



PowerPlasma 25i XTR

Safety, Setup and General Use Guide



FUNCTION: Plasma Cutter
PURCHASE DATE:
PLASMA CUTTER SERIAL NUMBER:
OPTIONAL ACCESSORY SERIAL NUMBER:

120V

Operator's Manual



Welders, Plasma Cutters, Multi-Process

www.everlastwelders.com
Need Parts? Need Technical Help? Call: 1-877-755-9353

380 Swift Ave. Unit 12 South San Francisco, CA 94080, USA

TABLE OF CONTENTS

SPECIAL NOTICE AND CALIFORNIA PROPOSITION 65 WARNING	3
CUSTOMER GREETING AND EXPLANATION OF PROCEDURES	4
WARRANTY AND CONTACT INFORMATION	5
SAFETY DISCLAIMER AND HF WARNING	6
SAFETY WARNINGS, DANGERS, CAUTIONS AND INSTRUCTIONS	7
GENERATOR OPERATION INFORMATION	10
SPECIFICATIONS	11
DUTY CYCLE AND USE INFORMATION	12
BREAKER SIZING AND WIRING REQUIREMENTS	13
GETTING STARTED, UNPACKING YOUR UNIT AND PRESET INFORMATION	14
CONNECTION OF AIR COMPRESSOR, REGULATORS, AND BASIC REQUIREMENTS TO PLASMA CUT	16
CONNECTING THE PLASMA TORCH, SETUP INFORMATION	17
FRONT PANEL VIEW AND COMPONENT ID	18
CONTROL PANEL LAYOUT AND ID	19
REAR PANEL VIEW AND COMPONENT ID	20
PLASMA CUTTING OPERATION WARNINGS AND SAFETY INFORMATION	21
EXPLANATION OF PLASMA FUNCTIONS AND TERMS	22
STARTING CUTS AND PIERCING INFORMATION	23
CONSUMABLE INFORMATION, CORRECT CUT AND TRAVEL SPEED INFORMATION	24
PLASMA CUTTING TORCH PARTS AND ASSEMBLY POWERPLASMA 25i XTRi AND iPT25 TORCH	27
ADDITIONAL TORCH AND CUTTING ADVICE/INFORMATION	29
TROUBLESHOOTING COMMON PLASMA CUTTING ISSUES	30

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. Due to multiple variables that exist in the welding field and the changing nature of it and of the Everlast product line, Everlast Power Equipment INC. does not guarantee the accuracy, completeness, authority or authenticity of the information contained within this manual or of any information offered during the course of conversation or business by any Everlast employee or subsidiary. 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.

WARNING!

California Proposition 65 Warning:

This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code § 25249.5 et seq.)

 Warning: Cancer and/or Reproductive Harm

www.P65warnings.ca.gov

THANK YOU! We appreciate you as a valued customer and hope that you will enjoy years of use from your plasma cutter. We work to please the customer by providing a well supported, quality product. *To make sure that you receive the best quality ownership experience, please see below for important information and time sensitive details.*

What to do right now:

1. Print your receipt from your confirmation email that should have been sent to you after your purchase and put it up for safe keeping. If you do not have one, contact us at 1-877-755-9353 (US customers) or 1-905-570-1818 (Canadian Customers). You will need this if anything should ever happen for original owner verification (if bought as a gift, original receipt will still be needed, or explanation sent to Everlast).
2. Read this manual! A large number of tech and service calls are a result of not reading the manual from start to finish. Do not just scan or casually peruse this manual. There are different features and functions that you may not be familiar with, or that may operate differently than you expect. Even if you have expertise in the field of welding, you should not assume this unit operates like other brands or models you have used.
3. Carefully unpack and inspect all items immediately. Look for missing or damaged items. Please report any issues within 48 hours (72 hours on weekend or holidays) of receiving your product,. Take pictures if you are able and contact us at 1-877-755-9353, ext. 207 if any issue is discovered between 9 am and 5 pm Eastern Time M-F (US customers) or at 1-905-570-1818 (Canadian Customers) between 9am and 4 pm weekdays except on Fridays when hours are from 9 am to 12pm Eastern. If outside of the US or Canada, contact your in-country/or regional distributor direct at their service number.

What to do within the next 2-3 days:

1. Make sure your electrical system is up to date and capable of handling the inrush and rated current of the unit. Consult and use a licensed and knowledgeable electrician. If you have downloaded this manual in expectation of delivery, get started now.
2. Make sure this machine is plugged in, turned on, and tested with every process and major feature, checking for proper function. You have a 30 day period to test and thoroughly check out the operation of this unit under our 30 day satisfaction period. If something is wrong, this policy covers shipping on the unit (30 day satisfaction policy applies to the USA only for the 48 lower states and D.C., territories and provinces are excluded) or any incidental parts that may be needed to resolve any issue. After this 30 day period, if you find something wrong with the unit, you will not receive the benefit of free shipping back and forth to resolve this issue. Your unit is still covered under the 5 year parts/labor warranty, but shipping is covered by the customer after the 30 day period is over. The first 30 days of operation with any electronic item is the most critical and if any issue will happen, it will often happen during this time. This is why it is very important that you put this unit to work as soon as possible. Any issue should be reported within 48 hours (72 if on the weekend or holiday). Everlast will not be liable for any shipping after that time.

What to do within the next 30 days:

Visit our website (US customers). Go to www.everlastwelders.com. Navigate to the resources tab and to the "product registration" page to register your product. While keeping your receipt/proof of purchase is still required for verification of ownership, registering will help us keep your details straight and establish a chain of ownership. Don't worry, though, your warranty is still valid if you can't do this. Remember: Always keep your receipt even if you register. You may want to staple a copy to your manual.

What to do if you have a warranty issue or problem with the unit:

1. Unplug the unit. (Also do this before any maintenance or cleaning is done.)
2. Do not attempt a self-repair until authorized by an Everlast representative. This does not include performing routine maintenance such as point gap adjustments or regular internal cleaning. Any third party repairs are not covered under warranty, and can further damage your unit.
3. Within 24-48hours, (or by the next working business day) you must contact U.S. tech support at 1-877-755-9353 ext 207 (U.S. hours are 9 am to 5pm Eastern for tech support and 9 am to 5 pm Pacific for the business/sales office). If you are in Canada contact 1-905-570-1818 (Canada hours are 9am to 4pm M-Th, 9am to 12pm Fri). Although phone contact is preferred to establish a warranty claim, you may send an email to tech@everlastwelders.com (US) or mike@everlastwelders.ca (Canada) along with your contact information and brief explanation of the issue and ask for a follow up call. If you contact us via phone, and you do not reach a live person, please leave a brief message with the nature of your problem and your contact information. You should expect a call back within 24 hours. It is also a good idea to follow up the message with an email.
4. Be prepared with as much information as possible when you talk with a tech advisor, including a details of the failure, settings, and application of the unit. **NOTE: A Proof-Of-Purchase (receipt) is required before returning the unit for warranty or before warranty parts can be sent to you.**
5. Keep in mind that, you may be asked to check a few basic things. Before you call, having a screwdriver and volt/ohm meter at hand is a good idea and will save time. Many issues can be resolved over the phone. If the issue cannot be resolved over the phone/email, you may be given an option to return the unit, or have a part shipped to you, at Everlast's discretion. Keep in mind, you may be asked questions that seem basic, or elementary to your knowledge base. These are not meant to question your knowledge, but rather to make sure nothing is overlooked. However the tech chooses to proceed, please cooperate with the process, even if you think you know what the cause or issue is. You may be asked to check something or open the unit during the diagnosis. This does not void the warranty! Opening the unit is a part of routine maintenance and cleaning. This is an important step. The willingness of the customer to work with tech support can save lots of time and accelerate the warranty process. For

warranty to be honored, you will need to make sure that you follow these guidelines. *Units that are returned without an RMA (issued by the tech support department) may not be repaired under the warranty agreement and you may be charged for the repair and can result in a delayed repair as well.*

What to do if you need setup help, guidance, weld issue diagnosis or have general product compatibility questions.

Call us at 877-755-9353 ext. 204 for welding guidance and general welding issue diagnosis. Or email performance@everlastwelders.com with the basic issue you are having, along with your specific settings, and welding application.

Hey...wait, what is my warranty?

Warranties and service policies and procedures vary from country to country and are maintained and supported by the regional or in country distributor of Everlast welding equipment.

USA Customers Only: For full details on the 5 year parts and labor warranty, 30 day satisfaction policy, terms of sale, and how to proceed with a warranty claim, please visit: <https://www.everlastgenerators.com/standard-warranty>. Accessories are covered by a separate warranty and detailed information can also be found at the link above.

Canada Customers Only: For full details on the 3 year parts and labor warranty, terms of sale, and related policies and procedures, please visit: <https://www.everlastwelders.ca/terms.php>.

Who do I contact?

USA Technical Support:

Email: tech@everlastwelders.com
1-877-755-9353 ext. 207
9am-5pm Eastern (Closed holidays)
Monday-Friday

USA Welding Support and General Product Information:

Email: performance@everlastwelders.com
1-877-755-9353 ext 204
9am-6:30 pm Eastern (Closed holidays)
Monday-Friday

USA Sales and Main Office:

Email: sales@everlastwelders.com
1-877-755-9353 ext 201
9am-5pm Pacific (Closed holidays)
Monday-Friday

Canada Technical Support:

Email: mike@everlastwelders.ca
905-570-1818
9am-4pm Eastern Monday-Thursday
9am-12pm Eastern Friday

Canada Sales and Main Office:

Email: sales@everlastwelders.ca
905-570-1818
9am-4pm Eastern Monday-Thursday
9am-12pm Eastern Friday

Other Countries and Regions:

Visit the U.S. Website @ www.everlastwelders.com and click on the flag of the country or region represented that is closest to you. If your country or region is not found, call the U.S. office at 1-650-588-8588 between the hours of 9am to 5pm Pacific, Monday through Friday.



Safe operation and proper maintenance is your responsibility.

Everlast is dedicated to keeping safety a top priority. While we have compiled this operator's manual to instruct you in basic safe operation and maintenance of your Everlast product, it is no substitute for observing safe welding practices and behavior. Safe welding and related cutting operations require basic knowledge, experience and ultimately the exercise of common sense. **Welding does significant hazards to your health and life! Exercise extreme caution and care in all activities related to welding or cutting. Your safety, health and even life depends upon it.**

WARNING! If you do not have proper knowledge or capability to safely operate this machine, do not use this machine until proper training has been received!

While accidents are never planned, preventing an accident requires careful planning. Stay alert!

Please carefully read this manual before you operate your Everlast unit.

The warranty does not cover damage or harm created by improper use, neglect of the machine or failure to follow safe operating practices.

NOTICE:



Welding and cutting operations may generate undesirable High Frequency (HF) and EMF energy. This can interfere with surrounding electronic equipment such as computers, routers, CNC equipment, televisions, radios, fluorescent lighting etc. If disturbance in surrounding electrical and electronic equipment is noted, consult a licensed electrician to help properly ground surrounding equipment to limit the interference. This machine may cause GCFI and ground fault outlets to malfunction. This unit is designed to be operated on a dedicated, properly grounded circuit.

Safety Warnings, Dangers, Cautions and Instructions



NOTICE. This unit manual is intended for users with basic knowledge and skillset in welding. It is your responsibility to make certain that the use of this plasma cutter is restricted to persons who have read, understand and follow the warnings and instructions in this manual. If you or the operator needs further instruction, contact Everlast welding support at 1-877 755-9353 ext. 204 or seek qualified professional advice and training.



WARNING! High Frequency (HF) energy can interfere with the operation of pacemakers and can damage pacemakers. Consult with your physician and pacemaker manufacturer *before* entering an area where welding and cutting equipment is in operation and *before* using this plasma cutter. Some pacemakers have limited shielding. Alert any users or customers of



WARNING! Use approved safety glasses with wrap around shields and sides while welding and working in the weld area or serious eye damage or loss of vision may result. Use a grinding shield in addition to the safety glasses during chipping and grinding operations.



WARNING! When welding always use an approved welding helmet or shielding device equipped with at least an equivalent of a shade 9 or greater. Increase the shade number rating as amperage increase over 100 amps. Inspect helmet for cracks in lenses and in the helmet. Keep lens covers in good condition and replace as necessary.



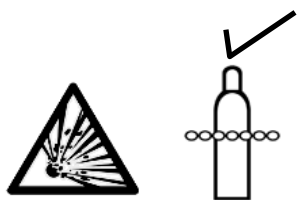
WARNING! Welding/cutting operations carry inherent risks which include but not limited to possible cuts burns, electrical shocks, lung damage, eye damage and even death. Take all appropriate measures to use proper Personal Protective Equipment (PPE). Always use leather welding gloves, closed toe (preferably reinforced or steel toe leather shoes, and long-sleeved flame resistant clothing (i.e. denim). Do not wear Poly/Nylon blend materials.



DANGER! Welding/cutting poses shock and electrocution risks. Keep this welding equipment dry. **Do not weld in the rain or where moisture accumulates.** Use dry, rubber soled shoes, gloves and clothing when welding. Do not rest or contact work clamp (ground) when welding. Keep all parts of the body insulated from the part being welded when possible. Do not touch terminals or connections while the unit is on. Consider all parts to be "live" at all times even if no live work is being performed. Do not use frayed welding cables.



CAUTION! Fires are possible but also preventable while welding. Always remove flammable rags, papers, and other materials from the weld area. Keep rags stored in an approved flame proof canister. Keep a fully charged fire extinguisher at hand. Remove any fuels, oils, paint, pressurized spray cans, and chemicals from the weld area. Make sure any smoke/fire detectors are function properly. Do not weld on tanks, drums or barrels, especially if pressurized or sealed. Do not weld on any container that previously held fuel or chemicals. Make sure the weld area is clear of flammable materials such as grass or wood shavings solvents and fuels. Do not wear frayed or loose clothing. Visually inspect and recheck the work area after welding looking for smoldering debris or flames.



WARNING! Welding gas cylinders are under high pressure. Keep all gas cylinders upright and chained to a cart or held safely in a safety holding pen. Never transport gas cylinders in an enclosed car van or other vehicle. Transport gas cylinders securely. Keep all cylinders capped while not in use or during transport. Replace the cap on the cylinder when it is going to be more than 24 hours before use. Do not use or attempt to repair faulty regulators. Never weld on gas cylinders. Keep gas cylinders away from direct sparks.

Safety Warnings, Dangers, Cautions and Instructions



DANGER! Welding and cutting operations pose serious inhalation hazards. Some of these hazards are immediate while others are cumulative in their effect. **Do not weld in enclosed spaces or in areas without adequate ventilation.** Fumes and gases released in the welding and cutting operations can be toxic. Use fans or respiration equipment to insure adequate ventilation if you are welding in a shop or garage area. **Do not weld on galvanized metal under any circumstance.** You may develop metal fume fever. Symptoms are similar to flu-like symptoms. Seek medical advice and treatment if you are exposed to galvanized welding fumes.

If you experience any eye burning, nose or throat irritation while welding, these are signs that you need more ventilation.

If you feel these symptoms:

- Stop work immediately and relocate work area with better ventilation.
- Wash and clean your face and hands.
- Stop work completely and seek medical help if irritation persists



DANGER! Never use brake cleaner or any chlorinated solvent to clean or degrease metal scheduled to be welded or other related equipment in the area being welded. The heating of this cleaner and its residue will create highly toxic phosgene gas. Small amounts of this vapor are harmful and can lead to organ failure and death. If degreasing of a part is necessary, use Acetone or an approved pre-weld cleaner. Use the proper personal protective equipment (PPE) when handling any cleaners/solvents.



DANGER! People with pacemakers should consult a physician and pacemaker manufacturer before welding. There is a potential for damage or serious malfunction resulting in death. High Frequency energy (HF)/Electromagnetic Fields generated during welding can interfere with pacemaker signals, even permanently damaging it. Some pacemakers offer some shielding, but restrictions regarding amperage and HF starting of TIG arcs may be placed upon the individual. Warn all potential bystanders that they should exit the work area if they have a pacemaker or similar medical equipment before welding. Severe electrical shock leading to injury or death may occur while using the plasma cutter if the user becomes part of the circuit path. While the Amp output of the plasma cutter is limited, the unit may produce an OCV of 300V or greater. Consult with a Physician if a pacemaker is










DANGER! Never defeat or modify any safety guards or shields. Keep all safety covers and shields in place.

Never place your fingers in or near a fan shroud or insert any object into the fan(s).



DANGER! Do not supply more than 100 PSI to the air-pressure regulator supplied with this machine. If you do, the regulator may leak or explode, causing severe injury or death. Use a separate regulator mounted at the air-compressor to control supply air pressure. **Never use an air compressor without a separate compressor mounted air regulator!**

Safety Warnings, Dangers, Cautions and Instructions

	CAUTION! Trip Hazards exist around plasma cutters. Cords, cables, welding leads and hoses pose a trip hazard. Be aware of their location and inform others of their location. Tape and secure them so they will stay out of high traffic areas.
	CAUTION! Welded metal can stay hot long after welding is completed. Burns may occur. Always wear gloves or use tongs/pliers when handling welded or cut metal. Remember the heat from the metal may catch other material on fire. Always have a fire-proof area ready to place welded components until they fully cool. Use soap stone or a metal marking marker to label the metal as “HOT” to serve as a reminder to all present in the area.
	CAUTION! Welding and cutting operations generate high levels of ultraviolet (UV) radiation which can burn and damage skin and eyes. The intensity is so high that exposed skin and eyes can burn in a few minutes of exposure. Minimize direct skin and eye exposure to this intense form of radiation by using proper PPE and sun screen where appropriate.
	CAUTION! Do not allow bystanders. Do not allow others without proper Personal Protection Equipment (PPE) suitable for welding to stand in the welding area or to observe welding and welding related activities. If protection is not readily available, use a welding screen to separate the welding area from the rest of the area. If no protection or screen is available, physically exclude them from the welding area by a wall or other solid divider. Keep all pets and young children away from the welding area.
	CAUTION! Electromagnetic Fields can be generated by this plasma cutter and radiate into the work place. The effect of EMF is not fully known. Exercise caution when welding by: NOT draping welding leads (guns/cables) over your shoulders or arms, NOT coiling them around your body, NOT inserting yourself directly between the cables, and by NOT contacting the unit while welding. DO keep the work clamp connected as close as possible to the area of the weld and directly to the object being welded whenever possible.
 	DANGER! Never touch connectors or fittings while this machine is turned on. Keep all safety covers in place when not in use. Never remove or replace the plasma consumables while the machine is turned On. Make sure the brass switch safety pins on the torch head remain in good repair and that the spring loaded function remains operational and keeps them fully extended when the torch cap is removed. The Open Circuit Voltage (OCV) while in plasma mode may exceed 400V. This is enough to cause burns, injury severe electrical shock, injury and instant death.

Important Information: Operating this unit with a generator or other off-grid service.

This plasma cutter unit should only be operated on a generator certified by its manufacturer to produce clean power. Clean power is equivalent to the quality of household or shop/garage type power. This means the generator must have 5% or less total harmonic distortion (THD) of the Sine wave. If you are unsure of the power output type of the generator, contact the manufacturer of the generator for verification. *Do not operate on square wave or modified square wave generators or converters/inverters or damage or malfunction may occur. Damage caused by running this unit off of "dirty" power or modified sine waves may not be readily apparent and can be cumulative in nature. However, damage may present itself immediately. The damage caused by running this unit on "dirty" power usually leaves internal tell-tale signs and damages specific parts.*

For recommendation for generator size, consult the specification page for surge wattage recommendations. Operating the unit on under-powered generators and/or on generators not rated with 5% or less THD can damage your unit. *The generator manufacturer determines this rating, not Everlast.* Do not assume that a name brand generator, or a "new" generator automatically provides clean power. Price paid does not guarantee a clean power output either. There are multiple brands at various price points capable of producing clean power. Investigate this before purchasing a generator. The manufacturer will usually state that a unit is clean power in the advertising information and will state actual THD. If the manufacturer does not state it, contact the manufacturer directly for a statement concerning actual THD.

NOTICE! Operation of this unit with generators not rated by its manufacturer as providing clean power (5% or less THD) is prohibited and will void the warranty. Operation with modified sine wave, or square wave generators and inverters/converters/UPS that do not produce "sine wave" output is prohibited and doing so will also void the warranty. Use only with generators/inverters/converters that produce an equivalent type of sine wave used in shops, homes and "shore" type systems.

WARNING! Do not start or stop the generator with the plasma cutter switched on. Never use the generator in ECO mode or an auto-idle mode. Even with a clean power rated generator, this action can damage the unit. *Turn on the plasma cutter only after full generator R.P.M. has been achieved and the engine is sufficiently warmed up.* Closely monitor generator fuel level so that the engine R.P.M doesn't drop or completely shut down with the plasma cutter plugged in. **For best practice: do not start or stop the generator with this plasma cutter plugged in, even if it is turned off. Unplug the plasma cutter before shutting down the generator.**

If using with a welder/generator, make sure the manufacturer has determined that the generator portion produces a clean sine wave. Many older models do not. Some newer models use "divided" power between welding and generating and cannot supply the full power to the plasma cutter unless the fine current control knob is turned to maximum. Do not use this unit with such welder/generators unless the Power/fine current control is turned to 100%. Some welder generators do have a separate alternator for generating power. If this is the case, be sure not to weld or load the machine while this unit is in use.

WARNING! Always make sure any generator or welder generator is properly grounded, according to local code. Ground the machine per the generator manufacturers instructions to meet code. Improperly grounded generators may damage the machine and more importantly may cause severe injury or death.

Single Phase 240V Operation:

This unit should be used with single phase 220/240V output. However, the unit may be used with single phase 208V if the voltage does not drop below 205V. If using this unit on 208V, duty cycle and display accuracy may be affected. Rated and Inrush Amperage will rise proportionately as well. If you decide to use this machine on 208V, before installing permanently, have an licensed electrician monitor voltage fluctuations, particularly under load and during peak use times. If the voltage remains constant, and steady without dropping below the 205V threshold, this unit may be used. Damage caused by using on undervoltage power sources is not covered by the warranty. Long arcing of the plasma may also increase amp demand. 240V and 480V Three phase operation is optional and special ordered.

WARNING!

Never use the electrical power outlet on the back of this machine for anything other than powering an Everlast brand water cooler. This is a special outlet designed to produce 240V with limited amperage draw. No other device or brand should be used in conjunction with this unit's outlet. This outlet is designed to supply 240V only. Do not attempt to modify, or change this outlet for use with anything else other than an Everlast brand water cooler designed for 240V operation. Severe damage, fire or injury may occur if other devices or other brand equipment is connected.

Specifications

Specifications	PowerPlasma 25i XTR
Inverter Type	Digitally Controlled IGBT Inverter
Minimum/Maximum Rated Output	10-25A/ 84-90V
Start Type	Blow-Back Type, High Frequency Start
Torch Type	Innotec IPT25
CNC Ready	No. Do not use with CNC equipment
Duty Cycle @ Rated Amps/Volts (40° C) (Output V/A)	35% @ 25A / 60% @ 20A / 100% @ 15A
OCV (U0)	400V
Voltage Input (U1)	120V
Maximum Inrush Amps (I1MAX) @ 120V	30A
Maximum Rated Effective Amps (I1EFF)	18A
Air Post Flow Timer	Automatic
Air Compressor Requirement and Recommendations.	3.5CFH @ 90 PSI, 20 Gallon Capacity
Duty Cycle/ Over Current Protection	Yes with LED Warning and Cutting Interrupt
Minimum Operating Air Pressure NOTICE: <i>Low Air Pressure safety sensor will interrupt output below this level.</i>	Approximately 35 PSI
Recommended Cutting Air Pressure:	55 to 62 psi (Up to 65 PSI is permissible, as static pressure may be higher. Under cut load the air pressure may drop slightly within the prescribed range.)
Maximum Supplied Air Pressure (From Compressor)	90 PSI WARNING! DO NOT EXCEED 90 PSI SUPPLY PRESSURE.
Recommended Maximum Daily Average Cut Thickness <i>(Steel, Hand Cut)</i> NOTICE: Decrease 35-40% for Aluminum and Stainless Steel (INOX).	1/4"
Rated Maximum Quality Cut @ 10-12 IPM (@ 250-300mm / min) <i>(Steel, Hand Cut)</i> NOTICE: Decrease 35-40% for Aluminum and Stainless Steel (INOX).	5/16"
Max Severance Cut @ 3-5 IPM (75mm / min) <i>(Steel, Hand Cut)</i> NOTICE: Decrease 35-40% for Aluminum and Stainless Steel (INOX).	3/8"
Gouging Limit	Do not use for gouging
Minimum Water Ingress Protection Standard	IP21S
Efficiency	>85%
Cooling Method	Fan (Full Time)
Dimensions (approximate)	13.75" L X 9"H X 5.5" W
Weight (Bare Unit)	14 lbs.
Generator Requirement (Surge Rating) WARNING! The generator must be rated for clean power output, defined as 5% Total Harmonic Distortion (THD) or less, or it will void warranty!	4000W Surge
Minimum Storage/ Minimum Operating Temperature	0°F/14°F

Specifications

*Duty Cycle

Duty Cycle is simply the amount of time out of a 10 minute period in which the unit can operate. For example, this unit has a duty cycle of 35% at maximum output. This means that the unit can be operated for 3.5 minutes out of 10 minutes. This may be continuously, or intermittently during the 10 minute period of time. This rating standard (United States) is based on a maximum ambient temperature of 40°C. Operating above this point, or at lower temperatures with high humidity may reduce the duty cycle rating. Of course, the duty cycle may increase somewhat as ambient temperature and humidity drops. Regardless, this unit's duty cycle is not controlled by a timer. Rather, this unit is equipped with a heat sensor located on a heat sink near the critical power components of the plasma cutter. If the operating temperature of the unit is exceeded, welding output will stop and an over-temperature warning light/error code will be displayed on the panel. **If a duty cycle event is registered, do not turn the unit off!** Allow the plasma cutter to continue to run at idle for at least 10-15 minutes until the temperature has fallen enough to reset the sensor and over-temperature warning light. *Even if the unit resets, allow the unit to cool for a full 15 minutes, or the duty cycle will be more quickly triggered since the unit resets just below the heat threshold. **The fan(s) must continue to run for a full 15 minutes to cool the unit properly after the duty cycle shut down has occurred.*** After 15 minutes of cooling, you may switch the unit off if you are finished welding. If the unit does not automatically reset after 15 minutes, turn the unit off. Wait for 15 seconds before turning the machine back on. If the unit does not reset, contact technical support for further advice and assistance. As a best practice, when you have completed welding and have been welding continuously for extended periods of time, keep your unit on for 10 additional minutes without welding to allow it to cool.

The intentional and/or repeated triggering of the duty cycle protection feature on this unit will shorten the lifespan of the unit's electronics and can weaken internal components. The effect of overheating your unit repeatedly takes a cumulative toll on the unit.

NOTICE: These units are tested by an international and independent certifying agency for their ability to sustain the claims of duty cycle, under lab induced conditions which are typically more stringent than average shop conditions.

Specifications

Breaker Sizing and Wiring Requirements

Before installation of this unit in any facility, always consult a licensed local electrician familiar with the requirements of properly wiring a plasma cutter into the electrical supply. Refer to the National Electric Code (NEC) and local codes. If needed, refer the electrician to Article 630 of the NEC during consultation to determine proper application and wiring needs. Use the I1MAX and the I1EFF ratings listed above to determine the proper breaker and conductor (wire) sizing required. Everlast plasma cutters are designed around use in industrial wiring applications and are intended to be used with modern electrical systems. Household wiring may need to be upgraded before this plasma cutter may be installed. A 15 Amp breaker will not allow the full range of cutting. A 20 Amp slow blow fuse or a delayed trip breaker will operate this unit satisfactorily. However some nuisance trips may be observed if long arcs are held. For best results use a 30A breaker to match the Inrush capability of this unit.

NOTICE: Due to the high switching frequency of this unit, additional HF protection and isolation may be needed if this plasma cutter interferes with the operation of electrical/electronic equipment.

IMPORTANT: Do not modify plasma cutter wiring. This unit meets the standards for conductor sizing on the power cable and takes into account power

NOTICE:

If any electrical disturbance is noticed as a result of the high frequency interference that is possible with the operation of the inverter switching and operation, the HF service bolt should be connected directly to a 12 gauge wire that is bonded directly to an outside copper ground rod driven into moist soil. Additionally, all metal items including any metal frame or sheeting of the building should be connected and grounded to separate copper ground rods driven into the ground at 10 foot intervals around the perimeter of the building. This includes items such as tables, carts, rack material, metal surrounds, etc. that may act as "antenna" to radiate/absorb HF energy. Additionally, all cords and welding leads should be twisted together and run directly to the work without coils or excess cabling. Normally, this will not be required, but it is supplied in the case of any interference that may be observed. This is usually observed in older or non standard installations where grounding and ground isolation is a problem.

Setup Guide

Getting Started

UNPACK YOUR UNIT.

Upon arrival, you will need to completely unpack your unit, and check things over. This is a time sensitive matter. Do not delay or hold the plasma cutter unopened in the box. First, make sure the unit is opened from the top. Be careful with using knives and sharp objects so you won't cut cords and cables inside the boxes. Lay all items out and inspect them.

You should have the following in your box:

1. Plasma cutter.
2. 100A Work Clamp (approx. 6 ft with cable)
3. Consumable Starter Kit for Plasma.
4. Regulator. Pressure Gauge and Tubing (4a)
5. Torch. Innotec IPT 25

When you receive your package, inspect the unit for damage. Check for the presence and general condition of the accessories. Some slight rubbing or chaffing of some of the accessories may be present, but this is considered normal. Most notably, the torch may appear to be used or fired. This is because it has been live tested in the factory for proper operation before putting into the box. If any item is damaged or missing, please inform Everlast within 72 hours of product receipt. See pages 4 and 5 for more details. Assemble the front, middle and rear handles with the supplied screws. Do not overtighten the screws.

POWER UP AND TEST YOUR UNIT.



NOTICE:

The unit comes with a basic consumable starter kit, designed to get you only through a couple days of plasma cutting. You should have 5 (pipe/non-shielded) cutting tips and electrodes. You will need to purchase a more extensive kit soon after receiving and using your unit. If you don't order extra consumables soon after you receive this unit, you may run out more quickly than you expect. This kit contains stand-off type, non-shielded consumables that are sized for the maximum Amp operation of the unit are designed for stand-off cutting. Lower Amp operation, gouging or drag cutting will require the purchase of additional consumables (See torch parts page for amp ratings and sizes). Additionally, some miscellaneous parts may be found together with the consumable kit which may include fasteners, extra fuses, and some items for the air regulator required for assembly. If you think you are missing a needed part, check the consumable kit bag before calling Everlast for replacement.

You will need to fully test the unit as soon as possible. Within 72 hours after receipt of the unit, be sure to have every thing you need at hand to test the unit. Make sure the correct input power, wiring, and plug configuration is being used. Then, power up your machine without any accessories installed. Allow the unit to idle for 15 minutes. Check and observe operation of knobs, controls and buttons, cycling through each as required. Make sure the fan is running at full speed. After the test is completed, turn the unit off, connect the accessories, shielding gas (customer supplied) and conduct live testing of all the functions and features of the machine. For testing and cutting make sure work clamp is connected directly to the part being welded (work). Check for arc starting and stability. If problems are observed, contact Everlast. See page 5 for more information. **NOTICE:** *Cosmetic damage claims after 30 days will not be accepted, unless Everlast is contacted and informed of such delay and reason for such a required delay (i.e. Overseas in deployment).*

CHECK FOR AIR LEAKS.

Be sure to check for gas leaks before attempting to cut. Connect all the lines and tighten and recheck any related clamps, plugs and fittings. If you hear or suspect leaks, use warm, soapy water (or a dedicated leak testing solution available from welding suppliers) and spray on all rear external connections. If any leaks are present, bubbles will form around the area of the leak. Tighten any clamps or fittings found to be leaking. If the regulator is leaking, make sure the pressure is not more than 90 psi, and tighten the small screws on the regulator with a screw driver. If too much pressure is applied, the regulator may have blown internal and external O-rings. Check and remedy if the regulator persists leaking. If the problem cannot be remedied, or internal leak is suspected contact Everlast. **NOTICE:** A small drop in set pressure and operating pressure (while cutting) is normal. This does not indicate a leak. This drop should never be more than 4 to 5 psi and is usually less than 3 psi. Setting the unit one LED light over the target pressure will offset this drop and allow the unit to perform satisfactorily while cutting. If the pressure drops more than this, this usually indicates the supply hose is too long or too small for the length it is running before reaching the unit. Always keep the supply hose as short as possible.

DISTANCE YOUR PLASMA CUTTER FROM YOUR WORK.

As a best practice technique, be sure to locate your plasma cutter away from the immediate area you are welding. Sparks and debris thrown by the plasma cutting process can enter the unit and cause damage. Do not intentionally cut with the plasma cutter on the work station or in the immediate area of the cut. This includes any grinding or milling operations that may occur in the area. *Keep in mind the fan draws air in from the rear and exhausts out the front and the sides of the unit.*

GIVE YOUR PLASMA CUTTER SPACE TO COOL.

The plasma cutter needs room to cool itself. Place the unit in a place that will allow 18" from all sides to allow for proper cooling. The plasma cutter pulls air in from the rear, and pushes it through the unit's heat sinks to cool the electronics. The air is then exhausted through the front panel and side louvers of the unit. If any of sides is blocked or restricted, the duty cycle will be reduced, and overheating will occur, leading to possible damage if the restriction is severe enough. Never attempt to restrict air flow by attaching filters to the vents or by modifying your fans for "on demand" service.

Setup Guide

Getting Started

CONNECT YOUR UNIT TO THE OUTLET.

Your unit has been shipped with a NEMA 5-15P plug. This is the standard plug used for 120V 1 Phase plasma cutters in North America. For 120V connection, select a NEMA 5-15 receptacle for operation with this unit. (Other regions/countries vary). as a conductor (on a dedicated plasma cutter circuit). There is no need for a neutral, so white is used as the other "hot" conductor in this instance. It is recommended to either install the receptacle as close to the main panel as possible or install a subpanel cutoff as close as possible to the outlet and plasma cutter. Follow local code to determine best arrangement.

If you are using this unit in conjunction with a 240V air compressor,

NOTICE:

There are special rules centered around wiring an outlet for service with a welding machine. The National Electric Code under Article 630 has developed specific regulations for wiring electrical service for welding equipment. These are different than for other types of service such as a stove or dryer in a household or even in a commercial application. You need to consult and/or employ a locally licensed electrician before installing this unit to make sure all national and local codes are followed. If you are not qualified to make these connections, don't. Everlast is in no way liable for any damages caused by improper connection of your plasma cutter. Your plasma cutter should be on a dedicated branch circuit not far from an electrical disconnect box. Importantly, it should not share circuits with other shop or household items. Do not attempt to "adapt" existing circuits because conductor (wire) colors are different for plasma cutters with 3 wire operation than for a dryer or range with 4 wire operation. (Unless adapting with an approved adapter when being powered with a "clean power" generator.) No neutral is used in a plasma cutter circuit. The white wire is a conductor in a single phase plasma cutter service. The red wire is not used. ***The input power cable conforms to North American standards for size, length, with consideration given to inrush amperage, rated amperage and duty cycle. Do not modify, or attempt to rewire your unit.***

you must supply a separate, dedicated circuit for both. Do not share or piggy-back a circuit with this plasma cutter unit.

Setup Guide

Getting Started

CONNECT THE AIR COMPRESSOR

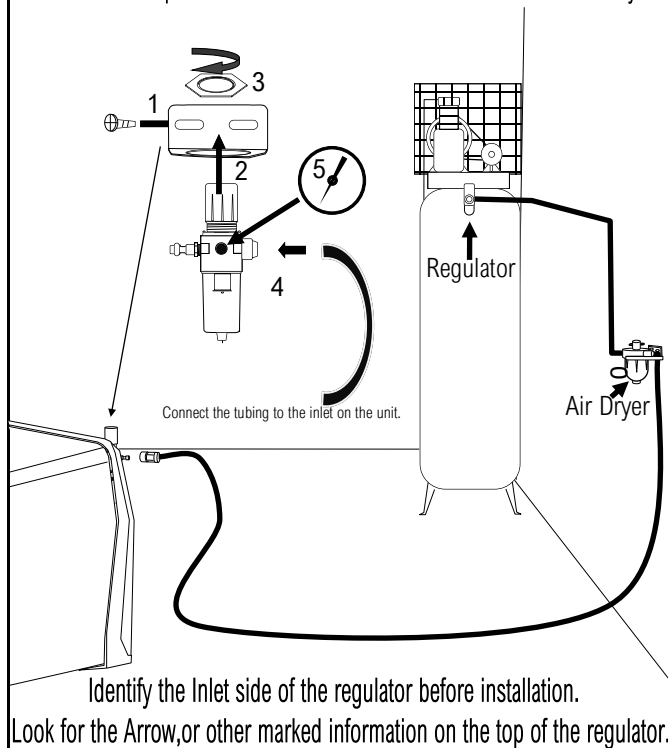
What do I need to be able to plasma cut?

The unit comes with everything you need as far as a basic starter kit for consumables, torch and regulator. However, you will need to supply a few things on your own.

1. You will need a suitable air-compressor and at least 3/8" supply line hose. 1/2" supply may be required for long distances. The input side on the regulator is the standard industrial 1/4" quick connect fitting. Suitable units should follow recommendations found in the product specification recommendations. Oilless and pancake compressors are not suitable.
2. You will need to be able to regulate your air at the air compressor. Do not use the pressure switch on the air compressor to control the air pressure. A gate or ball valve installed on the air compressor is not enough either. You will need an adjustable regulator which will control the air pressure at the tank. The regulator that you install on the unit is to be used to regulate actual cutting pressure. You need to be able to regulate the supply pressure down to 90PSI at the air-compressor. If you supply more than 100PSI to the cutter's regulator, you may damage the regulator.
3. You will need a separate air-dryer. Moisture is the enemy of any plasma system and destroys consumable life and eventually torches themselves. The regulator/filter included with the unit is not sufficient to remove moisture from the system. It is designed to trap particulates and slugs of water created by the coupling/decoupling process. A refrigerated system is not necessary. We recommend you look at the cartridge type systems that have replaceable elements for a budget alternative. If these are not available, consider at least having a replaceable paint gun dryer mounted inline and monitor the moisture it traps and replace it often.
4. You will need additional consumables with different sizes to match the cut Amperage. The stock consumables are designed for use at the maximum amperage of the machine. The orifice in the plasma tip is specifically designed for a range of Amps. To see that range, check the plasma torch pages of this manual, and each tip diameter corresponds to a specified amp range. Lowering air pressure to try to compensate for lower Amps results in poor quality cuts and inconsistent arc behavior. Always match the consumable size to the Amperage being used. **NOTICE:** Since Everlast does directly manufacture the plasma torches, every consumable configuration for every torch may not be stocked or available. For these or other special applications, consult OEM distributors of the IPT/PT/PTM series torches in the North American Markets.

Connect Compressor and Regulator.

NOTICE: The regulator is installed on the rear of the unit using the two screw holes and bracket kit provided. Follow the numbers for correct order of assembly.



IMPORTANT:

Do not reverse air flow direction! Make sure the arrow stamped on top of the regulator coincides with the direction of air flow.

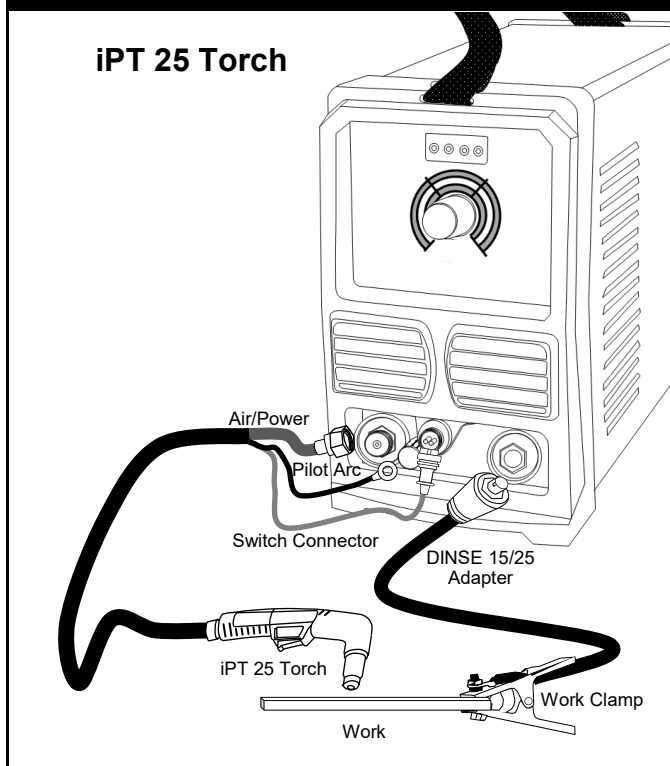
Setup Guide

Getting Started

The PowerPlasma 25i XTR torch connects via a threaded coupler. This coupler provides both gas and power to the torch. The torch also has a separate torch switch connection (Center, two pin connector) and a separate pilot arc wire (Black thumbscrew).

The standard unit is equipped with an Innotec IPT series 25 torch. The torch supports a range of operation from 10 to 25 Amps if the correct size and type of consumable is used. **Consult the torch pages that include torch breakdown and parts for the correct size consumable for the Amperage range along with its part numbers.** Or you can use the quick reference on the front of the machine for the appropriate consumable to use for the torch range. Typically a .6mm or .8mm cutting tip will be used. **NOTICE:** The torch comes standard with a special .65 mm consumable that is designed to work with the full Amp range of the cutter, but may not offer the absolute best cut quality or life span in all Amp ranges. It is always best to size the consumable for the job at hand and the amperage being used. The original .65mm consumable is designed for use with the torch out of the box and may not be available as an aftermarket or genuine Innotec parts replacement. Consult the online Everlast parts page for the IPT series torches for OEM replacement consumables and specific size and availability. If sourcing consumables online or locally elsewhere, be sure to use genuine OEM consumables only or the torch may be damaged or the consumable life may be drastically shortened.

How Do I Connect the IPT 25 Torch?



WARNING!

THIS UNIT HAS AN OCV OF 400V!

Do not torch any bare fitting while the unit is on!

Before dismounting torches, making adjustments, repairs, or inspections to torch, its cables, work clamp or switch:

TURN THE UNIT OFF!

Failure to do so may result in severe shock, injury, burn or death!

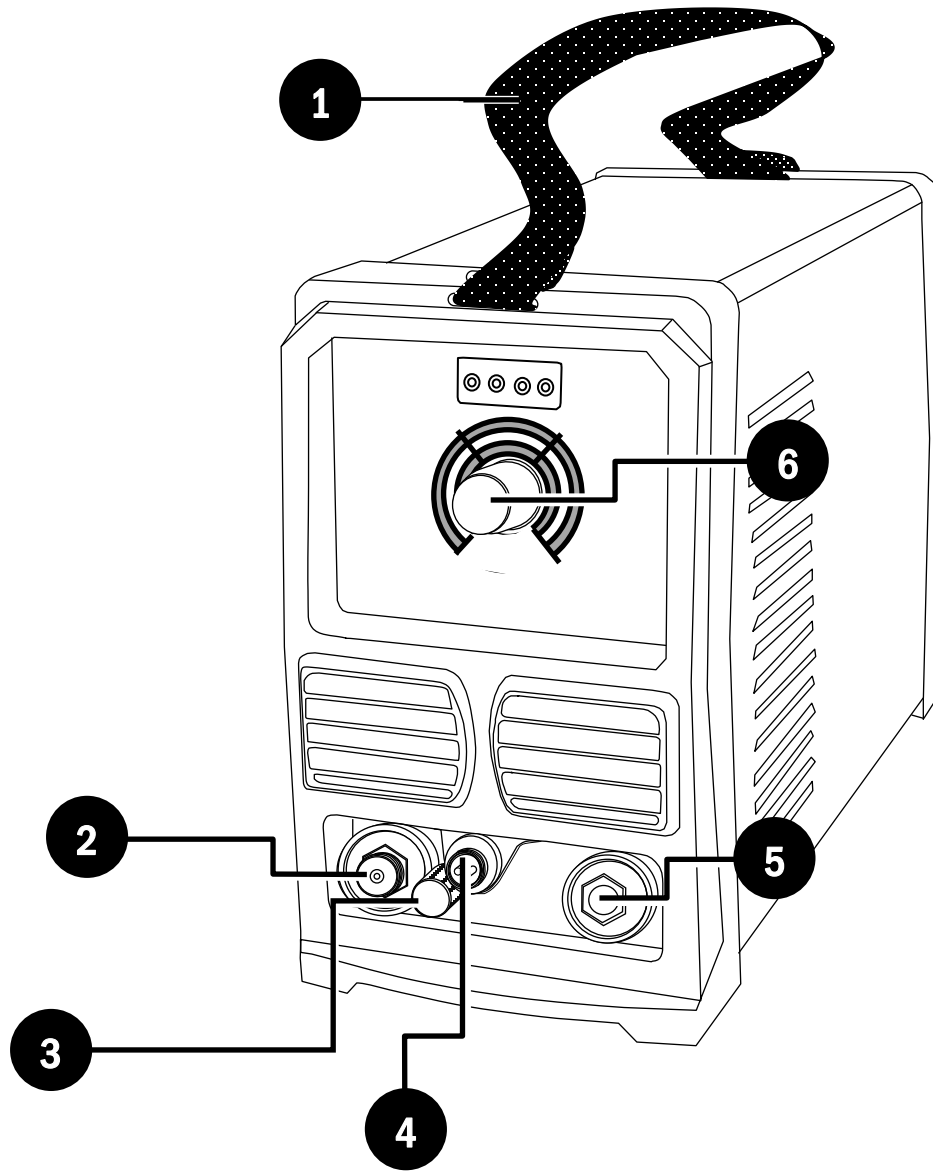
This unit is equipped with a parts in place trigger safety, which senses the outer shielding cap in place, however, in the event of an extreme torch or machine malfunction, power could still be present at the consumables, even after removing the shielding cap. It is recommended as a "best practice" that the unit be turned off before changing consumables.

Replace any lost fitting guards, safety covers or shields immediately to ensure maximum operating safety. Do not touch torch consumables or become a circuit path while cutting.

Always place the work clamp directly to part being cut, as close to the cut area as possible.

Component Identification and Explanation

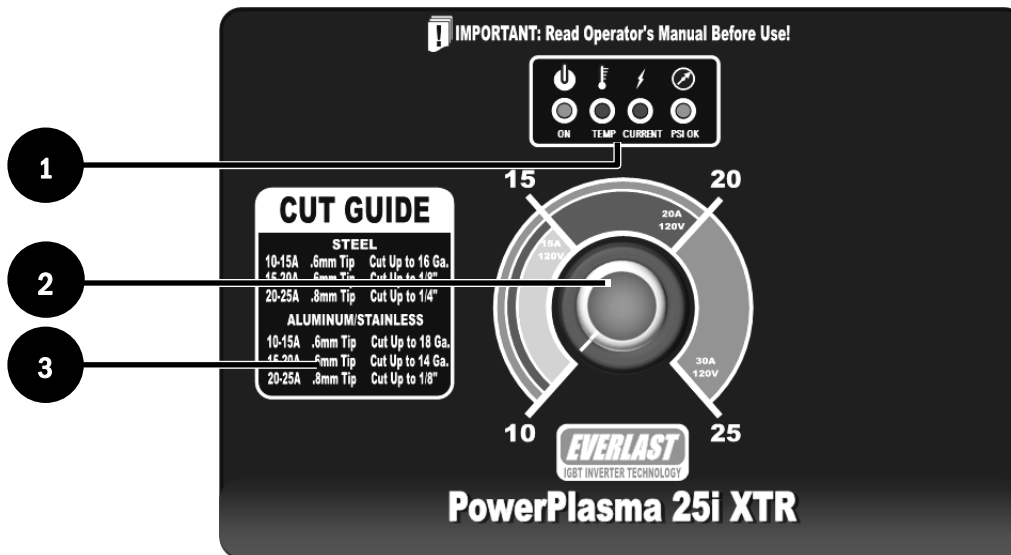
Front Panel View



Number	Component Identification	Component Note
1	Carry Strap	Use this adjustable strap only to carry the unit. Do not use this strap to suspend the unit.
2	Gas and Power Connection	This terminal is the main connection for the torch. It provides both air and cutting power to the fitting. Tighten lightly (<1/8" Turn) with a wrench. Do not over tighten or the fitting or housing will break. WARNING! Do not touch this fitting or the torch fittings while cutting or while the unit is switched on. Make or remove any torch connections only while the plasma cutter is switched off.
3	Pilot Arc Thumbscrew	Connect the eyelet (Ring) connection wire from the torch to this location. Tighten finger tight only.
4	Torch Switch Control (2-pin connector)	This fitting is to be connected directly to the torch switch wire with the two pin connector.
5	DINSE 15/25 Connector for Work Clamp	This terminal connection is for the work clamp. The work clamp should then be connected directly to the work (part being cut).
6	Operator Control Panel	See next page for details.

Component Identification and Explanation

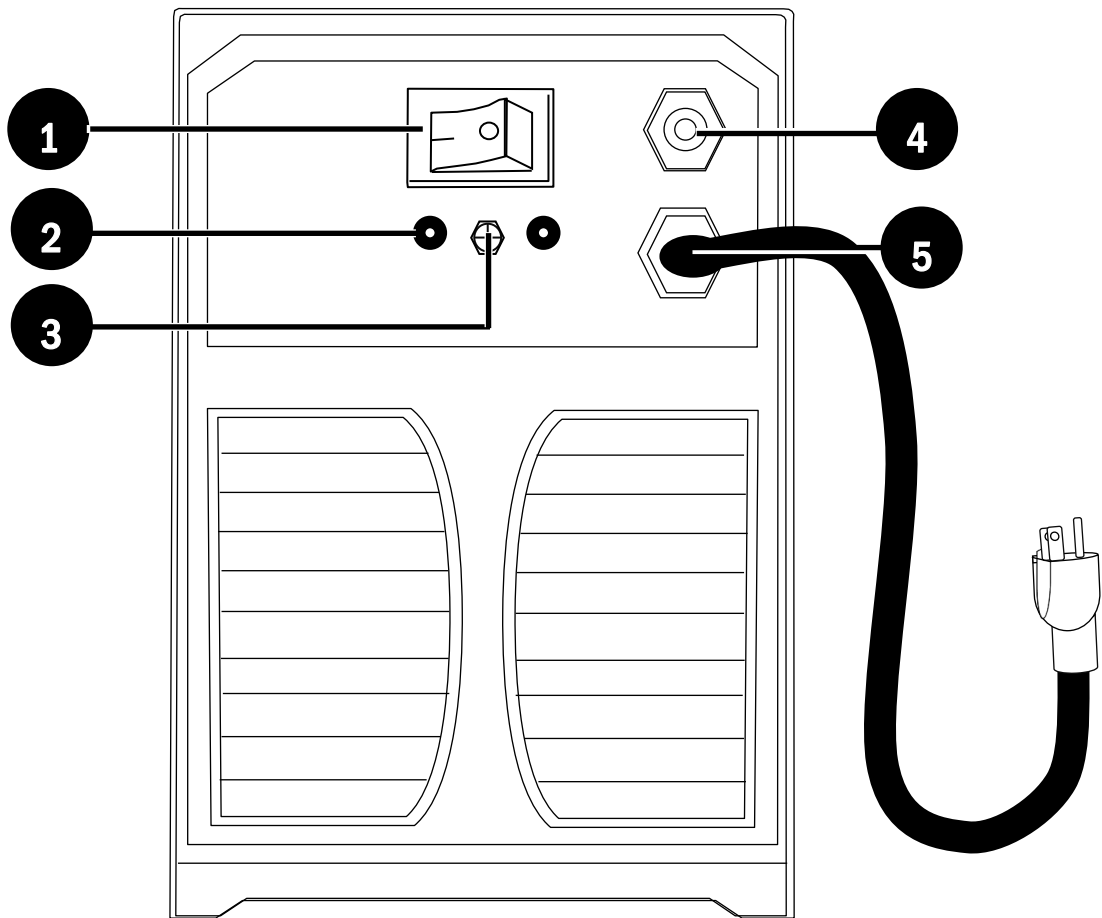
Control Panel Layout



Number	Component I.D.	Value	Component Note
1	Amps	10-25A	Use to set and control Amp output. Use the color coded guide and related information printed on the panel to manage breaker sizing and requirement. This is an approximate setting and depending on breaker type, age and condition, nuisance trips may be experienced at a lower or higher threshold.
2	Warning LEDs	NA	<p>The unit features 4 LED indicators:</p> <ul style="list-style-type: none"> On Indicator: Indicates and confirms the unit is on and receiving power Temp Indicator: Indicates an overheat has occurred. This means the unit has exceeded the duty cycle limits of the machine. When this light occurs, output will terminate until the unit has cooled. Current Indicator: Indicates an overcurrent condition has occurred. This can happen when a problem has occurred where the machine drew too much amperage. This could be a result of operating on dirty power, with undersized wiring, too low/high of supply voltage or similar condition. It can also indicate a severe internal fault. If the LED indicates that an over current event has occurred, switch the unit off briefly and check for a possible cause and remedy the problem if discovered. Then turn the unit back on. If the fault does not clear, this indicates possible internal damage. Discontinue use immediately and call Everlast. OK-To-Cut Indicator: Indicates that the air pressure has reached minimum safe operating air pressure when lit. If this light is not lit, make sure the air has been connected and that the air pressure is between 55-65 PSI. The minimum required air pressure required to cut is around 35 PSI. Once the air pressure reaches 35 PSI, the LED will light and cutting can take place. If the air pressure is set just above the minimum setting, expect the cutting to be frequently interrupted and for the light to go out as the pressure drops below the 35 PSI threshold. Keep in mind the 35 PSI air pressure threshold is not ideal pressure, only OK-to-cut-pressure.
3	Selection Chart	NA	Use this chart to select the correct consumable size and amperage for your cut. The figures given in the chart by no means recommend the "maximum" you are able to cut with the setting and consumable size given, but are recommended based off the best cut speed and quality. Use this cut chart, and the information provided on the torch page to select the best consumable for your cut.

Component Identification and Explanation

Rear Panel View



Number	Component Identification	Component Note
1	Power Switch	This switch turns the unit on and off.
2	Air Regulator Mounting Holes	The two mounting holes are used to locate the air regulator bracket. Attach the bracket before installing the regulator.
3	Ground Service Bolt	For use in a combined effort to mitigate any electrical interference that may be caused by the operation of this unit. Normally this may not be required. If required, drive a metal stake in the ground (copper clad ground) and is connected to it via a 12 gauge copper wire to this terminal screw. If required, all metal objects in the building should be grounded commonly to an outside ground at 10 ft intervals. These should not return to the electrical ground path.
4	Air input connector (from regulator)	Hose barb type. Use the clamps provided to connect the unit to the air regulator via the tubing.
5	NEMA 5-15 Power Plug and 6 ft cable	This plug is a standard North American type 120V 15A/20A plug. Make sure it is grounded properly.

Component Identification and Explanation

Plasma Cutter Function Important Information and Warnings:

DANGER! Never touch any of the bare portions of the torch power connectors, fuse, consumables or torch control while the unit is switched on and torch is connected. Severe injury or death may occur if the torch trigger is accidentally activated or becomes damaged. **This unit has an OCV of 400 Volts.**

WARNING! Do not use sun glasses or non cutting glasses to protect the eyes. Use at least a shade 8 for plasma cutting where the arc is clearly visible. Never use less than a shade 5, and only use that for situations where the arc is not visible. Do not use cutting shades rated only for Infrared use, such as those designed for Oxy-Fuel use. These usually do not offer sufficient UV protection unless stated otherwise.

CAUTION! Keep the torch switch isolated and the consumables in place on the torch while the unit is switched on. Turn the unit off to change consumables. Do not remove the trigger safety guard or attempt to defeat its operation in any manner. If the trigger safety becomes damaged, replace or repair it immediately. Turn the machine off to replace the consumables.

WARNING! Do not submerge the work clamp in water. Always connect the clamp directly when possible, but the clamp should never be submerged in water, or the water may siphon down the cable through capillary action and run into the DINSE connector or the machine. If the work clamp cannot be safely attached to the work without submerging it, either lower the water level of the table, or use a thick copper jumper wire direct to the work clamp which is attached directly to the work clamp.

WARNING! A poor work clamp connection may cause faulty cutting, loss of cutting power, or excessive pilot arc engagement. The Pilot arc is not designed for continuous run and the length of its time on should be limited as much as possible. If poor cutting is experienced, with minimal penetration into the cut, the pilot arc may be staying engaged. Check the work clamp and cable for proper connection. If required, change the work clamp if the copper cable and strap have burned or looks corroded.

STOP!

If the pilot arc does not appear to transfer, stop immediately, and investigate the cause. Usually this is a result of a poor work clamp connection, or too high of a cut height. Do not allow the pilot arc to remain on continuously. To do so will increase consumable wear greatly, or overheat the pilot arc circuit.

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.

Component Identification and Explanation

Explanation of Functions and Plasma Cutting Terms

What Air Pressure Do I Use to Cut?

The unit should maintain between 55 and 65 PSI while actively cutting.

The OK-TO-CUT indicator LED does not mean that the unit is operating at optimum air pressure. It just means that the unit has reached sufficient air pressure to cut safely. If used on the threshold of this limit, frequent arc outages may be observed as the pressure drops below the threshold. This is not a defect, but a safety feature. Do not lower the air pressure in an attempt to improve cut at lower Amps with oversize consumables. Consumable size should always be matched to the Amp range being used to cut. See the torch page and the parts information (or front of the unit) to match consumable size to the Amp range of the consumable.

Bevel. When plasma cutting a certain amount of bevel will be present. The cut will rarely be a true 90 degree cut. Usually 1 to 7 degrees of bevel may be present on the “keep” side. Ideally this figure is under 5 degrees of bevel. One side of the cut will have more bevel than the other. Measure the “keep” side of the bevel. Practice cut with your torch first before attempting precision requiring cuts to familiarize yourself with which side of the cut the bevel is being formed on. With the iPT60 torch the inside swirl ring can be flipped over to change the bevel side. If circle cutting, be sure you have identified the direction of bevel. Changing “clock” rotation of the torch in a circle cut will change the side of the bevel. See the instructions on circle cutting in this manual.

Blow Back Start. There are three common types of start that can be attributed to how the plasma arc is started or maintained. Two of the three are no longer used in more modern plasma cutting systems. These two are: Contact start and High Frequency start. Contact start simply means the torch must be touched to the metal and drag along to maintain an arc. High Frequency start uses points similar/same as the TIG process to create a small arc, or spark to start the arc without the torch needing to maintain contact or touch down to start. HF start with pilot arc operation causes a lot of electrical interference. The final type of start, is used in most modern plasma cuttings system. This is the Blow-back Start. In a Blow-back start torch design, when no gas is flowing and the torch is not in use, the electrode and tip rest in contact with each other, creating a closed circuit. When the torch is triggered, either a spring loaded “piston” or a specially designed spring loaded cartridge uses air pressure to drive the electrode rearward away from being in contact with the cutting tip, creating a small “Pilot Spark” energizing the pilot arc. This unit uses the modern “Blow-back” start style. For more information, see how the arc starts in the illustration located on the torch page.

Dross. Dross is the left-over oxidized metal created by the Plasma cutting arc. In an ideal cut, little or no dross will be left, as it is cleanly dispersed out the bottom of the cut. Generally, though some slight dross will be present. Dross is sometimes referred to as “slag” by people who are mostly accustomed to stick welding or cutting with oxy-fuel processes. The amount of and type of dross created is affected by torch cut height, cut speed, air pressure, consumable size and even torch angle. Two types of dross are generally present: Hard and Soft. See the instructions later in the manual to identify the type and cause of different types of dross.

Edge Start Cut. When the plasma torch reaches the upper limit of the cut capacity, piercing starts are no longer viable. Usually this is anywhere from 1/2 to 2/3 of the torch rated capacity. Cutting can still be

performed, but starting a cut in the middle of the metal is no longer an option. If piercing starts are attempted near the maximum capacity of the machine, wear will greatly accelerate on all torch consumables and even the torch itself. In fact a poorly performed pierce start will completely destroy the consumable set in one cut if the pierce is performed at or near the maximum capacity of the cutter. An edge start allows the torch to be placed on the very edge of the plate to be cut to start the arc. The arc actually lights right on the edge of the metal, and the torch is brought into the metal and the cut begins. A lead in is usually used to create the cut.

Kerf. Kerf is the width of the cut. Kerf will vary according to the consumable orifice size used, the stand off height, and to a lesser extent, cut speed. Kerf width is important to maintaining cut accuracy. Testing kerf width first is advised before trying to perform cuts which need a high level of accuracy. Always remember to adjust for the kerf width. Smaller kerfs can be achieved by using smaller diameter cutting tips, but cut thickness will be limited.

Lead-In/Lead Out. Lead ins or Lead Outs are simply cuts that are made at the beginning or end of the cut that will not be used in the final part being cut. These are usually tangential to circles or start outside of the part shape and travel into or out of the cut. This is done to prevent “blow out” of the kerf width and discontinuities where the torch starts/stops.

Pierce Start Cut. When the plasma cutter is sized properly and is used in an average, daily cut, the unit will not be at the all-out maximum capacity of the machine. In this case, the torch will use the pilot arc to start the arc and will begin to pierce a hole through the metal to start the cut. Of course, if desired the pierce can happen anywhere on the metal. When hand cutting, the piercing limit can be increased by starting the cut at a slight angle to keep the sparks and molten metal for bouncing back onto the torch head, and damaging it. Once the piercing begins and the cut begins to develop, the torch can then be slowly stood fully vertical to cut as the flame begins to exit the bottom of the cut.

Problem: I just changed my consumables now my torch won't light/or the arc is blowing out my tip. What's wrong?

Did you just change your consumables? Or did someone do it for you? All iPT torches use a swirl ring. This swirl ring is used to help create the torch arc, and confine it. It is a small brown/orange high temperature plastic piece shaped like a donut with several pin holes in the side directly under the cutting tip. Sometimes it'll stick lightly to the old cutting tip, or may even be dropped, unnoticed during the change. It is lightweight, and the color may blend in with the color of the copper cutting tip. This swirl ring is rarely replaced, but must be checked for its presence before reinstalling the consumables or it can damage the torch head and cause extreme malfunction. Occasional wild or random starts with poor arc may be present.

Problem: I can touch my torch to the surface and cut, but I don't get a pilot arc when I pull the trigger.

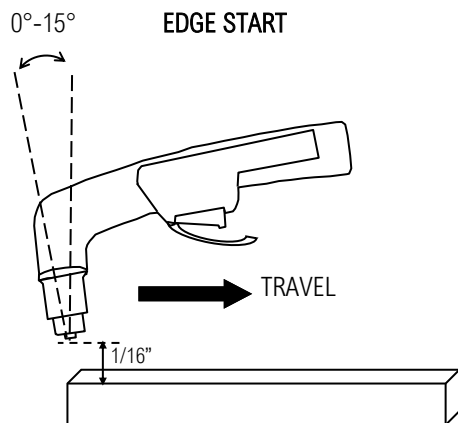
Check your fuse. The Pilot arc is served by this fuse. The fact you can touch the torch to the metal and still cut indicates the pilot arc is not functioning, but the cutting arc is still working ok.

Component Identification and Explanation

How do I edge start a plasma cut?

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.

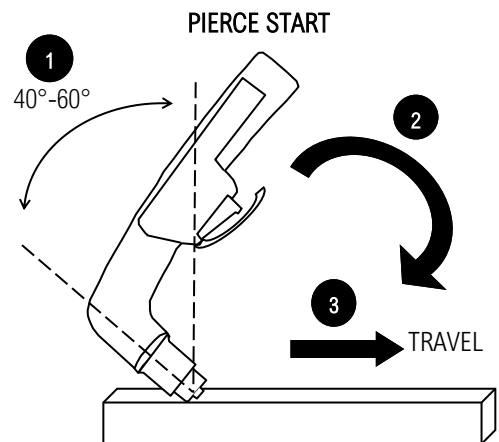
- 1) Line up the hole on the tip of the electrode on the edge of the cut. Hold torch perpendicular to the cut initially, about 1/16" off the metal. Slide the yellow safety lock and squeeze the trigger. Wait for arc to start.
- 2) Once the arc starts, wait for the arc to penetrate all the way through the metal.
- 3) As the torch 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" to 1/8" 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.



How do I pierce start a plasma cut?

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.

Component Identification and Explanation

How often should I check or change consumables?

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 prepare 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. If the cut quality suddenly deteriorates and begins to show greater than 5 degrees bevel, stop and check the consumables for wear. Inspect the cut tip orifice for the tell-tale signs of wear including deep pitting around the orifice and an egg shaped hole. The electrode should be inspected for wear as well at this time. The cap should be pulled off, along with the tip and the swirl ring. The tip should be examined for wear. A slight pit is normal in the center of the electrode. However, if the electrode tip is pitted around the center, or the center has a deep hole in it, the tip is worn. The very center of the electrode has a special insert made of hafnium. Hafnium is an expensive and durable metal that is used for electrodes. If the hafnium insert is wearing quickly, check for water or moisture getting into the system. Also, 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. Do not under tighten it either. Use the supplied wrench to tighten the electrode. Use your fingers only to tighten with this wrench. Avoid using pliers to install and remove the consumables.** This usually occurs on lower quality consumables (non-OEM) with poor chrome plating, but can occur if OEM consumables are overtightened.

NOTICE:

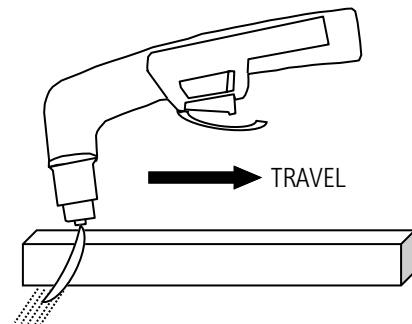
When lowering amps to cut thinner material, you must change to smaller orifice nozzle. Nozzles are offered in different sizes which are made for different amp levels. **See the torch parts page for amp range and size of consumables.** Everlast offers OEM size and configuration of consumables originally supplied with the torch for replacements and do not offer all configurations or sizes.

Everlast is not the manufacturer of the Innotec IPT series torches and does not offer all possible consumable types available for the torch series. OEM suppliers of the Innotec IPT torches (local and online) offer extended range of sizes and configurations. If drag cutting is desired, shielded drag consumables are now available from several online sources. *An orifice that is too large for the amps being used will result in arc instability and a rough cut.*

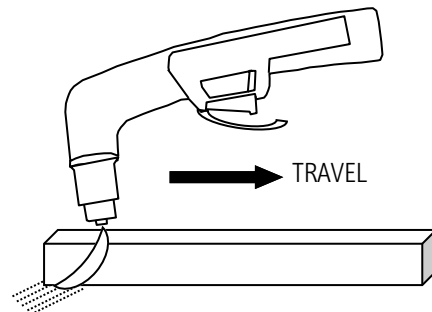
What should the torch flame look like?

The torch flame angle can tell you if you are cutting at the correct speed or not. Take a look at the examples below to help you determine if you are cutting at the correct speed.

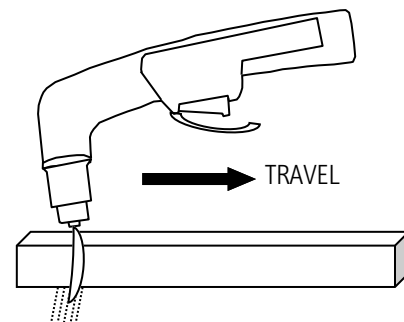
FLAME AT CORRECT TRAVEL SPEED



FLAME AT FAST TRAVEL SPEED



FLAME AT SLOW TRAVEL SPEED



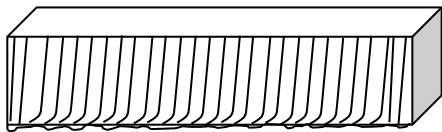
Component Identification and Explanation

What kind of dross am I seeing?

Dross identification can help you determine what is wrong with your cuts. Use the guide below to help you improve your cut quality.

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

SMOOTH, EVEN CUT LINES WITH A REARWARD SWEEP



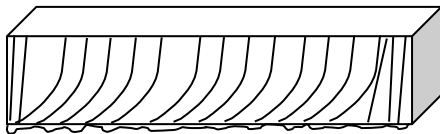
MINIMAL EASY TO CLEAN DROSS

RESULTS OF CUT AT SLOW SPEED
VERTICAL CUT LINES



SIGNIFICANT SOFT, POROUS DROSS

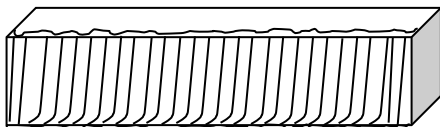
RESULTS OF CUT AT FAST SPEED
ROUGH, DISTINCT CUT LINES SPACED FAR APART



NOTICEABLE SMALL, HARD DROSS

RESULTS OF TOO MUCH STANDOFF OR
WORN CONSUMABLES

TOP DROSS, SLIGHT BEVELING AT TOP



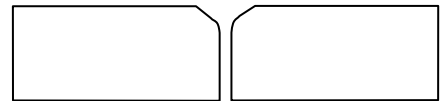
What other problems am I like to encounter?

Frequently, more than one problem may exist. Closely evaluating all issues can help narrow down cutting problems. Examine the cut for these additional issues to help you track down cut problems.

RESULTS OF TOO MUCH CURRENT OR TOO MUCH
STAND OFF HEIGHT

(END VIEW)

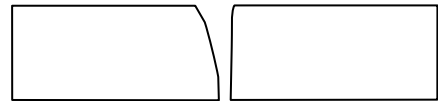
MELTED TOP EDGE



RESULTS OF WORN CONSUMABLE OR LOW AIR
PRESSURE OR OUT OF SQUARE TORCH

(END VIEW)

SEVERLY ANGLED CUT AT TOP

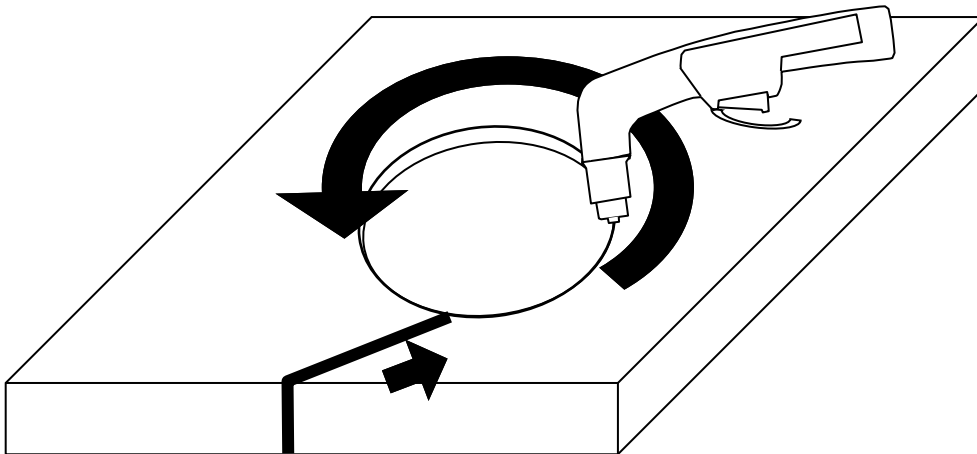


Component Identification and Explanation

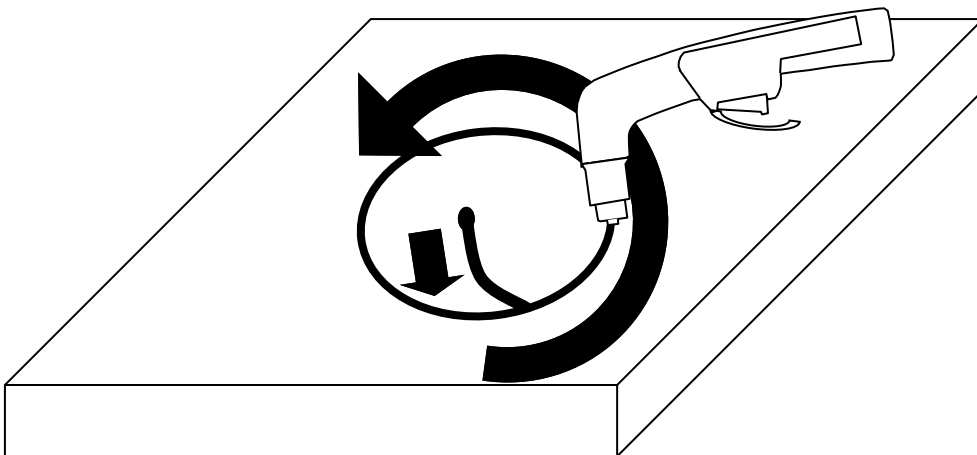
How Do I Use a Lead-in?

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.

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



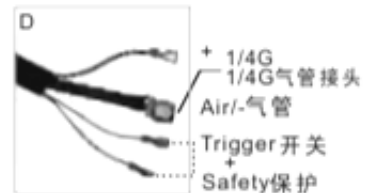
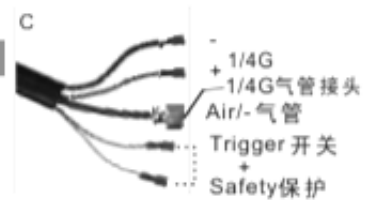
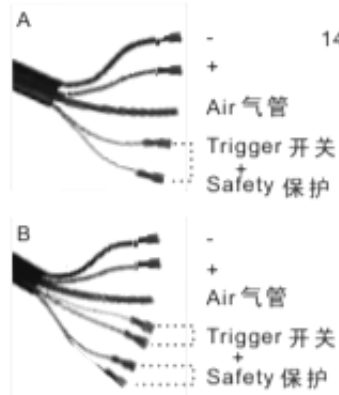
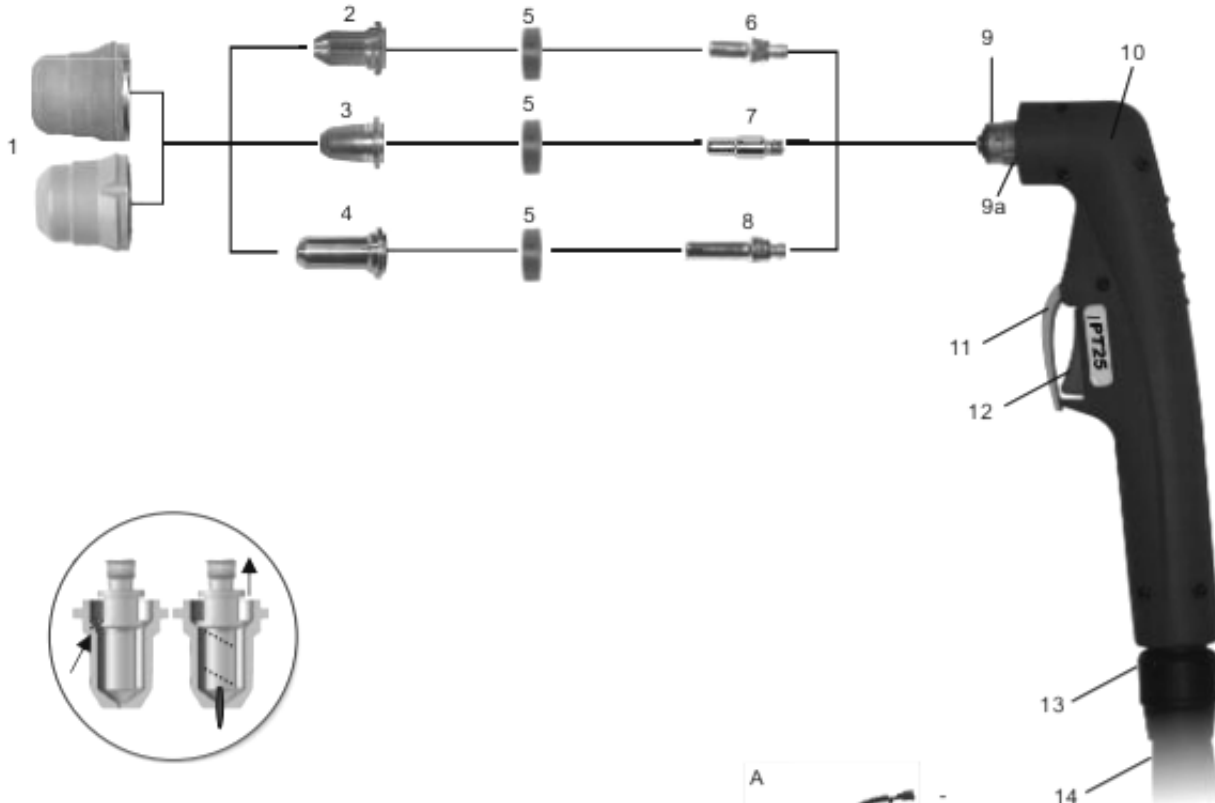
What is Kerf?

When you make a cut, a certain amount of material is removed from the cut. This is known as the kerf. In plasma cutting, knowing the width of the kerf is important to making accurate cuts. A typical kerf width from a plasma cutter will range from .045" to .090". The actual width of the kerf is affected by the orifice diameter in the consumable tip and by the cut height of the torch, and to some extent the thickness of the metal. Of course the best way to determine kerf width is to make a test cut and measure it. But if you are trying to achieve a narrow kerf width in thick plate metal, you will be limited by the fact that you will need a larger orifice to support the greater amperage needed to make a clean cut. Of course, you should always match the Amperage range to the orifice diameter. Lowering Amperage too low with a large consumable will result in arc instability and sputtering. A higher amperage consumable has a wider orifice width to support the increase in the Amperage. If the consumable size isn't increased, the higher Amperage arc will quickly “blow” its way to a wider orifice, which will lead to instability in the arc and a decrease in cut capacity since the hole is usually oblong instead of round at that point. Going with a larger diameter orifice on sheet metal means that while the cut can be performed more quickly, the kerf tolerance must be increased and figured into the cut plans. Cutting too slowly with a larger diameter consumable on thin metals will possibly yield an irregular kerf width, and “melt back”, where the metal and the dross melt back and close over the area just cut. If you have no choice but to cut thin material with a wider consumable,

Component Identification and Explanation

iPT 25 Torch

WITHOUT HIGH FREQUENCY
非高频



Technical Data		技术参数
		PT25C-s
Current 额定电流	25 Amp	PT25
Duty Cycle 占载率	35%	25 Amp
Gas 气体	Air/N ₂ 空气/氮气	60%
Gas Pressure 气压	2.8 Bar	Air/N ₂ 空气/氮气
Gas Flow 气流量	40LPM	4 Bar
Ignition 引弧方式	Without HF 非高频	95LPM
Post Flow 气体延时	20 sec. recommended 推荐20秒	Without HF 非高频
Standard Length 标准长度	4M	25 sec. recommended 推荐25秒
		4M

Component Identification and Explanation

iPT 25 Torch



Complete Torch

Code	Ref	Description	Code	Ref	Description
A	IVT0822	Plasma torch IPT25C/4m 2wires 等离子切割枪/IPT25C/4m/2芯控制线	B	IVT0829	Plasma torch IPT25/4m 4wires 等离子切割枪/IPT25/4m/4芯控制线
A	IVT0822-01	Plasma torch IPT25C/4m 2wires back striking 等离子切割枪/IPT25C/4m/2芯控制线/后引弧	B	IVT0829-01	Plasma torch IPT25/4m 4wires back striking 等离子切割枪/IPT25/4m/4芯控制线/后引弧
B	IVT0823	Plasma torch IPT25C/4m 4wires 等离子切割枪/IPT25C/4m/4芯控制线	C	IVT0827	Plasma torch IPT25/4m 1/4G 等离子切割枪/IPT25/4m 1/4G
B	IVT0823-01	Plasma torch IPT25C/4m 4wires back striking 等离子切割枪/IPT25C/4m/4芯控制线/后引弧	C	IVT0827-01	Plasma torch IPT25/4m 1/4G back striking 等离子切割枪/IPT25/4m 1/4G/后引弧
A	IVT0825	PA0375 Plasma torch IPT25/4m 2wires 等离子切割枪/IPT25/4m/2芯控制线	D	IVT0826	Plasma torch IPT25/4m 1/4G separated 等离子切割枪/IPT25/4m 1/4G/气电分离
A	IVT0825-01	Plasma torch IPT25/4m 2wires back striking 等离子切割枪/IPT25/4m/2芯控制线/后引弧	D	IVT0826-01	Plasma torch IPT25/4m 1/4G separated back striking 等离子切割枪 IPT25/4m 1/4G/气电分离/后引弧

Position	Code	Ref	Description
1			Outside nozzle;外喷嘴
1.1	IVS0660		Outside nozzle 1 hole;外喷嘴/1孔
1.2	IVS0660-01		Outside nozzle 1 hole/maximum life;外喷嘴/1孔/长寿命
1.3	IVS0662	PC0117	Outside nozzle 2 holes;外喷嘴/2孔
1.4	IVS0662-01		Outside nozzle 2 holes/maximum life;外喷嘴/2孔/长寿命
2			Tip;喷嘴
2.1	IVU0660-06		Tip Φ 0.6mm/10-20A/back striking;电极喷嘴 Φ 0.6mm/10-20A /后引弧
2.2	IVU0660-08		Tip Φ 0.8mm/20-30A/back striking;电极喷嘴 Φ 0.8mm/20-30A /后引弧
3			Tip
3.1	IVU0661-06	PD0116-06	Tip Φ 0.6mm/10-20A IPT25-40;电极喷嘴 Φ 0.6mm/10-20A
3.2	IVU0661-08	PD0116-08	Tip Φ 0.8mm/20-30A IPT25-40;电极喷嘴 Φ 0.8mm/20-30A
3.3	IVU0661-09	PD0116-09	Tip Φ 0.9mm/30-40A IPT25-40;电极喷嘴 Φ 0.9mm/30-40A
4			Extended tip;加长喷嘴
4.1	IVU0609-06		Extended tip Φ 0.6mm/10-20A/back striking;加长电极喷嘴 Φ 0.6mm/10-20A/后引弧
4.2	IVU0609-08		Extended tip Φ 0.8mm/20-30A/back striking;加长电极喷嘴 Φ 0.8mm/10-20A/后引弧
5	IVF0601	PE0106	Diffuser/IPT25-60;分流器 IPT25-60
6	IVB0048		Electrode/back striking/IPT25-60 back striking;等离子电极/IPT25-60/后引弧
7	IVB0660	PR0110	Electrode/IPT25-60;等离子电极 IPT25-40
8	IVB0049		Extended electrode/IPT25-60/back striking;加长等离子电极/IPT25-60/后引弧
9	IVZ0671		Plasma torch head IPT25C;等离子枪头 IPT25C
9a	IFT0709		*O*ring Φ 15x Φ 18mm;O型圈 Φ 15x Φ 18mm
10	IGV0038		Plasma handle manual/IPT20-60/Red;等离子手工手柄/IPT20-60/红色
11	IHJ0722		Protection part/Plasma/Yellow;开关保护档片/等离子用黄色
12	IHQ0070	185.0031	Trigger;开关
13	IHJ0898		Joint/small/new type;球节套件/小/新式
14			Cable assembly;电缆组
14.1	IVN0723		Cable assembly IPT20C-25/4m/2 wires/direct;电缆组/IPT20C-25/4m两芯控制线/直接连接
14.2	IVN0724		Cable assembly IPT20C-25/4m/4 wires/direct;电缆组/IPT20C-25/4m四芯控制线/直接连接
14.3	IVN0736		Cable assembly IPT25/4m 1/4G;电缆组/IPT25/4m 1/4G
14.4	IVN0730		Cable assembly IPT25/4m 1/4G separated;电缆组/IPT25/4m 1/4G/气电分离
15	ICG6006		Spanner for Plasma;等离子枪扳手
16	ISM0707		Circle cutting attachment;圆周切割附件

Component Identification and Explanation

Can I change my torch to another brand?

These units have been specifically programmed and designed for use with the blow-back design of the Innotec iPTM or a similar name brand PTM series torches. Changing out to other brands to “hybridize” the unit is not recommended and may result in damage to the machine. Some brands use a higher arc voltage, and this is controlled by the torch’s internal design and tolerances. These torches may work for a while, and offer the added convenience of cheaper bulk consumables, but will eventually damage the machine by forcing it to generate a higher arc voltage than it was designed for at any given amperage. It can also theoretically affect duty cycle ratings. If you desire to use another torch with this machine, consult with Everlast before replacing or changing your torch.

Why is my torch pilot arc sputtering or going on and off when I pull the trigger.

Pilot arc sputtering is often caused by several factors. The first, air pressure is too low. The second is that it may be too high. However, the third reason, and likely the most common reason is that the consumable size has not been matched with the Amperage setting of the machine. The unit is shipped with consumable sizes designed to be used at or near the maximum output of the machine. When you lower the amperage, the arc is simply being blown out or destabilized. Think of a small garden hose you may use outside your house. Then think of (if it were possible) connecting a fire hose to the same faucet and how weak and unstable the stream would be. Water and electricity do share similar characteristics. Use the torch page for your cutter to identify the proper size and type of consumable for your application. **NOTICE:** The stock consumable that comes with this torch is an “in between” size made just for out-of-the-box use for the full range of cutting Amps. However, this is not necessarily ideal for best cut quality, performance and consumable life, but is given to the customer so that the unit is ready to use upon receipt without needing extra consumables. This consumable may not be available as a replacement direct from Everlast, but other sizes are.

How do I set my plasma cutter for hand cutting?

Hand cutting is easy to learn and set. The maximum Amperage setting of your unit will cut even the thinnest pieces and do it well. However, there are two issues concerning this. You may have to move extremely fast, or dross will build up or the metal may weld itself back together. And, you may have a wider kerf than is desired. In order to avoid this, and get the most out of your unit, use the following guide to set your amperage, and to get your machine setup correctly. Be sure to then match the consumable size to the amperage being used.

- 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.*
- For a cut guide, consult the front sticker on the welder for ideal cutting. Greater cut thicknesses may be achieved, but these are numbers given for best performance at a reasonable cutting speed.

Troubleshooting

Common Plasma Cutting Issues

NO.	TROUBLE:	CAUSE/SOLUTION
1.	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.
2.	Air flows but pilot arc does not start or spark but arc starts when	Fuse blown. Replace with 30 A automotive type, slow blow. PCB issue.
3.	Will not start arc.	Air Pressure too low or too high. Torch electrode/blow back mechanism stuck in rear position (Clean and relubricate or replace head). Missing Swirl Ring (usually happens after consumable change).
4.	Pilot arc will not light. Arc will start when torch is drug on the metal. 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.)	Possible missing swirl ring. Pilot Arc wire is disconnected. 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.
5.	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
6.	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.
7.	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.
8.	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.
9.	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.
10.	Unstable arc at lower amps.	Nozzle orifice size is too large. Use nozzle with smaller orifice. Air pressure too high or too low. Poor work clamp connection.
11.	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.
12.	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.
13.	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.
14.	Excessively Beveled Cut.	Worn consumables, too high of stand-off height.
15.	Cup and/or nozzle is melting or cracking.	Improper cutting technique/excessive piercing.
16.	Power input circuit breaker trips repeatedly.	Improperly sized circuit. Internal issue. Contact Everlast.
16.	Arc "Blows Out" when ready to cut.	Too high of air pressure. Wrong size consumable for amperage being used.

