



ForceCut™

**Operating Manual
for
ForceCut™ LP-40D/50D**

MOSFET Pilot Arc

Plasma Cutters

Table of Contents

Table of Content	Pg. i
Thank you From LONGEVITY®	Pg. ii
Warranty/Shipping Damage/Order Information	Pg. 1-2
Introduction	Pg. 3
Warning and Safety Tips	Pg. 4-5
Specifications and Ratings	Pg. 6
What's Included?	Pg. 7
Basic Installation, Wiring, Air Regulator Assembly, and Setup Instructions	Pg. 8-13
Main Unit Knob/Button/Function	Pg. 14
Assembly of Plasma Cutter Torches	Pg. 15
Basic Plasma Cutter Operation	Pg. 16
Summary Chart of All LONGEVITY Plasma Cutters	Pg. 17-18
Features Chart of All LONGEVITY Plasma Cutters	Pg. 19
Typical Applications of All LONGEVITY Plasma Cutters	Pg. 20
Cutting Methods	Pg. 21
Tips and Advice for LONGEVITY Plasma Cutting by www.plasma-cutters.com and www.freeweldingforum.com	Pg. 22-27
Routine Maintenance	Pg. 28
Troubleshooting	Pg. 29
Conclusion	Pg. 30

THANK YOU!

We, at LONGEVITY®, want to thank you for purchasing our product. You are almost ready to experience LONGEVITY® Welding first hand. LONGEVITY® definitely appreciates your business and understand that this equipment may be overwhelming to setup and operate so we have prepared a manual that will assist you in understand your new plasma cutter/welder. If you have any questions during or after reading this manual, please feel to contact us! Please take a moment to register your product on our website at www.longevity-inc.com or www.lweld.com

Once again, thank you for choosing LONGEVITY® as your main welding supplier!

LONGEVITY® Global, Inc
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Hayward, CA 94545

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Customer Service: help@longevity-inc.com

Dealers: dealers@longevity-inc.com

Complaints: complaints@LONGEVITY-inc.com

Please join our welding forums to share welding tips and tricks, to receive useful information from customers who also use our products, and to be a part of the LONGEVITY® welding community at www.freeweldingforum.com

Warranty

Plasma Cutters, Welders, and Multi-Purpose Welders (Coverage for Parts and Labor for five years from the purchase date at our facility).

In the event of product failure or malfunction, the purchaser/recipient must contact LONGEVITY® GLOBAL, INC. to obtain an RMA (return or missing) number and a location of a designated repair facility. The welder, plasma cutter, multi-purpose unit, or any other welding related equipment comes with warranty on all internal components. The torch, cables, power cord, clamps, air regulator, argon regulator, hoses, case, paint, and consumables are not covered under warranty. Packages that are not pre-approved for return, and that do not have an RMA number will be refused and returned to the purchaser/recipient at the purchasers/recipients own cost. The product must be returned in its original packaging, with all accompanying components. Repair or replacement of the defective product will be at our option. The repaired/replaced product will then be returned to the purchaser. LONGEVITY® Global, Inc. will cover the return and replacement shipping charges (both ways) for units in need of warranty within and only for the first 30 days from the purchase date. After the 30 days from the purchase date, the purchaser shall be responsible for all shipping and handling costs of returning (both ways) the defective/faulty products for repair or replacement. We are not responsible for lost returns. The labor coverage only applies if the unit is serviced at our facility or one of our authorized dealers. We will not reimburse the labor if your wish to have a third-party or unauthorized repair technicians work on the product.

Shipping Damage

Your machine is insured against damage during shipping. Keep all packing materials and containers in case machine must be returned. We will initiate a claim with the shipping company to cover damage or loss. If there is shipping damage upon opening your package, our customer service team will work with you to get the matter resolved.

In Warranty Service

Customers, who own machines that are in warranty and require service, should contact our Warranty Department by email at help@longevity-inc.com to obtain a return authorization code. When doing so, please provide the following information:

Order No.: _____

Serial No: _____

Date of Purchase: _____

Warranty Period: _____

Unit Tested Prior to Shipment By: _____

Out-of-Warranty Service

Customers, who own machines that are out of warranty and require service, should contact us for an estimate. LONGEVITY offers an exchange program on out of warranty units. We also help non LONGEVITY customers with repairs, replacement, and service.

If your unit is not manufactured by LONGEVITY® and you cannot receive service from your manufacturer or seller, LONGEVITY® is here to help. Our warranty policy is also available for all plasma cutters and welders. For more information, please email us at help@longevity-inc.com

Introduction

The LONGEVITY® ForceCut™ series plasma cutters offer a revolutionary new approach to plasma cutting technology. LONGEVITY® plasma cutters use the newest technology available in the welding industry with the help of Toshiba internal components. By producing the units with inverter technology, we are able to produce smaller and more efficient units. During the manufacturing process, we kept the maintenance and repair in mind by enabling the internal components of the machine to be a simply plug and operate circuitry enabling all mother boards to be simply replaced and swapped out. The ForceCut™ series plasma cutters use special safety-redundant circuitry with built in auto-protection and self-adjusting circuitry to keep the machine running at a safe threshold. This helps protect the machine from over-voltage, power spikes, tip blowouts and shorting. We hope you enjoy your LONGEVITY® ForceCut™ series plasma cutter. We are proud of our achievements in the welding industry, we are thankful you have chosen to use the LONGEVITY® ForceCut™ series. These Pilot Arc plasma cutters are superior to High Frequency plasma cutters because they generator a pilot arc enabling for you to start cutting without making any contact with the metal workpiece.

Warning

Welding and plasma cutting may be dangerous to the operator and to bystanders, if the equipment is not operated properly. Welding or cutting must be performed in accordance with all relevant safety regulations. Carefully read and understand this instruction manual before installing and operating this equipment.

Changing function modes during welding may damage equipment.

- Before welding, disconnect the electrode-holder cable from the equipment.
- A circuit breaker is required to prevent electrical overload of the equipment.
- Only high quality welding tools should be used.



Electric Shock can be fatal.

- Ensure that ground cable is connected in accordance with applicable safety codes.
- Never touch electrodes, wires, or circuit components with bare hands. Wear dry welding gloves when welding.
- The operator must be insulated from the work piece.



Smoke and gas can be harmful to health.

- Ensure that the working area is well ventilated.
- Avoid breathing smoke and gas generated during the welding process.



Arc-light emission can be harmful to eyes and skin.

- Always wear a welding helmet, anti-radiation glass, and work clothes while welding.
- Ensure that people in or near the working area are protected.



Welding splash is a fire hazard.

- Keep flammable material away from the work place.
- Keep a fire extinguisher nearby, and have all personnel trained in its use.
- Surface noise generated while welding or cutting can be harmful to hearing.



In the event of a machine fault.

- Refer to this instruction manual.
- If the fault cannot be determined, contact your local dealer or supplier for assistance.



Safety Tips

Consider the following tips to ensure safe operation of your welding/cutting equipment:

- Ensure that this welding equipment is installed in an area free of corrosive chemical gases, flammable gases or materials, and explosive chemicals.
- The area should contain little dust, and have a humidity of no more than 80%.
- Operate the welding equipment in an area sheltered from direct sunlight and precipitation. Work area temperature should be maintained at -10°C to +40°C;
- If, because of an overload, the machine suddenly stops, and it is necessary to restart it, leave the internal fan operating to lower the inside temperature.
- Always wear protective clothing and a welding mask to protect your skin.
- Wear safety goggles designed to darken the arc generated by your machine.
- Wear suitable noise protection to protect your hearing.
- Ensure that machine is grounded through the power cord or on the machine case.
- Never operate the machine in bare feet or on a wet floor.
- Never switch the machine off while it's in use. Doing so will damage the internal circuitry.
- Ensure that your circuit breaker is rated to handle the current requirements of your machine.
- Use a UL approved receptacles and plugs with your machine. Never hard wire the machine to main power.
- Work in a well ventilated area to avoid smoke. Keep your head out of the smoke. Ensure that air is flowing away from you to avoid inhaling smoke.
- Ensure proper ventilation through the machine's louvers. Maintain a distance of at least 12 inches between this cutting equipment and any other objects in the work area.
- Use a screen or curtain designed to keep passers by from viewing the arc.
- The arc spray and metal spray from machine use may cause nearby fires. Use caution.
- If, after reviewing this manual, you have any problems in setting up or operating your machine, contact us at help@longevity-inc.com.

Specifications and Ratings

Parameter	Type	
	ForceCut 40D Pilot Arc	ForceCut 50D Pilot Arc
Input Voltage (V)	220v 1-Phase 50amp	
Cup Capacity max/sev (in.)	Up to ½”	Up to 5/8”
Input Current (Amp)	20Amp 110v/30Amp220v	20Amp 110v/30Amp220v
Output Current (Amps)	40	50
No-load Voltage (V)	100/200v	100/200v
Current Range (Amp)	10-40	10-50
Rated Duty Cycle (%)	60	60
Efficiency	85	85
Power Factor (Cos0)	0.93	0.93
Insulation Class	B	B
Protection Class	IP21	IP21
Arc Starting	Pilot Arc	Pilot Arc
Suggest Air Pressure (psi)	60-75	60-75
Suggested Air Volume (cfm)	3.5-4.5	3.5-4.5
Post Flow Time (Seconds)	10	10
Machine Weight (lbs)	22	23
Size LxWxH (inches)	15 x 6 x 12	15 x 6 x 12

What's Included:

- Main Unit
- Cutting Torch
- (Ground) Earth Clamp
- Air Regulator with Water Separator and Bracket
- Air Hose
- Teflon Tape
- Air Hose Valves (2)
- Consumables: 1 piece tip, 1 piece electrode

Pictures of Accessories: (Note: Torch Picture Various on Model Purchased)



Installation and Setup Instructions:

The item numbers referenced in the following paragraphs, refer to the numbered parts display in the diagrams shown below. LONGEVITY® has an instructional setup installation video on our website at www.longevity-inc.com, which we ask that you view prior installing the unit. The video shows the complete assembly of the machine. The video is located in the Resources section of the website under manuals and installation/set-up videos.

The LONGEVITY® LP-40/50D Pilot Arc Plasma Cutters are dual voltage and can be connected to either 110 or 220VAC.

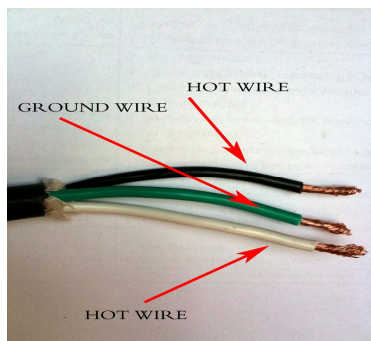
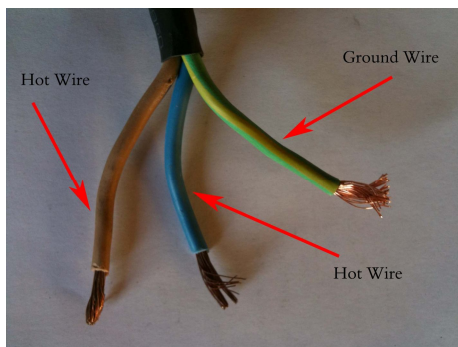
Connecting the electrical plug to the unit

Connecting the power plug to the unit is important. Please view the proper connection instructions below:

Wiring Introduction for 220 Volt

Danger: Read this manual completely before having your electrician attempt to wire up or connect your machine to an electrical power source. LONGEVITY® units should be wired by a certified electrician to insure your safety and a proper 110/220v plug match at your operating facility. Remember 220v plugs come with 3 or 4 prongs on them. Have the electrician check your existing receptacle.

Note: The power cord on single-phase machines has one ground wire and two hot wires when connecting to 220vac. Connecting these wires properly is extremely important. Improperly connected wires will void the warranty, affect personnel safety, and possibly damage your machine and electrical power outlet.



Identifying the Ground wire

Caution: The machine may appear to operate with an incorrectly connected ground wire, but it will not operate properly. Selecting the correct ground wire is important for proper machine operation and personnel safety.

Ground wires on LONGEVITY® Welding machines are usually one of the following colors:

- The ground wire is a dark green with a yellow stripe. The wire may also be just SOLID GREEN.

Clean the ends of the wires to more easily distinguish the colors. The best and safest way to determine which wire is ground is to measure the resistance between the machine chassis and the selected wire, using an ohmmeter. Another method is to check the continuity between the chassis and the wire, using a continuity meter. If the selected wire is ground, the connection between the chassis and the wire will cause the meter to illuminate. If, for any reason, you cannot visually detect the ground wire or do not feel comfortable with your selection, ask an electrician for help.

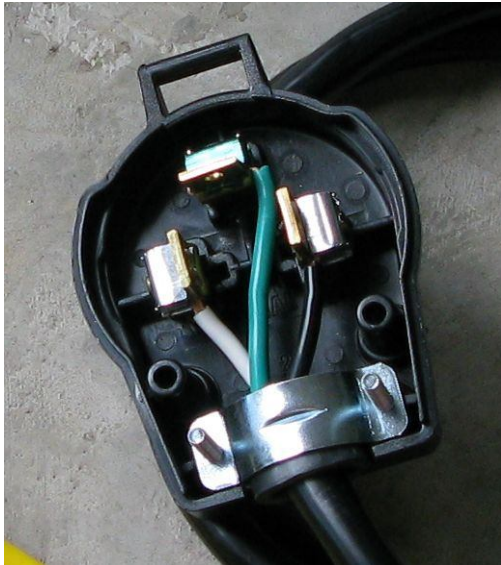
Identifying the hot wire

For 220vac service, both the brown and blue wire are positive wires. As you may know, 220vac features two hot wires. If you are wiring to 220vac, your blue and brown wires are both hot. The green with yellow or SOLID GREEN is the ground. Remember, any hot wire can be attached to either hot leg on the plug.

Note: Hot Wires May also be WHITE and BLACK if a GREEN WIRE is one of the three wires. Therefore, GREEN is ALWAYS GROUND.

NOTE: LONGEVITY® recommends a 50 AMP breaker on 220v, but you can operate on 30AMP breaker.

Finished Plug:



Wiring Introduction for 110 Volt - 20amp Breaker

Caution: The machine may appear to operate with an incorrectly connected ground wire, but it will not operate properly. Selecting the correct ground wire is important for proper machine operation and personnel safety.

Ground wires on LONGEVITY® Welding machines are usually one of the following colors:

- The ground wire is a dark green with a yellow stripe. The wire may also be just SOLID GREEN.

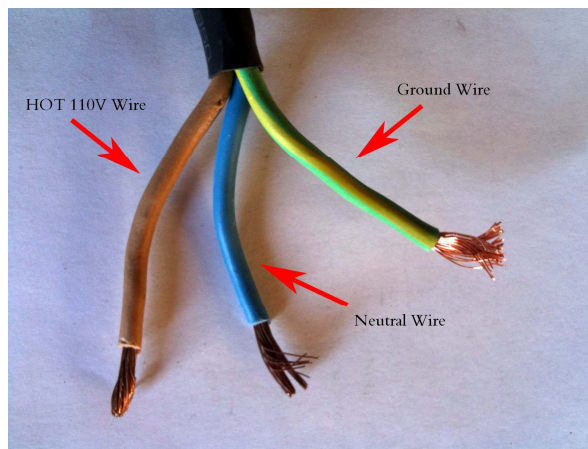
Clean the ends of the wires to more easily distinguish the colors. The best and safest way to determine which wire is ground is to measure the resistance between the machine chassis and the selected wire, using an ohmmeter. Another method is to check the continuity between the chassis and the wire, using a continuity meter. If the selected wire is ground, the connection between the chassis and the wire will cause the meter to illuminate. If, for any reason, you cannot visually detect the ground wire or do not feel comfortable with your selection, ask an electrician for help.

Identifying the Neutral Wire

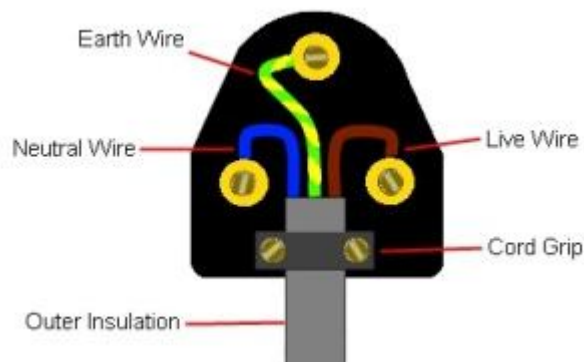
For 110vac service, the brown wire is is a hot wire. As you may know, 110vac features one hot wire, a neutral wire, and a ground wire. If you are wiring to 110vac, your blue wire is neutral, brown is hot and the green with yellow or SOLID GREEN is the ground.

Note: Hot Wires May also be WHITE and BLACK if a GREEN WIRE is one of the three wires. Therefore, GREEN is ALWAYS GROUND. In this case one of the wires is neutral and one is hot.

NOTE: LONGEVITY® recommends a 20 AMP breaker on 110v

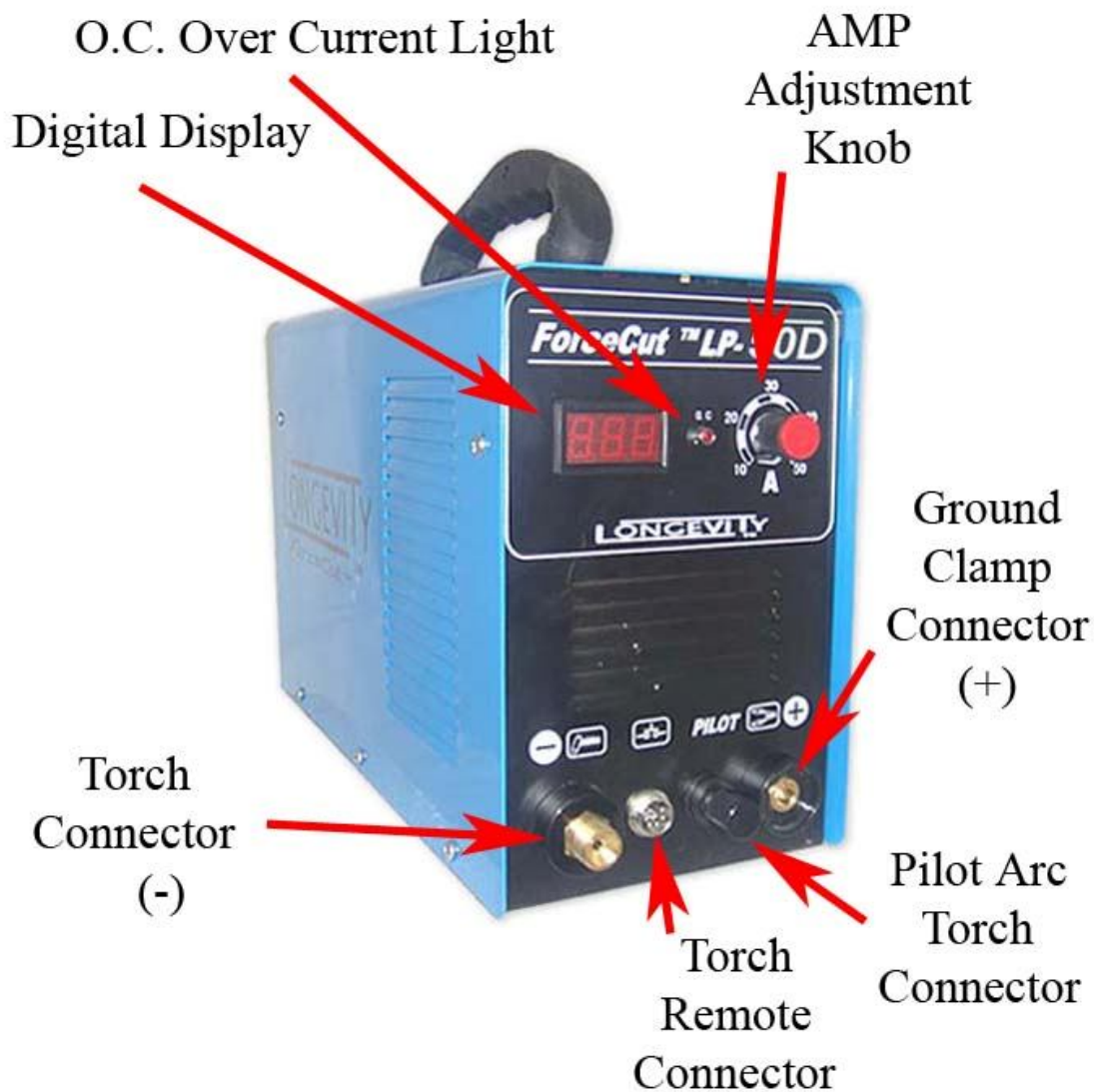


110V Plug Diagram:

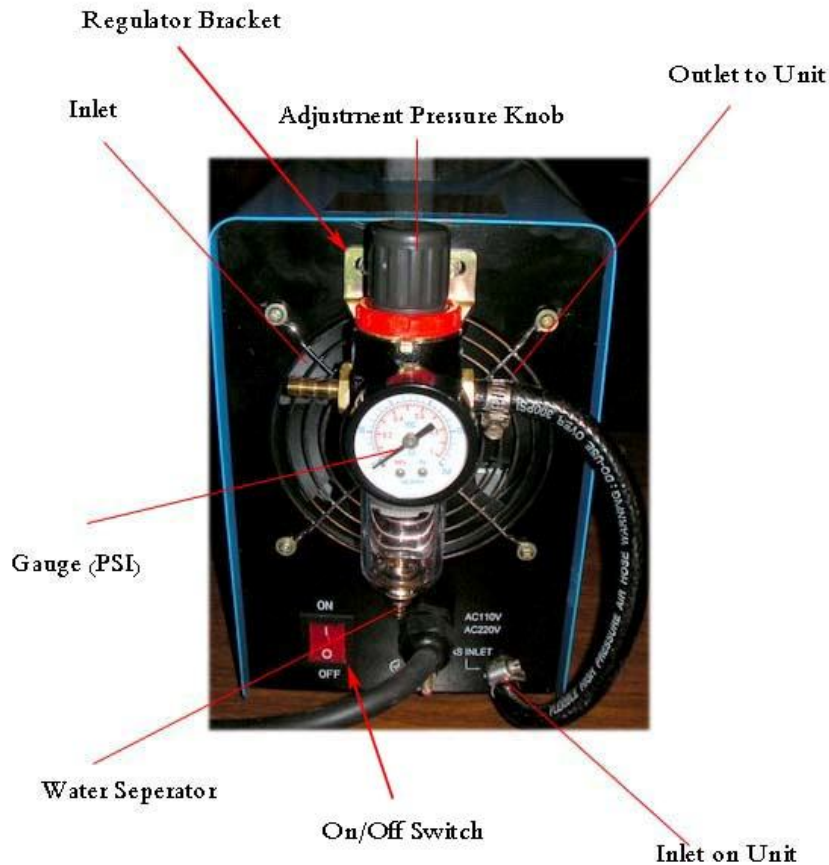


Basic Installation Instructions Pictured Model ForceCut™ 60i (Note: All Models have the same connections):

ForceCut™ LP-50D Pilot Arc:



Air Regulator Assembly to Unit (Pictured ForceCut™ LP-40D Pilot Arc Plasma Cutter):



LONGEVITY® includes an air regulator/filter with your machine. You must attach the bracket to the machine, and fasten the regulator to the bracket so it looks as pictured

1. Locate the INLET and OUTLET labeled on the regulator picture above and attach the Air Compressor to the inlet and the OUTLET to the INLET on Unit with the provided hose to back of the machine, where shown, and secure it with a hose tie.
2. Set the air compressor to about 60-75 PSI depending on the thickness of your cut. If you are getting a poor cut quality, try adjusting the PSI on the regulator to see if the cut quality improves.
3. Periodically, after long periods of use, you must remove water from the air by pushing the water release button inward to release water from the water separator section of the regulator.

Main Unit Knob/Button/Function:

1. **On/Off Breaker or Switch:** Either breaker or switch located on the back or front of the unit will control the unit to be turned on or off.
2. **Power Indicator (If applicable):** Shows unit is powered on. Indicator is present in some models with a green LED bulb. Other models that do not feature this LED, will have a lighted power switch.
3. **O.C. Over Current Light:** Illuminates when the duty cycle has been exceeded or the machine has overheated due to improper ventilation. Discontinue use until lamp goes out. Allow the fan to continue to run. Once lamp goes out, you may resume using the unit.
4. **Digital Display:** Displays the approximate amount of amperage set to on the unit.
5. **2.5/5.0/Auto Second Flow Switch:** Post Flow Switch that allows minimal or maximum air through to cool your torch. Manual 2.5/5.0 selection available in some units. Other units have automatic regulated POST FLOW.
6. **AMP Adjustment Knob:** Adjusts the amount of amps to desired AMP setting.
7. **Ground Clamp Din (+):** Location of ground clamp to be plugged in.
8. **Torch Remote Connector:** 2 or 7 pin torch connector plugs here to activate the torch relay once the trigger is pressed on the torch.
9. **Torch Connector Air Outlet:** Connect torch for air to pass through the unit and generate the arc at the torch tip.

Assembly of Plasma Torch:



The plasma cutter torch handle is made of fire and heat resistant materials. Avoid dropping the torch or striking anything with it. Assemble the consumables as pictured above, and described below.

1. Insert the electrode. Tighten it with pliers.
2. Seat the swirl ring on the electrode.
3. Place the copper tip on the ring, ensuring that is seated flat.
4. Place the shield cup over the tip and secure. Secure all parts into place by turning the ceramic cup clockwise until it is snug. Do not over tighten.

Basic Operation

1. Ensure that all cables are connected to the machine.
2. Ensure that the machine's OFF/ON switch is set to OFF, and plug the machine into the electrical outlet.
3. Connect the air compressor supply line to the air input side on the unit.
4. Turn the ON/OFF switch to ON. The cooling fans should operate and the ON indicator LED or power switch (if applicable) should illuminate.
5. Clean the contact point on the work piece to ensure a good electrical connection. Ensure that no rust or paint is present that could create an open circuit.
6. Connect the ground clamp to the work piece to be cut.
7. Connect the torch to the unit properly.
8. With the pilot arc knob connected, you should get a full continuous arc when the trigger on the torch is pressed.
9. Depress the button on your torch to start the arc and begin cutting.
10. You can test the air to insure that it is properly flowing by selecting Gas (Air) Test. Air will pass through the torch.
11. If necessary remove slag from the under part of the cut using a grinder or chisel.

Summary Chart of Plasma Cutters:

Plasma Cutters	Class	Gouging	Piercing	Rated Output	"Rated" Cutting Thicknesses at 220 V (110V reduces power in half)*			Recommended Generator Power
					Mild Steel	Stainless Steel	Aluminum	
MOSFET Technology 1-Phase	ForceCut® LP-40D Plasma Cutters	●	■	40 A at 60% (230 V Input) 30 A at 60% (110 V Input)	1/2 in	1/2 in	1/4 in	2500 watts
	ForceCut® LP-40D Pilot Arc Plasma Cutters	●	■	40 A at 60% or 30 A at 100% (230 V Input) 30 A at 60% or 25 A at 100% (110 V Input)	1/2 in	1/2 in	1/4 in	4000 watts
	ForceCut® LP-50D Plasma Cutters	●	■	50 A at 60% or 40 A at 100% (230 V Input) 40 A at 60% or 30 A at 100% (110 V Input)	3/4 in	3/4 in	3/8 in	4000 watts
	ForceCut® LP-50D Pilot Arc Plasma Cutters	●	■	50 A at 60% or 40 A at 100% (230 V Input) 40 A at 60% or 30 A at 100% (110 V Input)	3/4 in	3/4 in	3/8 in	4000 watts
	ForceCut® LP-60D Plasma Cutters	●	●	60 A @ 60% Duty Cycle (230 V Input)	1 in	1 in	1/2 in	10,000 watts

				40 A @ 100% Duty Cycle (110 V Input)				
	ForceCut® LP-70 Plasma Cutters	● ● ●		70 A at 60% (230 V Input)	1 1/4 in	1 1/4 in	5/8 in	8000 watts
	ForceCut® LP-80 Plasma Cutters	● ● ●		80 A at 60% (230 V Input)	1 1/2 in	1 1/2 in	3/4 in	9000 watts
	3-Phase MaxArc® LP-100 Plasma Cutters	● ● ●		100 A at 60% (230 V Input 1- phase)	2 in	2 in	1/4 in	10,000 watts
IGBT TECHNOLOGY 1-Phase	ForceCut® 60I Plasma Cutters	● ● ●		60 A @ 60% Duty Cycle (220 V Input)	1 1/4 in	1 1/4 in	3/4 in	6500 watts

Features Chart of Plasma Cutters:

Technology	Plasma Cutters	Product Weight	Highlighted Features
MOSFET Technology	ForceCut® LP-40D	25 lbs (28 lbs Boxed)	110/220 V Input, Portable, High Frequency Start, Toshiba Mosfet Technology
	ForceCut® LP-40D Pilot Arc	25 lbs (28 lbs Boxed)	Pilot Arc Starting Technology, 110/220 V Input, Portable, Toshiba Mosfet Technology
	ForceCut® LP-50D	25 lbs (28 lbs Boxed)	60% Duty at 50A & 100% Duty at 40A, 110/220 V Input, Portable, High Frequency Start, Toshiba Mosfet Technology
	ForceCut® LP-50D Pilot Arc	25 lbs (28 lbs Boxed)	Pilot Arc Starting Technology, 60% Duty at 50A & 100% Duty at 40A, 110/220 V Input, Portable, Toshiba Mosfet Technology
	ForceCut® LP-60D	36 lbs (40 lbs Boxed)	Powerful and Versatile! 110/220 V Input with 1" Cut Capability, Toshiba Mosfet Technology
	ForceCut® LP-70	38 lbs (45 lbs Boxed)	Commercial Grade, Powerful, 220 V Input, Toshiba Mosfet Technology
	ForceCut® LP-80	40 lbs (47 lbs Boxed)	Most Powerful 1-Phase 220 V Input, 1 1/2 in Rated, Toshiba Mosfet Technology
	MaxArc® LP-100	74 lbs (90 lbs Boxed)	Industrial Grade, 220 V Input 3-phase, 2 in Rated, Portable
IGBT Technology	ForceCut® 60I	45 lbs (52 lbs Boxed)	Commercial Plasma Cutter, Portable, Industrial Grade, 220 V Input 1-Phase, 1.25" Cut Power

Typical Applications Chart of Plasma Cutters:

Technology	Plasma Cutters	Typical Applications
MOSFET Technology	ForceCut® LP-40D	Hobbyist, Auto-Body, Plumbers, Sheet Metal Work, Thin Material, HVAC
	ForceCut® LP-40D Pilot Arc	Hobbyist, Auto-Body, Plumbers, Sheet Metal work, Thin materials. Pilot Arc enables easier Arc Starting 25 lbs (28 lbs Boxed)
	ForceCut® LP-50D	Hobbyist, Light Industrial, Commercial, Fabrication, Maintenance, Light Construction
	ForceCut® LP-50D Pilot Arc	Hobbyist, Light Industrial, Commercial, Fabrication, Maintenance, Light Construction
	ForceCut® LP-60D	Boat Repair, Commercial, Light Industrial, Body Shops, Repair
	ForceCut® LP-70	Commercial, Industrial, Repair, Fabrication
	ForceCut® LP-80	Manufacturing, Repair, Heavy Fabrication, Construction, Industrial
	MaxArc® LP-100	Manufacturing, Industrial, Construction, Heavy Duty Fabrication, Automation
IGBT Technology	ForceCut® 60I	Portable Fabrication, Industrial Repair, Heavy Manufacturing, Thick metal cutting, Commercial Use, Construction, Fab Work

Cutting Methods

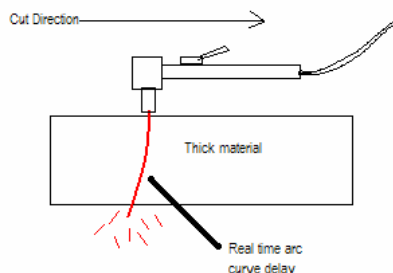
Different material thicknesses require different cutting techniques.

- **Thin material:** Start perpendicular to the work piece. It is unnecessary to angle or start on the edge, as the arc will pass through quickly.
- **Medium material:** Angle the torch tip to avoid damaging the tip. Once the arc passes through the material, you may begin cutting normally.
- **Thick material:** Drill a pilot hole through which to start your arc, or start on the edge of the work piece.

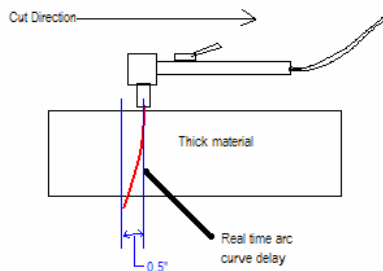
Never cut material on a flat surface. Raise the work piece above the surface to avoid blow back which may burn you or cause fires.

Real Time Arc-Curve Delay

When cutting thick materials you must maintain a steady even motion in the direction of the cut. Moving the torch too quickly causes an arc-curve delay. An arc-curve delay can leave the work piece with uncut sections, requiring you to re-cut those sections, which could distort or damage the work piece.



To avoid arc-curve delay, allow the arc to pass completely through the work piece before moving too far ahead. The arc-curve should lag not more than the thickness of the material being cut. In other words, if the work piece is one-half inch thick, the arc curve should lag not more than one-half inch behind the torch, as shown below.



Tips For LONGEVITY Plasma Cutting provided by www.plasma-cutters.com and www.freeweldingforum.com

Using a LONGEVITY Plasma Cutter with either High Frequency or Pilot Arc technology is very easy to use, and since each LONGEVITY unit is quality tested at our in house testing facility before it is shipped , most of our customers take right out of the box, plug it in and get to work. Naturally, it is easy to understand how excited you would be to see the delivery truck pull up with your brand new LONGEVITY Plasma Cutter and you should be. Congratulations is in order and we want to ensure you have the best experience with your LONGEVITY Plasma Cutter. However, excited as we are you can't wait to put your LONGEVITY Plasma Cutter into action, we would like you to consider these helpful tips and examples that will enable you to get the most out of your LONGEVITY Plasma Cutter and it's consumables. So, before using your LONGEVITY Plasma Cutter it is extremely important to read the owner's manual all the way through regardless of your experience level. Even if you are a seasoned veteran, give it a once through and keep it near by in case you, someone you know or someone you work with has a question about the use or specifications of your LONGEVITY Plasma Cutter.

At this point, let us assume that you have purchased the LONGEVITY Plasma Cutter that is right for you, and even though you did your research already, it is always a good idea to revisit the safety precautions, specifications and unique options ensuring you achieve the most with your LONGEVITY Plasma Cutter while staying safe. In case you have not decided which LONGEVITY Plasma Cutter is right for you, please visit the Help Me Choose section and take advantage of the LONGEVITY Smart Selector.

In terms of safety, the price of carelessly cutting corners can be extremely costly, not only to your health but to the people around you as well. So, before you get started using your LONGEVITY Plasma Cutter to create your master piece, build a bridge, or whatever you want to do, make sure you have a quality safety checklist you follow after you read the manual and before you get started. Below are a list of tips and safety measures you might find useful in developing your safety checklist. Remember, in no way shape or form does this checklist or any other check list ever replace the necessity of thoroughly reading the owner's manual of your LONGEVITY Plasma Cutter.

Check List Suggestions

- ▶ Connect the air supply to your LONGEVITY Plasma Cutter and consult your owner's manual to ensure the correct PSI. The PSI is about 65-75.
- ▶ Each LONGEVITY Plasma Cutter, regardless if it uses Pilot Arc or High Frequency technology, comes with an air flow regulator and water catcher. Reference the owner's manual of your LONGEVITY Plasma Cutter for specifications and care instructions of your air flow regulator and filter.
- ▶ Check the torch of your LONGEVITY Plasma Cutter and make sure everything is in order. Reference the owner's manual of your LONGEVITY Plasma Cutter to make sure all of your consumables are clean, correct, and pieced together securely before you begin cutting.
- ▶ Gouging or piercing can be achieved by simply lowering the amperage output and keeping with the recommended psi. Examples on how to achieve the desired results can be referenced in the owner's manual of your LONGEVITY Plasma Cutter.
- ▶ Now you are ready to use your LONGEVITY Plasma Cutter safely and efficiently. Turn the machine on and enjoy the satisfying experience of a quality LONGEVITY Plasma Cutter.
- ▶ Double check your air supply, air flow regulator and water filter. (More on this below.)
- ▶ All LONGEVITY Plasma Cutters require a solid ground connection as close to the work piece as practical. Remember, even though your LONGEVITY Plasma Cutter can cut through paint and other coatings on the metal, the ground connection requires a clean, flush connection to the work piece.
- ▶ Utilizing the proper safety equipment is just as important as understanding how to properly operate your LONGEVITY Plasma Cutter. Consult the owner's manual of your LONGEVITY Plasma Cutter

to be sure you are using the correct gloves, eye protection, welding leathers, face shield, etc. You can find all of the necessary equipment as stated in the owner's manual of your LONGEVITY Plasma Cutter in the accessories section of our website.

The old adage says to measure twice and cut once, but we want to go ahead and suggest you make a sample cut (of the same caliber as the intended use) with your LONGEVITY Plasma Cutter before you get started. Use this rehearsal just to be sure you have correctly calibrated all the settings to work as desired. If you are going to be cutting for a large piece of metal, it can sometimes be difficult for even the most experienced metal worker to cleanly stop and start. We recommend you use the sample cut to thoroughly rehearse the intended cut with your LONGEVITY Plasma Cutter.

LONGEVITY Plasma Cutter Tips

In order to successfully execute a clean cut with your LONGEVITY Plasma Cutter you must consider a combination of elements involved in the cutting process:

▮ The tip of your torch is designed to focus the plasma stream to the work piece in accordance with the appropriate setting (see owner's manual). Trying to use a 80-amp torch tip at a 40-amp setting will not focus the energy of your torch accurately and thus lead to a wider kerf. And the opposite scenario of using an 80-amp setting with a 40-amp tip will abuse your torch tip and require it to be replaced sooner than intended.

▮ When cutting a thicker material with your LONGEVITY Plasma Cutter it is important to use a torch tip designed for a higher-amp output. Higher-amp tips have a larger opening than lower-amp tips. Attempting to use a 40-amp tip to cut thick metal with a higher-amp output will distort your 40-amp tip meaning it will need to be replaced.

▮ Each LONGEVITY Plasma Cutter, both Pilot Arc and High Frequency, allow you to cut different metals at different speeds. For example to achieve a quality cut of 1/2in. thick steel with the LONGEVITY Force Cut LP-40D Pilot Arc your speed will be roughly 7 inches per minute. Where as the LONGEVITY Force Cut LP-80D will cut 1.25in. thick steel at the same rate.

Use extended tips on your LONGEVITY Plasma Cutter for tough to reach corners, tracing a pattern, or areas with tight spaces.

Pilot Arc technology allows you to ignite the arc without the tip touching the metal. Use a torch guide or tip shield to protect your consumable. The more often you drag your torch tip across the material or stop and restart the Pilot Arc, the shorter the life span of your consumables will be.

Using a torch guide or tip shield is a great way to protect the consumables of your LONGEVITY Plasma Cutter. Remember to maintain a 1/16in. - 1/8in. distance from the material when cutting.

* The important things to consider while using your LONGEVITY Plasma Cutter to cleanly execute a cut is correct amperage of the torch tip, thickness of the material, intended speed, proper technique, and ultimately protecting the life of your consumables.

Cutting Posture

Sometimes you may find that you are unable to use a guide or shield when operating your LONGEVITY Plasma Cutter. In some instances a project may be a very ornate design with different curves and protrusions or the material is too thick to apply a shield or guard to your LONGEVITY Plasma Cutter torch tip. In order to maintain the quality and consistency of your work we recommend that you use your other hand as a guide. Give yourself a fighting chance to steady your hands and take advantage of the protective gear you have like our guys on the LONGEVITY Facility Testing Team .

One of the reasons you purchase a LONGEVITY Plasma Cutter is because of it's quality. Therefore, we think you should have a few quality reminders to think about when you are cutting.

If you stop and start an arc in the middle of a cut, often the the quality of your cut will suffer and compromise the integrity of your so far clean cut-line. Remember, even when we do facility testing, a suitable method to apply when using your LONGEVITY Plasma Cutter is rehearsing the cut. Be sure you are going to be able to produce a smooth continuous cut-line all the way through.

Along with rehearsing your cut, another equally good reminder is to protect your consumables as much as possible. Often we can get comfortable piercing right through thin steel with our LONGEVITY Plasma Cutters, but when cutting thicker metal often the intense back splash from initial contact will rapidly wear down your torch tip and other consumables. Even though the seeing the bright sparks show off

the awesome power of your LONGEVITY Plasma Cutter, remember we want you to be able to enjoy the results of your work time and time again. So, in situations when you are going to be cutting thick metals at high amperage with your LONGEVITY Plasma Cutter, we recommend you start with the torch pointed at a 45 degree angle. This angled approach allows for the first blast of metal to be released with out back splash on to your valuable consumables.

Know Your Amperage, Know Your Metal

At www.longevity-inc.com, you can see the cutting thickness capability.

Understanding the amperage in relation to your cut speed is important. Some metals respond differently than others. For example the faster you move on a material such as aluminum, the cleaner your cut will be. Conversely, when using your LONGEVITY Plasma Cutter to cut thicker material, set your unit to full output and vary your travel speed accordingly. Thin material requires you to turn down the amperage and change to a lower-amperage to achieve a narrow kerf.

Figuring out if you are going too slow or too fast can be a daunting task that really only comes with time and experience. However, our guys in the LONGEVITY Facility Testing Team have a few pointers for you:

- If your cut has a lot of spray back then you are probably going too fast.
- If the arc exits the material going straight down then you are probably moving too slow and you will have an unnecessary buildup of "dross" or "slag."
- Your arc should be exiting the material at a 15 - 20 degree angle, but opposite the direction of your cut path.

Using A Cutting Guide

First thing in using a torch guide with your LONGEVITY Plasma Cutter is make sure it isn't flammable! Aluminum works as a great torch guide, but be sure it is attached to the torch cup and not the torch tip. Aluminum is a great contact guide because of it's smooth surface but be wary of the torch tip because of electrical conductivity of aluminum. It would be a terrible mess of a cut, loss of consumables, and overall depressing mistake if your torch guide melted to the torch tip or the project at hand. Next you want to mark the material to be cut with either white chalk or a black marker. If you are unsure of how steady your hands are, we recommend you try using a straight edge clamp attached to the work piece or torch guide.

All articles are composed by the LONGEVITY Facility Testing Team and are written with expressed interest of maintain a strong standard in LONGEVITY Global Inc. quality, to help address topics, and answer questions for amateur and experienced users alike. Please remember to always exercise extreme causation and abide by all provided safety specification.

Sample Photos:



For more information on plasma cutting from professionals go to
www.freeweldingforum.com and
www.plasma-cutters.com

Routine Maintenance

The life of your machine and the quality of the work performed using your machine, will be enhanced by practicing periodic routine maintenance.

- At regular intervals, clear dust that may accumulate in the machine using clean and dry compressed air. If the working condition has heavy smoke and pollution, the welding machine should be cleaned once a month.
- Keep the machine exterior clean with mild soap and water.
- Do not walk on or store items on the cables or cords.
- Do not jar, drop, or stack items on top of the machine.
- Always connect the machine to a well grounded electrical outlet.
- Always check the torch consumables before and after use and ensure that they are clear of obstructions, and that no parts are damaged.
- Replace any worn or damaged consumables before using machine.
- For periods of prolonged non-use, remove cables and store them in their original boxes in a cool dry place.

Troubleshooting

If your unit is not properly functioning, please call us immediately toll free at 1-877-566-4462 for support. We have included a small table here to diagnose most common problems.

Problems, Causes, and Solutions	
Problems	Causes/ Solutions
Machine will not turn on.	Check cords and breaker. If nothing is found, contact LONGEVITY
The machine runs, but nothing is happening	Check to see if you have the air regulator to the correct pressure. Make sure the regulator adjustment knob is turned clockwise and allow pressure. Check the consumables and make sure they are properly assembled. Check the ground clamp and proper grounding to the unit. Check pilot arc wire to insure it is properly connected to the unit.
Consumables (tips) are being consumed	Improper air flow. Increase the PSI on the regulator, check for leaks in the hose, maintain a distance of 1/8" from the torch tip or workpiece. If your unit comes with a manual Post Flow 2.5 or 5.0 switch make sure you leave it on 5.0 for more air to pass cooling your torch tips.
Heavy Underside Slag (Cutting)	Slow travel speed. Increase travel speed or amperage on unit.
Poor Cut Quality	Check Air Pressure. Insure your unit is capable of cutting the desired thickness of material. Check the consumables to insure they are producing a stable arc. Replace Consumables and insure you have the proper PSI at the regulator.
Inconsistent Arc	Improper grounding or possible lack of air pressure. Check and replace consumables and adjust the regulator to proper PSI
Plasma Cutter Pilot Does not Ignite	Check consumables to insure they are super tight. Possibly, replace the tips. Insure that you have compressed air flowing to the unit. Drop the PSI pressure.
O.C. Over Current LED Lights	The unit has reached its DUTY Cycle. Leave power of the machine on and allow fans to cool the machine. You can also turn the machine off to properly cool it. Do not continue to weld until light is off.
Issue Not Listed	Contact LONGEVITY Toll Free 1-877-566-4462 or via email at help@longevity-inc.com

LONGEVITY® Global, Inc. thanks you for your purchase and opportunity to be able to serve you. If, after reviewing this manual, you have any problems in setting up or operating your machine, contact us at help@longevity-inc.com.

LONGEVITY® Global, Inc.
Toll-Free 1-877-LONG-INC / 1-877-566-4462
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Please join our welding forums to share welding tips and tricks, to receive useful information from customers who also use our products, and to be a part of the LONGEVITY® welding community at www.freeweldingforum.com