

EVERLAST

POWERPLASMA 52i

50 Amp Digital IGBT Plasma Cutter

- CC**
- PAC**
- IGBT**
- 1 PHASE**
- DV 120/240V**



Operator's Manual for the PowerPlasma 52i Safety, Setup and General Use Guide

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everlastwelders.com



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Specifications and Accessories subject to change without notice.

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NOTICE:

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.

Dear Customer,

THANKS! You had a choice, and you bought an Everlast Product. 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 via the main customer service number in your country/region. 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 and download the official warranty statement, located on our website www.everlastwelders.com. If you are not in the United States, visit the distributor's website warranty information nearest to your region or country. Print it for your records and become familiar the terms and conditions outlined in the warranty. Warranty terms vary from country to country and region to region. For this reason, the warranty is honored through the original national/regional branch of Everlast that originally sold the unit only. If a product is purchased in one country or region, another country or region is not responsible for the enforcement or backing the terms of the warranty and sale.

Everlast offers full technical support in several different forms. We offer domestic based phone support and online support. Online support is available through email and through our website contact forms. We also provide a welding support forum designed for customers and noncustomer interaction. Technical advisors are active on the forum on a regular basis. 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. In the event you do not reach a live person, particularly during heavy call volume times, holidays, or off hours, leave a message and your call will normally be returned within 24 hours. For quick answers to basic operating or service questions, join the company owned forum linked through the US website. You should be able to 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 a series of questions by the advisors meant to clarify problems or issues. Some of these questions may seem basic or fundamental, but even with experienced users technical advisors can't assume that correct operating procedures are being followed for proper operation. They 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.**

Please note: To establish a warranty claim and return a unit for repair or replacement, you must call technical support first and go through basic diagnosis before an Return Authorization will be issued.



Serial number: _____
Model number: _____
Date of Purchase: _____

Everlast USA:

Everlast consumer satisfaction email: sales@everlastwelders.com
Everlast Website: everlastwelders.com
Everlast Technical Support: tech@everlastwelders.com
Everlast Welding Support: performance@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

FAX: 1-650-588-8817

Everlast Canada:

Everlast consumer satisfaction email: sales@everlastwelders.ca
Everlast Website: everlastwelders.ca
Everlast Technical Support: sales@everlastwelders.ca
Telephone: 905-637-1637 9am-4:30pm EST M-F

Everlast Australia:

Port Macquarie 4/18
Acacia Ave.
Port Macquarie NSW 2444
(02) 6581 23888
After Hours Support
0431 016 416
Sales: sales@everlastwelders.com.au
Support: support@everlastwelders.com.au

Everlast is dedicated to providing you with the best possible equipment and service to meet the demanding job requirements that you may have. We want to go beyond delivering a satisfactory product to you. That is the reason we offer free technical and basic welding support to assist you with your needs, should an occasion occur where it is 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 give you the best possible operator/owner experience. Welding and related cutting operations require basic experience and common sense. **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. Stay alert!

Please carefully read this manual before you operate your Everlast unit. This manual, if read in full, can assist the user in obtaining helpful information concerning the safe operation of this unit. Do not operate the 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 content of this manual is not meant to be an exhaustive primer on welding. It is written to an audience that, if not professional, will have at least some basic knowledge of welding terms and practices.

The 5 year warranty does not cover improper use, maintenance, accessories or consumables. Accessories are covered by a separate warranty (length varies), which is also listed on our website along with the full terms of the welder warranty. Consumables have no warranty.

Do not attempt to alter or defeat any piece or part of your unit, particularly any safety device. 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) waves. These 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 disturbance is noted. Sometimes, improper wire routing or poor shielding may be the cause.



WARNING! 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 or cuffed type 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



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 or limbs.
- 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! The use of this product can expose you to chemicals such as lead, which is known to the State of California to cause birth defects, reproductive harm and cancer. Proposition 65 Warning. For more information visit: www.P65Warnings.ca.gov



DANGER! 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 away from direct heat, flame and sparks.

Safety Precautions



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. Remove any faulty cords, plugs or electrical equipment from service or access. 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. **If operating on a generator:** Always switch off and disconnect the unit before shutting the unit down. Never start the generator with the unit switched on or connected. Failure to do so may result in damage to the unit. **This damage is not covered under warranty.** Make sure that any required generator grounding is performed properly and to the manufacturer's recommendations.



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.

POWERPLASMA 52i PACKAGE CONTENTS



Regulator/Water Trap/Filter Assembly



Consumable and Fuse Kit



Work Clamp



240V to 120V Adapter



iPT 60 Innotec Torch (12 ft.)

NOTICE! Accessory and consumable style and quantities are subject to change without notice. Consumable starter kits provide only enough consumables to get started. Extra consumables can be purchased through Everlast or through other local and online IPT 60 Innotec distributors. Full original consumable kits are sold through Everlast. Various diameter consumables for lower amp use are available. The unit comes with a spare 30 Amp glass-type (slow-blow) fuse for the pilot arc. Set this fuse aside where you can find it. Replacement fuses may be bought locally (use part number printed on fuse for reference) or directly from Everlast.

PowerPlasma 52i	Specifications
Inverter Type	Digital IGBT
Minimum/Maximum Rated Output	120V: 20A/88V-25A/90V 240V: 20A/88V - 50A/100V
Start Type	Blow-Back Type
Torch Type	iPT60 12 ft.
Duty Cycle @ Rated Amps/Volts (40° C) (Output V/A)	240V: 60% @ 50A/ 100V 100% @ 40A/ 96V 120V: 60% @ 25A/ 90V 100% @ 20A/ 88V
OCV (U0)	200 V
Voltage Input (U1)	Dual Voltage: 120V/ 240V; 50/60Hz 1 Phase (±10%)
Maximum Inrush Amps (I1MAX)	110V: 32.1A 220V: 35.8A
Maximum Rated Effective Amps (I1EFF)	110V: 24.9A 220V: 27.9A
CNC Port/ CNC Capable	Yes (Order CNC package to receive plug for port, or order plug separately)
Air Post Flow Timer	Adjustable, 0-50 Seconds
Air Compressor Requirement and Recommendations.	4.5 - 5 CFM @ 90 PSI (127-142 lpm @ 6.2 bar) Use a compressor with a minimum output of 5.3 CFM @ 90PSI (150lpm @ 6.2 bar), with 30 gallon (114 Liter) capacity or higher recommended for best operation. Pancake type and small oil-less compressors are not suitable.
Duty Cycle/ Over Current Protection	Yes, Self-diagnosing feature. (See code references at the end of this manual.)
Minimum Operating Air Pressure	Approximately 43 PSI (2.7 bar) (safety cut-out threshold) Use pressure indicated by target LED color. Varies by process. (Set and check air-pressure with "Air-Check" engaged) Low/High Pressure indicated by Error Code E03.
Maximum Supplied Air Pressure	90 psi (This is incoming pressure from the air compressor, not operating, or (From Compressor/Tank) cutting pressure.) The air compressor MUST have a separate pressure regulator at the tank or inline to control maximum supply pressure.
Recommended Maximum Daily Average Cut Thickness (Steel, Hand Cut)	1/2" (12mm) Decrease 35-40% for Aluminum and Stainless (INOX).
Recommended Maximum Daily Average Cut Thickness (Steel, CNC, Auto-Cutting Mechanisms)	1/4" (6mm) <i>Note: CNC operation has limiting factors that reduces operation Average Cut Thickness capability. This includes duty cycle, inability to manipulate torch for piercing duties, cut speed requirements/expectations.</i>
Rated Maximum Quality Cut @ 10-12 IPM (@ 250-300mm / min) (Steel, Hand Cut)	3/4" (19mm) Decrease 35-40% for Aluminum and Stainless (INOX).
Max Severance Cut @ 3 IPM (75mm / min) (Steel, Hand Cut)	1" (25mm) Decrease 35-40% for Aluminum and Stainless Steel (INOX).
Gouging Limit (approximate gouge depth/width)	1/8"x 3/16" (3mm x 4.8mm)
Minimum Water Ingress Protection Standard	IP21S
Efficiency	>85%
Cooling Method	Full time High Velocity Fan
Dimensions (approximate)	12.5" H x 7.5" W x 14" L (320mm x190mm x 355mm)
Weight (Bare Unit)	35 lbs. (16kg)
Generator Requirement	8,500 W Clean Power (≤5% total harmonic distortion/Clean Power Output Rated)
Minimum Storage/ Minimum Operating Temperature	Storage: -10°F/-23°C Operating: 14°F/-10° C

Use the I1MAX value to size the breaker. Use the I1EFF current to size wiring. Consult the NEC Article 630 for details concerning wiring and breaker requirements.

NOTICE:

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 average cut thickness for best results and speed. This is an industry standard recommendation and is not unique to Everlast PowerPlasma models. CNC cut thickness recommendations are further reduced by duty cycle, travel speed expectations, and straight-down piercing limitations. Everlast's performance specifications are based on reasonable environmental conditions with well maintained units, and 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.

NOTICE:

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. Welding and cutting operations are inherently dangerous. Only the operator of this Plasma cutter can ensure that safe operating practices are being 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.** If you do not have the skill or knowledge to safely operate the plasma cutter, do not use this plasma cutter until formal training is received. To prevent fire, always be aware of your surroundings.

GENERAL PRODUCT INFORMATION:

The PowerPlasma 52i utilizes the latest in digital inverter design technology. The digital design is a major revision of the former analog inverter design of its predecessor. This has simplified internal design, improved reliability and reduced weight. In addition, cutting operations are more accurately managed for increased performance and consumable life.

New features have been added which help the user to more easily achieve quality cut results. The addition of both the digital air pressure meter and colored LED lights help the user to achieve the best air pressure for the selected operating mode.

The new gouging feature on the PowerPlasma 52i is suitable for light gouging activities. This is perfect for delicately removing bad welds and defects on thin plate metals 1/4" or under in a single pass. The softer arc and lower air pressure allow the arc to smoothly remove around 5 lbs. of metal per hour. Special, larger consumables will be required to perform gouging activities in addition to the starter kit provided. These must be sourced and purchased separately.

POWER INPUT:

This unit may be operated on either 120V or 240V single phase input. No changeover of wiring is required. Simply plug the supplied adapter to the NEMA 6-50 plug on the plasma cutter and the unit will automatically sense the voltage that is being supplied. When operating on 120V input, please note the maximum output will be limited to 25 Amps. For Wiring and Breaker requirements, consult the Article 630 of the National Electric Code (NEC) for special information concerning proper wiring and breaker sizing of duty-cycle limited welding/cutting machines. Use the I_{1MAX} and I_{1EFF} ratings supplied on page 10 in this manual to determine correct breaker and wire sizing. **Always consult a licensed electrician before wiring this unit to new or existing service. Never attempt to adapt this unit to work with existing dryer or range plugs. Do not use on long or undersized extension cords. Use cords rated for 30 amps for 120V and 40A for 240V no more than 25 ft in length.**

GENERAL MAINTENANCE 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 this plasma cutter in standing water.

IMPORTANT: Before opening the unit for any reason, 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.

Every 1-2 months, depending upon use, the plasma cutter should be unplugged, opened up and carefully cleaned with dry compressed or canned air. To open, remove rear plastic cover and main cover. Do not remove the front plastic cover. Regular maintenance will extend the life of the unit. Carefully descale metal particles from the fan blades to prevent vibration and fan damage (if buildup is present).

- Do not restrict air flow or movement of air around the plasma cutter. Allow a minimum clearance of at least 18" (500mm) on all sides.
- Lift and carry the welder by the handle. Do not mount in areas that are prone to severe shock or vibration.
- Do not operate the unit immediately next to the weld/cut area. Allow at least 6 feet separation.
- Do not direct metallic dust or any dirt intentionally toward the machine, particularly in grinding and welding operations. Make sure the control panel is protected from damage.

DUTY CYCLE:

The duty cycle of this unit has been tested and established at 60% at full Amp Output. This duty cycle has been established under the standard rating temperature of 104 F (40 C). If you are not familiar with Duty Cycle ratings, duty cycle is the percent of time out of a 10 minute time period at which a welder or plasma cutter can operate continuously without overheating. Lowering output increases duty cycle. It is possible to achieve a 100% duty cycle by lowering the output Amps. However, 100% duty cycle is still based off a 10 minute time period and does not mean it has an "infinite" duty cycle. Theoretically, if the machine were to go 11 minutes of uninterrupted operation even at a 100% Duty Cycle level of operation, you could incur an overheat condition. Duty cycle on this machine is not controlled by a timer, but rather by one or more temperature sensors strategically located on the heat sink(s) of the machines internal circuitry. If an overheat is detected the cutting output will be interrupted. A code of "E01" will be displayed. If this happens, allow the unit to continue to run and cool for at least 15 minutes. **Do not turn the unit off during this time!** If the unit does not automatically reset after this time, cycle the machine off and back on to clear the code. If the code does not clear at this time, contact Everlast for further remedy. Intentionally and repeatedly triggering the duty cycle can damage the unit over time. This type of damage becomes apparent during repair and service and is not covered under warranty.

CNC Use and Duty Cycle Concerns:

CNC use demands more out of plasma cutter than normal hand cutting operations. Always be aware of your Amp output level and use patterns during CNC operation. If operating in CNC mode for thick, long cuts, or when doing repeated and rapid high input Amp demand activities, i.e. rapid, successive starts, consider lowering the Amp output of the machine to at least the 100% duty cycle rating of this unit for best results. (See page 10 for exact duty cycle specifications). Of course this lowers maximum cut capacity, but it is also part of the reason why CNC cutting has lower stated cut capacities across most all brands of plasma cutters.

Occasionally, you may exceed the duty cycle cutting through thick materials or with constant use. This usually causes no harm. *However, if you are regularly exceeding the duty cycle, this is a sign that you may need to use a larger plasma cutter or your unit may need to be cleaned and/or serviced.*

OVER/UNDER VOLTAGE/CURRENT:

This unit is equipped with a over/under voltage/current device which senses under or over voltage conditions caused by poor power supply or internal faults and shuts down output. If you observe an error code "E02" immediately turn the machine off. Evaluate the input power supply for proper voltage. Also inspect the suitability of any extension cords for service. If code does not clear, after remedying common issues stated below, contact Everlast. Do not continue to try to clear the code if it does not appear to have been corrected.

Common Items That Can Trigger the Over/Under Voltage Current:

- Operating on too long or undersized extension cord or service wiring. Damaged wiring.
- Improperly grounded service/ power supply.
- Operating on too small of a generator or on a generator not rated as "Clean Power" (5% or less THD).
- Too long of a cutting arc.
- Excessively worn or missing consumables or damaged torch head.
- Internal machine fault. (If code cannot be cleared after correcting other issues, call Everlast.)

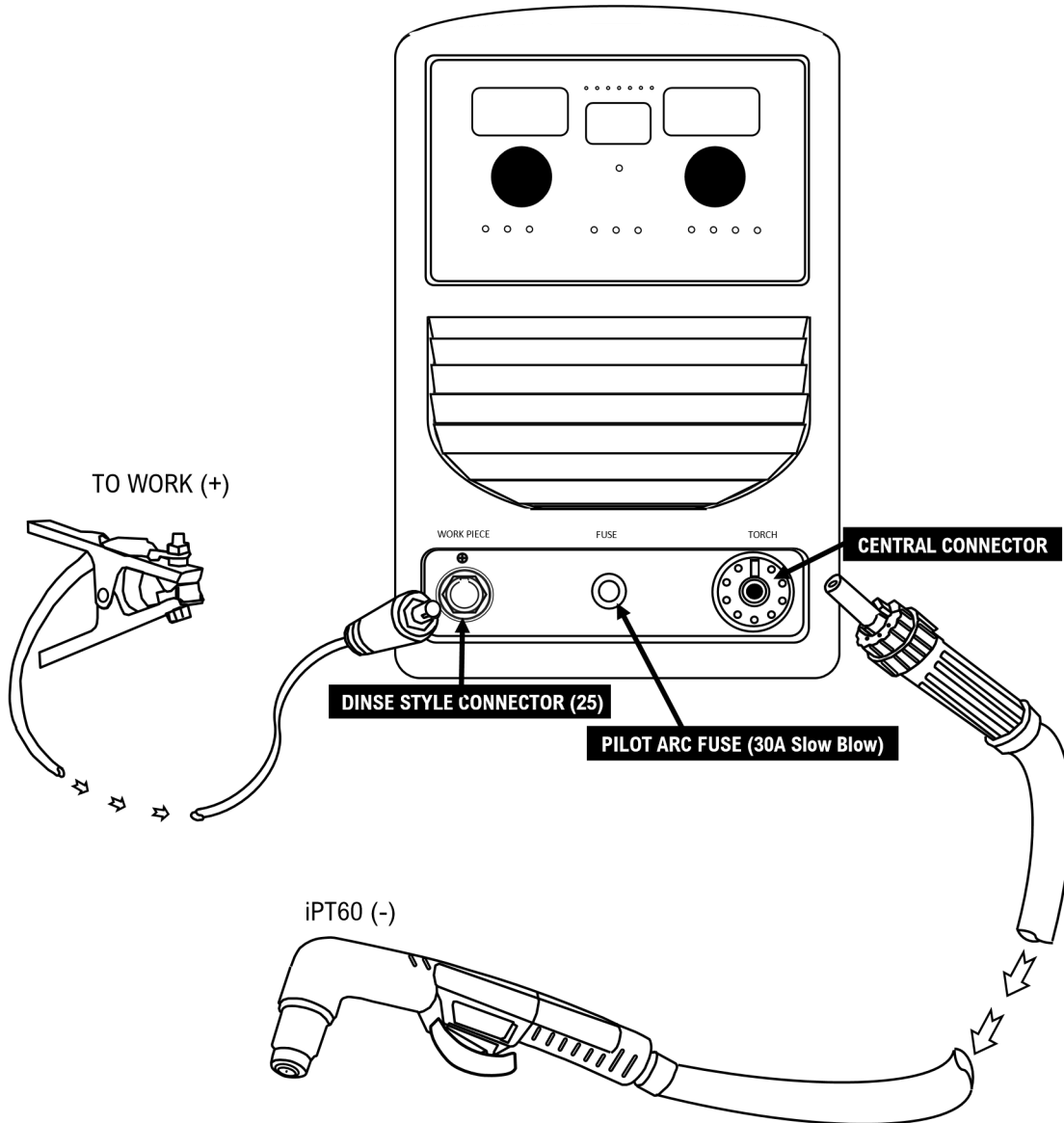
GENERATOR REQUIREMENTS AND OPERATION

This unit may be run on a generator capable of 8500 Surge Watts. Additionally, the generator must provide "clean power". Clean power is defined as having 5% or less Total Harmonic Distortion (THD). This is a rating given by the manufacturer of the generator, and not Everlast. This is similar to the power normally supplied at a wall outlet. This represents a sine wave (AC) that is mostly free of voltage spikes and electronic noise. Many general purpose (GP) generators are not rated to produce clean power and are designed for emergency or construction use with resistive loads such as lights or heaters. These generators can damage the plasma cutter. If damage does not occur immediately, the effect can be cumulative, depending on how "dirty" the power actually is. Damage created by running this unit off a generator, or welder/generator not rated for clean power output by its manufacturer will not be covered under warranty. If you are in doubt about your generator or welder/generator, contact the manufacturer. Everlast does not keep an authorized list of generator brands or models. However, if the manufacturer rates its generator for 5% or less THD, this is sufficient to meet our standards. However, do some additional research on the brand and model of the generator to make certain there are no issues, recalls or reported equipment (electronics in particular) damage related to malfunctioning generators from the manufacturer.

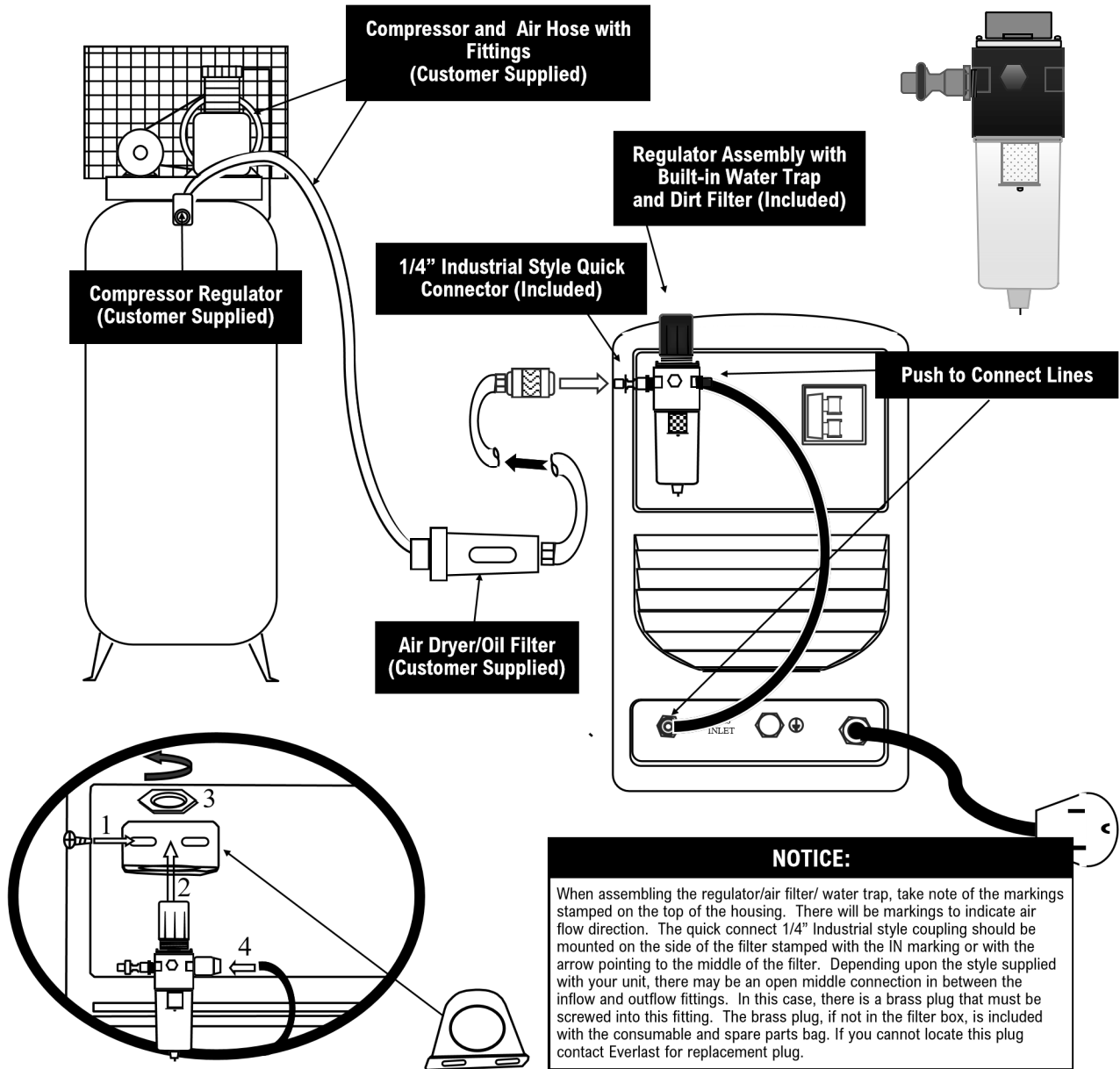
The generator should be properly grounded, according to the generator manufacturer instructions.

Never leave the unit on or connected while starting the generator. Never stop the generator while the unit is on or connected. Severe damage will occur. This includes running the generator low on or out of fuel. This damage is not covered under warranty, even if the unit is rated as "clean powered". Always allow the generator to warm up before plugging the unit in and using it. A cold engine may not develop or maintain proper RPM needed to provide stable, clean power even if the unit is rated to be "clean power". Never use economy idle (ECO mode), or auto idle modes with this unit. Always use maximum idle when this unit is turned on.

Plasma Connections: Front Torch and Work Clamp



**Plasma Connections:
Compressor and Dryer Diagram**



NOTICE:
When assembling the regulator/air filter/ water trap, take note of the markings stamped on the top of the housing. There will be markings to indicate air flow direction. The quick connect 1/4" Industrial style coupling should be mounted on the side of the filter stamped with the IN marking or with the arrow pointing to the middle of the filter. Depending upon the style supplied with your unit, there may be an open middle connection in between the inflow and outflow fittings. In this case, there is a brass plug that must be screwed into this fitting. The brass plug, if not in the filter box, is included with the consumable and spare parts bag. If you cannot locate this plug contact Everlast for replacement plug.

! IMPORTANT:
A separate air dryer between the air compressor and filter assembly must be installed, usually at the compressor or right before the regulator. This is a customer supplied item. Failure to install a separate air dryer/filter will greatly decrease consumable life. It can also lead to contamination in the torch head which will cause failure. Moisture in a plasma system is detrimental to all parts, including the solenoid and torch head. The included filter/water trap is designed mainly to catch dirt and moisture created during the coupling and uncoupling process, or minute amounts of moisture that may escape the separate dryer/filter. Multiple styles of dryers/filters are available in a wide range of prices from a few dollars to several hundred dollars. A simple, economic desiccant type dryer used in automotive painting is enough to get started. **Damage caused by operating the unit without the additional dryer/filter is not covered under warranty!** Never use this plasma cutter with an oiler system, or with a worn air compressor which uses excessive oil. For best results, if installing this unit on an older system, install a new hose and plumbing components after the air dryer before connecting to the unit.
Drain the air compressor on a *daily* basis after use.
Do not supply more than 90 psi to the plasma cutter from the compressor. If the air pressure on the front gauge drops too far to maintain a good cut or falls out of spec while cutting, increase the size of the supply hose/line to the plasma cutter in lieu of increasing supply pressure.

**STOP!**

To set the air pressure, use the “Air-Check” feature to initiate air flow, then adjust the pressure while air is continually flowing. **Do not fire the torch to initiate air flow. Firing the torch without cutting significantly increases consumable wear.**

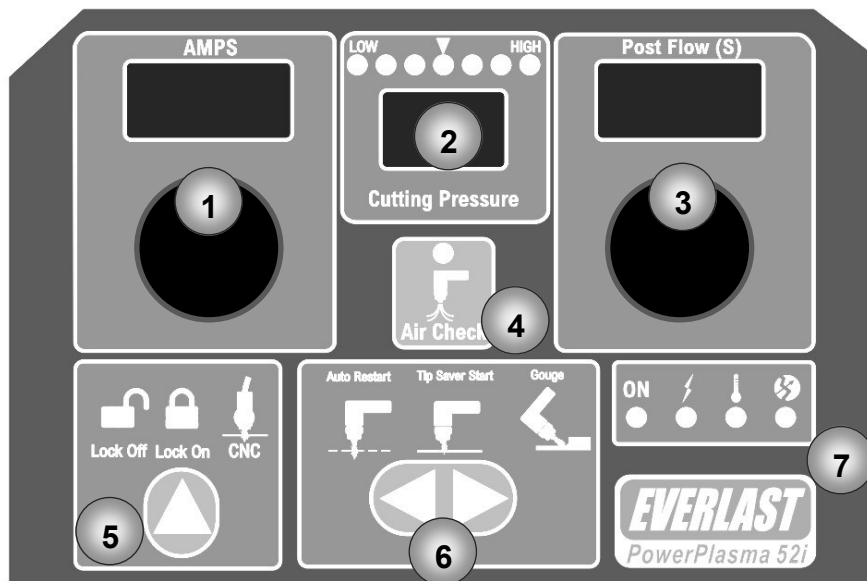
STOP!

- Turn the unit off to check and change torch consumables. Shock, burn, injury or death may result if the torch trigger were accidentally pressed during removal.
- Turn the unit off to check and change pilot arc fuse. Failing to do so may result in shock, burn, injury or death.
- Do not become a ground path while using this unit. This means you need to insulate/isolate yourself from the work piece while cutting. Refrain from touching or contacting the cutting tip while performing cut operations.
- Cutting wet or damp material may increase your chances for shock or electrocution. Sweat can also increase your chances of shock/electrocution.
- Do not exceed 90 P.S.I. (6.2 bar) input supply pressure (from compressor).

GENERAL OPERATING TIPS

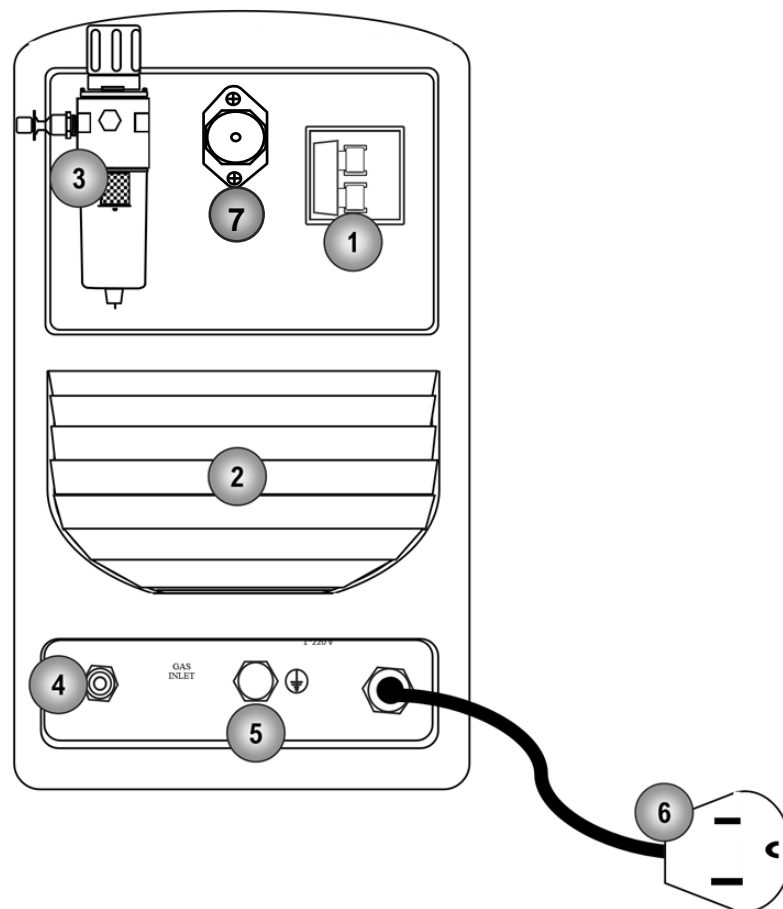
- Keep your standoff to less than 1/8”.
- Do not drag the torch directly on the metal unless using drag consumables. (Available from some OEM suppliers of the Innotec iPT series torches.)
- Always use dry air. Install inline air dryer. Do not rely on the supplied water trap/filter. Drain compressor daily to improve effectiveness of air dryers and to prevent them from prematurely failing.
- Don't greatly air pressure to try to reduce kerf or cut thinner material. Always reduce nozzle orifice size to match amperage.
- **See the Torch information page for different consumable sizes and amp ratings.** Use this as a general rule of thumb for good hand cutting speed and quality: For the first 1/8” of thickness, use 20 amps. After the first 1/8” add 10 amps for every 1/8” after that. For Stainless and Aluminum, use settings that are 40% higher.
- Do not attempt to operate with work clamp removed. Always connect the work clamp directly to the part being cut.
- Excessive pilot arc operation drastically reduces consumable life. Grind the area where the work clamp is attached for best contact. Use the Tip Saver function to extend consumable life when auto restarting is not necessary. Use the Auto Restart function for hand cutting expanded metal or while cutting intricate CNC components. If the unit only lightly cuts or gouges the surface, the pilot arc is staying on too long and continuity to the cut is not being detected. This can blow your pilot arc fuse and cause the torch not to strike unless touched to the metal. If this happens, change the fuse and make sure your work clamp has a good, direct connection to the work piece.

Front Panel Controls



ITEM	DESCRIPTION
1	Amps. Use to set and control Amp output. While cutting, the amps are displayed dynamically (live).
2	Cutting Pressure. This displays selected cutting pressure and indicates the ideal pressure for cutting. The center green LED indicates the target pressure, indicated by the center inverted arrow (). The farther away from the target pressure the unit is adjusted, the light colors will change to yellow and red. The pressure required will be different for cutting and gouging modes. If the pressure falls below the target pressure while cutting, increase pressure slightly so that the LED to the right of the arrow is lit. This will allow the target pressure to be correct while cutting. This happens when long lengths of hose, or undersized hose/plumbing is used to connect to the unit. If the hose is resized and shortened, the pressure drop will be less. Large variations in compressor cut-in/kickout pressures can also affect this. Make sure that you use an adequate size compressor as listed in the specifications on page 10. <i>If there is a significant loss of pressure, there may be an internal restriction to the pressure circuit or leak. Contact Everlast.</i>
3	Post-Flow. The post-flow adjustment adjusts the amount of time that air flows after the torch has finished cutting. This is important for extending your torch and consumable life. The higher the amperage and the longer the unit cuts, the more post flow is required. As a rule of thumb, use 1 to 2 seconds of post flow for every 10 amps. Longer post flow times may be used in cases where long, uninterrupted cuts are being performed.
4	Air Check. This is used to set and adjust cutting air pressure. Select the button to open the solenoid without having to fire the torch. Adjust air pressure to the target pressure. The gas will continue to flow until the button is reselected. Do not use the torch trigger and post flow cycle to set the cutting air pressure.
5a	Lock Off/ On. "Lock" refers to the trigger function. With the "Lock-off" selected press and hold the torch trigger to cut. The arc will stay on as long as the trigger is held down. This is the best method for short or detailed cutting. To use the "Lock-on" mode, press and release the torch trigger to start the cut. The arc will be on when the trigger is released. Press and release the torch trigger again to stop the cut and begin the post flow cycle. This can be used on long cuts with track torches or pipe beveling devices. Warning! Selecting Lock On can create a dangerous situation if the user is not alert and informed of its operation.
5b	CNC Operation. This turns on the CNC circuit and the rear control socket.
6a	Auto Restart. In this mode, the pilot arc is designed to switch back on automatically if cut continuity is lost. Once continuity is regained, the cutting arc will re-energize and the pilot arc will shut off. This cycle will happen continuously as long as it is needed. Use this mode to cut expanded or rusty metal or in CNC mode. This mode results in more rapid wear of the consumables.
6b	Tip Saver Start. In this mode the torch supplies the pilot arc for approximately 3 seconds before terminating the arc. This limits pilot arc on time and helps save consumables. Use this mode if you are hand cutting or cutting in CNC mode on long, continuous cuts. If the cut is lost, the torch must be retrIGGERED to restart the cut.
6c	Gouge. This feature is designed to quickly remove excess weld material or to correct defective welds or blemishes in metal. The torch is held at an shallow angle to the weld or area and the arc strikes the metal blowing a layer of metal away. The arc is less aggressive. Lower air pressure must be used along with large, special consumables (available separately from most OEM suppliers of the Innotec iPT series torch) designed for gouging. This unit is designed for light gouging only. See Specifications, page 10.
7	Information/Warning LED's. The far left LED confirms that the unit is switched to On and remains lit continuously. The lightning symbol indicates an over/under current/voltage condition and is accompanied by error code E02. The thermometer symbol indicates that the unit has surpassed the duty cycle and has over heated and is accompanied by error code E01. The broken round symbol indicates there the torch cap is not in place or making adequate contact with the base. It is accompanied by error code E04. Additional Error codes that occur without an accompanying LED can be found on the last page of this manual. With any error code, the output will be interrupted until it is corrected. In some cases, the machine may need to be reset by turning it off and back on again.

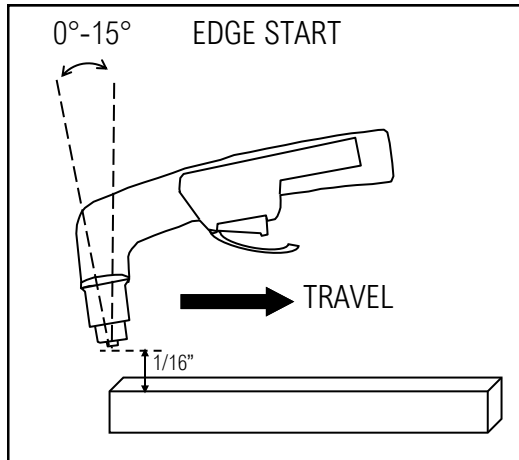
Rear Panel Connections



ITEM	DESCRIPTION
1	Breaker Switch. This switch serves as the main power switch for the unit. If a severe fault or short takes place, this breaker switch will trip. If the breaker trips, find and rectify fault before attempting to power the unit back on. If the breaker does not reset, contact Everlast.
2	Fan. Keep the fan area clear and allow a minimum of 18" (500mm) clearance for proper air circulation and maximum duty cycle. The fan should run continuously.
3	Regulator/Filter/Water Trap. This regulates the cutting pressure of the unit. To adjust: Pull up firmly but gently on the regulator knob until the detent clicks (about 1/8" or 3mm). Rotate clockwise to increase pressure. Rotate counterclockwise to decrease pressure. Observe the pressure and indicator lights on the front of the machine to reach the ideal pressure for the process you have selected. Push the knob back down after adjusting to lock-in the pressure setting. WARNING! Do not supply more than 90 psi to the regulator or damage and/or severe injury may occur.
4	Gas Inlet. The gas inlet has a push-to-connect type fitting. When initially installing, make sure the connecting tubing from the regulator to the inlet is squarely cut on the end so that a good seal is formed. If the tubing must be removed, the outer collar must be pressed in gently to release the tubing. Hold the collar while removing the tubing.
5	Ground Bolt. This is to be used in cases where High Frequency (H.F.) interference is being caused or where a bonded ground is indicated by code. This should be connected directly to an outside copper clad rod driven into the ground with at least a # 12 gauge wire connecting the two together. All metal parts inside the building should be grounded as well, including pipes, tables, and even metal siding to help prevent stray H.F. emissions from causing interference or damage to the electronics and surrounding equipment.
6	NEMA 6-50 Power Plug. This is the standard 240V, single phase plug used for welders/plasma cutters in North America. This plug has only three wires and is used by all manufacturers for this type application. This unit requires and uses no neutral. There are two power legs and one ground (middle U-shaped, or rounded prong). Do not attempt to rewire or adapt this plug for other applications. This unit is also supplied with a 240V to 120V adapter for 120V use. No changeover or alteration of the unit is required to step down to 120V input. The unit automatically senses the change and adapts the circuits to operate on 120V. Consult with a licensed electrician before installing power service to the unit. <i>Refer to Article 630 of the NEC for information concerning wiring of welders and plasma cutting units.</i>
7.	CNC Socket. The CNC socket is provided with the standard signals required to work with most CNC control systems. <i>The mating plug is optional, but it included as standard equipment in the CNC package version of this unit. Contact Everlast to purchase this connector without the CNC package.</i>

NOTICE:

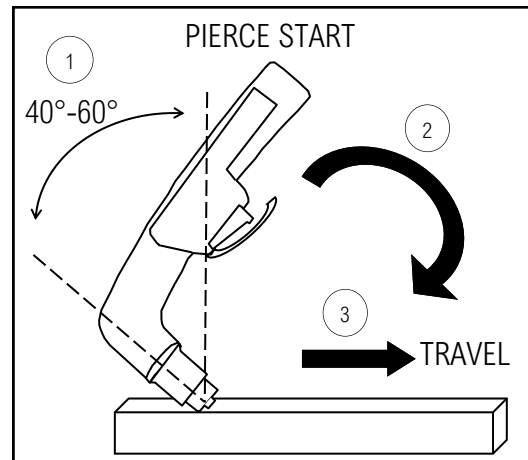
The design of the blow back start *may* cause a slight delay in the arc as the air pressure must built inside the torch tubing and head to create the pressure needed to force the electrode off the nozzle seat. This may take up to a second, especially when using longer torches or marginal air supply systems. Restarting the arc in tip saver mode requires retriggering the torch. If the torch does not light after 3 seconds, let go of the trigger and press it again. If the start or arc is erratic check nozzle and electrode for tightness and wear.



EDGE STARTS

Edge starts are the best type of start to promote consumable and torch life. This reduces blow back of molten material and allows a smooth gradual start of the arc and maximizes cutting capacity.

- 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. Slide the yellow safety lock and squeeze the trigger. Wait for arc to start.
- 2) Once the arc starts, wait for the arc to penetrate all the way through the metal.
- 3) As the flame penetrates the flame all the way through the metal, tilt the torch so there is a slight lead in the flame if metal is thin. If the metal being cut 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.



PIERCE STARTS

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 on thicker material.

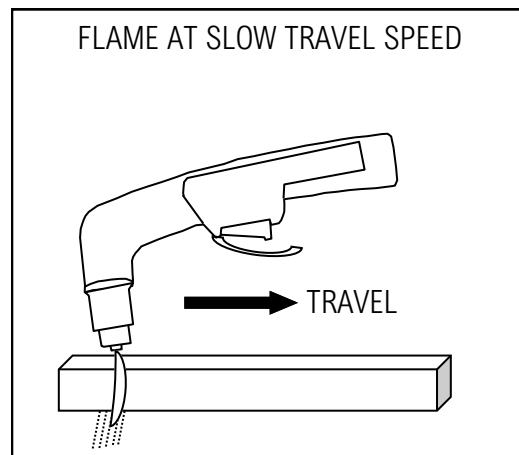
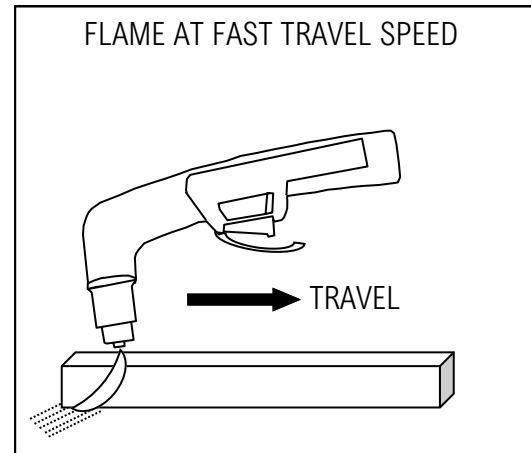
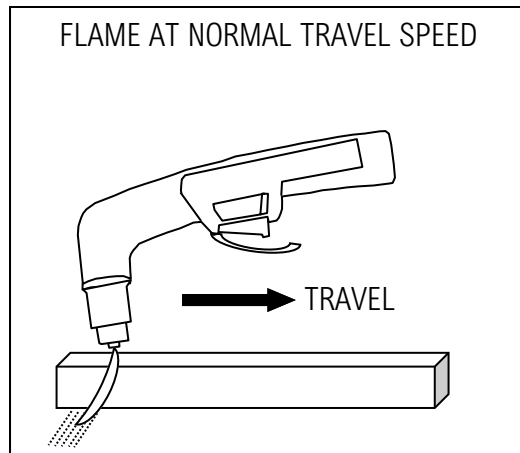
- 1) Tilt the torch in the direction of travel or toward the side of the metal to be discarded or wasted at a 40° to 60° angle. Slide the yellow safety lock and squeeze the trigger. Wait for arc to start.
- 2) Once the arc starts, wait for the arc to transfer from pilot arc to the cutting arc.
- 3) As the flame penetrates through the metal (at a sloped angle) rotate the torch slowly to the vertical position. 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 to provide no more than 1/8" standoff, less if possible. Long standoff heights reduce cut capacity and quality. It also promotes rapid consumable wear and can prevent the pilot arc from transferring.

NOTICE:

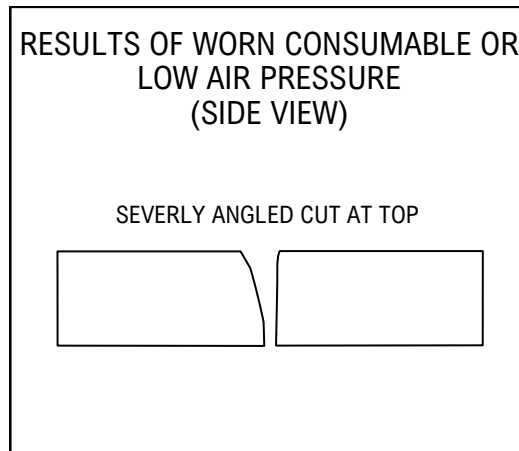
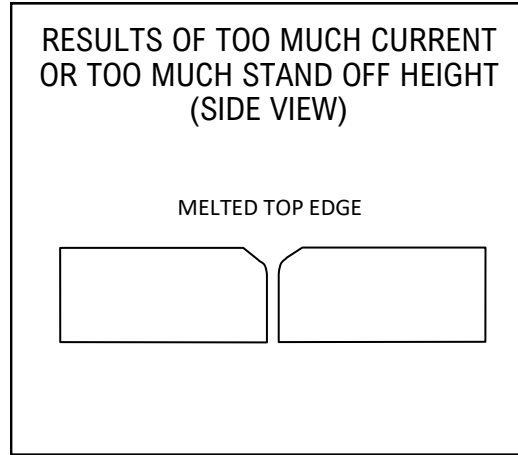
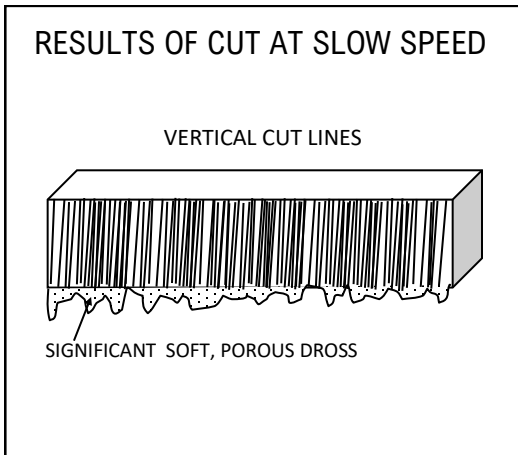
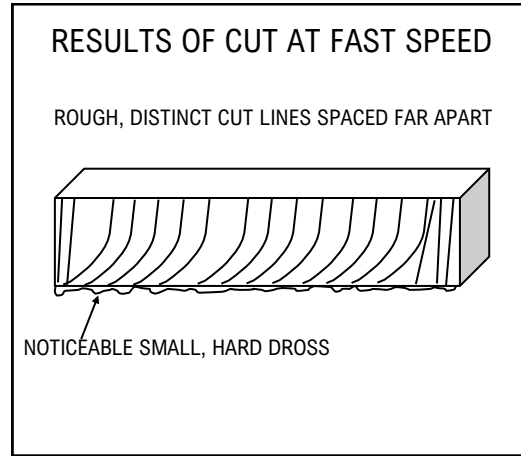
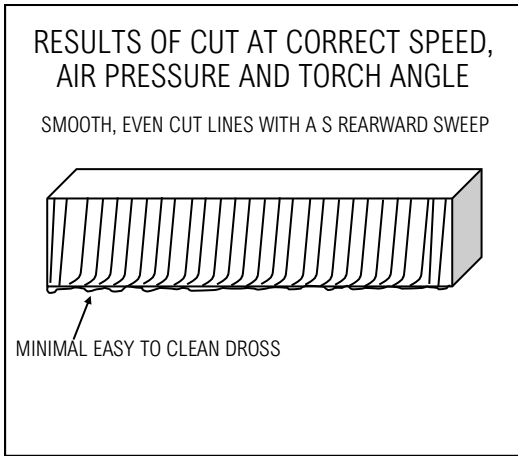
For longer consumable life do not use the pilot arc unnecessarily. Select the "Tip Saver Start" feature and do not fire the torch unless you are near the metal and ready to cut. For expanded metal cutting be sure to select "Auto Restart" to re-fire the pilot arc automatically.

**IMPORTANT:**

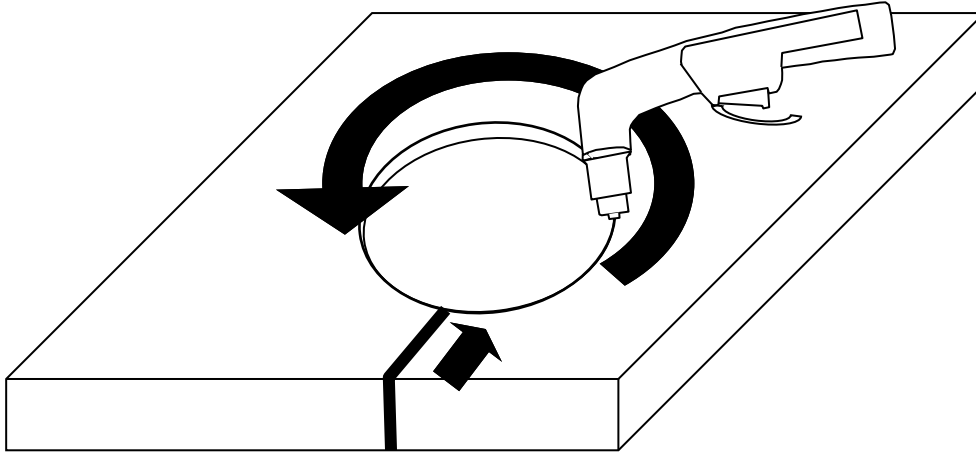
Check consumables regularly for wear and change them out before they are completely worn out. A good practice is to check consumables before turning the machine on each time you go to cut. It takes only a few seconds and can save yourself a lot of extra effort later. Allowing the consumables to wear until they quit working may damage torch related components, creating a more costly repair. Periodically, with the unit turned off, check the spring action of the electrode by removing the cup and tip and pushing your thumb or finger down on the electrode. The electrode should depress slightly and spring back quickly without a delay. If it does not, the torch head may need to be disassembled, cleaned and lightly lubricated with di-electric grease. In some cases the sealing O-rings may be broken or dirty causing sticking. Replacement torch head kits are available if repair is not an option. Sticking of the electrode like this causes starting issues. Most often this condition occurs because of moisture and dirt that makes it way into the system. **Additionally, do not overtighten the electrode or overheat the torch (by poor cutting techniques such as excessive piercing starts on thick metal) or the electrode threads may gall in the torch head and break off during removal.** This usually occurs on lower quality consumables (non-OEM) with poor chrome plating, but can occur if OEM consumables are overtightened.

NOTE:

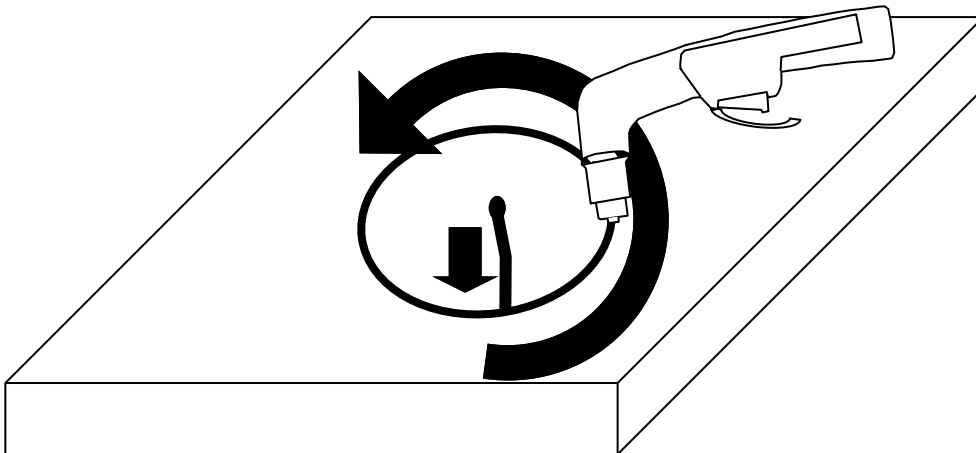
When stepping down amps to cut thinner material, you must change to smaller orifice nozzle. Nozzles are offered in different sizes which are made for different amp levels. **See the torch parts page for amp range and size of consumables.** Everlast offers OEM size and configuration of consumables originally supplied with the torch for replacements and do not offer all configurations or sizes. OEM suppliers of the Innotec iPT torches (local and online) offer extended range of sizes and configurations. An orifice that is too large for the amps being used will result in arc instability and a rough cut. Do not attempt to lower air pressure to compensate as this makes the issue worse.



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

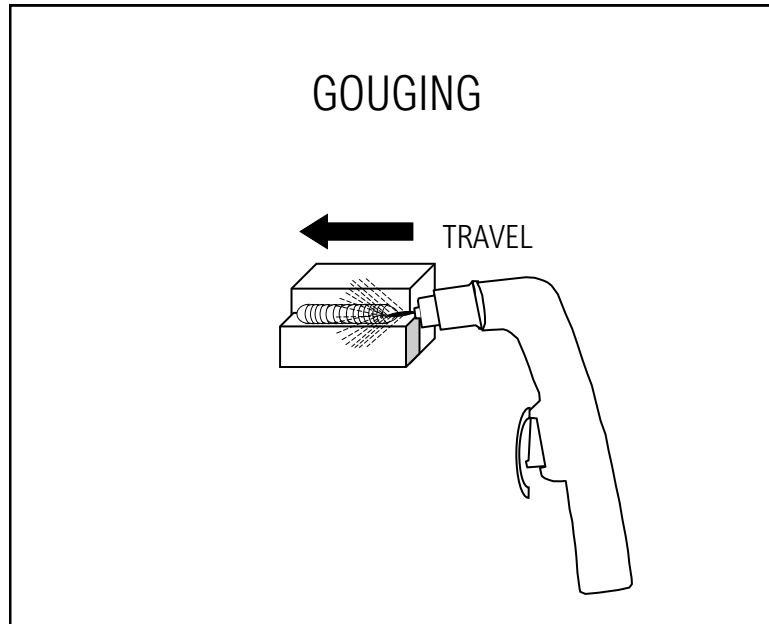


AN EXAMPLE OF CUTTING A LEAD-IN WHEN CUTTING HOLE IN AN OBJECT



NOTICE:

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 (and the direction you cut) when cutting an object to size so that too much metal is not accidentally removed and the object can be finished to the proper size.



GOUGING

Gouging is used to remove metal, usually a weld or surface defect by “washing” away the surface metal with an arc flame. Gouging should be performed with a consumable with a large diameter orifice or special gouge consumable with a large diameter orifice. These consumables are available from some OEM suppliers of the Innotec IPT series torch. If no gouging consumable is available, use a 1.1mm tip and lower amps to 40A.

To gouge, the torch tip should be oriented inline with the weld, with a slight converging angle (45 to 65 degree angle) to the weld or part being gouged so that the metal begins to slough away. This will allow the arc to contact, but not cut through the surface, with an extended, softer arc flame. This unit is not designed for heavy duty use, but is designed for light gouging activities only. Metal removal is limited to a relatively shallow trench and multiple passes may need to be used.

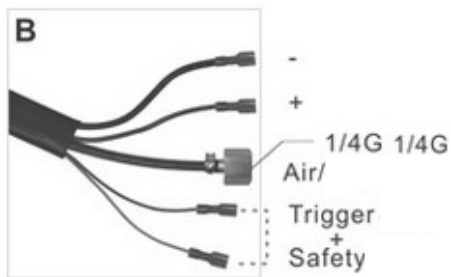
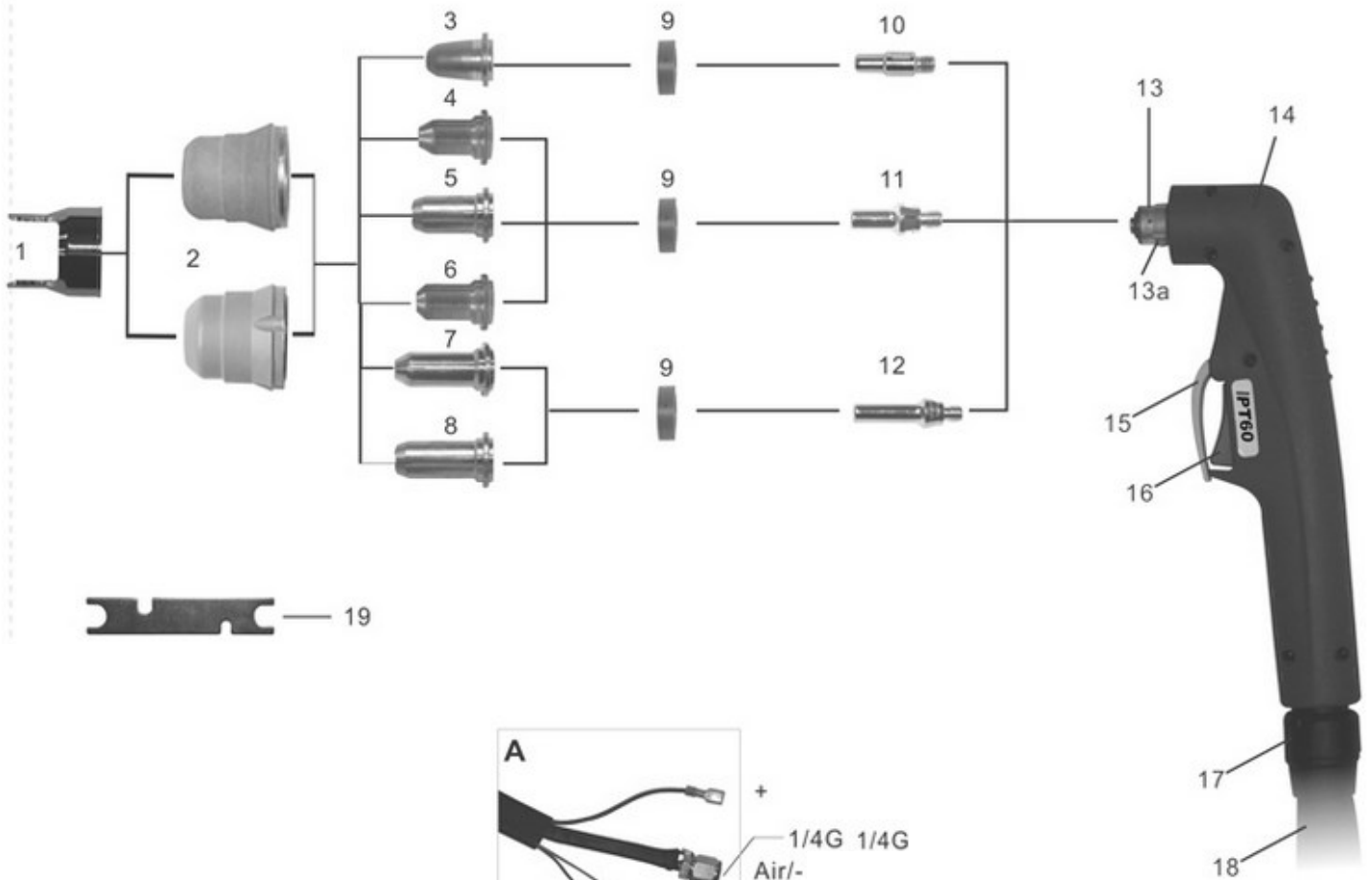
When set to “Gouge”, the unit will require readjustment of the air pressure to a lower PSI setting. Be sure to notice the LED’s which will guide you to the proper air pressure. Too low of an air pressure will cause issues with arc stability.

Extreme angles where continuity cannot be sensed will cause loss of gouging arc, and the pilot arc will reignite (if not in tip saver mode). Be sure to notice if you see any sudden change in arc intensity or aggressiveness of gouging. Also notice amp output on the display. Any drop in Amps to the 20 to 27 amp level indicates that the continuity has been lost and the pilot arc has taken over. If this is noticed, stop and steepen the torch angle to the part being gouged. Restart the arc, and gradually lean the torch until effective gouging is taking place, but continuity is not lost.

Gouging tends to be a relatively long and continuous process. Because of this, the duty cycle may be exceeded if the operator is not aware of the amount of time the unit is in use performing gouging operations.

WARNING!

Gouging creates large showers of sparks. These sparks exit the gouge and are traveling 30 feet or more horizontally. Always be aware of the spark direction and travel distance. Have a fire extinguisher at hand, and a responsible person watching for fires and smoldering areas where the sparks may have traveled. Never leave an area where you have cut or gouged unattended for at least 30 minutes to ensure no fires occur. Thoroughly inspect the area before leaving for embers or smoldering materials. Never direct sparks/metal dross toward any area where there are bystanders. Use proper face and body/hand protection while gouging.

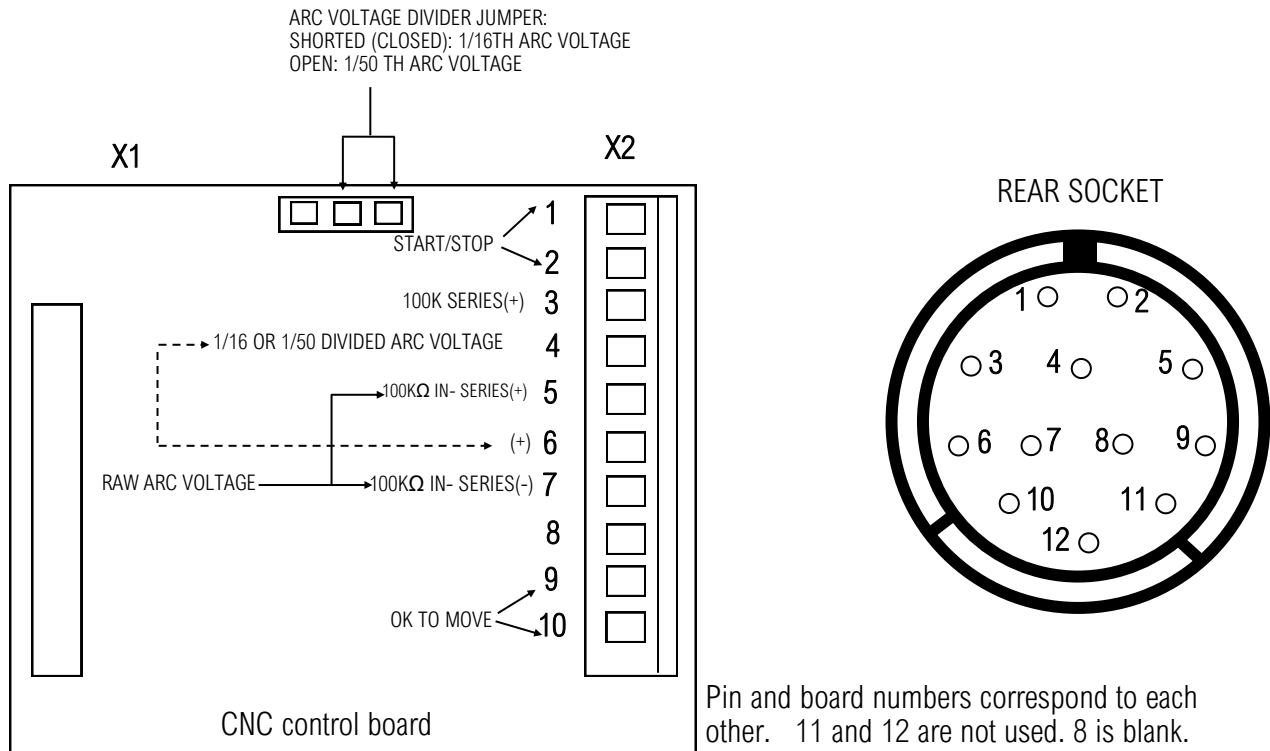


Technical Data	技术参数
Current	60Amp
Duty Cycle	60%
Gas	Air/N ₂
Gas Pressure	4.4-5.0 Bar
Gas Flow	110 LPM
Ignitor	Without HF
Post Flow	55sec. recommended
Standard Length	6M



Position	Code	Ref.	Description
1	ISM0098		Double pointed spacer/IPT60
2			Outside nozzle
2.1	IVS0661	PC0116	Outside nozzle 6 holes
2.2	IVS0663		Outside nozzle 6 holes/maximum life
3			Tip
3.1	IVU0661-06	PD0116-06	Tip Φ 0.6mm/IPT25-60/10-20A
3.2	IVU0661-08	PD0116-08	Tip Φ 0.8mm/IPT25-60/20-30A
3.3	IVU0661-09	PD0116-09	Tip Φ 0.9mm/IPT25-60/30-40A
4			Tip
4.1	IVU0660-06		Tip Φ 0.6mm/10-20A/back striking
4.2	IVU0660-08		Tip Φ 0.8mm/20-30A/back striking
4.3	IVU0660-09		Tip Φ 0.9mm/30-40A/back striking
4.4	IVU0660-10		Tip Φ 1.0mm/40-50A/back striking
5	IVU0668-09		Tip Φ 0.9mm/30-40A/IPT60/back striking
6			Flat tip
6.1	IVU0668-10		Flat tip Φ 1.0mm/40-50A/back striking
6.2	IVU0668-11		Flat tip Φ 1.1mm/50-60A/back striking
7			EXTended tip
7.1	IVU0609-06		EXTended tip Φ 0.6mm/10-20A/back striking
7.2	IVU0609-08		EXTended tip Φ 0.8mm/20-30A/back striking
8	IVU0603-09		EXTended tip Φ 0.9mm/30-40A/back striking
9	IVF0601	PE0106	Diffuser IPT25-60
10	IVB0660	PR0110	Electrode Plasma IPT25-40
11	IVB0048		Electrode Plasma IPT25-60/back striking
12	IVB0049		Extended electrode Plasma IPT25-60/back striking
13	IVZ0673		Plasma torch head IPT60
13a	IFT0709		"O"ring Φ 18x15mm
14	IGV0038		Plasma handle manual/IPT20-60/Red
15	IHJ0722		Protection part/Plasma/Yellow
16	IHQ0070	185.0031	Trigger
17	IHJ0898		Joint/small/new type
18			Cable assembly
18.1	IVN0806		Cable assembly/IPT60/6m 1/4G Separated
18.2	IVN0807		Cable assembly/IPT60/6m central adaptor
18.3	IVN0808		Cable assembly/IPT60/6m 1/4G
19	ICG6006		Spanner for Plasma
20	IZX0078	FY0023	Central adaptor torch side Plasma 5 pins
21	ISM0707		Circle cutting attachment
Complete Torch			
A	IVT0847		Plasma torch IPT60/6m 1/4G
A	IVT0847-01		Plasma torch IPT60/6m 1/4G back striking
B	IVT0848		Plasma torch IPT60/6m 1/4G seperated
B	IVT0848-01		Plasma torch IPT60/6m 1/4G back striking
C	IVT0846		Plasma torch IPT60/6m central adaptor
C	IVT0846-01		Plasma torch IPT60/6m central adaptor/back striking

CNC CONNECTOR PIN-OUT



Pins 1 and 2 activate (turn on) the plasma cutter.

Pins 9 and 10 gives the "OK to Move" signal. These are Dry "N.O." style contacts. It is a non electronic switch that *closes* when the pilot arc transfers to cutting arc. Sometimes referred to as "Arc OK".

Pins 5 and 7 provide the raw, undivided arc voltage, which is used by some controllers to adjust the height of the torch (THC). This is the actual cutting voltage. It runs through 2 -100KΩ resistors to prevent arcing at the connector plug. Some controllers may use the raw voltage, and is dependent upon the impedance of the input. C-and-CNC* controller and Torchmate * do not use this voltage.

Pins 4 and 6 provide the divided arc voltage. This is selectable by adding a jumper on the CNC circuit board to create either 1/16 th or 1/50th of the raw arc voltage. It may be used by some controllers for torch height control (THC). The jumper is installed when the product is delivered (1/16th). The machine must be opened and the jumper removed for use with 1/50th requirements. (Remove rear cover and metal cover only to access!)

Pin 3 is what some controller manufactures refer to as "Ground" this is connected directly to the work piece lead, which is actually a positive polarity. If the controller has a pin for ground this is likely the pin to use.

*Everlast does not endorse or recommend these brands and is not affiliated with them in anyway. They are mentioned as a common reference only. For specific recommendations regarding connection, contact the manufacturer of the CNC equipment/controllers. There are numerous makers of CNC equipment for plasma cutting and Everlast does not offer technical support for individual manufacturers. The CNC manufacturers should provide all necessary details for proper connection and setup of their machines.

NOTICE!

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

DANGER!

Raw Arc Voltage is dangerous! Use caution if using Raw Arc Voltage or severe shock or death may occur.

TROUBLE:	CAUSE/SOLUTION
Machine will not turn on. No fan, no display.	Check cords and wiring in the receptacle. Check circuit breaker. Check plug condition.
Air flows but arc does not start within 2-3 seconds.	Check consumables for wear and tightness. Check fuse. Check Air Pressure. Sticky or slow spring/piston on torch blow back mechanism. Release trigger and try again.
Air flows but pilot arc does not start or spark but arc starts when nozzle is rubbed on the metal.	Fuse blown. Replace with 30 A automotive type, slow blow. PCB issue.
Will not start arc.	Air Pressure too low. Torch electrode/blow back mechanism stuck in rear position. Missing Swirl Ring (usually happens after consumable change).
Pilot arc will not light. Arc will start when torch is drug on the metal.	Fuse blown. Change fuse (30A slow blow)
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.
Arc Sputters.	Inadequate air flow or air pressure. Improperly sized nozzle. Change to nozzle/Tip with smaller diameter orifice as amps are lowered. Readjust air pressure. Loose consumables. Check tightness. Worn Consumables
Consumables are dirty, smutty looking upon inspection. Premature wear on consumables. Shortened consumable life. Tips are melted looking.	Moisture, oil contamination of consumable. Wrong consumables. Poor quality aftermarket consumables. Drag cutting with wrong consumables. Wrong cutting technique.
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 with pilot arc or by drag/scratch starting nozzle directly on metal. Machine runs.	Torch cup is loose, safety contact pins dirty or not making contact with cup face. Torch switch wire is loose. Problem with Central connector. Torch is not properly connected. IGBT or PCB bad, contact Everlast.
Over current/Duty cycle Error Code. Machine runs, but no output.	Duty cycle exceeded or Over current. Allow machine to cool. Reset main power switch after full cool down period. Make sure fan is not blocked. Check wiring and remove excess/undersized extension cords. Operated on "dirty power" generator and unit has failed.
Unstable arc at lower amps.	Nozzle orifice size is too large. Use nozzle with smaller orifice.
Arc tries to start but irregular, dancing arc and/or arc melts through side of nozzle.	Missing swirl ring, or worn electrode or both. Check and replace. Make sure swirl ring is not cracked.
Arc will try to start if touched to the metal, but no air flow while switch is pressed.	Stuck or dirty solenoid valve. Loose solenoid wire connection. Bad PCB. Contact Everlast.
Air flows continuously. Erratic or unpredictable shutting off of air after post flow time has expired.	Place switch into "normal" or "cut" mode. Reduce post flow time. Solenoid is stuck. Contact Everlast.
Excessively Beveled Cut.	Worn consumables, too high of stand-off height.
Cup and/or nozzle is melting or 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.

ERROR CODES	
E01	Overtemperature/ Duty Cycle Exceeded
E02	Over/Under Voltage/Current/Unit Fault
E03	Air Pressure Too High or Low
E04	No Torch or Loose Torch Cap
E05	Torch Switch Stuck

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

- Keep your standoff to **less** than 1/8" distance from the work piece.
- Always use dry air. Drain compressor daily to improve effectiveness of air dryers and to prevent them from prematurely failing.
- Make sure work clamp is attached directly to the part being cut. Make sure the work clamp is attached to freshly cleaned metal.
- Don't greatly lower air pressure to try to reduce kerf or cut thinner material. Always reduce nozzle orifice size to match amperage. See Torch pages for 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.

NOTICE:

The pilot arc is not designed to be used to cut. The pilot arc is used to scour the surface to establish continuity so that the cutting arc will transfer. If you experience difficulty cutting and the arc seems to barely penetrate the metal, cutting speed is slow, or the consumable is wearing extremely fast, it is likely that the cutting arc has not engaged. While the pilot arc is engaged, the amperage is always going to drop to 20-27 amps. **If you notice the output amperage at this level while firing the torch or briefly before cutting, do not be alarmed. This is normal.** The reduction in amperage prevents the consumables from being damaged. When continuity is sensed, the cutting amperage will increase as the arc transfers from torch to the metal. If amperage does not increase while cutting, and amperage is set over 27 amps, it is likely that the pilot arc is not transferring to the metal. Check for proper connection of the work clamp. Connect it directly to piece of metal being cut. Do not rely on an indirect connection through a work bench table. If necessary, grind a clean place on the metal to expose fresh, un-oxidized area of metal to make the best possible connection.

