



**Operating Manual
for**

WeldMax™

416D/518D/520D

Multi-Purpose

Welding Machines

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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!

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Hayward, CA 94545

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Sales: sales@longevity-inc.com

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 LongevityTM welding community at www.freeweldingforum.com

Warranty

A manufacturer's limited warranty covers parts only, unless indicated below, and is furnished for five years from the date of purchase warranting the product to be free of material defect or workmanship as follows:

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. In addition to the warranty we offer, we would like for you to register your product on our website at www.longevity-inc.com/resources. Remember, warranty starts from the date of purchase. For your convenience, write your order information below so you can track your order in case you need warranty work.

Order No.: _____

Date of Purchase: _____

Warranty Period: _____

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 will lend out hand. Our warranty policy is also available for all plasma cutters and welders. For more information, please email us at help@longevity-inc.com

Warnings and Safety

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. Cutting and welding can cause cancer because of the smoke that comes from the welds and cuts.

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.

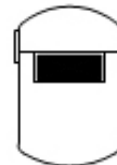
Keep a fire extinguisher nearby, and have all personnel trained in it's use.

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.

General Description

This WeldMax™ series welding machine, designed for welding low-carbon steel, alloy steel, and stainless steel, uses advanced inverter technology, which allows us manufacture a unit that can also employ a Plasma Cutter. By employing high-power MOSFETS and PWM technology, it converts DC voltage to high frequency AC voltage. Subsequently, voltage is transformed and rectified, resulting in a small main transformer and a light-weight inverter welder, which increases welding performance rates by 30%. High frequency oscillation, enabling high frequency DC output, is used in the arc-starting system. This machine provides stable output, and reliable, completely portable, efficient, and low noise generation, while welding or cutting.

The WeldMax™ series has three different functions: TIG, Arc, and plasma cutting. During ARC or TIG welding, this equipment provides stable output with no arc-length variations. During plasma cutting, the arc, being driven by highly compressed air, sees a rapid temperature rise up to 10,000 to 15,000 degrees, and becomes highly ionized. Consequently, it produces the powerful plasma arc for cutting. Plasma cutting saves energy, is efficient, and creates smooth, high-speed cuts. These machines weld and cut carbon steel, stainless steel, alloy steel, as well as copper and other nonferrous metals. They are small, highly efficient, energy saving, stable in output, and reliable. Their ratio of input voltage to output voltage approaches 85 percent.

Technical Specifications and Ratings

| MODE | Parameter | Type | | |
|-------------------------------|-------------------------------------|--------------------------|---------------------------|---------------------------|
| | | WeldMax® 416D | WeldMax® 518D | WeldMax® 520D |
| 416/518/520D Units | Power Voltage | AC110/220v | | |
| | Input Frequency | 50/60 Hz | 50/60 Hz | 50/60 Hz |
| | Rated Input Current | 20A 110v/50A 220v | 20A 110v/50A220v | 20A 110v/50A 220v |
| | Power Capacity | 4.8KVA | 5.0KVA | 5.0KVA |
| | No load Voltage | 80v/200v | | |
| | Working Voltage | 26.4V | 28.1V | 29.0V |
| | Efficiency% | >80% | >80% | >80% |
| | Power Factor | 0.93 | 0.93 | 0.93 |
| | Insulation Class | F | F | F |
| | Protection Class | IP21S | IP21S | IP21S |
| | Weight | 38lbs | 38lbs | 39lbs |
| | Size | 18.9 X 9.4 X 13.0 in. | 19.4 X 13.0 X 12.6 in. | 22.0 X 14.4 X 14.0 in. |
| | Welding Thickness (Steel) | .31 in. | .39 in. | .5 in. |
| | Cutting Thickness (Steel) | Up to .5 in. | Up to .79 in. | Up to .79 in. |
| DC TIG (GTAW) | Base Current Adjusting Range | 5 – 160A | 5 - 200A | 10 - 200A |
| | Pulse Current Adjusting Range | 5 – 160A | 5 - 200A | 10 - 200A |
| | Rated Duty Cycle at Max Amps | 60% | | 60% |
| | Current Down-Slope Time | 0-10 Seconds | | |
| | Remote Control/Pedal | Yes | | |
| | Arc Starting Mode | High Frequency | | |
| DC ARC/STICK | No Load Voltage | 60 – 80V | | |
| | Base Current Adjusting Range (Amps) | 10 – 160A | 10 – 160A | 10 – 160A |
| | Rated Output Current (Amps) | 160A | 160A | 160A |
| | Rated Duty Cycle at Max | 60% | | |

| | Amps | | | |
|----------------------|------------------------------|----------------|----------|----------|
| PLASMA CUTTER | Base Current Range (Amps) | 20 – 40A | 20 – 50A | 20 – 50A |
| | Rated Duty Cycle at Max Amps | 60% | | |
| | Arc Starting Method | High Frequency | | |

What's Included?



Installation, Wiring, 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® WeldMax Plasma Cutter/Welder Combo units are dual voltage and can be connected to either 110 or 220VAC.

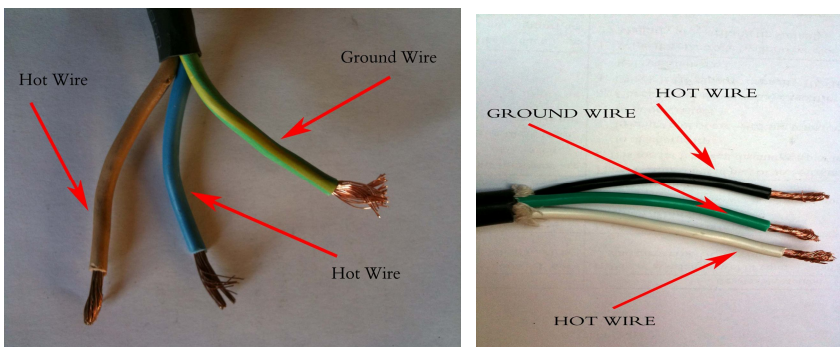
Connecting the electrical plug to the unit

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.

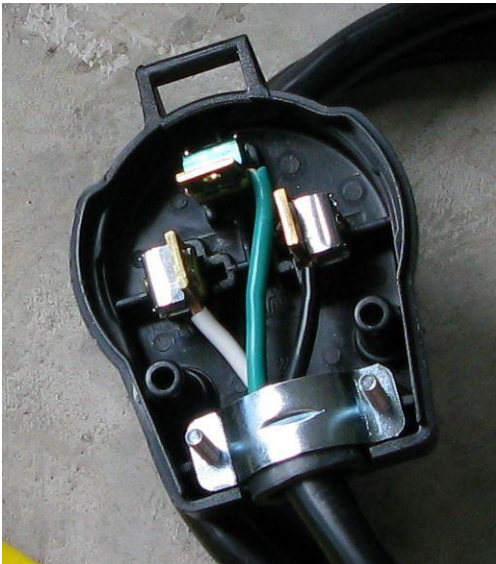
Identifying the hot wire

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.

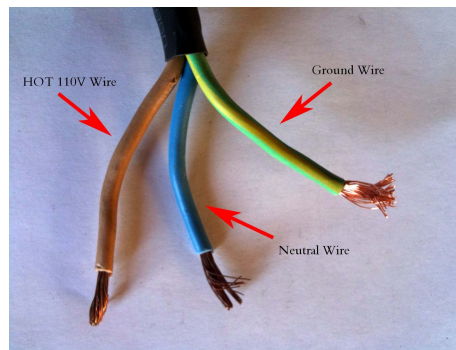
Clean the ends of the wires to more easily distinguish the colors. The best and safest way to determine which wire is ground is to measure the resistance between the machine chassis and the selected wire, using an ohmmeter. Another method is to check the continuity between the chassis and the wire, using 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

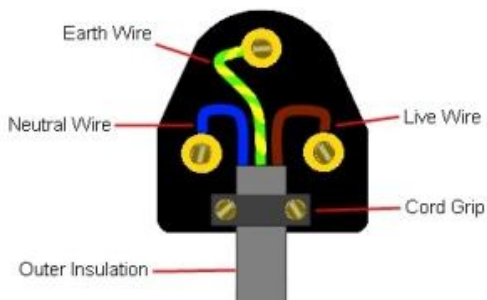
For 110vac service, the brown wire is is a hot wire. As you may know, 110vac features one hot wire, a neutral wire, and a ground wire. If you are wiring to 110vac, your blue wire is neutral, brown is hot and the green with yellow or SOLID GREEN is the ground.

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

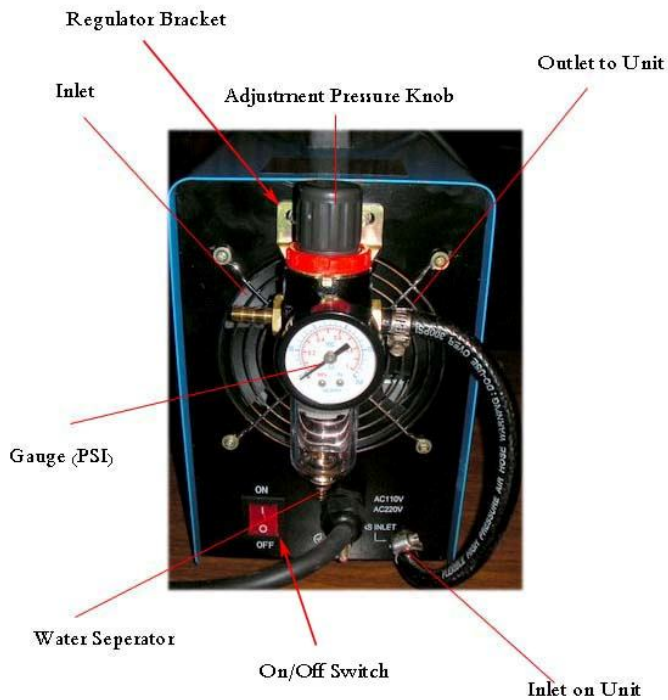
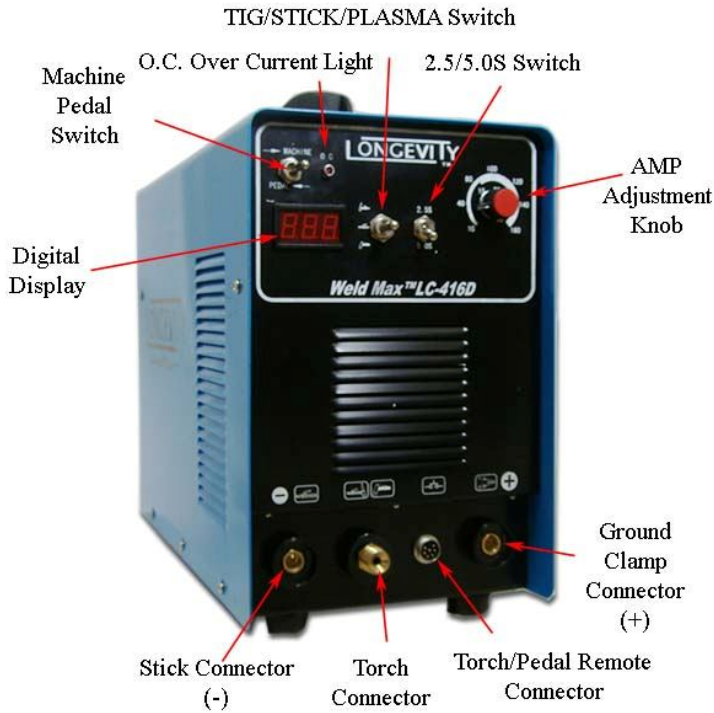


110V Plug Diagram:



Main Unit

Pictured: WeldMax 416D Multi-Purpose Unit



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 :** Shows unit is powered on. Indicator is present in some models with a green LED bulb.
- 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. Gas (Air) Test/Cutting:** This mode allows you to test air pressure and release air through the torch. Selecting Gas (Air) Test, you should have air passing through the torch as long as the compressor is on. Cutting mode allows you to use the plasma cutter normally.
- 6. AMP Adjustment Knob:** Adjusts the amount of amps to desired AMP setting.
- 7. Ground Clamp Connector (+):** Location of ground clamp to be plugged in and ran to the workpiece.
- 8. Stick Connector (-):** Connect the stick welding rod here. You can also reverse polarity by switching the ground clamp
- 9. Torch Remote Connector:** 2 or 7 pin torch connector plugs here to activate the torch relay once the trigger is pressed on the torch.
- 10. Torch Connector:** Connect torch for air to pass through the unit and generate the arc at the torch tip.
- 11. Torch Air Outlet:** This is only used with specific torches that require water cooling. Your unit does not come with this feature as it is not required.
- 12. Air Regulator Pressure Gauge:** Shows the amount of pressure at the torch in PSI.
- 13. Pressure Regulator Adjustment Knob:** Adjust the amount of pressure at the unit. Pull the knob towards you or up to unlock, turn clockwise for more pressure and counter clockwise for less pressure. Once the desired pressure is reached, pop the knob back in place to lock it in place.
- 14. Thermal Protection Fan:** Cools your unit during operation. Fan should be operating once the power is turned on and the unit power indicator is lit.
- 15. 110/220v Power Cord:** Attach the power cord to the wall outlet for unit power.
- 16. Ground Lug:** An additional safety grounding lug. You can earth this wire or properly ground it to your electricians specifications. Grounding the unit and yourself during cutting is extremely important
- 17. Air Inlet:** Attach air compressor hose to the air inlet here.
- 18. Machine/Pedal:** Select Pedal, when pedal is plugged into the machine.

Assembly of Plasma Torches:

The plasma cutter torch handle is made of fire and heat resistant materials. Avoid dropping the torch or striking anything with it. For convenience and ease of use, the torch's ON/OFF switch can be positioned on the top, the side, or the bottom of the torch body.

Assembly of Consumables for the 40/50AMP Torch Heads

Assemble the consumables as pictured above, and described below.

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

The torch consumables are now successfully assembled.



Assembly of Consumables for the 60AMP Torch Head

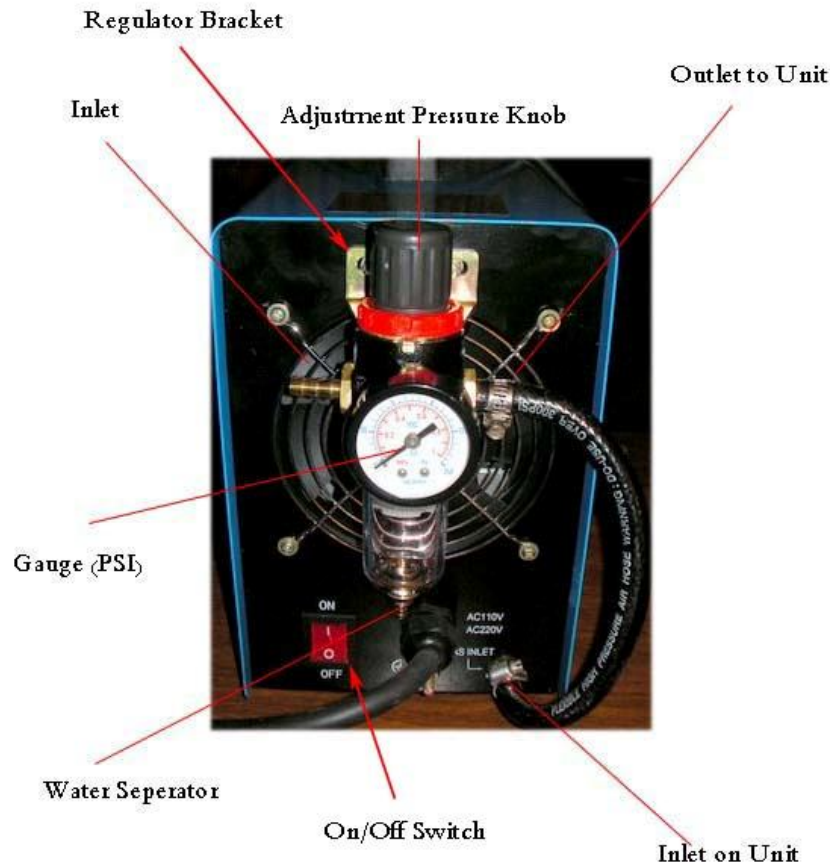
Assemble the consumables as pictured above, and described below.

1. Insert the electrode.
2. Place the copper tip on the ring, ensuring that is seated flat.
3. Secure all parts into place by turning the pink ceramic cup clockwise until it is snug. Do not over tighten.

The torch consumables are now successfully assembled.



Air Regulator Assembly to Unit



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.

Plasma Cutter Operating Tips from www.plasma-cutters.com

Tips For Longevity Plasma Cutting

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.

¹Using 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 caution 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

TIG Section: Setting Up The TIG Torch



Selecting the Right Tungsten Electrodes:

Selecting the right tungsten is crucial to a successful TIG weld. You have to insure the correct tungsten is used for the type of metal you are welding, the type of technology used in your welder such as transformer or inverter, and the thickness of the metal you will need to weld. This leaves you with a variety sizes ranging from 1/16 to 1/8" and the types of tungstens such as the Pure Tungsten (TP), 2% Thoriated Tungsten (TT2), 2% Ceriated Tungsten (TC2), and 2% Lanthanated Tungsten (TL2). Fortunately, LONGEVITY offers high quality tungsten electrodes and explains which tungsten is required for the right application. Pure Tungsten (TP) – (green tipped) - Pure tungsten readily forms a ball on the end. It is designed for use with transformer-based power sources for AC welding of aluminum. Unfortunately, LONGEVITY does not carry transformer based technology considering the size and weight of TRANSFORMER welders. Therefore, this tungsten is rarely sold buy our sales staff

2% Thoriated Tungsten (TT2) – (red tipped) - This tungsten is the most common tungsten currently being used with LONGEVITY DC TIG. It is generally utilized for DC welding of mild steel, bronze, and stainless steel and basically all metals except aluminum and offers excellent performance. A drawback is that this tungsten has a low level radiation hazard and the fact that they no recommend to weld aluminum. We recommend this tungsten with our stand alone DC only TIG Welders, our **WeldMax series** multi-purpose welders, which feature DC TIG welders. The 2% Thoriated Tungsten works well with Inverter Welders. This is the tungsten to use for your welder. LONGEVITY does have them available.

2% Ceriated Tungsten (TC2) – (grey tipped) – 2% ceriated is an excellent substitute for 2% thoriated tungsten and is designed for transformer and inverter based power sources. For Transformer DC welding, this tungsten requires less amperage to start so it is recommended for thinner metals. It offers a stable arc and can be used for both AC and DC welding with inverter power sources and is our most popular sold tungsten because it can be used to weld every type of metal in both AC / DC modes in our LONGEVITY INVETER TIG welders. We recommend this unit with our ArcMate 200AMP ACDC TIG/STICK unit or our WeldAll series multi functional welders and plasma cutters because of the versatility of AC DC welding.

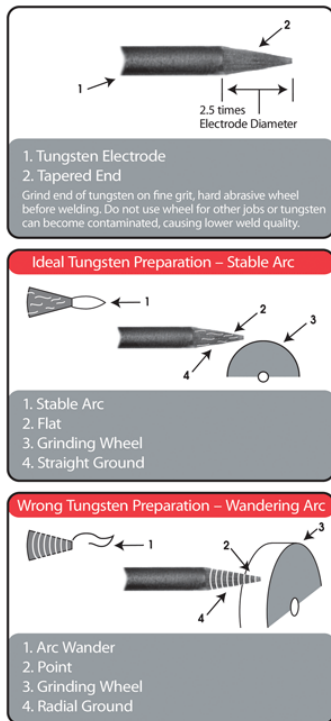
2% Lanthanated Tungsten (TL2) – blue tip – 2% lanthanated is probably the most popular substitute for 2% thoriated tungsten. Offering a longer life span than the 2% thoriated tungstens, it is a nice a nice alternative, but not as recommended as our 2% Thoriated Tungsten. This tungsten can be used with both transformer and inverter technology on both AC DC modes.

Tungsten Chart Guide

| Tungsten Type | Diameter | | | |
|----------------|--------------|--------------|--------------|-------------|
| | 0/40"(1.0mm) | 1/16"(1.6mm) | 3/32"(2.4mm) | 1/8"(3.2mm) |
| Pure Tungsten | TP-7040 | TP-7116 | TP-7332 | TP-718 |
| 2% Thoriated | TT2-7040 | TT2-7116 | TT2-7332 | TT2-718 |
| 2% Ceriated | TC2-7040 | TC2-7116 | TC2-7332 | TC2-718 |
| 2% Lanthanated | TL2-7040 | TL2-7116 | TL2-7332 | TL2-718 |
| Amparage-Ac | 20-30 | 30-80 | 60-130 | 120-200 |
| Amparge-Dc | 15-50 | 50-120 | 80-150 | 130-250 |

Sharpening a Tungsten

Sharpening a tungsten is very important for a nice fine arc strike. There are auto sharpeners to place the perfect sharpening point on your tungstens or you can simply use a grinding wheel to sharpen your tungsten. Remember, after sharpening to a pencil point, you want to flatten the bottom for a good arc.



Selecting the right FILLER RODS FOR TIG WELDING:

Filler Rods are essential to [TIG Welding](#) because the filler rod is fed into the molten puddle by hand filling in the puddle to create a stronger metal bond or puddle to join two metal pieces. It is extremely important to have the right filler rod based on the metal you are welding. It is also necessary to have the right [tungsten](#) to insure you are properly setup to weld your metal.

Part # Application:

| | | |
|--------------|---------------------------|--------------|
| 4043-1/16-1 | 4043 Alloy Aluminum Wire | 1/16" X 36" |
| 4043-3/32-1 | 4043 Alloy Aluminum Wire | 3/32" X 36" |
| 5356-1/16-1 | 5356 Alloy Aluminum Wire | 1/16" X 36" |
| 5356-3/32-1 | 5356 Alloy Aluminum Wire | 3/32" X 36" |
| 308L-035-1 | 308L Stainless Steel Wire | .035" x 36" |
| 308L-1/16-1 | 308L Stainless Steel Wire | 1/16" X 36" |
| 70S6-1/16-1 | ER70S-6 Steel Wire | 1/16" X 36" |
| 70S6-3/32-1 | ER70S-6 Steel Wire | 3/32" X 36" |
| 70S2-1/16-1 | ER70S-2 Steel Wire | 1/16" X 36" |
| 80SD2-1/16-1 | ER80SD-2 Steel Wire | E1/16" X 36" |

Longevity offers quality filler rods at affordable prices. Please take a look at the selection of filler rods that we carry to decide what the best application of rod will be for your weld.

Your choice of filler rod is extremely important to the strength and matter density of your weld. You can determine the diameter of the filler rod needed, by the thickness of the material that you will be welding. Here are some pointers in deciding how to choose the correct filler rod for your weld.

1. 4043 is a general filler rod for most aluminum welding. Remember, the WeldMax series is strictly DC welding so aluminum is not possible with the use of Argon.
2. 5356 is perfect for 5xxx series aluminum. If you are planning on anodizing the finished piece, this rod should be used for the weld.
3. ER70S-6 is designed for welding mild steel.
4. ER70S-2 is recommended for welding 4130 chrome moly tubing in most applications.
5. ER80S-D2 is for welding 4130 chrome moly tubing if a higher strength weld is required.
6. 1/16" diameter filler should be used when material is 1/8" and less thick. 3/32" diameter filler rod can be used for 1/8" and thicker material. For more info on Filler Rods, go to www.freeweldingforum.com

Setting Up the Argon Regulator:

The argon regulator (pictured below) is included with your unit. Setting it up to your argon bottle is easy. Simply screw in the valve to the bottle and set the pressure to about. Use 100% Argon at 15-25 CFH (cubic feet per hour). Set the gas flow using the regulator on the gas bottle. Use higher flow when extending the tungsten electrode to reach into corners or gaps. We recommend about 18 CFH. Remember, that you also have a post flow setting on the unit to pass more argon after the arc to cool the electrode.



Argon Regulator Assembled.

Basic TIG Operation

(Tungsten Inert Gas - Gas Tungsten Arc Welding - GTAW)

TIG Operation and Principles:

Shielding Gas: Use 100% Argon at 15-25 (cubic feet per hour). Set the gas flow using the regulator on the gas bottle. Use higher flow when extending the tungsten electrode to reach into corners or gaps.

Tungsten Electrode: We recommend 2% Thoriated tungsten (red) for TIG welding with our DC TIG welders. Use smaller diameter electrodes for thinner metal (low amperage), thicker electrodes for thicker metals that require more amperage. For the right tungsten electrode, please refer to earlier in this manual or go to www.longevity-inc.com

Filler Rod Selection: Depending upon the metal to be welded, filler rod selection is critical. Consult with your local welding supplier for the optimum filler rod to properly complete the weld. In certain applications, TIG welding can be performed without the use of a filler rod. Use free welding forum at www.freeweldingforum.com to gather advice or go to www.longevity-inc.com.

Pre-TIG Welding

As you get to know the above information of basic TIG welding applications, there are a couple of basic steps that need to be taken. The tungsten must be sharpened and shaped before initiating an arc. With inverter TIG welding machines, tungsten sharpness is important. Your weld's outcome will be partially determined by the shape of your tungsten. Sharpening an electrode consistently will cause an unstable, wandering arc, making it more difficult to control the weld puddle. Carefully rotate the tungsten as it is being ground to prevent a flat spot or a hollow ground point. Also note that tapering the tungsten to 2.5 times of its diameter is generally recommended for most DC welding applications. For high amperage DC welding, do not over sharpen the point, but leave a slight truncation on the end of the tungsten. This prevents the tungsten tip from breaking away and falling into the weld. It is also normal for a slight dome to form on the tungsten in DC mode. However, if the arc becomes erratic or the arc is difficult to start, regrinding the tungsten will be necessary. If the tungsten is accidentally dipped into the weld puddle, regrinding the tungsten will be necessary to eliminate contamination, particularly on aluminum. Grind tungsten's only on a dedicated stone, free of contamination from other metals.

Starting a TIG Weld: Filler rod selection is critical to a TIG welds density, strength and purity. Check out our filler rod selection chart on our website for optimum filler rod to properly complete a weld. In certain applications, TIG welding can be performed without the use of a filler rod. One of the biggest issues for beginning welders is holding and maintaining an arc. Starting an arc with your High Frequency welder is quite simple. Set the machine for TIG operation then select the desired amperage. Grasp the torch in a manner that is comfortable to you. Place the torch so that the tungsten is no more than 1/8 inch from the weld surface. Depending upon the setup, either press the foot pedal down or press the trigger to initiate the high frequency arc. A small blue glowing cone may be observed. This is the high frequency arc. Immediately after that, you

should see a strong and stable arc flowing from the torch. As the arc begins to grow, a molten puddle will appear. If it does not appear, stop your weld and increase the amperage. Repeat the start sequence.

1. To help the molten puddle form, slowly make small circles with the torch to build the heat in the weld area. A bright, fluid puddle will begin to form.
2. Once a uniform puddle is established, tilt the torch head about 75 degrees from the weld surface into the direction of the weld. This will direct the arc to the front of the weld puddle.
3. Grip the filler rod at a 15 degree angle to the weld surface with the other hand. Hold the rod in the iridescent cone of gas that surrounds the weld puddle. Do not hold it in the arc. Keep it close to the weld. A “skeleton” keyhole will begin to form in front of the weld. The keyhole is evidence that you are ready to add filler material and move forward. Introduce the filler rod into the key hole area underneath the arc. Wait for a single molten drop to fall off the tip of the rod.
4. When a molten drop falls from the rod, quickly remove the rod, keeping it inside the gas cone. The molten drop of filler metal should blend quickly into the puddle.
5. Move the torch forward slightly, carrying the keyhole with the weld. If the key hole is lost, then forward travel was too fast or too far. When the keyhole shows good development, repeat the steps 3-5 until you have a proper weld bead established.
6. Weld termination. When the weld bead has reached the desired length, add a final drop of filler and slowly circle the torch over the end of the weld to fill the crater. If the weld crater is not correctly filled, cracking and weld failure may occur. This is a small but important step to properly completing a weld. Release the foot pedal or release the trigger to stop. Keep the TIG torch in place until the post flow ends--usually around 5 seconds.
7. When finished welding always let the welder's fan run for a minute or two to cool the machine before turning the power switch off.

Basic Diagrams of Welding

Fig. 1

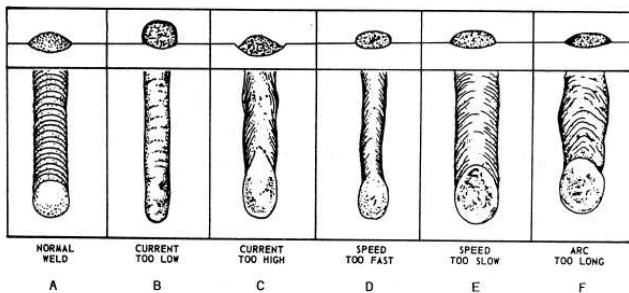
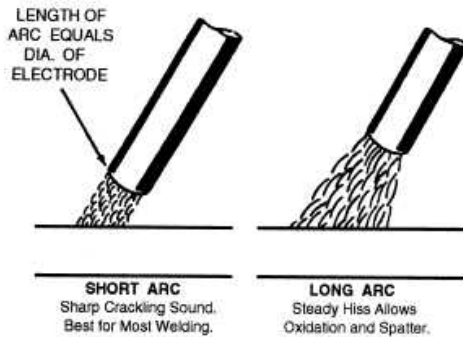


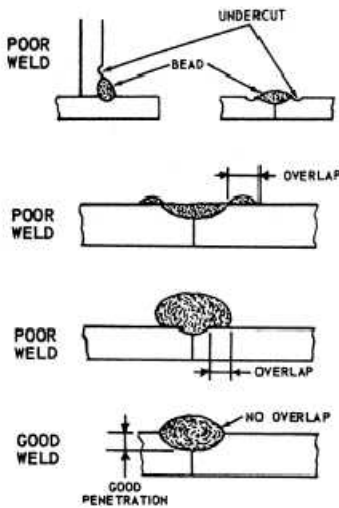
Figure 1: Comparison chart of welds

Fig. 2



Length of Arc When an arc is too long, the metal melts off the electrode in large globules and the arc may break frequently. This produces a wide, spattered, and irregular deposit with insufficient fusion between the base metal and the weld. When an arc is too short, it fails to generate enough heat to melt the base metal properly, causes the electrode

Fig. 3



Setting the length of an arc to stick frequently to the base metal, and produces uneven deposits with irregular ripples. The recommended length of the arc is equal to the diameter of the bare end of the electrode, as shown in figure 3.

The length of the arc depends upon the type of electrode and the type of welding being done; therefore, for smaller diameter electrodes, a shorter arc is necessary than for larger electrodes. Remember: the length of the arc should be about equal to the diameter of the bare electrode except when welding in the vertical or overhead position. In either position, a shorter arc is desirable because it gives better control of the molten puddle and prevents atmospherical impurities from entering the weld.

Sample of a quality stainless steel weld:



STICK/ARC Welding

Stick Welding

(Also known as MMA-Manual Metal Arc or Shielded Metal Arc Welding-SMAW)

Connect the Stick torch to the - terminal and Torch Control receptacles.

Connect the ground clamp to the + terminal and clamp the metal to be welded. Reverse the torch and ground connections for DCEP (Direct Current Electrode Positive).

DC Stick - Select Stick, DC, desired amps using Base cur knob

1. Insert electrode into electrode holder. Position the electrode for the most comfortable position so that the electrode can be held directly over the work piece with a slight angle.
2. Set Amperage to the recommended amperage by the electrode manufacturer. Strike an arc by swiping it briskly across the work piece in the same manner as one would strike a match. Alternatively, you may strike an arc with firm tapping motion against the work piece. Either method is acceptable. An arc should initiate. Continue to keep the arc going by holding the electrode off the work piece no more than the electrode width.
3. Continue the arc by feeding the electrode into the weld puddle while moving the electrode forward. This will take some coordination, but will be fairly easy to do after practice. Do not allow the arc to become too long, because air and slag can become entrapped in the metal. The sound of a proper arc will be similar to a gentle frying sound. A long arc will emit a humming sound. An arc that is too short may be extinguished and the electrode may stick to the work piece. If the electrode sticks, immediately release the electrode from the electrode holder and break the electrode loose by hand. If the flux breaks off, simply trim off the excess rod until flux and bare metal meet. A welding rod must have flux to shield the weld from the atmosphere or the weld will fail.
4. Use the Basic Current control to change arc qualities. Adjust the amperage according to the recommendations of the electrode (welding rod) manufacturer for the type and size of the electrode used. When welding in the AC mode the AC Frequency control will affect how crisp the arc is, whether it is smooth and buttery or deeply penetrating. Use it to suit the desired weld finish. Experimentation will be required to find the optimal setting desired. It is an excellent tool for out of position welding.
5. Electrode selection. Electrodes are usually given performance and characteristic ratings using a system of letters and numbers determined by the American Welding Society (AWS). The rating system includes the minimum tensile strength of the finished weld, the weld position (flat, vertical, horizontal, or overhead or a combination of two or more positions) and the flux type. Additional information may be given. Each manufacturer has their individual name and terminology as well. As there is no general recommendation that can be made about a particular electrode selection, except for practice welds, a electrode designated by the AWS as E 6011, E 6013, E 7014, or E 7018 may be used, each having its own distinct features and purpose. These are among the most common electrodes used in the industry and are not difficult to find. E 6011 electrodes are not as smooth running as some of the other electrodes, but offer the advantage of being able to weld on rusty metal and contaminated surfaces. It is widely used and requires very little skill to begin using. This is not a particular

endorsement of an E6011, rather a simple example of what may be used in developing proficient technique. It is recommended that a variety of electrodes be used and practiced with. Consultation with an experienced local welding supplier will help greatly in determining what welding electrode is the best for your given situation. Many times, samples or small packages of electrodes are available at relatively low cost to determine for yourself the best electrode to use.

Stick Electrode Chart Example: E 60 1 3

Strength

60--60,000 psi,

70--70,000 psi

Weld Position

1--All positions: Flat, Vertical, Horizontal, & Overhead

2--Flat Position or Horizontal Fillets Only

3--Flat Position Only

Weld Characteristics

0--Non-low hydrogen, DC Reverse polarity

1--Non-low hydrogen, AC or DC Reverse polarity

2--Non-low hydrogen, AC or DC Straight polarity

3--Non-low hydrogen, AC or DC Either polarity

4--Non-low hydrogen, iron powder coating, AC or DC Reverse polarity

5--Low-hydrogen, DC Reverse polarity

6--Low-hydrogen, AC or DC Reverse polarity

7--Non-low hydrogen, iron powder coating, AC or DC Reverse polarity

8--Low hydrogen, iron powder coating, AC or DC Reverse polarity

Polarity Definition

electrode negative =straight polarity (typical stock machine setup)

electrode positive = reverse polarity

Be sure to observe the electrode manufacturer recommendations regarding polarity. If the weld appears lumpy, porous or otherwise malformed, change the polarity of the ground cable and the electrode holder cable. Many electrodes run with in reverse polarity, (DCEP) setting. A few run with a straight polarity (DCEN). Some will run either way. For reverse polarity (DCEP) stick welding, swap the electrode holder and ground cable connections.

Proper weld identification. Overlap and undercutting are two main causes of weld failure. Proper washing of the weld bead into the sides or “toes” of the weld is important. Keep the welding electrode or the TIG tungsten and welding arc within the weld joint to prevent overlap. Pausing on the sides of the welds to wait for the sides to fill reduces the chance of undercutting, even if the current is a little too high. If it is possible, with any practice weld, cut the joint down the middle, lengthwise, or place the weld in a vice and use a hammer to bend the metal over the weld area until it is either broken or bent 90 degrees. This destructive testing method will help you improve your skill by revealing faults and flaws in your welds.

Stick (SMAW) Electrode Welding

Stick, the most basic of welding processes, offers the easiest option for joining steel and other metals. Although it produces the least pretties or cleanest welds, ARC/STICK welding gets the job done! Stick welding power sources deliver inexpensive options for welding versatility, portability and reliability. Stick joins metals when an arc is struck between the electrode and the work piece, creating a weld pool and depositing a consumable metal electrode into the joint. The electrode's protective coating also acts as a shielding gas, protecting the weld and ensuring its purity and strength. Best for windy conditions and adverse environments.

If you're not familiar with Stick (SMAW) welding basics, the following information can make choosing an electrode easier.

| AWS Class | Position | Polarity | Usage |
|-----------|----------|--------------|---|
| E6010 | All | DCEP | A great choice for welding on dirty, rusty, greasy or painted steel - especially in vertical or overhead applications. |
| E6011 | All | AC,DCEP | All-purpose stick electrode; used for carbon and galvanized steel; 60,000 PSI tensile strength; deep penetration and ideal for welding light to medium amounts of dirty, rusty or painted materials. |
| E6013 | All | AC,DCEN,DCEP | Light to medium penetrating all-purpose stick electrode; for use on carbon steel; 60,000 PSI tensile strength; good for general all-purpose applications and joints with poor fit-up. |
| E7014 | All | AC,DCEN,DCEP | For higher-deposition requirements; 70,000 PSI tensile strength; ideal for applications requiring light penetration and faster travel speeds. |
| E7018 | All | DCEP | Low-hydrogen electrode; for low, medium and high-carbon steels; 70,000 PSI tensile strength; ideal for out-of-position welding and tacking; not recommended for low-voltage AC Welders. |
| E7018AC | All | AC,DCEP | Low-hydrogen electrode; for low, medium and high-carbon steels; 70,000 PSI tensile strength; ideal for out-of-position welding and tacking; specially formulated to operate with small 208/230 volt AC welders. |

Electrode Polarity Chart

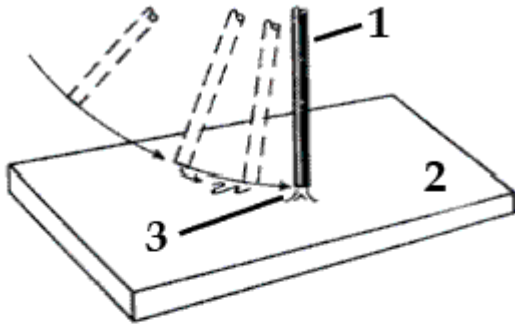
| Electrode | DC* | AC | Position | Penetration | Usage |
|-----------|--------|----|-----------------------|-------------|-----------------------------------|
| 6010 | EP | — | All | Deep | Min. Prep, Rough, High Spatter |
| 6011 | EP | ✓ | All | Deep | |
| 6013 | EP, EN | ✓ | All | Low | General |
| 7014 | EP, EN | ✓ | All | Medium | Smooth, Easy, Fast |
| 7018 | EP | ✓ | All | Low | Low Hydrogen, Strong |
| 7024 | EP, EN | ✓ | Flat, Horz. Fillet | Low | Smooth, Easy, Faster |
| 308L | EP | ✓ | All | Low | Stainless Steel |

*EP = Electrode Positive (Reverse Polarity); EN = Electrode Negative (Straight Polarity)

Electrode Amperage Chart

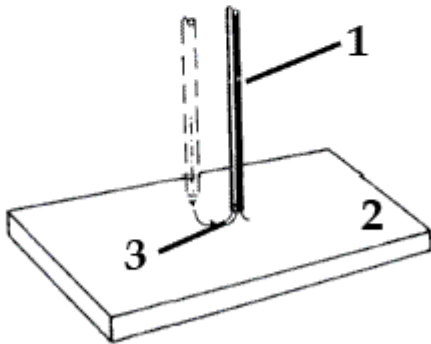
| Elect. | Dia. (in.) | Amperage Range | | | | | |
|-------------------|---------------|----------------|-----|------|------|------|------|
| | | MIN. | 50A | 100A | 150A | 200A | MAX. |
| 6010 & 6011 | 3/32 | | █ | | | | |
| | 1/8 | | █ | █ | | | |
| | 5/32 | | █ | █ | █ | | |
| | 3/16 | | █ | █ | █ | █ | |
| 6013 | 5/64 | █ | | | | | |
| | 3/32 | █ | █ | | | | |
| | 1/8 | █ | █ | █ | | | |
| | 5/32 | █ | █ | █ | █ | | |
| 7014 | 3/32 | | | █ | | | |
| | 1/8 | | | █ | █ | | |
| | 5/32 | | | █ | █ | █ | |
| 7018 | 3/32 | | █ | | | | |
| | 1/8 | | █ | █ | | | |
| | 5/32 | | █ | █ | █ | | |
| 308L | 3/32 | █ | | | | | |
| | 1/8 | █ | █ | | | | |
| | 5/32 | █ | █ | █ | | | |

Striking an Arc



Helpful Hints

- Use a drag technique for most applications.
- Take precautions with flying materials when chipping slag.
- Keep electrodes clean and dry - follow manufacturers instructions.
- Common steel electrodes (refer to chart above).
- Penetration: DCEN- Less penetration; AC - Medium (can be more spatter also); DCEP - Most penetration



1 Electrode; 2 Workpiece; 3 Arc

Catalog and Capabilities

LONGEVITY has what you need for stick welding, from welders to welding supplies and protective clothing. Stick welders come in two basic classifications; 115V stick welders and 230/460V stick welders. Stick Electrodes or welding rod for stick welding are available in stainless steel, carbon steel, low alloy steel, maintenance alloy, hard facing, nickel alloy, and magnesium

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, free of bug infestation.

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 are in the right mode, plasma cutter, tig, stick. Check the torches and your ground. Make sure there is argon or compressed air for plasma and tig. |
| Arc will not start | Check the ground connection. Check the torch for proper consumables installation. Replace consumables. |
| Consumables (tips) are being consumed | Improper air/gas 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 |
| 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 |
| 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 |
| Unit Will Not Weld | Check ground connection, torch setup, and check if you are in the proper mode ARC/TIG. If you are TIG Welding check to see if you have the proper TUNGSTEN and FILLER ROD. |
| Tungsten is Melting or Being Consumed Quickly | Low Argon Gas flow. Check the Argon Gas flow. Turn up post flow. Incorrect Tungsten or Incorrect Tungsten Size. Possible small size shield cup. Read selecting the right tungsten on www.longevity-inc.com/resources |
| Contaminated Tungsten | If the Tungsten is dipping or melting inside the weld. Use larger tungsten and fewer amps on the unit. Sharpen tungsten. |
| Poor Weld Quality | Remember to clean welding material prior to welding with acetone. Practice on the form and technique. Use the right tungsten and filler rod. |
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| Problems, Causes, and Solutions | |
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| Problems | Causes/ Solutions |
| STICK Welder Having a Hard Time Striking an Arc | Check the ground. Check the workpiece and clean it. Increase the Arc Force on the unit. |
| STICK Welder Producing Poor Quality Welds | Use the proper rod and polarity. |