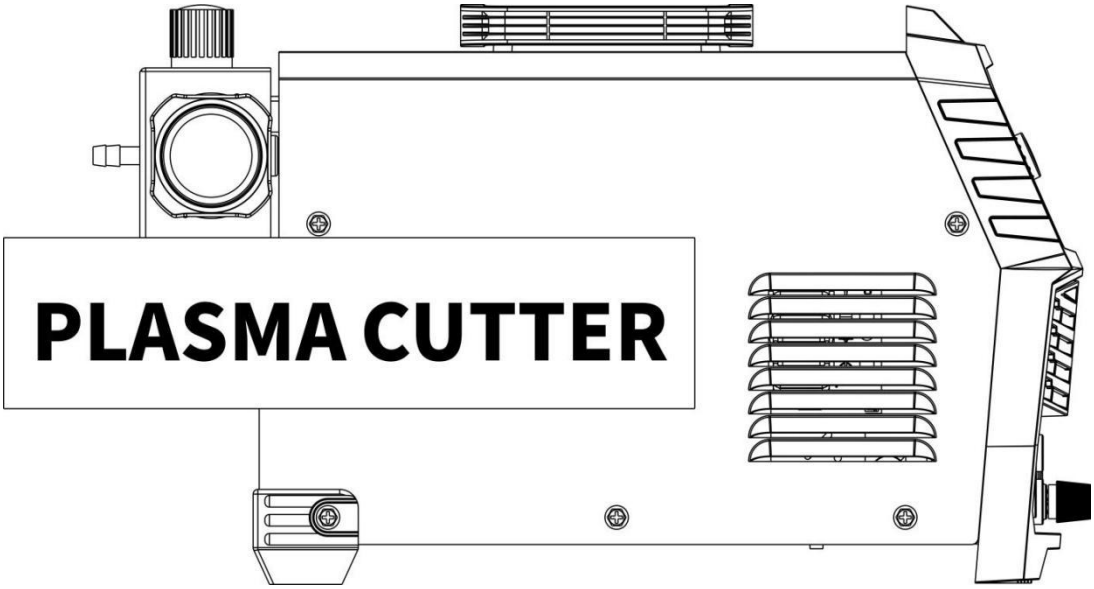
ARCCAPTAIN®

PLASMA CUTTER
CUT55 NON-HF



English

User Manual

www.arccaptain.com

Dear Valued Customer,

Thank you for going with ARCCAPTAIN! We're all about making plasma cutters superior for you. ARCCAPTAIN was built by high quality components, every single unit machine was passed multiple industry leading laboratory tests to provide a great cutting experience and performance.

Two-year warranty service is provide to yours! When unpacking, make sure that the product is intact and undamaged. DO NOT return directly before contact our customer service.

Six ways to connect us and join in ARCCAPTAIN Community:

Email: service@arccaptain.com

Online: www.arccaptain.com/pages/contact-us

Facebook: arccaptainwelder

Instagram: arccaptain_welder

Youtube: arccaptain-weld

Whatsapp: +19892449456

This manual is designed to help you get the most out of your ARCCAPTAIN products. Please save this manual and take time to read the safety warnings and precautions, assembly, operating, inspection, maintenance. They will help you protect yourself against potential hazards on the worksite. Failure to do so can result in serious injury!

Save for future reference:

Product：	
Date Purchased:	
Serial Number:	
Product Feedback:	

TABLE OF CONTENTS

1.SAFETY

⚠ WARINING **READ ALL SAFETY WARNINGS BEFORE WORKING!**

Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury. Save all warnings and instructions for future reference!

If you encounter any issues during installation or operation, refer to the relevant sections in this manual for inspection. If you're still unsure or unable to resolve the problem, please contact ARCCAPTAIN professional support.

1.1 General Safety

- Do NOT use the plasma cutter if the switch does not turn it on and off.
- Disconnect the plug from the power source before making any adjustments, changing accessories, or storing the plasma cutter.
- Ensure the switch is off before connecting to power or moving the plasma cutter to prevent accidental starting.
- Always maintain and use safety guards, covers, and devices properly.
- Keep hands, hair, clothing, and tools away from moving parts like V-belts, gears, and fans.
- Follow these instructions and consider working conditions when using the plasma cutter and accessories.
- This manual may not cover every possible situation. It's important for the operator to use common sense and caution while using this product.

1.2 Electrical Safety

⚠ WARINING **BEWARE OF ELECTRIC SHOCK!**

- DO NOT cut in a damp area or come in contact with a moist or wet surface.
- DO NOT modify any wiring, ground connections, switches, or fuses in this cutting equipment.
- DO NOT come into physical contact with any part of the cutting current circuit, including the workpiece, ground clamp, electrode or cutting wire, and metal parts on the electrode holder or MIG gun.
- DO NOT connect the ground clamp to electrical conduit, and DO NOT cut on electrical conduit.
- NEVER leave the plasma cutter unattended while energized. Turn off the power if you have to leave.
- DO NOT attempt to plug the plasma cutter into the power source if the ground prong on INPUT POWER CABLE plug is bent over, broken off, or missing.
- DO NOT alter INPUT POWER CABLE or plug in any way.
- People with pacemakers should consult their physicians before use. Magnetic field can make cardiac pacemaker a bit wonky.

⚠ WARINING **REPLACING COMPONENTS CAN BE DANGEROUS!**

- Only experts should replace machine parts. Avoid dropping foreign objects into the machine during component replacement. Ensure correct wire connections after replacing PCBs to prevent property damage.

1.3 Fire Safety

⚠ WARINING **BEWARE OF FIRE HAZARD!**

- Place the machine on non-combustible surfaces to prevent fires.
- Ensure no flammable materials are near the working area to reduce fire risk.
- Avoid installing the machine near water sources to prevent water damage.
- Always weld/cut materials in a dry environment with humidity below 90% and maintain a working temperature between -10°C and 40°C.
- When welding/cutting outdoors, ensure shelter from sunlight and rain, keeping the machine dry at all times.
- Do not operate the machine in dusty or chemically corrosive environments.
- Remove or secure all combustible materials within a 35 feet (10 meters) radius of the work area. Use fire-resistant material to cover or seal open doorways, windows, cracks, and other openings.
- Improper use can lead to fire or explosion. Avoid flammable materials near the working area, keep a fire extinguisher nearby with trained personnel, refrain from cutting closed containers, and do not use the machine for pipe thawing.

1.4 Fumes and Gases Safety

⚠ WARINING **SMOKE CAN BE HARMFUL TO YOUR HEALTH!**

- Keep your head away from the smoke while cutting to avoid breathing in harmful gases.
- Ensure the working area is well-ventilated with exhaust or ventilation equipment during cutting.
- Only work in a confined area if it's well-ventilated, or wear an air-supplied respirator.

1.5 Arc Rays and Noice Safety

⚠ WARINING

EXCESSIVE NOISE DOES GREAT HARM TO HEARING!

ARC RADIATION MAY HURT YOUR EYES AND BURN YOUR SKIN !

- Arc radiation can harm eyes and skin; excessive noise can damage hearing.
- Use certified cutting eye protection with at least a number 10 shade lens rating.
- Wear leather leggings and fire-resistant shoes or boots; avoid clothing that can catch sparks or molten metal. Do not touch hot workpiece with bare hands.
- Keep clothing free of flammable substances and wear dry, insulating gloves and protective clothing.
- Wear an approved head covering and use appropriate cutting attire.
- When cutting overhead or in confined spaces, use flame-resistant ear plugs or ear muffs.
- Wear ear covers or other hearing protectors when cutting.

1.6 Gas Shielded Cutting – Cylinder Safety

⚠ WARINING CYLINDERS CAN EXPLODE WHEN DAMAGED!

- Never cut on a pressurized or closed cylinder.
- Avoid letting the electrode holder, electrode, cutting torch, or cutting wire touch the cylinder.
- Keep cylinders away from all electrical circuits, including cutting circuits.
- Always keep the protective cap on the valve except when the cylinder is in use.
- Use only the correct gas shielding equipment designed for your specific type of cutting, and maintain it properly.
- Protect gas cylinders from heat, physical damage, slag, flames, sparks, and arcs.
- Always follow proper procedures when moving cylinders.
- Do not install the machine in an environment with explosive gas to avoid an explosion.

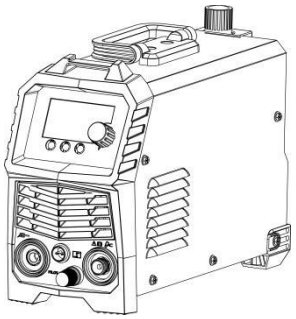
1.7 Additional Safety Information

- Use only the supplied power cord for this plasma cutter or an identical replacement cord. Do not install a thinner or longer cord on this plasma cutter.
- Maintain labels and nameplates on the plasma cutter. These carry important information.
- Ensure the ground clamp is securely connected to the workpiece during cutting.
- Pressing the gun switch when cutting or cutting.
- When disposing of the cutting machine, please note the following:
- Burning electrolytic capacitors on the main circuit or PCB board may cause explosions. Burning plastic components such as the front panel may produce toxic gases. Dispose of it as industrial waste.

2.PRODUCT DESCRIPTION

2.1 Function Overview

This is a new Pro series plasma cutting machine with advanced technology, complete functions and excellent performance. This ultra-portable plasma cutting system is suitable for a variety of application needs. In addition, the new series is also equipped with the latest APP remote control function.



- Advanced digital control
- The CUT55NON-HF plasma cutting machine adopts advanced MCU intelligent digital control technology, and all major components are operated by software.
- Large screen display and multi-scene mode:
- The product supports grid cutting, rust removal, plate cutting and other modes. Users can choose the required working mode according to the usage scenario.
- Grid cutting adjusts the PA time 5-15S to avoid frequent start-up of the cutting gun switch. The rust removal mode can perform simple metal rust surface rust removal.
- The upgraded LED display supports different working modes and function switching such as current, voltage, air pressure display and unit switching;
- Multi-function mode:
- The function mode supports 2T/4T/PT/PA mode, and functions such as back-air

supply and safety protection can be easily read through the digital display.

- Full digital control improves the consistency and stability of cutting, while making the cutting machine more compact and cutting more precise.
- Powerful cutting performance
- Using non-high frequency technology, the IPT60 cutting torch realizes non-high frequency non-contact arc ignition. In this mode, the cutting torch head does not need to contact the metal plate, which prolongs the life of consumables and increases the cutting thickness.
- Dual voltage mode
- CUT55NON-HF is a versatile plasma cutting machine that can use 110V/220V AC voltage. It uses compressed air as the plasma gas source to cut metal, so make sure your air compressor is ready. The device outputs 220V stably to cut carbon steel with a maximum thickness of 26 mm, and is also capable of cutting other metals such as stainless steel, copper, cast iron and aluminum.

2.2 Technical parameters

Items	Models	
	CUT55NON-HF	
Rated input power supply	Single-phase AC220V 50/60Hz	Single-phase AC110V 50/60Hz
Rated input capacity (kVA)	9.2	5.5
Power factor	0.7	
Rated output (A/V)	55 / 100	35 / 94
Rated duty cycle (%)	60	60
No-load voltage (V)	310V	
Output current range (A)	20 ~ 55	20 ~ 35
Arc ignition mode	NON-HF Non-Contact	
Post-flow time (s)	5	
Gas pressure range	0.21~0.49Mpa / 30.5~71.0PSI	
Insulation grade	H	
Cooling mode	Air cooling	
Enclosure ingress protection	IP21S	

Efficiency (%)	85	
Cutting Thickness	1" maximum cut 11/16" ideal clean cut	9/16" maximum cut 1/2" ideal clean cut

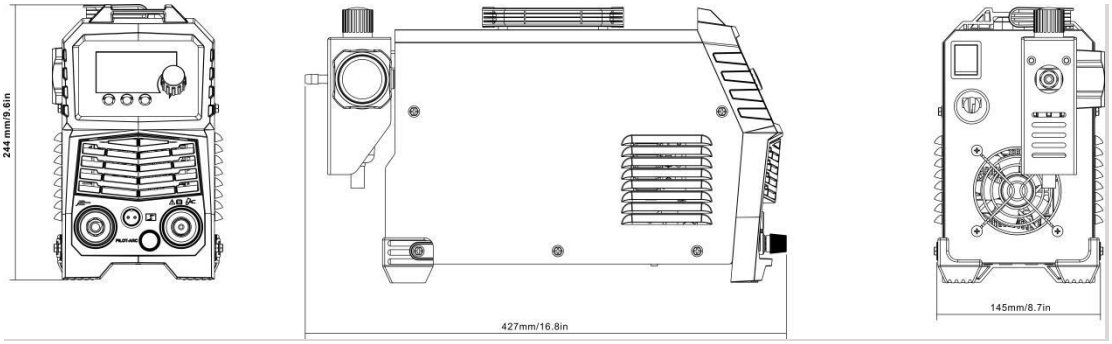


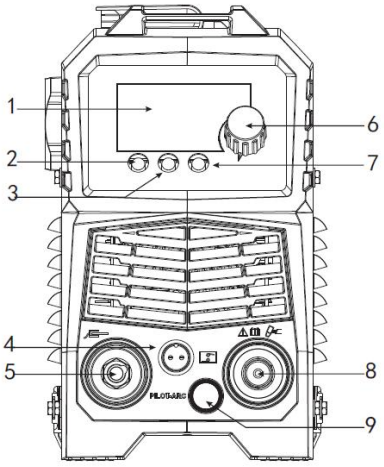
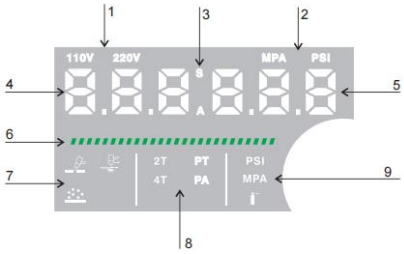
Figure 2: Size

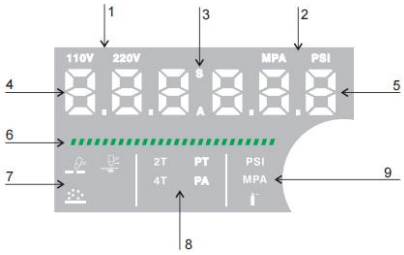
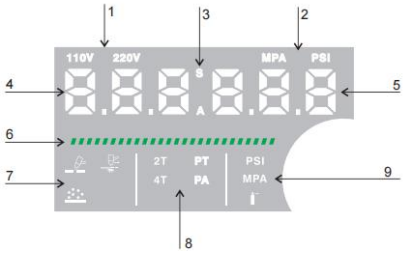
2.3 Package

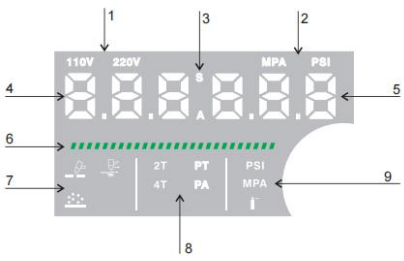
Name	Specification	Quantity (pcs)
Cutting machine	CUT55NON-HF	1
Air Compressor Filter	Installed on the machine	1
Cutting torch & accessories	IPT60	1
Ground clamp	300A-0.025in^2 DKJ 10-25	1
Gas hose	0.3*0.47in	1
Hose clamp	/	2
Strap	/	1
Nozzle	1.1	2
Electrode	/	2
Operator’s manual	CUT55NON-HF Operator’s manual	1

3. INSTRUCTIONS

3.1 Panel Instruction

Part name	Function	Picture
1.Digital screen	To display the cutting information	 **Figure 3 Front panel controls**
2. Mode button	Cutting/grid cutting/rust removal mode switch button	
3.Function buttons	2T/4T/PT/PA mode switch button	
5.Earth cable terminal	To connect the earth cable	
8.Cutting torch terminal	To connect the cutting torch	
6.Current control knob	To adjust the output current	
7.Air unit conversion button	PSI/MPA/Gas detection	
9.Pilot arc terminal	To connect pilot arc Line	
4. Interface for torch trigger (2 pin)	To connect the control signal of cutting torch	
1. Input voltage	Display the current input voltage:110v/220v	 **Figure 4 Digital Display**
2.Air Unit	“MPA”:Metric “PSI”： Imperial	
3.“S”/ “A”	“S” post-blow time unit; “A” Cutting current unit;	
4.Current	Display Current	
5.Air pressure	Display air pressure	
6.Current Display	As the current increases, the indicator lights up more and	

Running Lamp	more.	
7.Cutting operation mode	1,Symbol  Lights up to indicate that it is currently in cut mode. 2，Symbol  Lights up to indicate that you are currently in grid cutting mode. 3，Symbol  Lights up to indicate that it is currently in descaling mode.	
8. 2T/4T/PT/PA	2T mode: 1. Long press the torch switch to enter the cutting mode. 2. Release the torch switch to exit the cutting mode. 4T mode: 1. Long press the torch switch to enter the cutting mode. 2. Release the torch switch to maintain the cutting mode. 3. Press the torch switch to prepare to stop the cutting mode. 4. Release the torch switch to stop the cutting mode. **PT mode** 1. Operation steps for the machine to enter PT mode. 1.1 The machine is in 2T mode, press the Mode button twice to enter PT mode.the PT mode indicator light is on. 1.2 The machine is in 4T mode, press the Mode button once to enter PT mode. the PT mode indicator light is on. 2. Operation steps for setting the post-blow time of the machine: adjust the Current control knob on the panel in a clockwise	

	direction, and set the time to 5~15s. 3. Save and exit PT mode: The setting is automatically saved after completion, and it will automatically return to 2T or 4T cutting mode after 3S of standby.Users can also press the center Mode button to return to 2T/4T mode by themselves. 4. The machine enters the VArc . **PA mode operation procedure:** When the machine is in 2T mode, press the center Mode key 3 times. the PA mode light will come on. 4.2 When the machine is in 4T mode, press the center Mode key 2 times and the PA mode light will come on. 4.3. Procedure for setting the machine dimension arc time: Adjust the current control knob of the panel clockwise, and set the time to 2-10S. (Please note that the longer the dimension arc time, the greater the degree of wear and tear of the nozzle and electrode). 4.4 Save and Exit PA Mode: Automatically save after setting is completed, and automatically return to 2T/4T mode after 3S of standby.Users can also press the center Mode button to return to 2T/4T mode.	
9.PSI MPA 	1, The default unit of air flow at start-up is English PSI, users can select the metric unit MPA by clicking the Mode button on the right side. 2, When the user selects the symbol  to turn on the gas	

	detection function, the air valve will automatically open and air will flow out from the nozzle of the gun head. This means that the machine's gas path is normal. If the user does not automatically switch back to PSI or MPA mode after 3S, the air valve will automatically close and return to PSI or MPA mode. **Please note that when the air check function is on, any cutting mode will not work.**	**Warning**: The machine cannot cut when it is in PT/PA mode. It can only cut when it is in 2T/4T mode.

1.Power switch	To control the ON/OFF of the input power of the machine
2.Cable	For power supply input
3.Cooling fan	For heat dissipation through forced air cooling
4.Air inlet port	This interface uses a 1/4 NPT quick connector.

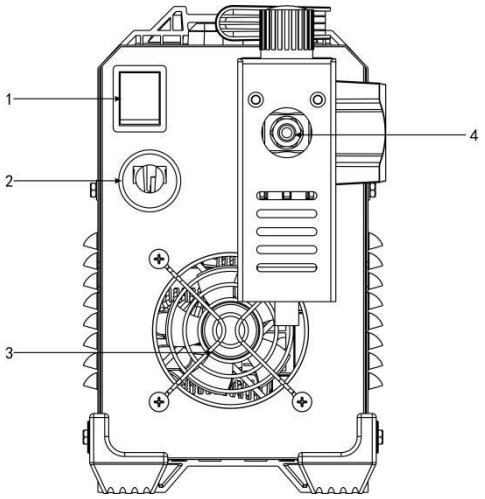


Figure 5 Back panel controls

*** For more detailed information about the connection and operational guidelines for the ARCCAPTAIN APP, please visit arccaptain.com and explore the resources available there.**

3.2 Nameplate

On the machine, there is a plate that includes all the operating specifications for your new unit. The serial number of the product is also found on this plate.

The duty cycle rating of a plasma cutter defines how long the operator can cut and how long the cutter must rest and be cooled. Duty cycle is expressed as a percentage of 10 minutes and represents the maximum cutting time allowed. The balance of the 10-minute cycle is required for cooling.

For example, a plasma cutter has a duty cycle rating of 60% at the rated output of 55A. This means with that machine: you can cut at 55 A output for six (6) minutes out of 10 with the remaining four (4) minutes required for cooling. The duty cycle of your new plasma

cutter can be found on the data plate affixed to the machine. It looks like the diagram below.

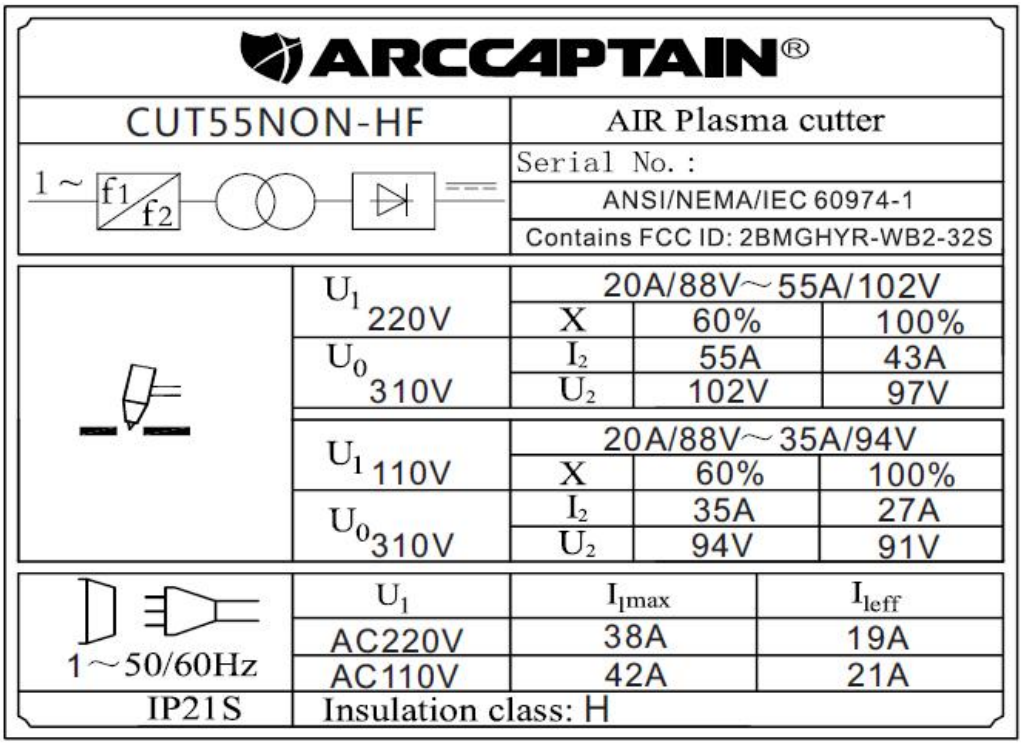


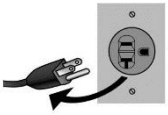
Figure 6: Nameplate

4.INSTALLATION AND CONNECTION

⚠ WARINING BEWARE OF ELECTRIC SHOCK!

Check and follow the instructions listed in the "Safety" section of this manual.

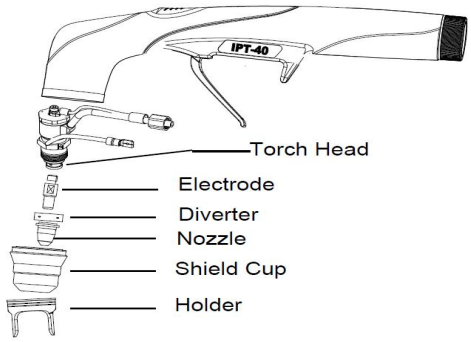
⚠ WARINING DO NOT set up without SWITCH OFF !



4.1 Installation of the cutting torch

Check the torch for proper assembly. Install proper torch parts for the desired application (Refer to the following Torch head figure).

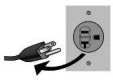
NOTE: The power supply will **NOT** operate unless the torch shield cup is fully seated against the Parts in Place pins in the torch head.

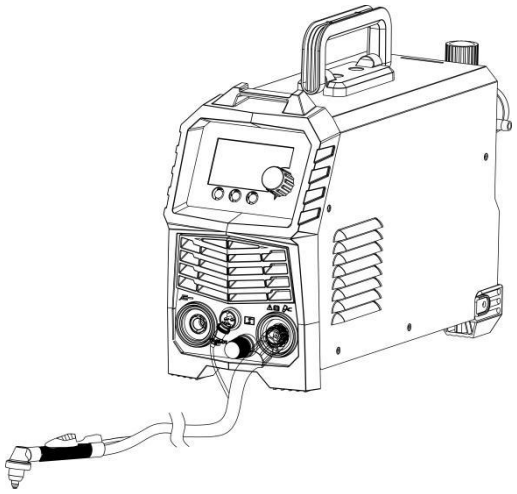
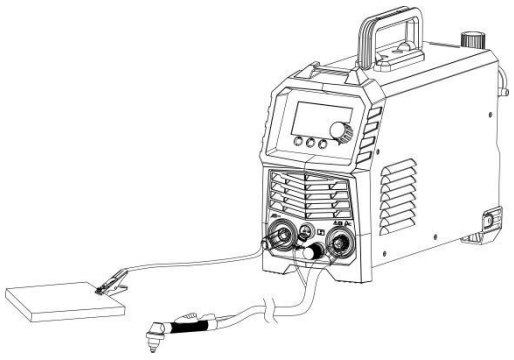
1. Connect the Electrode into the Torch Head. **2. Connect the Diverter into the Torch Head.** **3. Connect the Nozzle into the Electrode.** **4. Connect the Shield Cup into the Torch Head.** 5. **Connect the Wire Spacer Guide onto**	

the Shield Cup	**Figure 7 cutting torch head**

4.2 Installation of the Connection Cable

⚠ WARINING DO NOT set up without SWITCH OFF !



Description	Picture
1. Connect the Cutting gun to "-" Negative polarity and aviation plug **NOTICE:** The Cutting gun connector MUST be tightly connected to the socket to avoid power short circuit.	 **Figure 8 Connection of cutting torch**
2. Connection of earth cable Insert the quick plug on the earth cable into the terminal and tighten it clockwise. **NOTICE:** The ground clamp connector MUST be tightly connected to the socket to avoid power short circuit. **Ensure the ground clamp is connected on clean, bare metal (not rusty or painted).**	 **Figure 9 Connection of earth cable**

3. Connection of air compressor

The CUT55NON-HF requires compressed air to be

attached to the unit. Use a hose clamp to tighten the gas hose to avoid air leakage

NOTICE:

The input air pressure mini-mum must be 5 Bar and must not exceed 10.3 Bar. An air regulator is included with the unit with optimum pressure setting set to 4 Bar.

The unit is also equipped with an air filter which captures water and oil vapor. The vapor collected can be drained out of the bottom of the unit by turning the drain button.

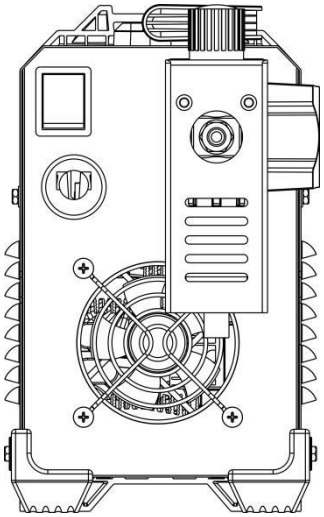


Figure 10 Connection of air compressor

4. Connection of input power

The CUT55NON-HF operates in 110V/220V power supply. Plug the Power Cord into a properly grounded. Set Cutting Gun down on nonconductive, nonflammable surface away from any grounded objects. And then then turn the Power Switch ON. The fan should start. The Digital screen should turn on.

NOTICE:

Adjust the Voltage Switch to match the outlet voltage:

For 110VAC, attach the provided adapter to the Power Cord.

For 220VAC, do not use the adapter.

Plug the Power Cord into a properly grounded and rated receptacle matching the plug and selected voltage.

Need to be connected to circuits with 50A and above circuit breakers

Warning:

DO NOT power on until the screen turns off and the fan stops working.

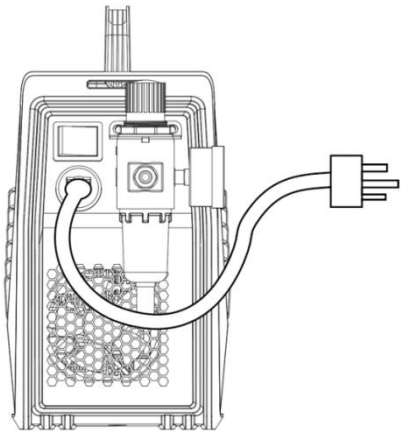


Figure 11 Connection of input power

5. OPERATION

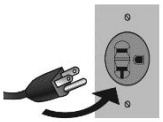
⚠ WARINING BEWARE OF ELECTRIC SHOCK!

NOTICE:

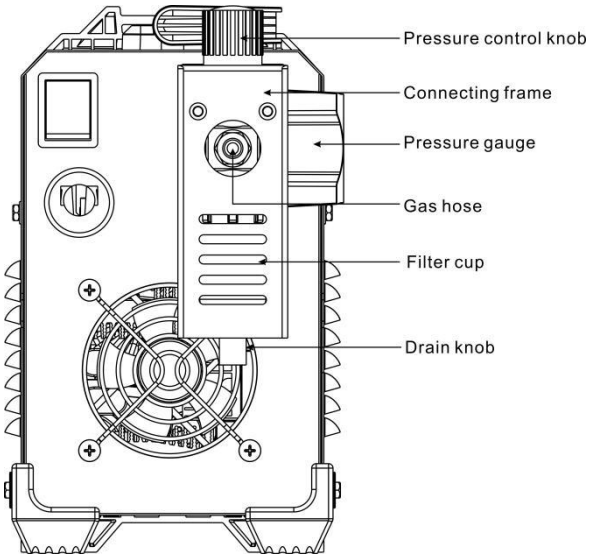
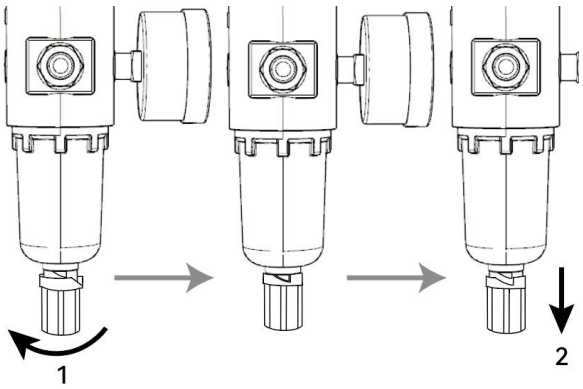
To prevent serious injury from fire or electric shock:

1.DO NOT touch anything, especially not the ground clamp, with the gun or cutting wire or an arc will be ignited.

2. DO NOT touch plasma cutter Components while it is plugged in.

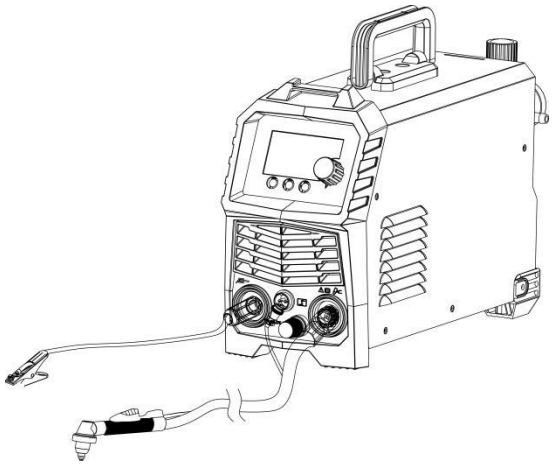
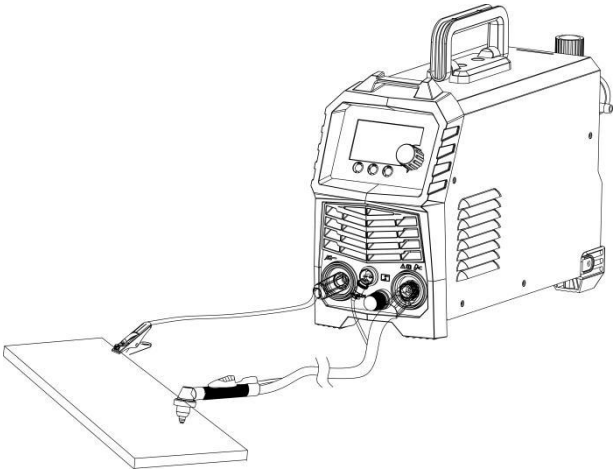
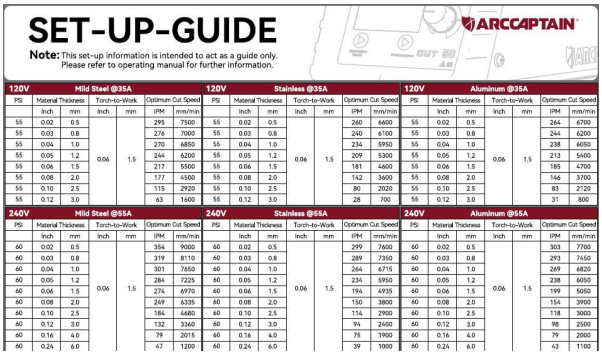


5.1 Operation of the reducer valve

Description	Picture
Steps for reducer setting are as follows: 1. lift the **pressure control knob** upward. adjust the gas pressure to the desired value by rotating the knob (rotate to "+" direction to increase gas pressure; rotate to "-" direction to reduce gas pressure); 2. press down the **pressure control knob** to get the knob locked.	 **Figure 12 Installation of the reducer valve**
Release water and oil vapor or gas **WARINING: DO NOT set up without SWITCH OFF !** 1. Turn the knob to the left to open the drain knob. 2. Pull the drain knob down to Release water and oil vapor or gas. **NOTICE:** The drain knob needs to be turned off before CUT55NON-HF can be used properly.	 **Figure 13 Release water and oil vapor or gas**

5.2 Operation method

⚠ WARINING BEWARE OF ELECTRIC SHOCK!

Description	Picture
1. Confirm that CUT55NON-HF has been installed and operated correctly, refer to **sections 4 and 5**	 **Figure 14 Installation**
2. Clamp the Ground clamp onto the workpiece, The Ground clamp must be securely connected to the workpiece.	 **Figure 15 Clamp the Ground clamp**
3. Set the output current control knob at maximum position for higher cutting speed and less dross formation. Reduce the current, if desired to reduce the cut width, heat affected zone or travel speed as required. 4. You can refer to **Appendix 1** to set cutting parameters	 **Figure 16 refer to Appendix 1**

SET-UP-GUIDE

ARCCAPTAIN

Note: This set-up information is intended to act as a guide only. Please refer to operating manual for further information.

120V	Mild Steel @35A						120V	Stainless @35A						120V	Aluminum @35A					
PSI	Material Thickness		Torch-to-Work		Optimum Cut Speed		PSI	Material Thickness		Torch-to-Work		Optimum Cut Speed		PSI	Material Thickness		Torch-to-Work		Optimum Cut Speed	
	Inch	mm	Inch	mm	IPM	mm/min		Inch	mm	Inch	mm	IPM	mm/min		Inch	mm	Inch	mm	IPM	mm/min
55	0.02	0.5	0.06	1.5	295	7500	55	0.02	0.5	0.06	1.5	240	6600	55	0.02	0.5	0.06	1.5	244	6700
55	0.03	0.8			276	7000	55	0.03	0.8			240	6100	55	0.03	0.8			244	6200
55	0.04	1.0			270	6850	55	0.04	1.0			234	5950	55	0.04	1.0			238	6050
55	0.05	1.2			244	6200	55	0.05	1.2			209	5300	55	0.05	1.2			213	5400
55	0.06	1.5			217	5500	55	0.06	1.5			181	4600	55	0.06	1.5			185	4700
55	0.08	2.0			177	4500	55	0.08	2.0			142	3609	55	0.08	2.0			146	3700
55	0.10	2.5			115	2920	55	0.10	2.5			80	2020	55	0.10	2.5			83	2120
55	0.12	3.0			63	1600	55	0.12	3.0			28	700	55	0.12	3.0			31	800
240V	**Mild Steel @55A**						**240V**	**Stainless @55A**						**240V**	**Aluminum @55A**					
PSI	Material Thickness		Torch-to-Work		Optimum Cut Speed		PSI	Material Thickness		Torch-to-Work		Optimum Cut Speed		PSI	Material Thickness		Torch-to-Work		Optimum Cut Speed	
	Inch	mm	Inch	mm	IPM	mm/min		Inch	mm	Inch	mm	IPM	mm/min		Inch	mm	Inch	mm	IPM	mm/min
60	0.02	0.5	0.06	1.5	354	9000	60	0.02	0.5	0.06	1.5	299	7600	60	0.02	0.5	0.06	1.5	303	7700
60	0.03	0.8			319	8110	60	0.03	0.8			289	7350	60	0.03	0.8			293	7450
60	0.04	1.0			301	7650	60	0.04	1.0			264	6715	60	0.04	1.0			269	6820
60	0.05	1.2			284	7225	60	0.05	1.2			234	5950	60	0.05	1.2			238	6050
60	0.06	1.5			274	6970	60	0.06	1.5			194	4935	60	0.06	1.5			199	5050
60	0.08	2.0			249	6335	60	0.08	2.0			150	3800	60	0.08	2.0			154	3900
60	0.10	2.5			184	4680	60	0.10	2.5			114	2900	60	0.10	2.5			118	3000
60	0.12	3.0			132	3360	60	0.12	3.0			94	2400	60	0.12	3.0			98	2500
60	0.16	4.0			79	2015	60	0.16	4.0			75	1900	60	0.16	4.0			79	2000
60	0.24	6.0			47	1200	60	0.24	6.0			39	1000	60	0.24	6.0			43	1100

1. When ready to cut, place the torch near the work, make certain all safety precautions have been taken and pull the trigger. The pilot arc will start.

2. Pierce the work piece by slowly lowering the torch onto the metal at a 30° angle away from the operator. This will blow the dross away from the torch nozzle. Slowly rotate the torch to vertical position as the arc becomes deeper.

NOTE: Graphics shown are for understanding torch angles for best results – the distances from the workpiece are exaggerated. In actual operation, the nozzle should be held just above the work piece surface.

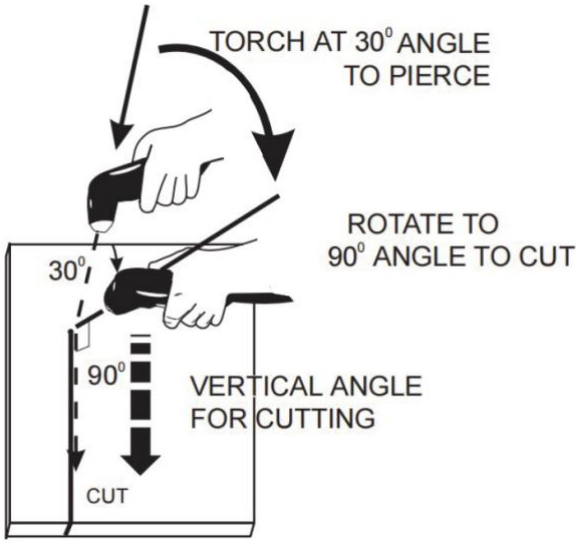


Figure 17 Cutting operation

- **NOTE**

For better torch control, it is acceptable to let the nozzle drag along the work piece surface. This will shorten nozzle life. Also, it is acceptable to place a non-conductive torch guide on the work piece in order to achieve a cleaner cut

• When the trigger is released, the arc will stop. The gas will continue to flow for 5 seconds of postflow. If the trigger is activated within this time period

• If the dross is difficult to remove, reduce the cutting speed. High speed dross is more difficult to remove than low speed dross.

• The right side of the cut is more square than the left as viewed along the direction of travel.

• Clean spatter and scale from the nozzle frequently.

- **Parts in place**

Cutting torch reference Figure 7 cutting torch head. If the accessories of cutting torch need to be replaced, please log in to the official website: WWW.ARCCAPTAIN.COM

• Check the assembly of the torch consumables. If they are not properly in place, the machine will not start. **Make sure that the shield cup is hand tight. Do not use pliers or over tighten.**

• Check the conditions of the inside of the nozzle. If debris has collected, rub the electrode on the inside bottom of the nozzle to remove any oxide layer that may have built up. Refer to the “Routine Maintenance Section".

• Check the condition of the electrode. If the end has a crater-like appearance, replace it along with the nozzle. The maximum wear depth of the electrode is approximately .062”. A green and erratic arc will indicate definite electrode failure and the electrode should be replaced immediately.

• Replace the nozzle when the orifice exit is eroded away or oval shaped.

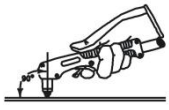
- **Pilot arc discussion**

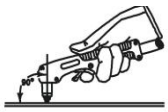
The CUT has a smooth, continuous pilot arc. The pilot arc is only a means of transferring the arc to the workpiece for cutting. Repeated pilot arc starts, in rapid succession, is not recommended as these starts will generally reduce consumable life. Occasionally, the pilot arc may sputter or start intermittently. This is aggravated when the consumables are worn or the air pressure is too high.

Always keep in mind that the pilot arc is designed to transfer the arc to the workpiece and not for numerous starts without cutting. When the pilot arc is started, a slight impulse will be felt in the torch handle. This occurrence is normal and is the mechanism which starts the plasma arc. This impulse can also be used to help troubleshoot a "no start" condition.

5.3 Notes for cutting operation

⚠ WARINING BEWARE OF ELECTRIC SHOCK!

	It is recommended not to ignite the arc in the air if not necessary, for it will shorten the lifespan of the electrode and nozzle of the torch. If the gun switch is pressed for more than 3 seconds without contact with the workpiece, the arc will be closed.
	It is recommended to initiate the cutting from the edge of workpiece, unless penetration is needed.
	Ensure spatters fly from the bottom of workpiece while cutting. If spatters fly from the top of workpiece, it indicates that the workpiece can not be fully cut because the cutting torch is moved too fast or the cutting current is too low.
	Keep the nozzle slightly touching the workpiece or keep a short distance between the nozzle and workpiece. If the torch is pressed against the workpiece, the nozzle may stick to the workpiece, and smooth cutting is unavailable.
	For cutting round workpiece or to meet precise cutting requirement, molding board or other assistant tools are needed.
	It is recommended to pull the cutting torch while cutting.

	Keep the nozzle of cutting torch upright over the workpiece, and check if the arc is moving with the cutting line. If the space is not enough, don't bend the cable too much, step on or press upon the cable to avoid suffocating of gas flow. The cutting torch may be burned because the gas flow is too small. Keep the cutting cable away from edge tools.
	Clean up the spatters on the nozzle timely, for it will affect the cooling effect of the nozzle. Clean up the dust and spatters on the torch head after using everyday to ensure good cooling effect.

- **The workpiece is not cut fully. This may be caused by:**

1. The cutting current is too low.
2. The cutting speed is too high.
3. The electrode and nozzle of the torch are burned.
4. The workpiece is too thick.

- **Molten slag drops from the bottom of workpiece. This may be caused by:**

1. The cutting speed is too low.
2. The electrode and nozzle of the torch are burned.
3. The cutting current is too high.

5.4 Cutting parameters table

⚠ WARINING BEWARE OF ELECTRIC SHOCK!

Select proper current according to the cutting parameters table, workpiece material, cutting thickness and cutting speed, etc. (The figure in the below table is an approximation.)

Figure 18 Cutting speed (in/min) when cutting current is 55A

Cutting thickness（inch）	0.004	1/32	1/16	1/8	3/16	7/32	1/4	9/32	5/16	3/8
Mild steel		315		59			15			
Galvanized steel		315		59			15			
Stainless steel		315		59			15			
Aluminum		315		59						
Brass		29.5								
Red copper		29.5								

5.5 Replacement of electrode and nozzle

⚠ WARINING BEWARE OF ELECTRIC SHOCK!

When the phenomena below occur, the electrode and nozzle should be replaced. Otherwise, there will be strong arc in the nozzle, which will break down the electrode and the nozzle, or even burn the torch. Nozzles of different models are different, so ensure the nozzle is of the same model when replacing it.

1.Electrode wear＞0.06in

2.Distortion of the nozzle

3.Cutting speed declining, arc with green flame

4.Difficult in arc ignition

5.Irregular cut

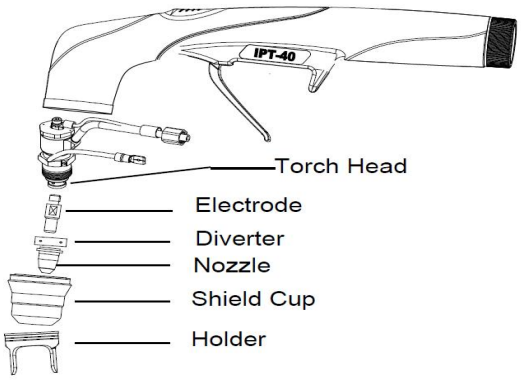


Figure 1

9 Exploded view of cutting torch

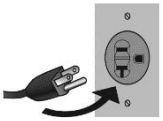
If the accessories of cutting torch need to be replaced, please log in to the official website: WWW.ARCCAPTAIN.COM

6.MAINTENANCE

⚠ WARINING BEWARE OF ELECTRIC SHOCK!

NOTICE:

The power of the switching box and the cutting machine should be shut down before daily checking (except appearance checking without contacting the conductive body) to avoid personal injury accidents such as electric shock and burns.



Tips:

1.Daily checking is very important in keeping the high performance and safe operation of this cutting machine.

2.Do daily checking according to the table below, and clean or replace components when

necessary.

3.In order to ensure the high performance of the machine, please choose components provided or recommended by dealer when replacing components.

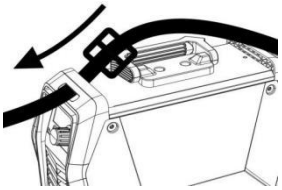
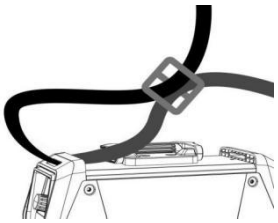
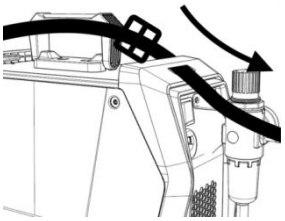
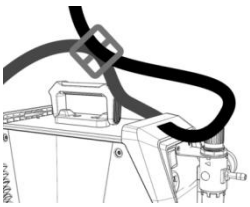
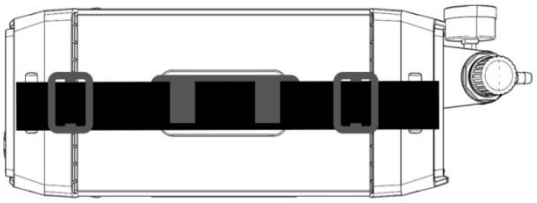
4. **Daily checking of the cutting machine**

Items	Checking requirements	Remarks
Front panel	Whether any of the components are damaged or loosely connected; Whether the output quick sockets are tightened; Whether the abnormity indicator illuminates.	If unqualified, check the interior of the machine, and tighten or replace the components.
Back panel	Whether the input power cable and buckle are in good condition; Whether the air intake is unobstructed.	
Cover	Whether the bolts are loosely connected.	If unqualified, tighten or replace the components.
Side plates	Whether the side plate is loosely fixed.	
Chassis	Whether the screws are loosely connected.	
Routine	Whether the machine enclosure has color fading or overheating problems; Whether the fan sounds normal when the machine is running; Whether there is abnormal smell, abnormal vibration or noise when the machine is running.	If abnormal, check the interior of the machine.

Daily checking of the cables

Items	Checking requirements	Remarks
Earth cable	Whether the grounding wires (including workpiece GND wire and cutting machine GND wire) break off.	If unqualified, tighten or replace the components.
Cutting cable	Whether the insulating layer of the cable is worn, or the conductive part of the cable is exposed; Whether the cable is drawn by an external force; Whether the cable connected to the workpiece is well connected.	Use appropriate methods according to the work site situation to ensure safety and normal cutting.

7.STRAP INSTALLATION

Step 1: Thread the strap through the strap hole in front of the welder.	
Step 2: Thread the strap through the nylon buckle as shown in the diagram.	
Step 3: Thread the strap through the strap hole in back of the welder.	
Step 4: Thread the strap through the nylon buckle as shown in the diagram.	
Step 5: The strap installation is complete.	

8. TROUBLESHOOTING

⚠ WARINING BEWARE OF ELECTRIC SHOCK!

The abnormity indicator on the front panel would illuminate in case of any failures inside the cutting machine.

Malfunction phenomena	Cause and solution

Turn on the machine, the LED screen illuminates, the control PCB keys do not function, and there is no response when pushing the torch trigger.	The cutting machine crashes: Shut down the machine, and restart it.
the LED Display E60 /E10/E31/E34/E80/81	**1**.**E60** overheat protection: machine is under overheat protection and stops working until E60 disappears **2**.**E10** over-current protection:internal components are damaged, please contact dealer for help **3**. **E31** Input network voltage undervoltage protection: Under AC120V net voltage input user turn off the power switch, the display will light up E31 after 1S clock, and the display will go out within 10S clock. Warning: Users cannot re-enter the AC120V/240V network voltage within 10S of the display not going out.If the user re-enter the AC120V/240V network voltage within 10S clock display E31 will not go out, the machine can not work. 4. **E34**: indicating that the IGBT drive voltage is too low, and you need to contact the manufacturer's after-sales service for help 5. E80 Input air pressure under pressure protection: When the input air pressure is less than 0.2MPa (30Psi), the machine displays E80, which means the current input air pressure is under pressure.Users need to adjust the pressure reducing valve to adjust the air pressure to 0.2MPa-0.55MPa (recommended value is 0.4MPa or 57.5Psi). 6. E81 Input air pressure overpressure protection: When the input air pressure is greater than 0.55MPa (80Psi), the machine displays E81, which means the current input air pressure is

	overpressurized.Users need to adjust the pressure reducing valve to adjust the air pressure to 0.2MPa-0.55MPa (recommended value is 0.4MPa or 57.5Psi).
Turn on the machine, the LED screen illuminates, and the fan works. When pushing the torch trigger, the solenoid valve functions, but there is no HF discharge rustling.	The arc ignition part fails: 1.The inter electrode distance of the discharge nozzle is too long. 2.There is leakage of the HF capacitor 222/10KV. 3.The mosfet or the optocoupler on the HF board is damaged. 4.The input voltage is too low.
Arc can not be ignited.	1. The air pressure is overly high or overly low. 2. Replace the electrode or nozzle

Appendix 1

SET-UP-GUIDE

Note: This set-up information is intended to act as a guide only.
Please refer to operating manual for further information.

120V	Mild Steel @35A					120V	Stainless @35A					120V	Aluminum @35A				
PSI	Material Thickness		Torch-to-Work		Optimum Cut Speed	PSI	Material Thickness		Torch-to-Work		Optimum Cut Speed	PSI	Material Thickness		Torch-to-Work		Optimum Cut Speed
	Inch	mm	Inch	mm	IPM	mm/min		Inch	mm	Inch	mm	IPM	mm/min		Inch	mm	IPM	mm/min
55	0.02	0.5	0.06	1.5	295	7500	55	0.02	0.5	0.06	1.5	260	6600	55	0.02	0.5	0.06	1.5	264	6700
55	0.03	0.8			276	7000	55	0.03	0.8			240	6100	55	0.03	0.8			244	6200
55	0.04	1.0			270	6850	55	0.04	1.0			234	5950	55	0.04	1.0			238	6050
55	0.05	1.2			244	6200	55	0.05	1.2			209	5300	55	0.05	1.2			213	5400
55	0.06	1.5			217	5500	55	0.06	1.5			181	4600	55	0.06	1.5			185	4700
55	0.08	2.0			177	4500	55	0.08	2.0			142	3600	55	0.08	2.0			146	3700
55	0.10	2.5			115	2920	55	0.10	2.5			80	2020	55	0.10	2.5			83	2120
55	0.12	3.0			63	1600	55	0.12	3.0			28	700	55	0.12	3.0			31	800
240V	**Mild Steel @55A**					**240V**	**Stainless @55A**					**240V**	**Aluminum @55A**				
PSI	Material Thickness		Torch-to-Work		Optimum Cut Speed	PSI	Material Thickness		Torch-to-Work		Optimum Cut Speed	PSI	Material Thickness		Torch-to-Work		Optimum Cut Speed
	Inch	mm	Inch	mm	IPM	mm/min		Inch	mm	Inch	mm	IPM	mm/min		Inch	mm	IPM	mm/min
60	0.02	0.5	0.06	1.5	354	9000	60	0.02	0.5	0.06	1.5	299	7600	60	0.02	0.5	0.06	1.5	303	7700
60	0.03	0.8			319	8110	60	0.03	0.8			289	7350	60	0.03	0.8			293	7450
60	0.04	1.0			301	7650	60	0.04	1.0			264	6715	60	0.04	1.0			269	6820
60	0.05	1.2			284	7225	60	0.05	1.2			234	5950	60	0.05	1.2			238	6050
60	0.06	1.5			274	6970	60	0.06	1.5			194	4935	60	0.06	1.5			199	5050
60	0.08	2.0			249	6335	60	0.08	2.0			150	3800	60	0.08	2.0			154	3900
60	0.10	2.5			184	4680	60	0.10	2.5			114	2900	60	0.10	2.5			118	3000
60	0.12	3.0			132	3360	60	0.12	3.0			94	2400	60	0.12	3.0			98	2500
60	0.16	4.0			79	2015	60	0.16	4.0			75	1900	60	0.16	4.0			79	2000
60	0.24	6.0			47	1200	60	0.24	6.0			39	1000	60	0.24	6.0			43	1100

Note: The above information is intended for a down hand butt weld with a gas flow of 8-12 l/min. Please refer to the operation manual for further information. Settings taken at front panel knobs