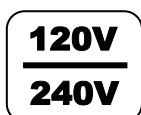


# ***EVERLAST***

## **SUPERCUT 51P**

**MOSFET INVERTER PLASMA CUTTER WITH PILOT ARC**



### ***Operator's Manual For SUPERCUT 51P PLASMA CUTTER Safety, Setup and General Use Guide***

Rev. 1    2 -00318-16

[everlastwelders.com](http://everlastwelders.com)



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Specifications and Accessories subject to change without notice.

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**NOTE:** Product Specifications and features are subject to change without notice. While every attempt has been made to provide the most accurate and current information possible at the time of publication, this manual is intended to be a general guide and not intended to be exhaustive in its content regarding safety, welding, or the operation/maintenance of this unit. Everlast Power Equipment INC. does not guarantee the accuracy, completeness, authority or authenticity of the information contained within this manual. The owner of this product assumes all liability for its use and maintenance. Everlast Power Equipment INC. does not warrant this product or this document for fitness for any particular purpose, for performance/accuracy or for suitability of application. Furthermore, Everlast Power Equipment INC. does not accept liability for injury or damages, consequential or incidental, resulting from the use of this product or resulting from the content found in this document or accept claims by a third party of such liability. **This manual has been compiled to give an overview of operation and is designed to offer information centered around safe, practical use of the plasma cutter.** The welding industry is inherently dangerous. Only YOU, the operator of this Plasma cutter, can ensure that safe operating practices are followed, through the exercise of common sense practices and training. Do not operate this machine until you have fully read the manual, including the safety section and understand the risks and dangers involved with operating a plasma cutter.

**Dear Customer,**

**THANKS!** You had a choice, and you bought an Everlast. We appreciate you as a customer and hope that you will enjoy years of use from your welder.

Please go directly to the Everlast website to register your unit and receive your warranty information. Your unit registration is important should any information such as product updates or recalls be issued. It is also important so that we may track your satisfaction with Everlast products and services. If you are unable to register by website, contact Everlast directly through the sales department at the main customer service number in your country. Your unit will be registered and warranty will be issued and in full effect. Keep all information regarding your purchase. **In the event of a problem you must contact technical support before your welder can be a candidate for warranty service and returned.**

**Please review the current online warranty statement and information found on the website of the Everlast division located in or nearest to your country. Print it for your records and become familiar of its terms and conditions.**

Everlast offers full technical support of its product in several different forms. We have online support available through email, and a welding support forum designed for customers and noncustomer interaction. Technical advisors are active on the forum daily. We also divide our support into two divisions: technical and welding performance. Should you have an issue or question concerning your unit, please contact performance/technical support available through the main company headquarters available in your country. For best service call the appropriate support line and follow up with an email, particularly during off hours, or in the event you cannot reach a live person. In the event you do not reach a live person, particularly during heavy call volume times, holidays, and off hours, leave a message and your call will normally be returned within 24 hours. Also, for quick answers to your basic questions, join the company owned forum available through the website. You'll find knowledgeable, helpful people and staff available to answer your questions, and perhaps find a topic that already addresses your question at <http://www.everlastgenerators.com/forums/>.

Should you need to call or write, always know your model name, purchase date and welder manufacturing inspection date. This will assure the quick and accurate customer service. **REMEMBER: Be as specific and informed as possible. Technical and performance advisors rely upon you to carefully describe the conditions and circumstances of your problem or question. Take notes of any issues as best you can. You may be asked many questions by the advisors to clarify problems or issues that may seem very basic. However, diagnosis procedures MUST be followed to begin the warranty process. Advisors can't assume anything, even with experienced users, and must cover all aspects to properly diagnose the problem. Depending upon your issue, it is advisable to have basic tools handy such as screwdrivers, wrenches, pliers, and even an inexpensive test meter with volt/ohm functions before you call.**

Let us know how we may be of service to you should you have any questions.

Sincerely,

Everlast Customer Service



Serial number: \_\_\_\_\_

Model number: \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

#### Contact Information

Everlast US:

Everlast consumer satisfaction email: [sales@everlastwelders.com](mailto:sales@everlastwelders.com)

Everlast Website: [everlastwelders.com](http://everlastwelders.com)

Everlast Technical Support: [support@everlastwelders.com](mailto:support@everlastwelders.com)

Everlast Support Forum: <http://www.everlastgenerators.com/forums/index.php>

Main toll free number: 1-877-755 WELD (9353) 9am—5pm PST M-F  
11am-4pm PST Sat.

FAX: 1-650-588-8817

#### **Everlast Canada:**

Everlast consumer satisfaction email: [sales@everlastwelders.ca](mailto:sales@everlastwelders.ca)

Everlast Website: [everlastwelders.ca](http://everlastwelders.ca)

Everlast Technical Support: [sales@everlastwelders.ca](mailto:sales@everlastwelders.ca)

Telephone: 905-637-1637 9am-4:30pm EST M-F  
10am-1pm EST Sat.

FAX: 1-905-639-2817

#### **Everlast Australia:**

Sydney: 5A Karloo Parade Newport NSW 2106

(02) 9999 2949

Port Macquarie: 2B Pandorea Place Port Macquarie

(02) 8209 3389

After hours support: 0413 447 492

Everlast Technical Support: [support@pickproducts.com](mailto:support@pickproducts.com)

## SAFETY PRECAUTIONS

Everlast is dedicated to providing you with the best possible equipment and service to meet the demanding jobs that you have. We want to go beyond merely delivering a satisfactory product to you. That is the reason we offer free technical support to assist you with your needs should an occasion occur. In the event that you need a repair, or have an issue, please call tech support to initiate a warranty claim and an Return Authorization number if needed. With proper use and care your product should deliver years of trouble free service.



Safe operation and proper maintenance is your responsibility.

We have compiled this operator's manual to instruct you in basic safety, operation and maintenance of your Everlast product to so you may enjoy the best possible operating experience. Most welding and cutting is based upon experience and common sense. As thorough as this welding manual may be, it is no substitute. Exercise extreme caution and care in all activities related to welding or cutting. Your safety, health and even life depends upon it. While accidents are never planned, preventing an accident requires careful planning.

**Please carefully read this manual before you operate your Everlast unit.** This manual is not only written for the safe use of the machine, but also to assist in obtaining the best performance out of your unit. Do not operate this unit until you have read this manual and you are thoroughly familiar with the safe operation of the unit. If you feel you need more information please contact Everlast Support.

The warranty does not cover improper use, maintenance or consumables. **Do not attempt to alter or defeat any safety device of your unit.** Keep all shields and covers in place during unit operation should an unlikely failure of internal components result in the possible presence of sparks and explosions. If a failure occurs, discontinue further use until malfunctioning parts or accessories have been repaired or replaced by qualified personnel.



### ***Note on High Frequency electromagnetic disturbances:***

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



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

## SAFETY PRECAUTIONS



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



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



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



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



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



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



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



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



Flame proof and insulated gauntlet gloves are required whether welding or cutting or handling metal. Simple work gloves for the garden or chore work are not sufficient. Gauntlet type welding gloves are available from your local welding supply companies. Never attempt to weld with out gloves. Welding with out gloves can result in serious burns and electrical shock. If your hand or body parts comes into contact with the arc of a plasma cutter or welder, instant and serious burns will occur. Proper hand protection is required at all times when working with welding or cutting machines!

## SAFETY PRECAUTIONS



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



**Welding and plasma cutting processes generate electro-magnetic fields and radiation.** While the effects of EMF radiation are not known, it is suspected that there may be some harm from long term exposure to electromagnetic fields. Therefore, certain precautions should be taken to minimize exposure:

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



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

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

- Stop immediately and relocate work if necessary until adequate ventilation is obtained.
- Stop work completely and seek medical help if irritation and discomfort persists.



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



**WARNING!** This product when used for welding or cutting produces fumes and gases which contains chemicals known to the State of California to cause birth defects and in some cases cancer.

(California Safety and Health Code §25249.5 *et seq.*)



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



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



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

## SAFETY PRECAUTIONS

### continued



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



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



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

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



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



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



Keep all covers in place. A faulty machine may shoot sparks or may have exploding parts. Touching uncovered parts inside machine can cause discharge of high amounts of electricity. **Do not allow employees to operate poorly serviced equipment.** Always check condition of equipment thoroughly before start up. Disconnect unit from power source before any service attempt is made and for long term storage or electrical storms.



Further information can be obtained from The American Welding Society (AWS) that relates directly to safe welding and plasma cutting. Additionally, your local welding supply company may have additional pamphlets available concerning their products. Do not operate machinery until you are comfortable with proper operation and are able to assume inherent risks of cutting or welding.



# SuperCut 51P



Air Regulator



Consumable Starter Kit



240 V to 120V Adapter



Work Clamp



AG-60 12 ft. Plasma Torch

NOTE: Accessory and consumable style and quantities are subject to change without notice. Consumable starter kits provide only enough consumables to get started. OEM quality consumables can be purchased direct through Everlast or other online sources of the AG-60 torch.

Specification	SuperCut 51P
Inverter Type	Analog, V- MOSFET, operating over 100kHz
Minimum/Maximum Rated Output	14 A/85.6 V - 50 A/100 V
Start Type	HF Start
Torch Type	Everlast AG 60 12 ft.
Duty Cycle @ Rated Amps/Volts ( 40° C) (Output V/A)	60% @ 50 A/ 100 V, 240 V 100% @ 39 A/ 96 V, 240 V 60% @ 35 A/ 94 V, 120 V 100% @ 27 A/ 90.9 V, 120 V
OCV (U0)	255 V
Voltage Input (U1)	Dual Voltage: 110 V/ 220 V; 50/60Hz 1 Phase
Maximum Inrush Amps (I1MAX)	47.9 A @ 120 V; 29.9 A @ 240 V
Maximum Rated Effective Amps (I1EFF)	37.1 A @ 120 V; 23.2 A @ 240 V
CNC Port	NO
Air Post Flow Timer	Fixed
Minimum Air Compressor Requirement	3.5 - 4 CFM @ 90 psi/ 30-60 gallon reserve
Duty Cycle/ Over Current Protection	Yes
Minimum Operating Air Pressure	None
Recommended Operating Air Pressure (Set with Air Flow set to "Continuous" )	65 psi
Maximum Supplied Air Pressure (From Compressor/Tank)	90 psi
Recommended Maximum Average Cut Thickness	1/2"
Recommended Daily Use Thickness	24 ga.-7/16"
Rated Maximum Quality Cut @ 10-12 IPM (Steel)	5/8"
Max Severance Cut @ 3 IPM (Steel )	3/4"
Minimum Water Ingress Protection Standard	IP21S
Efficiency	>85%
Cooling Method	Full Time High Velocity Fan with Tunnel design
Dimensions (approximate)	300mmx190mmx515mm (11"H X 7.4" W X 20.2" L)
Weight (Bare Unit)	9.7 Kg (21.4 lbs)
Operating Temperature (Min/Max)	-10°-40° C (14°-104° F)

Decrease maximum cut thickness values for aluminum and stainless by approximately 35%.

When evaluating a plasma cutter for daily service, do not consider maximum severance cut values as criteria for routine use! These maximum specifications are intended for occasional situations that might require such a cut. Plan the unit's daily use around the recommended daily cut thickness for best results and speed. This is an industry standard recommendation and is not unique to Everlast Plasma Cutters. Plasma performance specifications are based on reasonable environmental conditions with well maintained units, including cutting with new consumables using optimum air pressure. Actual performance results may vary in the field due to variable conditions, power supply, air pressure, air quality, consumable wear etc.


## SECTION 1

## INTRODUCTION AND SPECIFICATIONS

**General overview:** The Everlast Supercut 51P plasma cutter is an improved V-MOSFET inverter design when compared to the previous MOSFET based SuperCut 50P model featuring improved internal circuitry and higher operating frequency (Over 100kHz). This unit incorporates design elements that are intended to improve performance and reliability. The entry level SuperCut 51P is designed to meet the demands of people having occasional plasma cutting needs such as homeowners, or hobbyists with a small project or occasional repair work in mind. These units are a budget minded alternative to oxy fuel cutting, intended for hobbyists and small shops that do not require production level performance out of their plasma cutters. If taken care of and properly maintained these units should see a useful service life providing rapid, clean and inexpensive cuts. The USA warranty period for MOSFET based units is 3 years from date of shipping. For warranty details please see the warranty section at [www.everlastwelders.com](http://www.everlastwelders.com) or the dedicated company website for your region.

**General Use and Care:** Care should be taken to keep the unit out of direct contact with water spray. The unit is rated IP21S, which rates it for light contact with dripping water. It is a good idea to remove the plasma cutter from the vicinity of any water or moisture source to reduce the possibility of electrocution or shock. Never operate in standing water.

Every 1-2 months, depending upon use, the plasma cutter should be unplugged, opened up and carefully cleaned with compressed air. Regular maintenance will extend the life of the unit.

 **IMPORTANT:** Before opening the unit for any reason, including adjusting the point gap, make sure the unit has been unplugged for at least 10 minutes to allow time for the capacitors to fully discharge. Severe shock and/or death can occur.

Do not restrict air flow or movement of air around the plasma cutter. Allow a buffer distance of 2 ft from all sides if possible, with a minimum distance of at least 18" clearance. Do not operate the unit immediately in the weld/cut area where sparks and dust are directed toward the unit.

Do not mount in areas that are prone to severe shock or vibration. Lift and carry the welder by the handle.

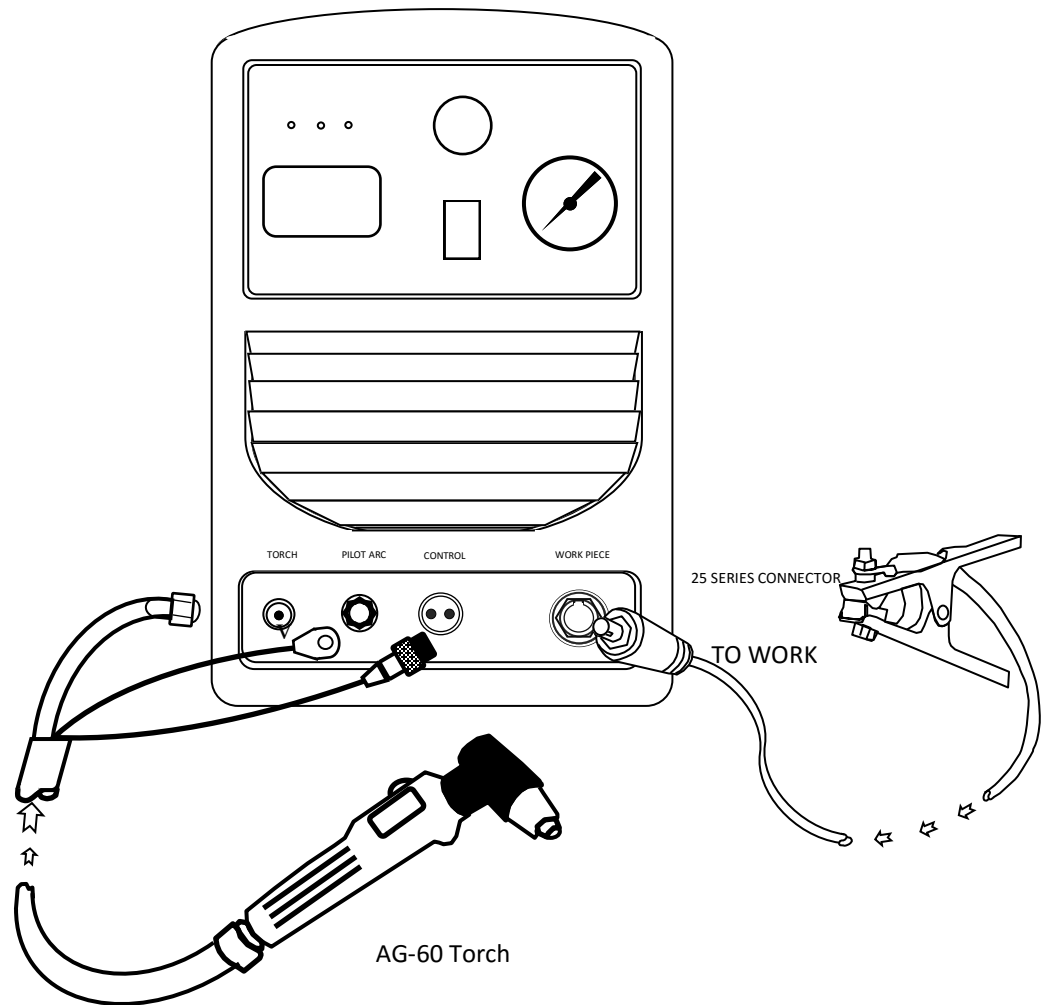
Do not direct metallic dust or any dirt intentionally toward the machine, particularly in grinding and welding operations. Make sure the panel is protected from dam-

age.

**NOTE:** When servicing unit, remove rear plastic panel first, then remove the metal cover. **DO NOT REMOVE THE FRONT PLASTIC PANEL! THE FRONT PANEL IS INTEGRAL TO THE FRAME OF THE UNIT. REMOVING THIS PANEL IS TIME CONSUMING AND UNNECESSARY.**

**Duty Cycle.** The duty cycle has been determined for the PowerPlasma at 60% @ 50 amps while operating on 240V input power, and 60% @ 35 amps while operating on 120V input power. The duty cycle is based off a 10 minute duty cycle rating at 40° C. This means that the unit is capable of being operated at the max amps for the stated percent of time out of 10 minutes without a break to cool down the unit. For the remainder of the 10 minute time period, the welder should rest for maximum life span of components. The temperature light (represented by the thermometer symbol) will come on and the unit will automatically stop cutting when an overheat condition has occurred. Stop trying to cut immediately. Heat will continue to be generated and transferred to the electronics after welding has ceased. Cutting in humid (>80% relative humidity), or hot conditions (over 104° F) can affect duty cycle as well. Do not shut down an overheated welder until it has safely cooled. After an event has occurred that has triggered the duty cycle interrupt, allow the unit to cool for at least 15 minutes while it is switched on. Once the overheated condition has cleared, cutting operations may resume. To reset, cycle the power switch off and then back on. Do not operate the unit with the covers removed. These are in place for safety and are an integral part of the cooling system. If the cover is removed for cleaning, note that the cooling louvers are located toward the front of the unit and must be reinstalled to maintain cooling efficiency.

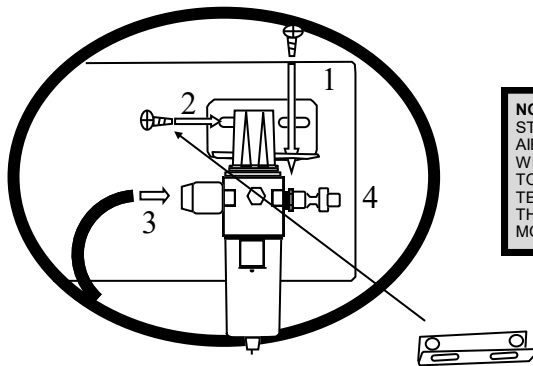
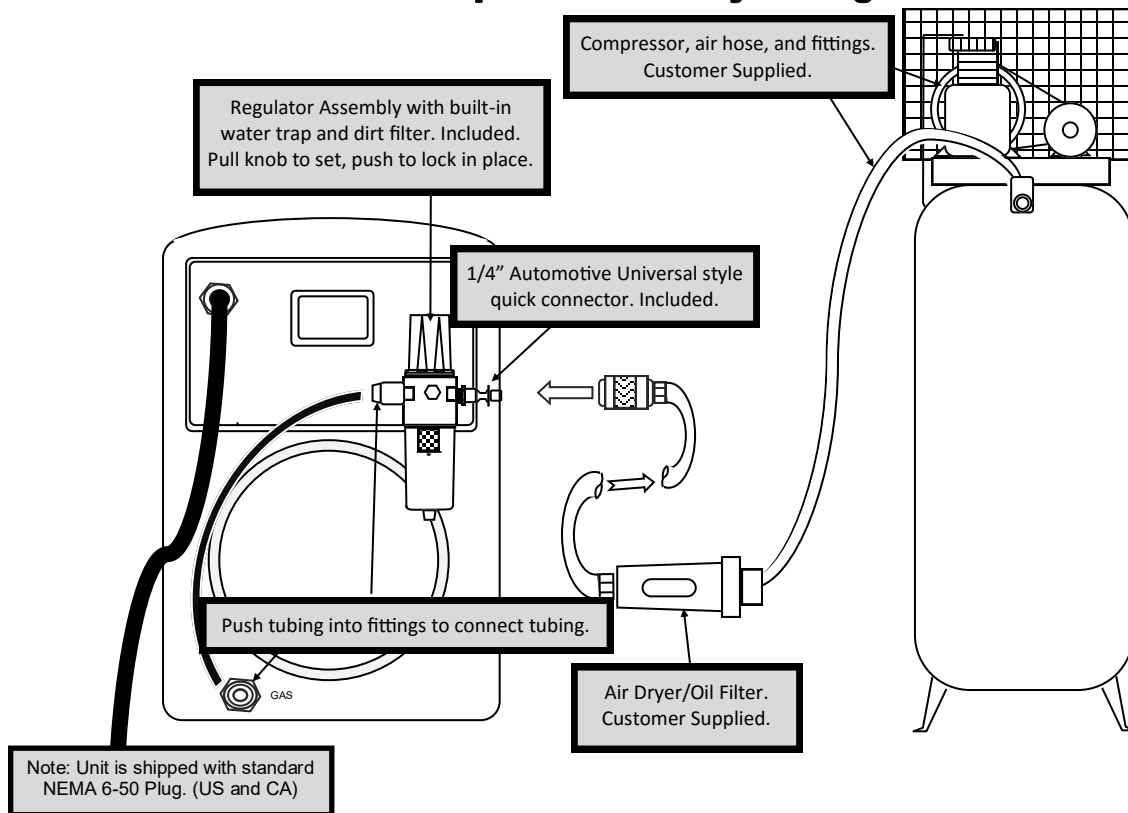
**Over Voltage/Over Current.** If an over voltage or over current condition has occurred (represented by the lightning bolt symbol within a triangle) the plasma cutter will cease output and the OC light will be lit. If an over-current has been triggered, investigate the cause and remedy it. Turn the machine off for 5 minutes then switch the unit back on to allow the unit to completely reset itself.

**QUICK SETUP GUIDE: PLASMA CONNECTIONS****NOTES:**

- 1) This unit is not equipped with low air pressure safety cut out. Attempting to cut without air or with low air pressure may severely damage the unit and/or torch. Always verify air pressure is present and that it is set to correct operating parameters before attempting to make a cut. In order to prevent accidental disconnection while cutting, double check the quick coupler on the rear of the machine to make sure it is fully engaged and the collar has returned to its seated position.
- 2) Do not exceed 90 psi air supply pressure or failure of components may result.
- 3) Adjust cutting pressure to 55-65 for best results with unit panel switch set to "Continuous." This will allow air to flow through the torch without engaging the pilot arc. Always switch unit back from "Continuous" to "Automatic" after setting cutting pressure.
- 4) Use tips (nozzles) with smaller orifices when cutting in 120V mode or at low amperages (<40A). A symptom of a consumable that is too large, is a wandering arc or sputtering arc. Do not lower air pressure below 40 psi to try to prevent sputtering, it will only cause a loss of cutting power and accuracy.
- 5) Do not attempt to cut with the work clamp removed. The unit will produce the pilot arc without the work clamp connected. The pilot arc is not designed to cut and excessive use will burn up the consumable and the torch. Keep the pilot arc engaged for little as possible. If you notice that the unit does not cut but only scars the surface or cuts less than 1/8" into the metal very slowly, and the pilot arc is present, then it is likely to be an issue with a poor connection of the work clamp. Poor connection of the work piece can cause the pilot arc not to transfer properly and stay switched on. Have someone safely look at the display while attempting a cut. The display should briefly drop below 30 amps and then return to the preset amperage level. If it remains below 30 amps (usually 20-27 amps or so) the pilot arc is not transferring. Stop and examine the work piece, clamp and even the DINSE connector on the panel. Repair if necessary. If this does not resolve the pilot arc transfer issue, contact Everlast.
- 6) Do not intentionally drag the torch directly on the metal. Keep a standoff of approximately 1/16" (1 mm). This will prevent rapid consumable wear and prevent possible damage to the torch and the unit. The wire stand-off guide can be used to maintain the required distance and can be adjusted by bending the base to meet the desired stand-off height if a stand-off cannot be maintained manually. Other types of stand-offs may be used.

## QUICK SETUP GUIDE: REAR CONNECTIONS FOR PLASMA OPERATION

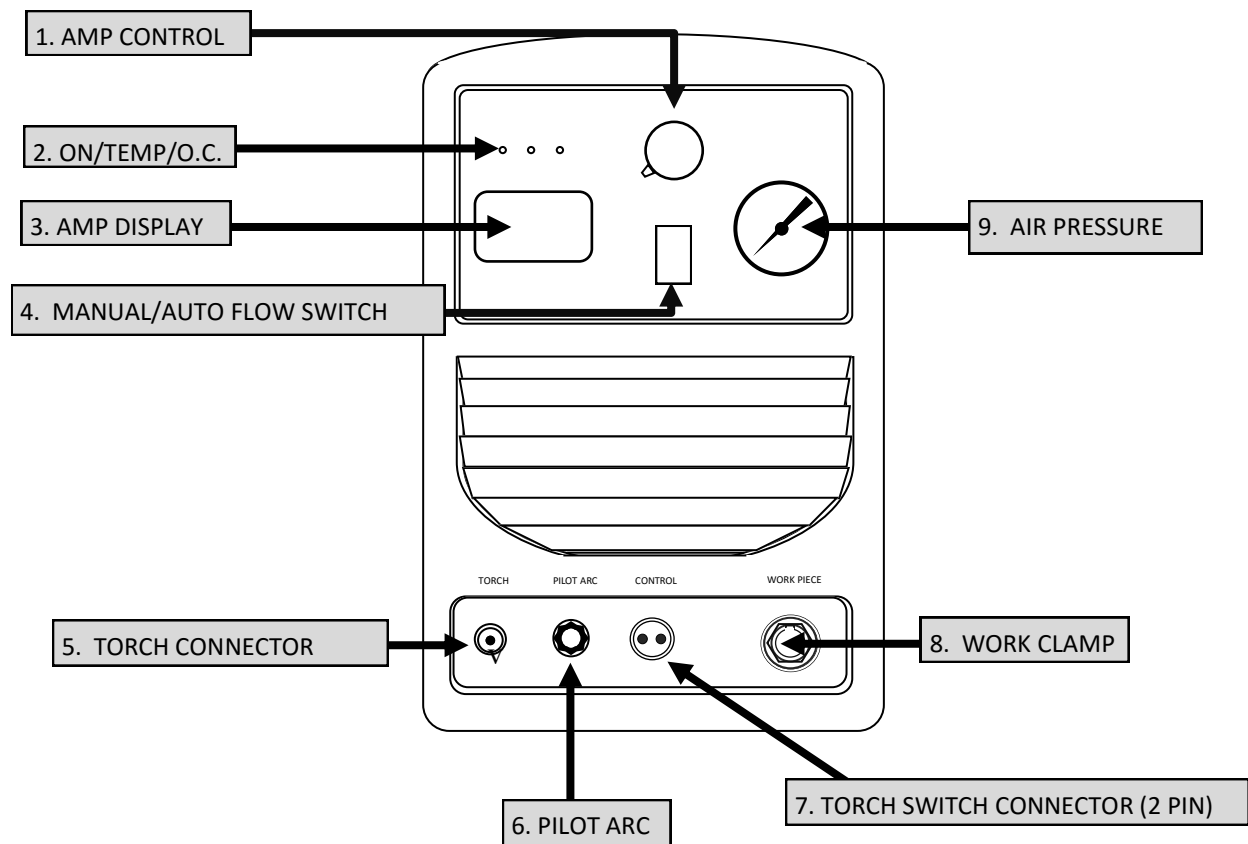
### Compressor and Dryer Diagram



**NOTE:** WHEN ASSEMBLING THE AIR FILTER NOTICE THE MARKINGS THAT ARE STAMPED ON TOP OF THE REGULATOR HOUSING FOR AIR FLOW DIRECTION. AIR FLOW DIRECTION WILL BE MARKED AS IN OR OUT OR WILL BE STAMPED WITH A SMALL ARROW TO INDICATE AIR FLOW DIRECTION. THE 1/4" MALE AUTOMOTIVE QUICK COUPLING SHOULD BE MOUNTED ON THE SIDE OF THE FILTER WITH "IN" OR THE ARROW POINTING TO THE MIDDLE OF THE FILTER. ALSO THE BRASS PLUG INCLUDED WITH THE ACCESSORY PACKAGE SHOULD BE MOUNTED IN THE CENTER HOLE. IF IT IS NOT INSTALLED ALREADY.

**NOTES:** A SEPARATE AIR DRYER BETWEEN THE AIR COMPRESSOR AND FILTER ASSEMBLY MUST BE INSTALLED. IT SHOULD BE INSTALLED AS CLOSE TO THE PLASMA CUTTER AS PRACTICAL. THIS IS A CUSTOMER SUPPLIED ITEM. THIS WILL REDUCE CUTTING ISSUES SUCH AS SPITTING, POPPING AND RAPID CONSUMABLE WEAR. THE FILTER THAT IS INCLUDED IS NOT SUFFICIENT TO REMOVE ALL MOISTURE. IT SERVES ONLY AS A WATER TRAP AND FINE SEDIMENT FILTER. ANY AIR COMPRESSOR SYSTEM PRODUCES MOISTURE IN ALMOST ANY ENVIRONMENT REGARDLESS OF HUMIDITY LEVELS. DAILY DRAINING OF THE AIR COMPRESSOR IS RECOMMENDED AS WELL. THE AIR SUPPLIED TO THE PLASMA CUTTER SHOULD BE OF SIMILAR QUALITY USED FOR AUTOMOTIVE PAINTING. DIFFERENT STYLES OF DRYERS ARE AVAILABLE. THE MOST INEXPENSIVE AND COMMONLY AVAILABLE IS THE REPLACEABLE DESSICANT TYPE USED FOR AUTOMOTIVE PAINTING. DAMAGE DONE TO THE TORCH AND THE PLASMA CUTTER (INCLUDING BUT NOT LIMITED TO: SHORTING, CORROSION AND DETERIORATION OF INTERNAL LINES AND COMPONENTS) AS A RESULT OF EXCESS MOISTURE IS NOT COVERED UNDER WARRANTY. ADDITIONALLY, A FILTER SHOULD BE INSTALLED IN-LINE OR AT THE COMPRESSOR THAT WILL FILTER ANY EXCESS OIL OR OIL BLOW-BY FROM THE LINE IF NECESSARY. DO NOT USE WITH OILING SYSTEMS DESIGNED TO AUTOMATICALLY LUBRICATE AIR TOOLS. IT IS ADVISABLE TO USE THE PLASMA CUTTER WITH A NEW AIR HOSE/LINE THAT IS FRESH WITHOUT MOISTURE OR LUBE CONTAMINATION. IF AIR PRESSURE DROPS FROM THE COMPRESSOR TO THE CUTTER MORE THAN 5-10 PSI, OR AIR FLOW IS INSUFFICIENT, INSPECT THE DRYER, FILTER, OR AIR HOSE AND INCREASE TO A LARGER SIZE IF NECESSARY. FAILURE TO USE THE PROPER DRYER OR FILTER IS A LEADING CAUSE OF PLASMA CUTTING ISSUES.

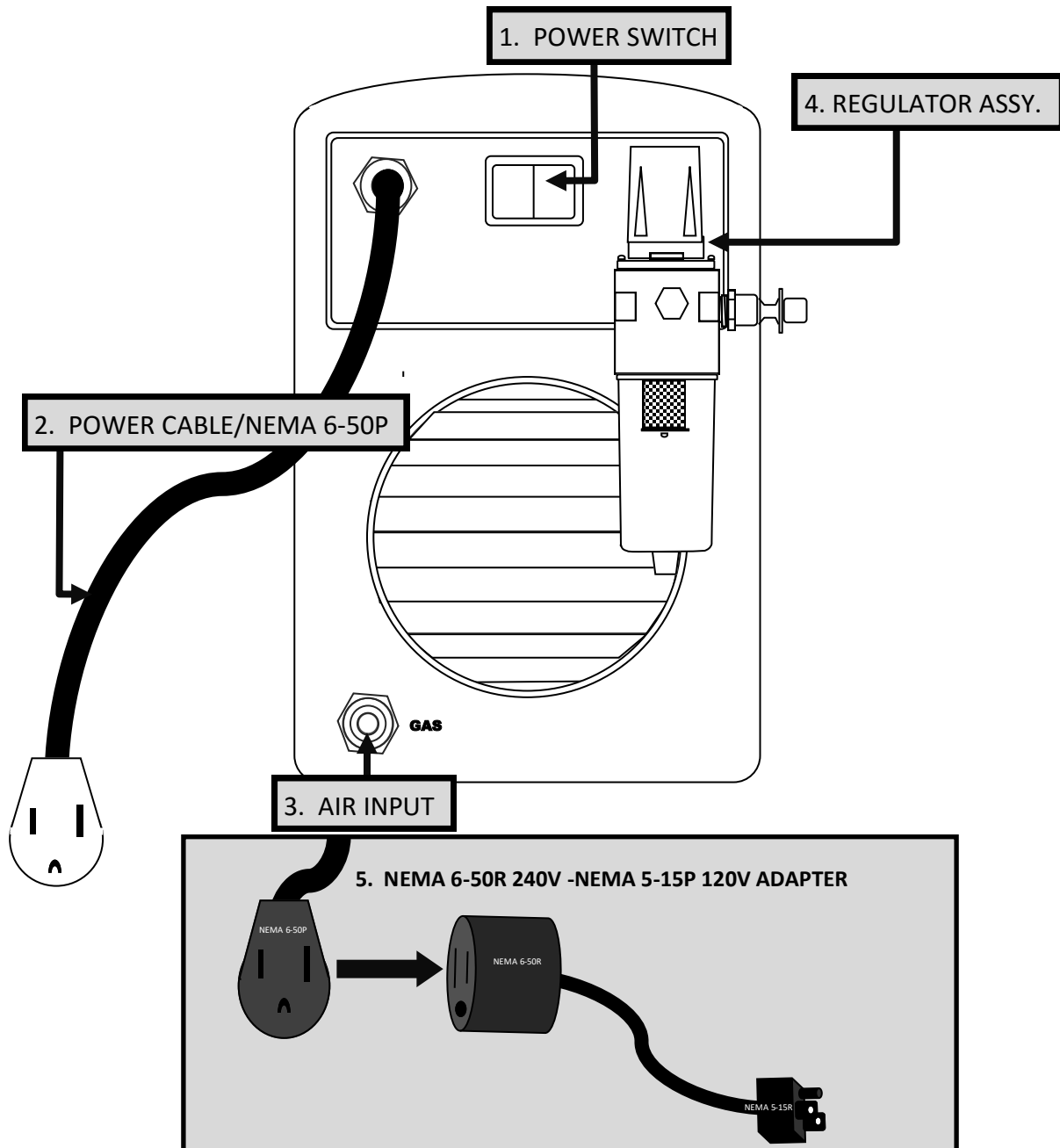
## FRONT PANEL FEATURES AND CONTROLS



## FRONT PANEL FEATURES AND CONTROLS CONTINUED

SUPERCUT 51P	PARAMETERS	PURPOSE
1. Amp Control	N/A	Controls amperage output.
2. On/Temp./Over-Current	On/Off	On indicator should always be lit while the unit is plugged in and the power switch is switched on. The Duty Cycle light (identified by the thermometer symbol) will light up and plasma cutting will be interrupted when the unit's temperature sensors signal that the duty cycle has been exceeded. The fan will continue to run and the display will remain lit, but cutting output will cease. Do not turn off the unit until it has had sufficient time to cool (15 minutes minimum). Once the unit has cooled, reset the unit by cycling the power switch off and back on. If the Over-current light (identified by the lightning/triangle symbol) is on, an over-voltage or over-current situation has occurred and cutting output will cease. Cycle the power switch to the off position for 5 minutes to allow time for the plasma cutter to reset. Before turning unit back on, check and remedy cause of over current/voltage. If the does not go off after correcting the cause by resetting the unit, contact Everlast tech support. Do not intentionally and repeatedly cause a duty cycle or over-voltage event. This will shorten the life-span of the plasma cutter circuitry and related components.
3. Amp Display	N/A	Indicates actual amperage while cutting. While adjusting the amperage, the displays purpose changes to display the static, selected amperage. When the pilot arc is engaged, it is normal for the amps to drop on the display. Typical readout while pilot arc is engaged is <30 amps.
4. Continuous/Automatic Air Post Flow	N/A	This switch is designed to allow the operator to select between automatic operation of the air post flow or a continuous, constant flow of air. The Continuous flow position can also be used to offer extra torch cooling after extended cutting or to provide air flow while setting torch pressure without having to fire the torch. Use the automatic setting for cutting. Post flow will be automatically controlled after arc is terminated. Post flow is used to cool the torch and consumables to flow after the arc is terminated.
5. Torch connector	16 mm	The torch connector provides power and air to the torch. When storing the plasma cutter without the torch attached, make sure both male and female fittings are kept covered with a piece of tape or some other material to prevent dirt, moisture and insects from entering the fittings. Do not touch the metal or exposed parts of the fittings while cutting. Make sure the insulating plastic cover on the nut is in place to prevent direct contact being made with the brass fitting while the plasma cutter is in use. Connect and disconnect the torch while the unit is switched off. Do not overtighten the fitting. Tighten hand tight if possible. Do not use thread tape or other sealing compound on the connection.
6. Pilot Arc Connector	N/A	This thumb screw is designed to retain the pilot arc wire (identified by the eye-let). Finger tighten only. Do not use pliers or other tools to tighten connector.
7. Control	2 pin style	The two pin aviation-type connector is connected directly to the torch switch controlling the on/off cycling of the arc. Make sure the knurled nut is finger tight only. Do not use tools to tighten the control connector.
8. Work Piece Connector	25 series	Location of the terminal connection for the work clamp cable. DINSE-style connector.
9. Air Pressure Gauge	0-150 psi	Used to measure air pressure. Adjust the operating (cutting) pressure while air is actively flowing. Select the continuous post flow position to allow the air to flow without having to cycle the torch trigger. To prevent excess consumable wear and for safety reasons, do not attempt to adjust air pressure by firing the torch with the trigger. Adjust air pressure to approximately 65 psi. While cutting if the air pressure drops more than 10 psi from the static air pressure, check for internal kinks or leaks in tubing, torch hose or for other restrictions.

## REAR PANEL FEATURES AND CONTROLS



**Note:** Consult a local, licensed electrician for proper installation and use with 120V. To operate the plasma cutter at the maximum output amperage of 35 A on 120 V input, a heavier rated breaker and heavier rated wiring may need to be installed. On 120V, inrush current (related to breaker sizing) is 47.9 A at maximum setting. The effective rated current on 120V is 37.1 A on 120V. Be sure to refer to article 630 of the NEC for the correct information regarding the code regulations and reduced wiring requirements for duty cycle limited welding/cutting machines. When operating on 120V circuits of 20 A or lower, reduce the amp output to 25 amps or less if breaker tripping is experienced. Maximum inrush amps while operating on 240 V input is 29.9 A. Rated effective current on 240 V input is 23.2 A. No internal switching of wires or circuitry is required to operate on 120 V. The plasma cutter's circuitry will automatically sense the input current and adjust accordingly if the 240V to 120V adapter supplied with the plasma cutter is used. Other adapters may be used, but plug polarity must be preserved for correct and safe operation.



## REAR PANEL FEATURES AND CONTROLS CONTINUED

SUPERCUT 51P	PARAMETERS	PURPOSE
1. Power switch	On/Off	The rocker switch on the rear of the unit serves as the On/Off switch for the cutter. Always turn it off by the switch first before using any disconnect.
2. Power Cord and Plug	120/240 V 1 phase, 50/60 Hz. NEMA 6-50P	The new SuperCut 51P now includes a standard NEMA 6-50P plug. This unit is capable of operating on 120V or 240V power. Use supplied pigtail adapter plug when operating on 120V. Consult a licensed electrician before connecting this unit to make sure your wiring meets NEC codes. For 120V operation, unit automatically senses the change in input voltage. For 1 phase, 240V operation, welders and plasma cutters do not use a neutral. Only a ground is required, so be sure to use a proper adapter if you are operating on a receptacle other than a NEMA 6-50R. These adapters are available online and at major electrical supply stores. Do not attempt to modify the wiring or the plug of the SuperCut 51P unit. The unit meets National Electric Code standards for 240V welder/plasma cutter wiring. Modification of the plasma cutter power cable or plug may result in voiding of the warranty.
3. Air Input Connection	Push-to-connect	The unit is supplied with tubing which connects this fitting to the regulator. The tubing fittings supplied with the SuperCut 51P are push-to-connect. Cut the tubing squarely before installation to reduce the chance of leaking. To install, simply push the tubing into the connectors. If you suspect leaking, test the connection with a solution of mild soapy water. If bubbles are seen, disconnect the tubing by pushing in firmly on the outer release collar and inspect it. If necessary re-trim the tubing. The tubing must slide fully into the fitting. Air pressure from the compressor should not exceed 90 psi or leaking may result if the tubing is allowed to be over-pressurized at the regulator.
4. Regulator/Filter Assembly	90 psi max supply 65 psi operating	To increase pressure, pull knob out until it clicks (about 1/4"). Then, rotate knob clockwise to increase pressure, counterclockwise to decrease pressure. Press in to lock. Do not supply the unit with MORE than 85 psi from the compressor. Do not operate the torch with more than 65 psi for optimum results. Do not lower air pressure just to make low amp cuts. Use a nozzle/tip with a smaller orifice. The water trap/filter component of the regulator is designed only to capture large droplets of water and particles and is not intended to be used alone as an air dryer. A separate air dryer must be used. Moisture in the air supply is the most common cause of premature wear and failure of consumables and torches.

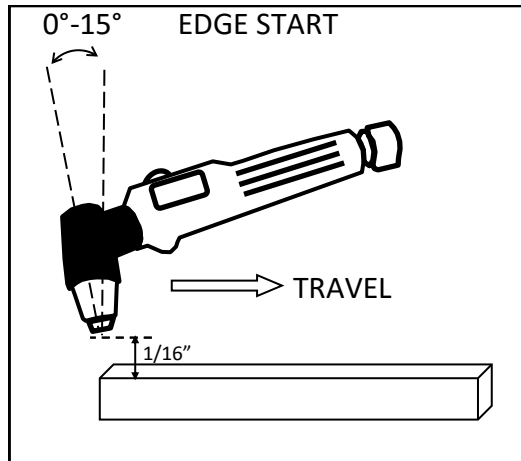
## NOTES:

- The air input connection should be checked for leaks periodically, especially if the machine has been over pressurized or jerked around.
- Never operate this plasma cutter on a generator that is not certified by its manufacturer to be "clean" power, which is less than 10% total harmonic distortion. Less than 5% is preferred. Operating the unit on square wave output or modified sine wave generator is strictly prohibited. Contact the manufacturer of the generator for this information. Everlast does not have an "approved" list of generators. But, if the generator is not listed as clean power by its manufacturer, then operation is prohibited. Generators that do not at least meet the operating input requirements of the plasma cutter are also forbidden to be used with the plasma cutter. Surge amp capability of the generator should equal or exceed the maximum inrush demand of the welder. But the surge capability should not be used as the only factor. The regular, running output of the generator should match or exceed the running or "rated" demand of the welder. Any damage done by operating the welder on a generator not specified by its manufacturer to be a "clean" source of power, will not be covered under warranty. This also includes suspect power sources where voltage is below 208 V and above 250 V. For 120V use, it should be within 110-130 V.

## SECTION 3

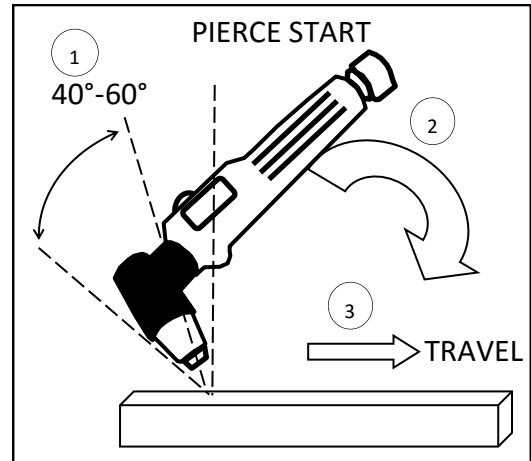
## BASIC THEORY AND FUNCTION

**Helpful Hint:** If difficulty is observed in starting the arc, it may be time to readjust the point gap setting found inside. The HF points tend to wear and get dirty over time. This is a normal maintenance item and not something for warranty consideration. Before attempting to adjust the point gap, be sure to unplug the unit for 15 minutes before removing the rear plastic panel, and the steel case to access the points located near the front of the unit. Do not remove the front panel! Use a feeler gauge to adjust the points to the proper setting. Another possibility is that the air pressure is too low or too high. Worn/loose consumables may cause this as well. Consult Everlast for proper gap specifications.



Edge Starts are the best type of start if possible to promote consumable and torch life. This reduces blow back of molten material and allows a smooth gradual start of the cut.

1. Line up the hole on the tip of the electrode on the edge of the cut. Hold torch perpendicular to the cut initially, about 1/16" off the metal.
2. Once the arc starts, wait for the arc to penetrate all the way through the metal.
3. As the torch penetrates its flame all the way through the metal, tilt the torch so there is a slight lead in the flame if metal is thin. If it is thick, keep holding torch in a nearly vertical position.
4. Begin moving the torch in the direction of the cut. Maintain 1/16" standoff height.
5. Move the torch fast enough so the sparks and flame trail from the bottom edge at an angle of no more than 30° and no less than 10° from perpendicular to the metal. Excess angle of sparks/flame indicate too fast of travel speed or practical cut capacity has been reached. Little or no angle indicates too slow of travel speed.

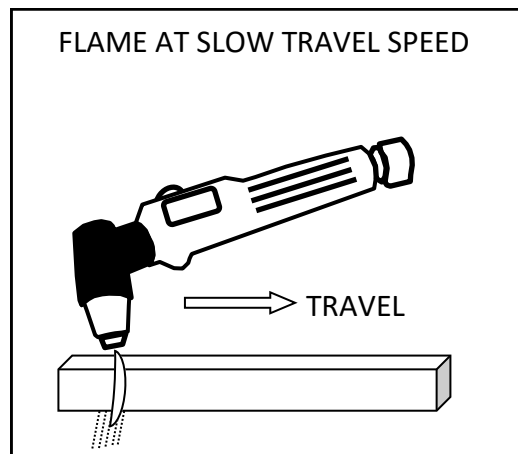
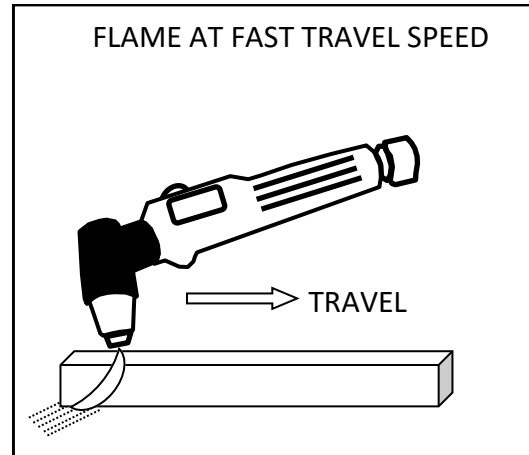
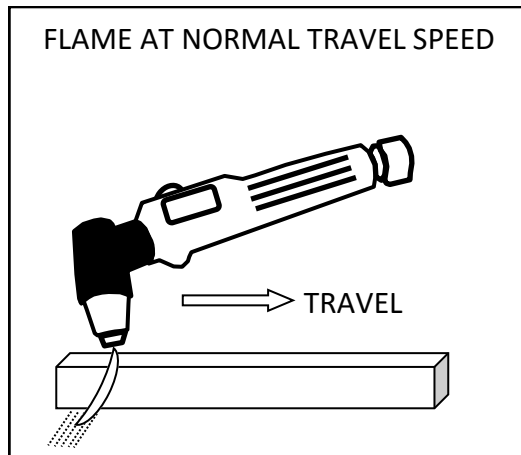


Piercing starts often result in rapid consumable wear and excess blow back of molten metal deposited onto torch and consumables. This should be done only as necessary.

1. Tilt the torch in the direction of travel or toward the side of the metal to be discarded or wasted at a 40° to 60° angle. Slide the yellow safety lock and squeeze the trigger.
2. Once the arc starts, wait for the arc to transfer from pilot arc to the cutting arc.
3. As the torch penetrates its flame all the way through the metal, rotate the torch slowly to the vertical position, as the arc penetrates the metal. Tilt the torch from 0°-15° for thin metal cuts, or hold it nearly perpendicular for thicker metal cuts.
4. Begin moving the torch in the direction of the cut. Maintain 1/16" standoff height.
5. Move the torch fast enough so the sparks and flame trail from the bottom edge at an angle of no more than 30° and no less than 10° from perpendicular to the metal. Excess angle of sparks/flame indicate too fast of travel speed or practical cut capacity has been reached. Little or no angle indicates too slow of travel speed.

**IMPORTANT:** If you use a standoff guide with the torch, it must be adjusted or bent to provide to 1/16" standoff. Excessively long standoff heights reduce cut capacity and quality. It also promotes rapid consumable wear and can prevent the pilot arc from transferring effectively.

**TIP:** For longer consumable life do not use the pilot arc unnecessarily. Rapid wear will occur if the pilot arc stays engaged more than 3 seconds at a time.

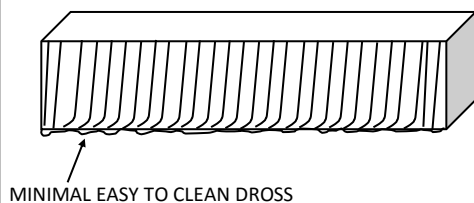


**NOTE:** When stepping down amps to cut thinner material, or using on 120V, you must change to smaller orifice nozzle for the best cutting results. Too large of an orifice diameter will result in arc instability and a rough cut. Lowering the air pressure below 50 psi to try to get the torch to cut will only result in a lazy, wandering arc or an arc that sputters on and off continuously.

**IMPORTANT:** Check consumables regularly for wear and change them out before they are completely worn. Allowing the consumables to wear until they quit working may damage related torch components, creating a more costly repair.

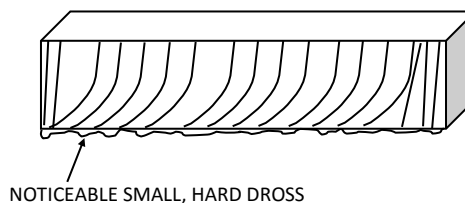
**RESULTS OF CUT AT CORRECT SPEED,  
AIR PRESSURE AND TORCH ANGLE**

SMOOTH, EVEN CUT LINES WITH A S REARWARD SWEEP



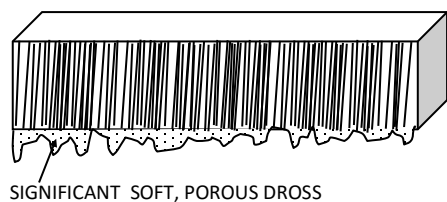
**RESULTS OF CUT AT FAST SPEED**

ROUGH, DISTINCT CUT LINES SPACED FAR APART



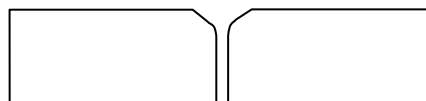
**RESULTS OF CUT AT SLOW SPEED**

VERTICAL CUT LINES



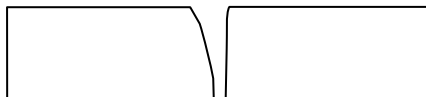
**RESULTS OF TOO MUCH CURRENT OR  
TOO MUCH STAND OFF HEIGHT  
(SIDE VIEW)**

MELTED TOP EDGE

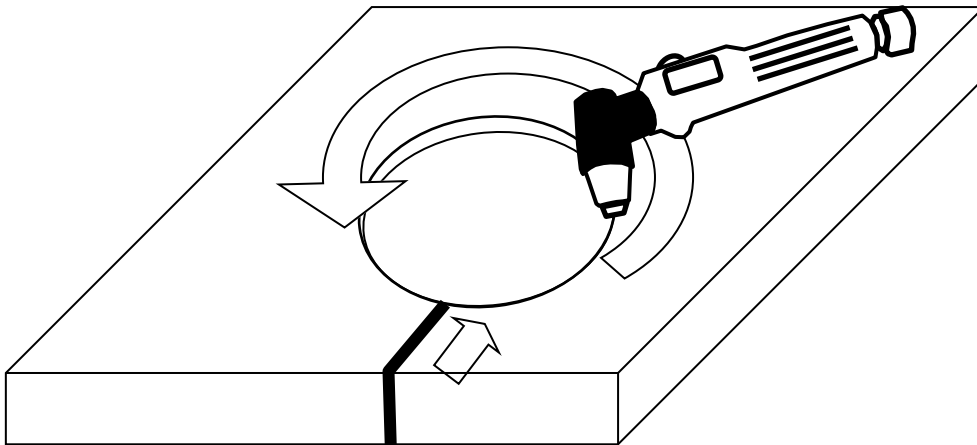


**RESULTS OF WORN CONSUMABLE OR  
LOW AIR PRESSURE  
(SIDE VIEW)**

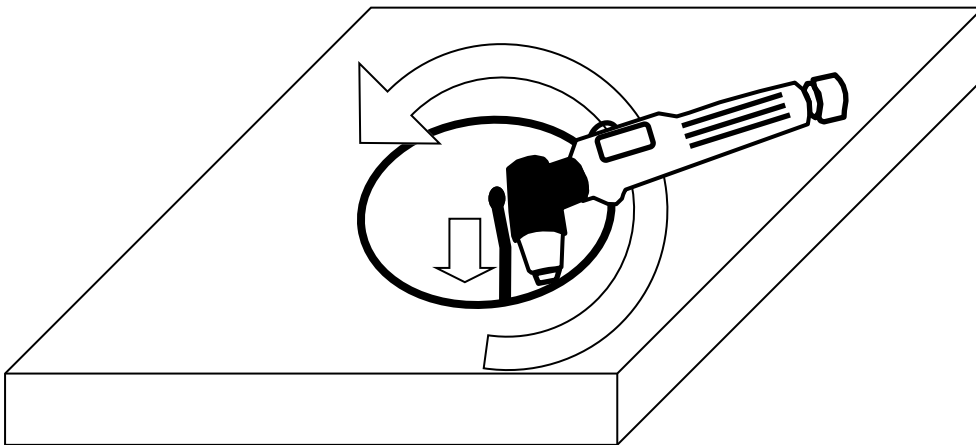
SEVERLY ANGLED CUT AT TOP



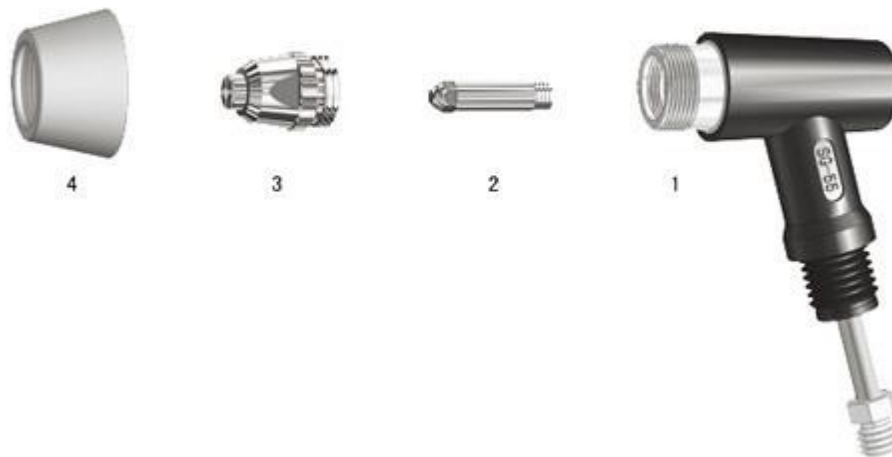
AN EXAMPLE OF CUTTING A LEAD-IN WHEN CUTTING OUT A DISK SHAPED OBJECT



AN EXAMPLE OF CUTTING A LEAD-IN WHEN CUTTING HOLE IN AN OBJECT



When cutting an object, particularly a pattern shape, where the torch must pierce or re-fire in-line at an intersection of a cut, a lead-in cut should be employed. A lead-in is a cut that is made in the disposable part (also known as a drop) of the object to “lead” into the main part of the cut so that the destructive force of the arc is not directed into the desirable side of the cut itself. Also, all plasma cutters exhibit some angularity or bevel in the cut which is greater on one side than the other. Keep this in mind when cutting an object to size so that too much metal is not accidentally removed.

**AG60/SG 55 PLASMA TORCH**

ITEM	DESCRIPTION	PART NUMBER/SKU
1	Torch Head/Body	E-WSD-061
2	Electrode 1.0mm	E-AG60-TIP
3	Tip/Nozzle	E-AG60-EL
4	Shielding Cup	E-AG60-CUP

<b>PLASMA TROUBLE SHOOTING:</b>	<b>CAUSE/SOLUTION</b>
Air Flows but arc does not start within 2-3.	Check consumables for wear and tightness. Check Air Pressure. Release trigger and try again.
Air Flows but arc does not start or spark when nozzle is contacted on bare/clean metal.	Worn or loose consumables. Damaged torch power cable. Damaged inverter. (MOSFETS)
Pilot arc will not light.	Pilot arc wire is not connected or is broken.
Pilot arc will not transfer and amps read approximately 25-27 amps while switch is held. (Arc barely cuts or only "scratches" the surface of the metal or cut is extremely slow on thin materials.)	Check work clamp connection. Make sure rust is removed from work clamp contact area. Faulty Clamp. Arc continuity is not being sensed. If these steps do not correct the issue, contact Everlast. Operating in 110V mode.
Arc Sputters.	Inadequate air flow or air pressure. Improperly sized nozzle. Decrease size as amps are lowered. Increase air pressure to 55-65 psi while air is flowing through torch. Loose consumables. Check tightness. Worn consumables
Consumables are dirty, smutty looking upon inspection. Premature wear on consumables. Shortened consumable life.	Moisture, oil contamination of consumable. Wrong consumables. Poor quality aftermarket consumables.
Premature wear on consumables. Short consumable life. Uneven wear of consumables, melting of cup.	Moisture, oil contamination of consumable. Excessive pilot arc time. Improper cutting technique. Wrong piercing technique.
Arc will not start. Air will not flow. Machine runs.	Torch cup is loose. Torch switch or switch wire is loose or broken. Problem with connector. Torch is not properly connected.
Unstable Arc at lower amps.	Consumable orifice size is too large. Reduce orifice size.
Arc tries to start but irregular, dancing arc and/or arc melts through side of nozzle.	Worn electrode or Nozzle/Tip. Check and replace. Make sure ceramic cup is secure and not cracked or broken.
Arc will try to start if touched to the metal, but no air flow while switch is pressed.	Stuck or dirty solenoid valve. Contact Everlast.
Air flows continuously.	Unit set to Continuous Flow. Solenoid is stuck. Contact Everlast.
Excessively Beveled Cut.	Worn consumables, too high of stand-off height.
Cup and/or nozzle is melting/cracking.	Improper cutting technique/excessive piercing/
Power input circuit breaker trips repeatedly.	Improperly sized circuit. Internal issue. Contact Everlast.
Arc "Blows Out" when ready to cut.	Too high of air pressure. Reduce to 55-65 psi. Wrong size consumable. Use smaller consumable. Readjust air pressure. Increase amperage.
Arc will not stop when switch is released.	Torch trigger is stuck.
Pilot arc will not start but will initiate arc and cut when nozzle contacts metal	Pilot arc wire not connected or broken. HF points dirty/corroded/worn. Readjust Points. Contact Everlast technical support for how-to instructions.



***STOP: DO NOT FIRE THE TORCH WITH THE TRIGGER TO SET AIR PRESSURE. USE THE "CONTINUOUS FLOW" FEATURE TO SET CUTTING PRESSURE. DO NOT CHANGE CONSUMABLES WHILE THE UNIT IS ON. SERIOUS SHOCK, BURN OR INJURY MAY RESULT!***

Having trouble setting your unit for best cutting? Try the following:

- Keep your standoff to **less** than 1/8". Do not drag the torch directly on the metal.
- Always use dry air. Drain compressor daily to improve effectiveness of air dryers and to prevent them from prematurely failing.
- Don't greatly lower air pressure to try to reduce kerf or cut thinner material. Always reduce nozzle orifice size to match amperage. Contact Everlast for information concerning different consumable sizes.
- Use this as a general rule of thumb for good hand cutting speed and quality:
  1. For the first 1/8" of thickness, use 20 amps.
  2. After the first 1/8" add 10 amps for every 1/8" after that.
  3. For Stainless and Aluminum, use settings that are 40% higher.



