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*Supreme CUT60D*



## OWNER'S MANUAL

Carefully read the operation manual prior to using,  
Installing and maintaining this electric welding machine.

 **LOTOS TECHNOLOGY**  
POWERFUL, PORTABLE AND AFFORDABLE WELDING SOLUTIONS

# IMPORTANT

## Save This Manual

You will need the manual for safety warnings and precautions, assembly instructions, operating and maintenance procedures, parts list and diagram. Keep your invoice with this manual. Write invoice number and date of purchase on the inside of the manual. Keep the manual and invoice in a safe and dry place for future.

## Operation Manual

Carefully read the operation manual prior to using, installing and maintaining the electric welding machine for the purpose of preventing damages such as fire, electric shock and etc. from occurring. Please keep the manual for the reference in the future.

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# SAFETY WARNINGS AND PRECAUTIONS



PLEASE READ AND UNDERSTAND THE FOLLOWING SAFETY HIGHLIGHTS. BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS. ARC AND TIG WELDING CAN BE HAZARDOUS. PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS SHOULD CONSULT WITH THEIR DOCTOR BEFORE OPERATING



WHEN USING THE WELDER, ALL BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED TO REDUCE THE RISK OF PERSONAL INJURY AND DAMAGE TO EQUIPMENT.

## READ ALL INSTRUCTIONS BEFORE USING THIS WELDER.

- **Keep work area clean.** Cluttered areas invite injuries.
- **Observe work area conditions.** Do not use machines or power tools in damp or wet locations. Do not expose to rain. Keep work area well-lighted. Do not use electrically powered tools in the presence of flammable gases or liquids.
- **Keep children away.** Children must be never allowed in the work area. Do not let them handle machines, tools or extension cords.
- **Store idle equipment.** When not in use, tools must be stored in a dry location to inhibit rust.
- **Always lock up** tools and keep them out of the reach of children.
- **Do not force tool.** It will do the job better and safer at the rate for which it was intended. Do not use inappropriate attachments in an attempt to exceed the tool capacity.
- **Use the right tool for the job.** Do not attempt to force a small tool or attachment to do the work of a larger industrial tool. There are certain applications for which this welder was designed. Do not modify this welder and do not use this welder for any other purposes for which it was not intended.
- **Dress properly.** Do not wear loose clothing or jewelry as they can be caught in moving parts. Protective, flame retardant, electrically non-conductive clothing and non-skid footwear are recommended when working. Wear restrictive hair covering to contain long hair.
- **Use eye and ear protection.** Always wear ANSI approved, arc shaded, impact safety face shield (welding helmet). Always use a full-face shield when welding. Always wear ANSI approved eyewear under face shield and while in the workplace. Wear a NIOSH approved dust mask or respirator when working around metal, chemical dusts, fumes and mists.
- **Do not over reach.** Keep proper footing and balance at all times. Do not reach over or across running machines.
- **Maintain tools with care.** Keep tools sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories. Inspect tool cords periodically and, if damaged, have them repaired by an authorized technician. The handles must be kept clean, dry, and free from oil and grease at all times.
- **Disconnect power.** Unplug tool when not in use.
- **Remove adjusting keys and wrenches.** Check that keys and adjustment wrenches are removed from the welder and work area before plugging in.

- **Avoid starting unintentionally.** Be sure the switch is in the off position when not in use and before plugging in. Do not carry any tool with your finger on the trigger, whether it is plugged in or not.
- **Stay alert.** Watch what you are doing. Use common sense. Do not operate any tool when tired.
- **Check for damaged parts.** Before using any tool, any part that appears damaged should be carefully checked to determine that it would operate properly and perform its intended function. Check for alignment and binding of moving parts; any broken parts or mounting fixtures; and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician. Do not use the tool if any switch does not turn on and off properly.
- **Guard against electric shock.** Prevent body contact with grounded surfaces such as pipes, radiators, ranges and refrigerator enclosures.
- **Replacement parts and accessories.** When servicing, use only identical replacement parts. Use of any other parts will void warranty. Only use accessories intended for use with this welder. Approved accessories are available from [www.uwelding.com](http://www.uwelding.com).
- **Do not operate tool if under the influence of alcohol or drugs.** Read warning labels on prescriptions to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not operate the welder.
- **Maintenance.** For your safety, service and maintenance should be performed regularly by a qualified technician.
- **Use proper size and type extension cord.** If an extension cord is required, it must be of the proper size and type to supply the correct current to the welder without heating up. Otherwise, the extension cord could

melt and catch fire, or cause electrical damage to the welder. This welder requires use of an extension cord of 20Amps minimum capability up to 30 feet, with a wire size rated at 12 AWG. Longer extension cords require larger size wire. If you are using the welder outdoors, use an extension cord rated for outdoor use, signified by "WA" on the jacket. Performance of this welder may vary depending on condition in local line voltage. Extension cord usage may also affect welder performance.



**The warnings, cautions and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood, by the operator, that common sense and caution are factors, which cannot be built into this product, but must be observed at all times by the operator.**

## ARC WELDER SAFETY WARNINGS AND PRECAUTIONS

**Warning:** This product, when used for welding and similar applications, produces chemicals known to cause cancer and birth defects (or other reproductive harm).



### ELECTRIC SHOCK can be fatal

The electrode and work (or ground) circuits are electrically “hot” when the machine is on. Do not touch these “hot” parts with your bare skin or wet clothing. Protective clothing should be hole free, dry and ANSI approved. Wear dry, hole-free gloves to insulate hands.

- Do not permit electrically live parts, cables, or electrodes to contact skin, clothing or gloves.
- This unit draws enough current to cause serious injury and or death.
- Before turning the welder on, check the welder gun to be sure that there are no protruding screw heads and that all insulation is secure.
- Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.
- Always be sure the work cable makes a good electrical connection with the metal being cut. The connection should be as close as possible to the area being cut.
- Ground the work metal to be cut to a good electrical (earth) ground.
- Maintain the welding torch, work clamp, power cable and cutting machine in a safe operating condition. Replace damaged insulation wherever it is needed.
- Never dip the electrode in water for cooling.
- When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.



### FUMES & GASES can be dangerous

Plasma cutting may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When cutting, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. In confined spaces or in some circumstances, outdoors, a respirator may be required. Additional precautions are also required when cutting on galvanized steel.

- Do not cut in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas and other irritating products.
- Read and understand the manufacturer's instructions for this equipment and the consumables to be used, including the material safety data sheet (MSDS) and follow your employer's safety practices. MSDS forms are available from your welding distributor or from the manufacturer.



### ELECTRIC&MAGNETIC FIELDS may be dangerous

The EMF field that is generated during arc welding may interfere with various electrical and electronic devices such as cardiac pacemakers.

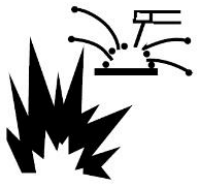
- Anyone using such devices should consult with their physician prior to performing any electric welding operations.
- Exposure to EMF fields while welding may have other health effects, which are not known.





#### **ARC RAYS can burn**

- Avoid eye and body damage. Arc rays and infrared radiation can cause injury to the eyes and burn the skin. Wear ANSI approved eye and body protection. Do not allow viewing by visitors without proper eye and body protection.
- Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when plasma cutting or observing open arc plasma cutting.
- Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.



#### **WELDING SPARKS can cause fire or explosion**

Avoid eye and body damage. Arc rays and infrared radiation can cause injury to the eyes and burn the skin. Wear ANSI approved eye and body protection. Do not allow viewing by visitors without proper eye and body protection.

- Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when plasma cutting or observing open arc plasma cutting.
- Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.



#### **CYLINDER may explode if damaged**

Use only compressed gas cylinders containing the correct shielding gas for the process

used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.

- Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.
- Cylinders should be located:
- Away from areas where they may be struck or subjected to physical damage.
- A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.
- Never allow any electrically “hot” parts to touch a cylinder.
- Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.
- Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.



#### **ELECTRICALLY POWERED EQUIPMENT can be dangerous**

Turn off input power using the disconnect switch at the fuse box before working on the equipment.

- Install equipment in accordance with the local codes and the manufacturer's recommendations.



#### **MOVING PARTS can cause injury**

Ground the equipment in accordance with the manufacturer's recommendations. Keep away from moving parts such as fans.

- Keep all doors, panels, covers and safety guards closed and securely in place.

# CALIFORNIA PROPOSITION 65 WARNINGS



Welding or cutting equipment produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)



Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.

## For Gasoline Engines:



Engine exhaust contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

## For Diesel Engines:



Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

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**PLEASE READ THIS OPERATION MANUAL CAREFULLY AND THOROUGHLY BEFORE ATTEMPTING TO OPERATE THIS MACHINE. KEEP THIS MANUAL HANDY FOR QUICK REFERENCE. PAY CLOSE ATTENTION TO THE SAFETY INSTRUCTIONS PROVIDED FOR YOUR OWN PROTECTION.**

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# SPECIFICATIONS

## ❖ GENERAL DESCRIPTION

**THANK YOU!** You had options for other CNC machines and you chose LOTOS Supreme CUT60D Plasma Cutter. We appreciate you as a customer and hope that you will enjoy years of use from your plasma cutter.

**Congratulations for your purchase.**

The new, redesigned LOTOS Supreme CUT series is a non-high frequency start machine. The “blow-back” type start that is used is generally safe for use in CNC applications and is ideal for general use. Blow-back type start involves a rearward movement of the electrode within the torch head when forced by the air pressure. When air pressure is applied the movement of the electrode off its seated position against the inner surface of the circuit grounded nozzle creates a spark, energizing the plasma stream. With this machine’s start type and pilot arc design, you are able to cut on any metal surface without having to contact to strike an arc which is ideal for cutting items like expanded metal or uneven surfaces. This Cutting machine has a wide range of uses which is suitable for cutting: stainless steel, alloy steel, mild steel, copper and other color metal materials.

There are several other key features on the Supreme Cut series:

- With the reliable Blow-Back non-high frequency start, the LOTOS Supreme CUT60D is suitable for CNC application meaning there will be no interference to your CNC computer system.
- Italy made Trafimet ERGOCUT S65 torch features a “BLOWBACK” design with a Euro-type Central connector. Offering improved consumable life with a patented “BACK STRIKING” design.
- Plasma Air Gouging enabled.
- 2T/4T Function enabled.
- Expanded/punched metal cutting by using Continuous pilot arc model.
- Post-flow control provides the time of the post flow air so consumable life is increased and the torch can be cooled for an extended period of time if desired.
- The pre-installed NPT 1/4” industry type D plug and air filter regulator allows you to quick connect to your air compressor by using the stand coupler existing on your air compressor.
- Pre-installed 12-PIN CNC Interface.

## ❖ WHAT'S INCLUDED

✓ Power Supply:



✓ 20ft Torch with Central Connector:



✓ 10ft Ground Clamp & Cable:



✓ 120V/240V Convertor:



✓ 12-PIN CNC Connector



✓ Hand-Held Shield, Wire Brush, etc.



✓ Consumables & Tools:



✓ Instruction Manual

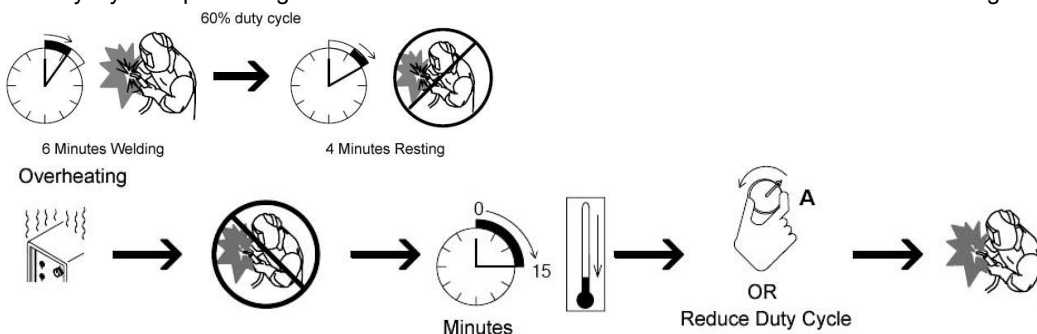


## ❖ POWER SUPPLY RATINGS

### Supreme CUT60D

Specification	220/240 V	110/120 V
Inverter Type	MOSFET	
Minimum/Maximum Rated Output	20 A/88V - 60 A/104 V	20 A/88V - 30 A/92 V
Start Type	Blow-Back Type	
Torch Type	TRAFIMET ERGOCUT S65 with Central Connector	
Duty Cycle @ Rated Amps/Volts (40° C) <sup>1</sup> (Output V/A)	60% @ 60 A/104 V 100% @ 46 A/98.4 V	60% @ 30 A/92 V 100% @ 23A/89.3 V
OCV (U0)	309 V	
Voltage Input (U1)	Standard 220/ 240 V (+-15%) 50/60Hz 1 Phase	Standard 110/ 120 V (+-15%) 50/60Hz 1 Phase
Maximum Inrush Amps (I1MAX)	44.5 A	39.4 A
Maximum Rated Effective Amps (I1EFF)	34.5 A	30.5 A
CNC Port	Yes	
Air Post Flow Timer	Adjustable	
Minimum Air Compressor Requirement	5.5 CFM @ 90 psi/ 30-60 Gallon reserve	
Duty Cycle/ Over Current Protection	Yes	
Minimum Operating Air Pressure (Safety Cut-Out Threshold)	35 psi	
Recommended Operating Air Pressure (Set with Air Flow set to "Constant Flow")	40-75 psi	
Maximum Supplied Air Pressure (From Compressor/Tank)	90 psi	
Ideal Cut Thickness (Hand Torch)	4/5" (20mm)	1/3" (8mm)
Ideal Cut Thickness (CNC)	1/2" (12mm)	1/4" (6mm)
Max Severance Cut @ 3 IPM (Steel)	1 1/4"	
Minimum Water Ingress Protection Standard	IP21	
Efficiency	>85%	
Cooling Method	Full Time High Velocity Fan with Tunnel Design	
Dimensions (approximate)	20.67 L x 7.87 W x 14.6 H	
Weight (Bare Unit)	31.3 lbs.	

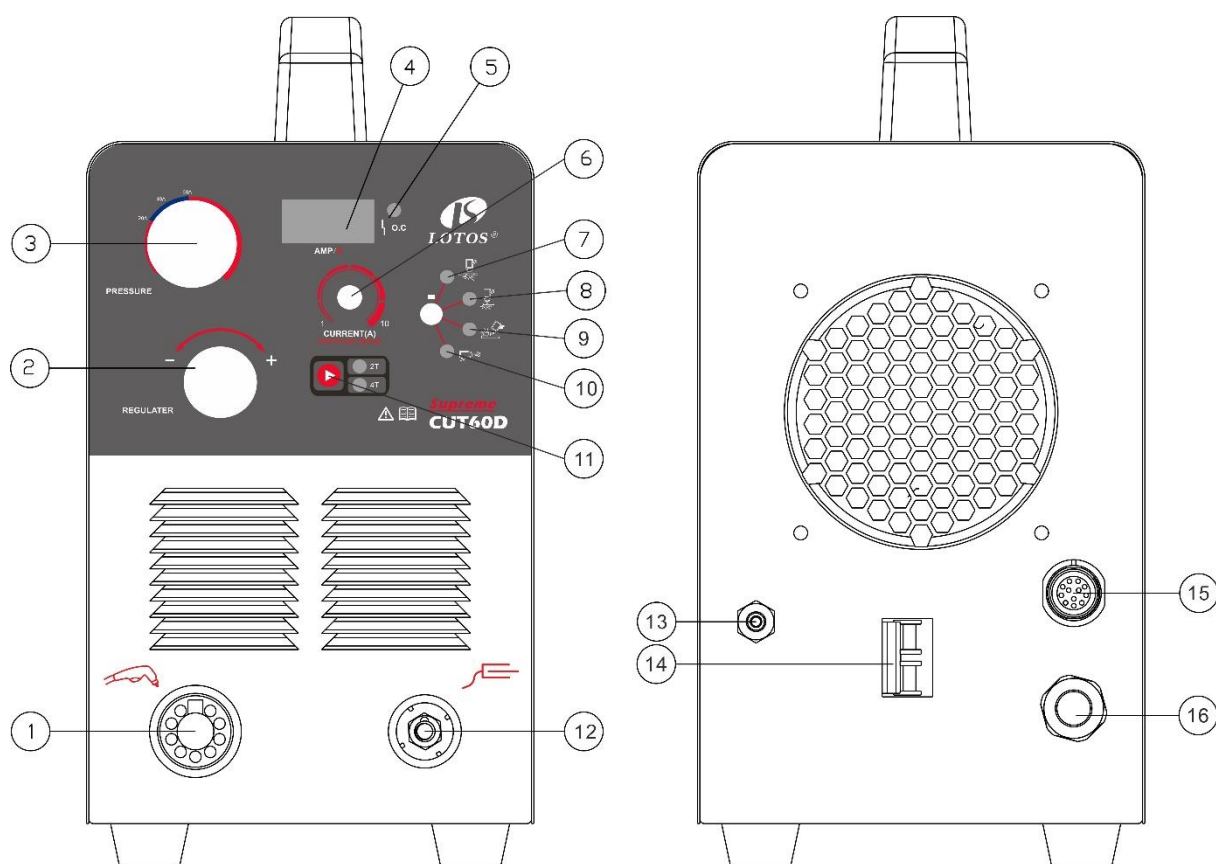
<sup>1</sup> Duty Cycle is percentage of 10 minutes that unit can weld at rated load without overheating.





The unit is connected to the supply even if the Power Switch is in the “OFF” position meaning there are electrically live parts inside the power source as long as it is plugged in. Carefully follow the instructions given in this manual.

## ❖ PANEL EXPLANATION

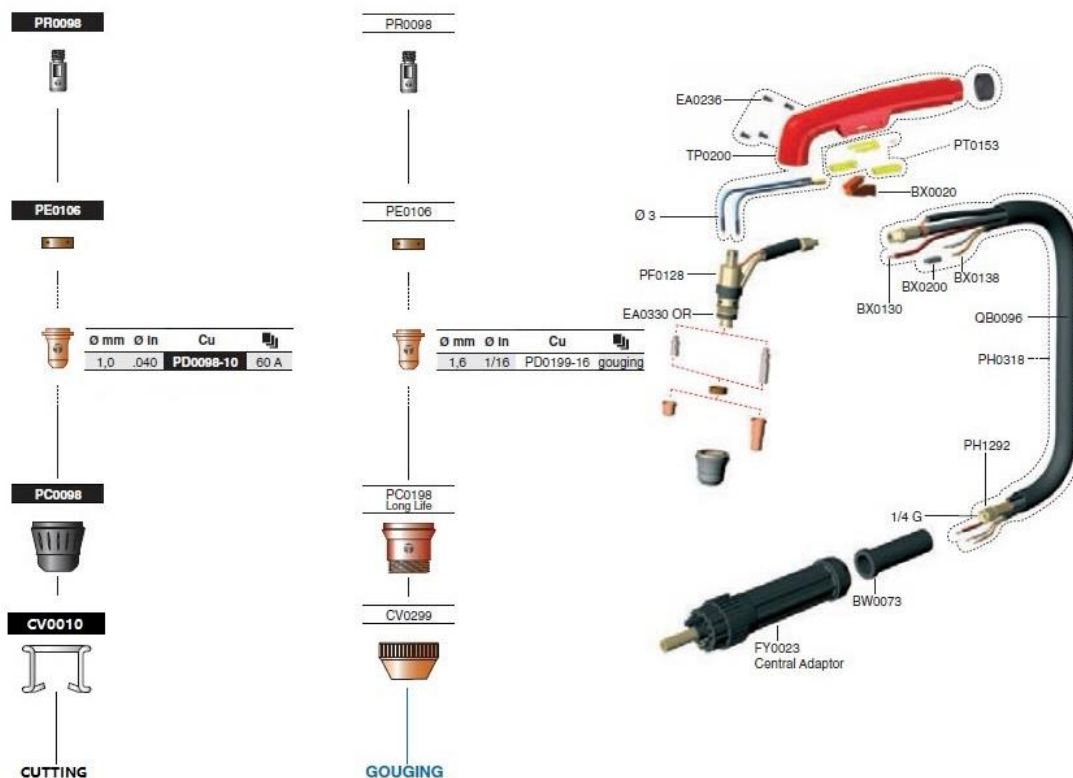


1 Central Switch Socket	9 Gouging
2 Pressure-Reducing Valve	10 Gas Check/Post Flow
3 Gas-Pressure Meter	11 2T/4T Change-Over Switch`
4 Digital Display	12 Positive Output
5 Overheat	13 Air Inlet
6 Current / Post Flow	14 Power Switch
7 Continuous Pilot Arc	15 CNC Interface
8 Non-Continuous Pilot Arc	16 Power Cord

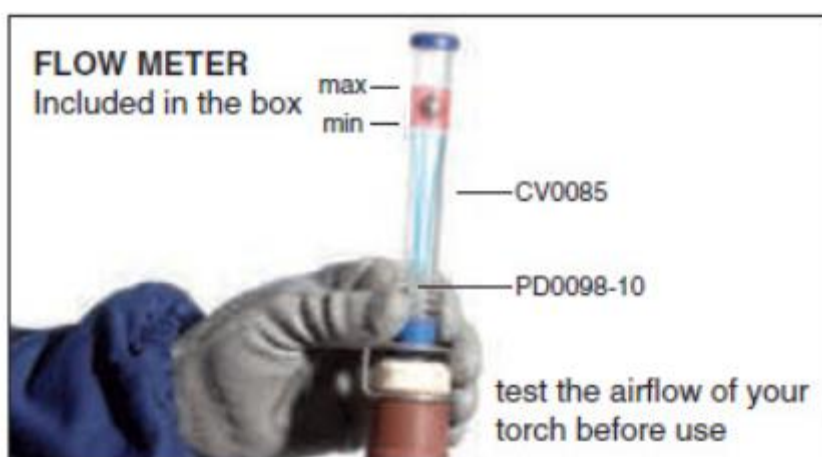
## ❖ CONSUMABLE TYPE AND INSTALLATION

The LOTOS Supreme CUT60D use the high-quality stand Trafimet Ergocut S65 torch. The torch and most of the related consumables are made in Italy by Trafimet.

ERGOCUT S 65 for LOTOS Supreme CUT60D



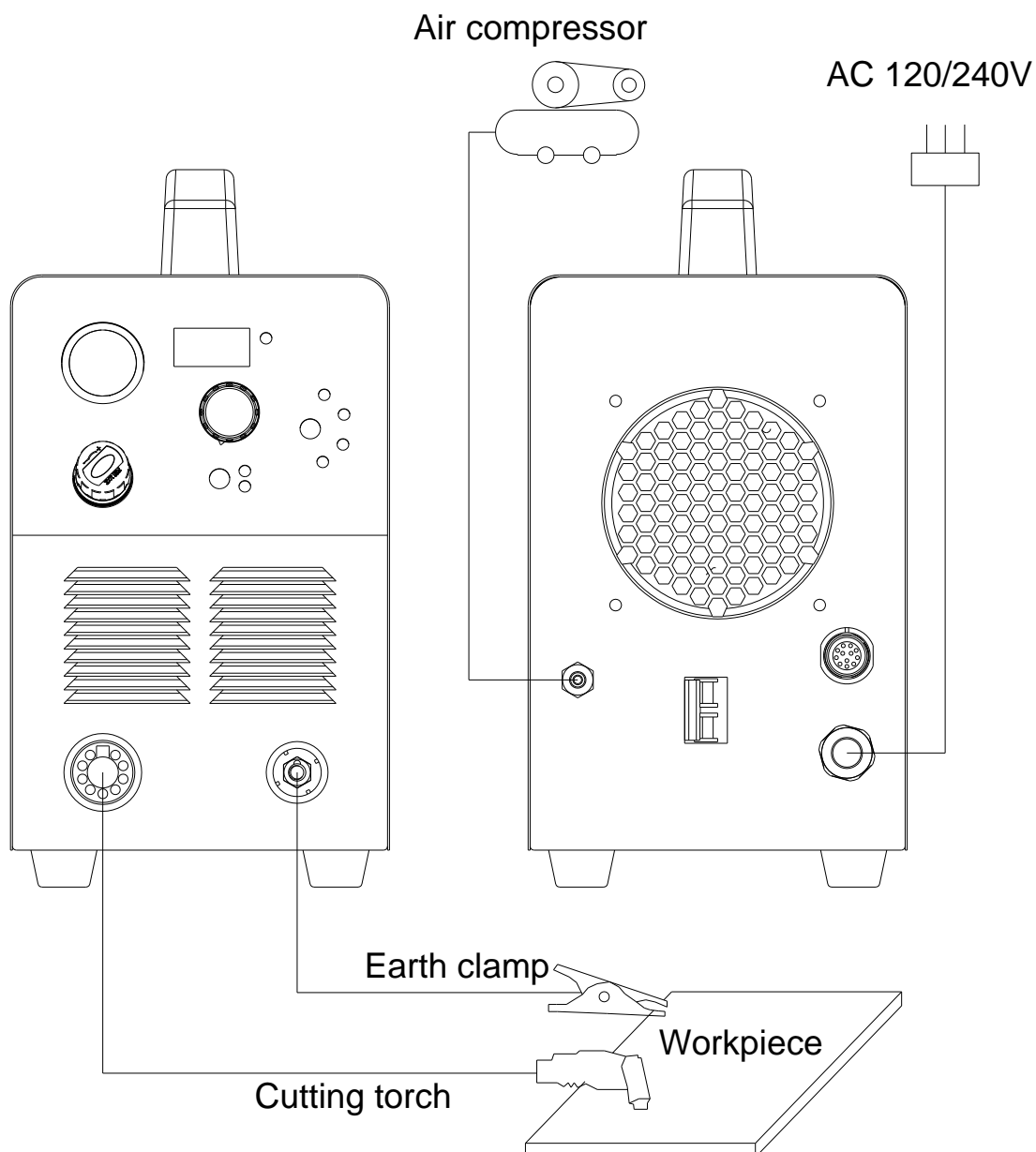
Use the Flow Meter to Test the Airflow of your torch before cutting. Make sure the metal ball is in red range.



# QUICK SETUP GUIDE



PLEASE READ ENTIRE INSTALLATION SECTION BEFORE STARTING INSTALLATION. BE SURE THAT ONLY QUALIFIED PERSONNEL SHOULD PERFORM THIS INSTALLATION.



# INSTALLATION



**PLEASE READ ENTIRE INSTALLATION SECTION BEFORE STARTING INSTALLATION. BE SURE THAT ONLY QUALIFIED PERSONNEL SHOULD PERFORM THIS INSTALLATION.**

## ❖ **MACHINE SETUP**

### **ELECTRIC SHOCK can be fatal**



- Have a qualified electrician install and service this equipment.
- Turn the input power OFF and unplug the machine from the receptacle before working on this equipment.
- Allow machine to sit for 5 minutes minimum to allow the power capacitors to discharge before working inside this equipment.
- Do not touch electrically hot parts.
- Machine must be plugged into a receptacle that is grounded according to the National Electrical Code and local codes.
- Do not remove or defeat the purpose of the power cord ground pin.



## ➤ **SELECT SUITABLE LOCATION**

The machine will operate in harsh environments. Even so, it is important that standard measures are followed in order to assure the machine is long lasting and reliable operation.

- The machine must be located where there is open space such that the air circulation in the back and out the front will not be restricted.
- Avoid getting dirt and dust in the machine. Failure to observe these precautions can result in excessive operating temperatures and the machine will shut down by itself.

## ➤ **ENVIRONMENTAL AREA**

Keep the machine dry. Do not place it on wet ground or in puddles. Avoid rain water. Operating in rain is not allowed.

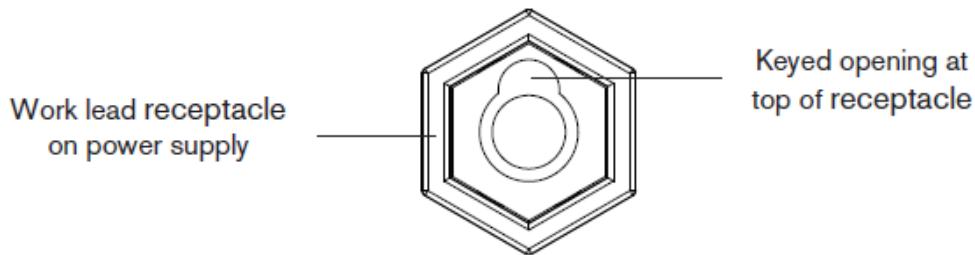
## ➤ **INPUT CABLE CONNECTION (enclose installing diagram)**

- Every machine has an included power cable which must be connected to coordinated voltage class in compliance according to input voltage of cutting machine. We recommend connecting this machine to 60A circle break under 240V and 50A circle break under 120V. If cutting machine whose power voltage is 230V is connected wrong to AC 380V, that will cause components of inter-machine are burned up.
- Make sure power cable is connected to power switch reliably and prevent from oxidizing.
- Make sure power voltage is inside the waved range.



➤ **OUTPUT CABLE CONNECTION**

- Make sure copper screw of another end of torch is connected to gas-electrical integration terminal then tighten them clockwise relation (prevent from leaking gas).
- Connect the ground cable to the positive terminal of front panel then tighten it.  
Note: The receptacle is keyed. Align the key on the work lead connector with the opening at the top of the receptacle on the power supply.



Push the work lead connector all the way into the receptacle on the power supply and turn clockwise, approximately 1/4 turn, until the connector is fully seated against the stop in order to achieve an optimal electrical connection.



**Caution: Ensure the work lead is fully seated in the receptacle to prevent overheating.**

➤ **CHECK**

- Check if cutting machine is grounded reliably according to standard.
- Check if all connectors are connected firmly.
- Check if power voltage is correct.

➤ **NOTE THE FOLLOWING**

- Ensure that the work clamp and the work piece make good metal-to-metal contact. Remove rust, dirt, paint, coatings and other debris to ensure the power supply makes proper contact with the work piece.
- For the best cut quality, attach the work clamp as close as possible to the area being cut.
- Do not attach the work clamp to the portion of the work piece which will be cut away.

# OPERATION



PLEASE READ AND UNDERSTAND THIS ENTIRE SECTION BEFORE OPERATING YOUR MACHINE. ONLY QUALIFIED PERSONNEL SHOULD OPERATE THIS EQUIPMENT. OBSERVE ALL SAFETY INFORMATION THROUGHOUT THIS MANUAL.

## ❖ OPERATIONS

### **ELECTRIC SHOCK can be fatal**

- Have an electrician install and service this machine and its equipment.
- Turn the input power off at the fuse box, disconnect or unplug supply lines and allow machine to sit for five minutes minimum to allow the power capacitors to discharge before working inside this machine.
- Do not touch electrically hot parts. Turn the input power OFF and unplug the machine from the receptacle before working on this equipment.



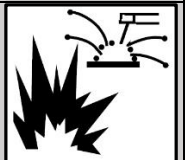
### **FUMES AND GASES can be dangerous**

- Keep your head out of fumes.
- Use ventilation or exhaust to remove fumes from breathing zone.



### **WELDING SPARKS can cause fires or explosions**

- Keep flammable material away.
- Do not weld, cut or gouge on containers that have held or are currently holding combustibles.



### **ARC RAYS can burn**

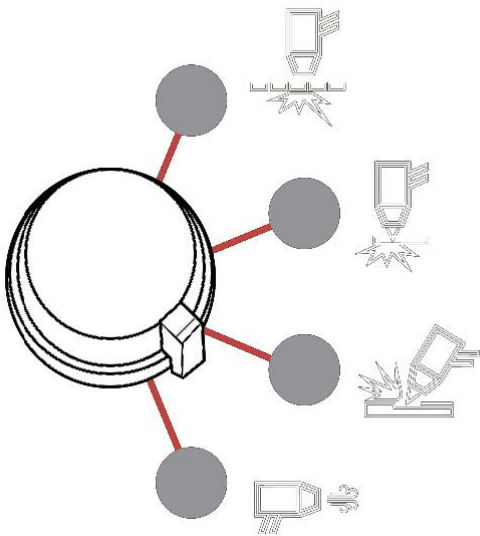
- Wear eye, ear and body protection.



## ❖ OPERATION STEPS

- Turn on the system: Set the ON/OFF switch ⑭ to the ON (I) position. Screen will turn on and will show the current volume after 5 Seconds.
- Set the operation mode switch

Use the operating mode switch to select the type of work you want to perform.



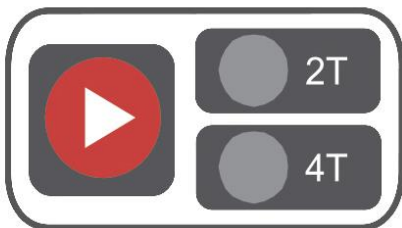
✧ For cutting expanded metal, grates, metal containing holes, or any job that requires a continuous pilot arc. Using this mode to cut standard metal plate will reduce consumable life.

✧ For cutting or piercing metal. This is the standard setting for normal metal cutting.

✧ For gouging metal. (Note: there are no gouging consumables in the box. For plasma air gouging you will need to buy the gouging consumables set separately.)

✧ For setting post flow, then you can adjust the knob set the post flow time. When the digital display does not flash, the setting is complete and the setting will be saved automatically.

- Set the 2T/4T model switch

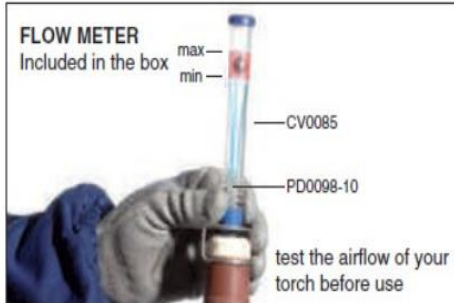


✧ 2T/4T Locks the torch in the ON (fire) position. With the 4T option selected, press the trigger to fire the torch. You can then release the trigger while continuing to cut. Press the trigger again to stop the arc. The arc also stops if you lose transfer.

- Adjust the air flow

Set the mode switch to Gas Check/Post Flow mode.

✧ Adjust your air compressor's output air flow and pressure and make it is adequate to machine, open the valve of your air compressor.



✧ Use the flow meter which comes with your package and test the air flow of your torch before use.

✧ Press the trigger on the torch, electromagnetic valve is starting and burner of torch should have air flowing out. Make sure the metal ball is in the RED range so that the output air flow is in a proper rate

✧ Adjust the Pressure-Reducing Valve② and set the input PSI for your cutting or gouging.

✧ Turn the adjustment knob ⑥ to adjust the post flow delay time.

## ● Set the output AMPs

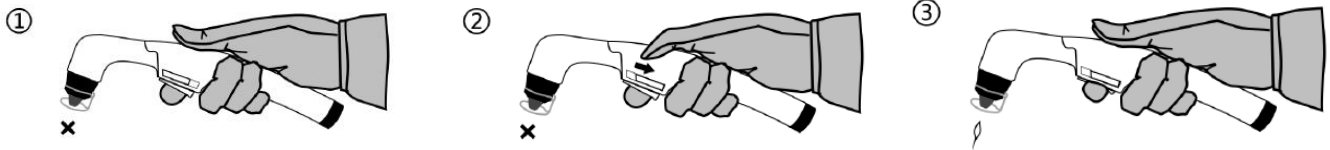
✧ Press the trigger on the torch, electromagnetic valve is starting and burner of torch should flow out gas and the Burner of pilot-arc cutter should spurt fire.

✧ Turn the adjustment knob ⑥ to change the amperage. Make sure cutting current is adequate to machine specifications according to thickness of cutting piece.

✧ Keep a distance of 0.06Inch(1.5mm) from copper tip from the work piece, press the trigger of the torch and burn/strike arc, sparks of arc striking will diminish immediately. User can begin to cut.

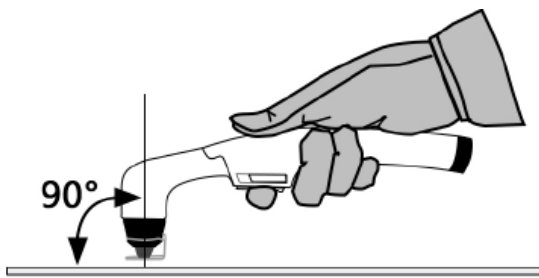
## ❖ OPERATE THE SAFETY TRIGGER

The hand torches are equipped with a safety trigger to prevent accidental firings.



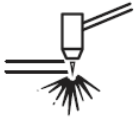
### ➤ **Hand torch cutting suggestions**

- Drag the torch tip lightly along the work piece to maintain a steady cut.
- While cutting, make sure that sparks exit from the bottom of the work piece. The sparks should lag slightly behind the torch as you cut ( $15^{\circ}$  —  $30^{\circ}$  angle from vertical).
- If sparks spray up from the work piece, move the torch more slowly, or set the output current higher.
- With either the 75-degree or 15-degree hand torch, hold the torch nozzle perpendicular to the work piece so that the nozzle is at a  $90^{\circ}$  angle to the cutting surface. Observe the cutting arc as the torch cuts.

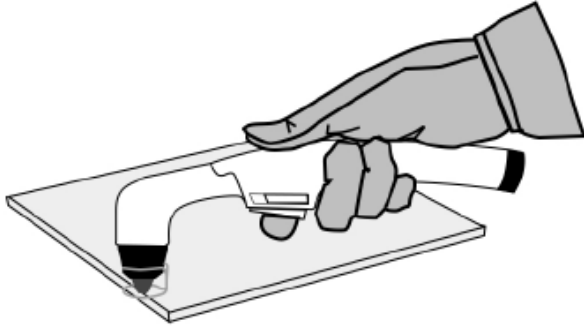


- If you fire the torch unnecessarily, you will shorten the life of the nozzle and electrode.
- Pulling, or dragging, the torch along the cut is easier than pushing it.
- For straight-line cuts, use a straight edge as a guide. To cut circles, use a template or a radius cutter attachment (a circle cutting guide).

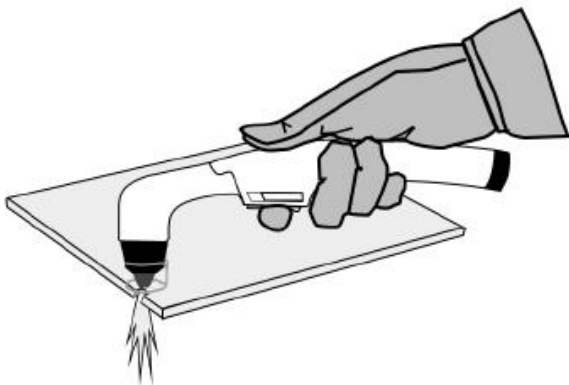
## ❖ CUT FROM THE EDGE



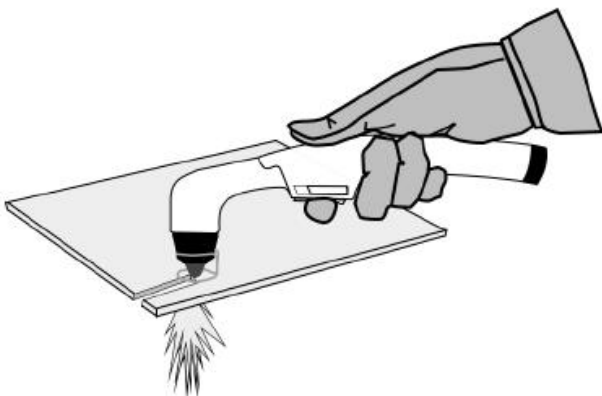
1. Hold the torch 90° to the edge of the work piece.



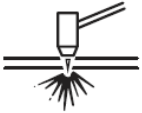
2. Press the trigger of the torch to start the pilot arc. Hold the torch at the edge (do not continue the cut) until the arc has cut completely through the work piece.



3. Drag the torch across the work piece to proceed with the cut smoothly. Maintain a steady, even pace. Make sure the arc cut completely through the work piece.

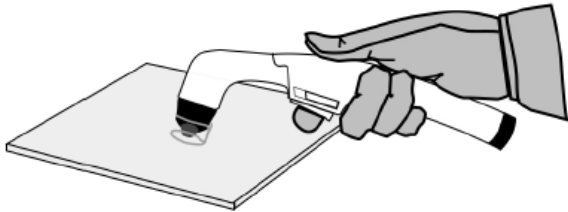


## ❖ PIERCE A WORK PIECE

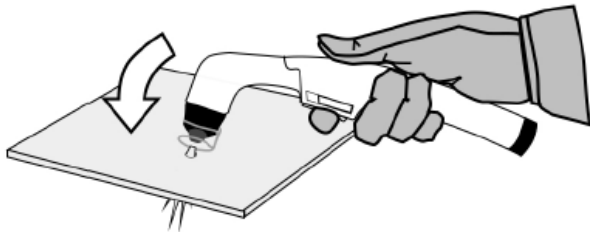


Recommend using 2T function while piercing

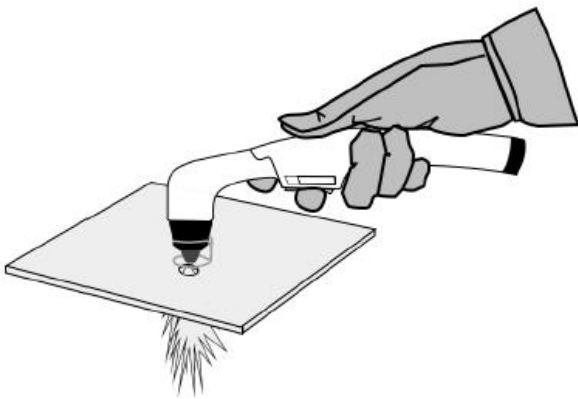
1. Hold the torch at an approximate 30° to the work piece, the distance between the torch tip and the work piece should be within 1/16 inch (1.5 mm).



2. Fire the torch. Slowly rotate the torch to from 30° to 90°.



3. Hold the torch in place while continuing to press the trigger. When the arc goes completely through the work piece, then the arc has pierced the material.



4. When the pierce is complete, drag the torch lightly along the work piece to proceed with the cut.

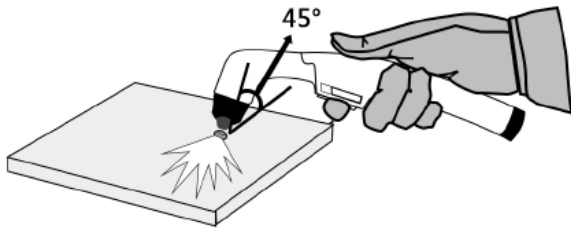


## ❖ GOUGE A WORK PIECE



**Note:** There are no gouging consumables included in the box. For plasma air gouging you will need to buy the gouging consumables set separately.

1. Hold the torch at a 45° to the work piece with a small gap 1/16 inch (1.5 mm) between the torch tip and the work piece. Press the trigger to obtain a pilot arc. Transfer the arc to the work piece.



2. Keep an approximate 45° angle to the work piece as you feed into the gouge. Push the plasma arc in the direction of the gouge you want to create. Keep a small distance between the torch tip and the molten metal to avoid reducing consumable life or damaging the torch.

**Direction of Travel**



## ❖ **CAUSES OF COMMON HAND-CUTTING ISSUES**

The work piece is not cut completely through. This can be caused by:

- The cutting speed is too fast.
- The consumables are too worn.
- The amperage setting is set too low for the thickness of the work piece.
- Gouging consumables are installed instead of cutting consumables.
- The work clamp is not attached properly to the work piece.
- The air pressure is too low or the air flow rate is not high enough.

Cut quality is poor. This can be caused by:

- The amperage setting is too low for the thickness of the work piece.
- The wrong consumables are being used (gouging consumables are installed instead of drag-cutting consumables, for example).
- Your cutting speed is too quick or too slow.

Consumables' life is shorter than expected. This can be caused by:

- Moisture in the air supply.
- Incorrect air pressure.
- Consumables are incorrectly installed.

## ❖ USING THE MACHINE TORCH



You will need to refer to the manufacturer's instructions for specifics on operating the machine torch in your configuration. However, the information in the following sections will help you optimize cut quality and maximize consumable life.

### Ensure the torch and table are set up correctly

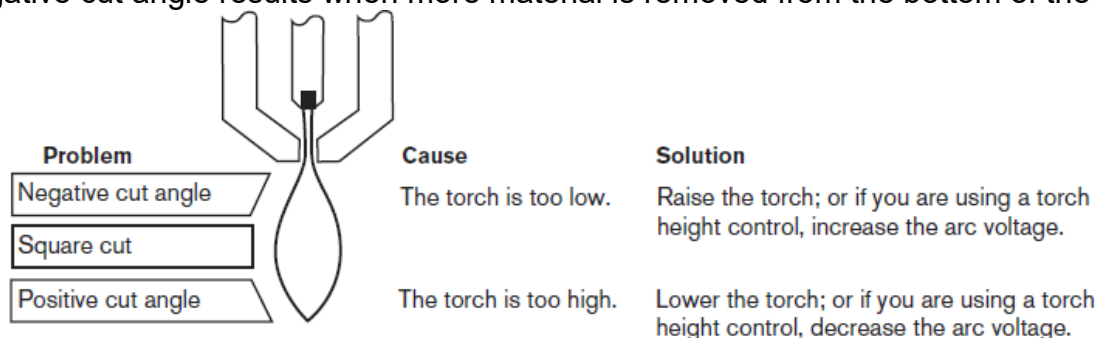
- Use a square to align the torch at right angles to the work piece in two dimensions.
- The torch may travel more smoothly if you clean, check and "tune" the cutting table's rails and drive system.
- Unsteady machine motion can cause an irregular, wavy pattern on the cut surface.
- Ensure that the torch does not touch the work piece during cutting. Contact with the work piece can damage the shield and nozzle and affect the cut surface.

### Understand and optimize cut quality

There are several factors to consider in cut quality. The following sections explain how these factors can affect cut quality.

#### **Cut Angle**

- A positive cut angle results when more material is removed from the top of the cut than from the bottom.
- A negative cut angle results when more material is removed from the bottom of the cut.



#### **Dross**

Some amount of dross will always be present when cutting with air plasma. However, you can minimize the amount and type of dross by adjusting your system correctly for your application. Excess dross appears on the top edge of both pieces of the plate when the torch is too low (or voltage is too low when using a torch height control). Adjust the torch or adjust the voltage of your torch height controller in small increments (5 volts or less) until the dross is reduced.

- Low-speed dross forms when the torch's cutting speed is too slow and the arc angles ahead. It forms as a heavy, bubbly deposit at the bottom of the cut and can be removed easily.
  - ✓ Increase the speed to reduce this type of dross.
- High-speed dross forms when the cutting speed is too fast and the arc angles behind. It forms as a thin, linear bead of solid metal attached very close to the cut. It is more firmly attached to the bottom of the cut than at low speed and is difficult to remove. To reduce high-speed dross:
  - ✓ Decrease the cutting speed.
  - ✓ Decrease the torch-to-work distance.

# MAINTENANCE

- Remove dust by using compressed air regularly. If plasma cutter is placed in environment where condition is polluted with smoke and dust, the plasma cutter must have dust removed every day.
- Pressure is adequate to cutting in order to protect smaller components.
- Check the electric connectors and make sure the connectors are connected firmly (specially connect and insert components), tighten the connectors.
- Avoid water getting into machine and prevent machine becoming damp, or the machine must be dried in time and measured insulation by meter. After there is no problem, the machine can be operated.
- If the machine will not be used for a long time, it should be put in its own packing box and store in dry environment.

# TROUBLESHOOTING

For Customer Service, please contact us by [support@lototechnology.com](mailto:support@lototechnology.com) or Call us at 408-739-2329.

Issues	Resolvable Methods
Digital display is on, fan is not working and control knob is not working.	<ul style="list-style-type: none"> <li>✓ Over voltage protection is working. Turn off the machine then turn on it again after several minutes.</li> </ul>
Digital display is on and fan is working. However, while pressing the trigger of torch, there is no arc-striking and electromagnetic valve is not working.	<ol style="list-style-type: none"> <li>1. Check if torch is well connected.</li> <li>2. Check if control knob of torch is damaged.</li> <li>3. Part of assistant power module on top PCB board is damaged and there is no DC 24V output.</li> </ol> <ul style="list-style-type: none"> <li>✓ Contact LOTOS for repair.</li> </ul>
Digital display is on and fan is working. However, pressing the trigger of the torch, there is no arc striking and inter red LED light is on (need to remove the cover).	<ol style="list-style-type: none"> <li>1. The MOSFET on the top PCB board is damaged (driver module is damaged).</li> <li>2. Voltage rising transformer on the bottom PCB board is damaged.</li> <li>3. Control module is damaged.</li> </ol> <ul style="list-style-type: none"> <li>✓ Contact LOTOS for repair.</li> </ul>
Digital display is on, fan is working and Airflow comes while press the trigger on the torch. However, there is no arc-striking and inter red LED light is not on (need to remove the cover).	<p>There may be some damage on the PCB board:</p> <ol style="list-style-type: none"> <li>1. Primary coil of arc-striking transformer is damaged or has poor contact.</li> <li>2. Voltage rectifier diode is damaged.</li> </ol> <ul style="list-style-type: none"> <li>✓ Contact LOTOS for repair.</li> </ul>
Pilot arc is not striking when pressing the trigger on the torch.	<ol style="list-style-type: none"> <li>1. Input voltage is too low.</li> <li>2. The input air pressure is too high or too low.</li> </ol> <ul style="list-style-type: none"> <li>✓ Use a stable 120 V or 240 V power source.</li> <li>✓ Adjust the air pressure.</li> </ul>

# REFERENCE

Note: LOTOS collects its data under laboratory test conditions using new consumables. User experience may vary if the operation conditions are different.

## ❖ PSI SETTING REFERENCE TABLE

Output AMP	Air Pressure (PSI)	
	Cutting	Gouging
20 A	40	30
30 A	50	35
40 A	55	40
50 A	65	45
60 A	75	55

## ❖ CUTTING SPEED REFERENCE TABLE

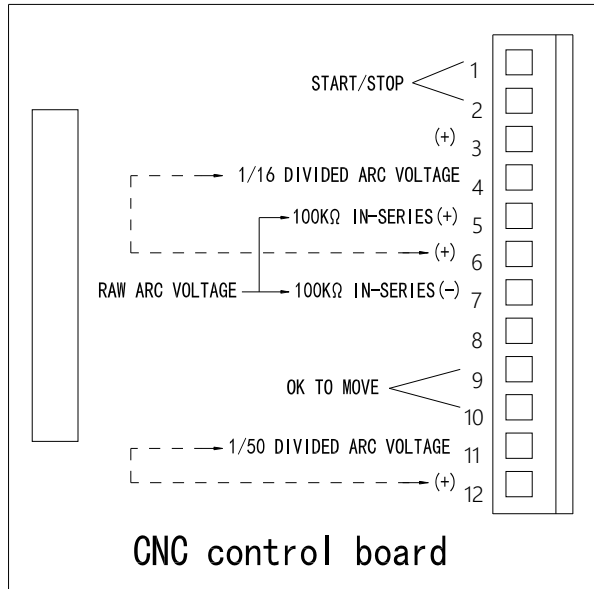
Mild Steel							
AMPS	PSI	Material Thickness		Torch-to-Work Distance		Optimum Cut Speed	
		Inch	mm	Inch	mm	IPM	mm/min
20	40	26GA	0.5	0.06	1.5	236.22	6000
30	50	16GA	1.6			110.24	2800
40	55	10GA	3.4			86.61	2200
45	60	3/16"	5			62.99	1600
45	60	1/4"	6			47.24	1200
50	65	1/3"	8			43.31	1100
55	70	2/5"	10			39.37	1000
60	75	1/2"	12			23.62	600
60	75	5/8"	16			17.72	450
60	75	3/4"	20			11.81	300

Stainless							
AMPS	PSI	Material Thickness		Torch-to-Work Distance		Optimum Cut Speed	
		Inch	mm	Inch	mm	IPM	mm/min
20	40	26GA	0.5	0.06	1.5	188.98	4800
30	50	16GA	1.6			88.19	2240
40	55	10GA	3.4			69.29	1760
45	60	3/16"	5			50.39	1280
45	60	1/4"	6			37.80	960
50	65	1/3"	8			34.65	880
55	70	2/5"	10			31.50	800
60	75	1/2"	12			18.90	480
60	75	5/8"	16			14.17	360
60	75	3/4"	20			9.45	240

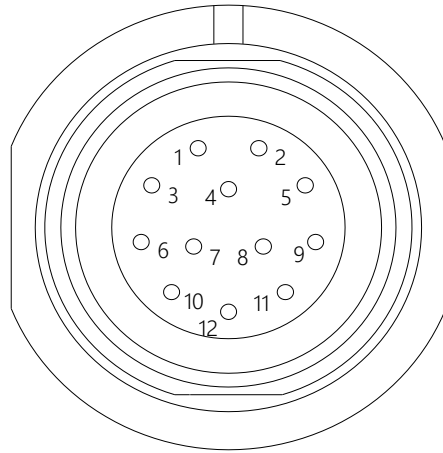
Aluminum							
AMPS	PSI	Material Thickness		Torch-to-Work Distance		Optimum Cut Speed	
		Inch	mm	Inch	mm	IPM	mm/min
20	40	26GA	0.5	0.06	1.5	271.65	6900
30	50	16GA	1.6			126.77	3220
40	55	10GA	3.4			99.61	2530
45	60	3/16"	5			72.44	1840
45	60	1/4"	6			54.33	1380
50	65	1/3"	8			49.80	1265
55	70	2/5"	10			45.28	1150
60	75	1/2"	12			27.17	690
60	75	5/8"	16			20.37	517.5
60	75	3/4"	20			13.58	345



## ❖ CNC CONNECTOR PIN OUT



## REAR SOCKET



Pin and board numbers correspond to each other. 8 is not used.

- Pins 1 and 2 activate (turn on) the plasma cutter.
- Pin 9 and 10 gives the “OK to Move” signal. These are Dry “N.O.” style contacts. It is non-electronic switch that closes when the pilot arc transfers to cutting arc. Sometimes referred to as “Arc OK”.
- Pins 5 and 7 provide the raw, undivided arc voltage, which is used by some controllers to adjust the height of the torch (THC). This is the actual cutting voltage. It runs through 2-100kΩ resistors to prevent arcing at the connector plug. Some controllers may use the raw voltage, and is dependent upon the impedance of the input. CandCNC\* controller and Torchmate\* do not use this voltage.
- Pins 4 and 6 provide the divided arc voltage. The CNC circuit board to create 1/16th of the raw arc voltage. It may be used by some controllers for torch height control (HTC).
- Pins 11 and 12 provide the divided arc voltage. The CNC circuit board to create 1/50th of the raw arc voltage. It may be used by some controllers for torch height control (HTC).
- Pin 3 is what some controller manufacturers refer to as “Ground” this is connector directly to the work piece lead, which is actually a positive polarity. If the controller has a pin for ground this is likely the pin to use.

**NOTE: Do not connect anything directly to the output terminals or leads. Do not connect anything from the controller to the chassis of the cutter, especially a ground lead. Do not install any kind of converter or divider inside the machine.**

\* LOTOS does not particularly endorse or recommend these brands and is not affiliated with them in anyway. They are mentioned as a common reference only. For specific recommendations regarding connection, contact the manufacturer of the CNC equipment/controllers

# CONSUMABLES

The following accessories and consumables can be purchased on [www.uwelding.com](http://www.uwelding.com), or call 408-739-2329 to order.

## Gouging Consumables Set

Note: there are no gouging consumables included in your package. For plasma air gouging you will need to buy the gouging consumables set separately.

SCSET14	SCNOZ	SGSET11	SGNOZ
 <b>LOTOS®</b>	 <b>LOTOS®</b>	 <b>LOTOS®</b>	 <b>LOTOS®</b>
<b>Plasma Cutting Consumable Set</b>	<b>Plasma Cutter</b>	<b>Plasma Gouging Consumable Set</b>	<b>Air Plasma Gouging</b>
Electrodes *5 pcs (PR0098)		Electrodes *5 pcs (PR0098)	
Tips *5 pcs (PD0098-10)		Tips *5 pcs (PD0199-16)	
Stand Off Guides *3 pcs (CV0010-A)		Air Diffuser *1 pc (PE0106)	
Air Diffuser *1 pc (PE0106)			
For LOTOS Supreme CUT60D	For LOTOS Supreme CUT60D	For LOTOS Supreme CUT60D	For LOTOS Supreme CUT60D
 Made in Italy by Trafimet	 Made in Italy by Trafimet	 Made in Italy by Trafimet	 Made in Italy by Trafimet

## Cutting Consumables Set

SGCUP	SGSET07	
 <b>LOTOS®</b>	 <b>LOTOS®</b>	<b>AND MORE... ON <a href="http://www.uwelding.com">www.uwelding.com</a></b>
<b>Air Plasma Gouging</b>	<b>Plasma Gouging Consumable Set</b>	
Shield Cup (CV0299)	Electrodes *2 pcs (PR0098) Tips *2 pcs (PD0199-16) Outside Nozzle *1 pc (PC0198) Air Diffuser *1 pc (PE0106) Plasma Gouging Shield Cup *1 pc (CV0299)	
For LOTOS Supreme CUT60D	For LOTOS Supreme CUT60D	
 Made in Italy by Trafimet	 Made in Italy by Trafimet	