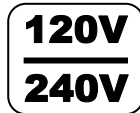
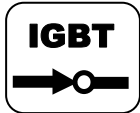


# **EVERLAST**

## **POWER TIG 185 DV**

AC/DC Pulse TIG/STICK WELDER



### ***Operator's Manual for the PowerTIG 185 DV Safety, Setup and General Use Guide***

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

Rev. 2 0 01005-18ETL



1-877-755-9353

329 Littlefield Ave. South San Francisco, CA

Specifications and Accessories subject to change without notice.

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**NOTE: Product specifications, accessories and features are subject to change without notice!** While every attempt has been made to provide the most accurate and current information possible at the time of publication, this manual is intended to be a general guide and not intended to be exhaustive in its content regarding safety, welding, or the operation/maintenance of this unit. Everlast Power Equipment INC. does not guarantee the accuracy, completeness, authority or authenticity of the information contained within this manual. The owner of this product assumes all liability for its use and maintenance. Everlast Power Equipment INC. does not warrant this product or this document for fitness for any particular purpose, for performance/accuracy or for suitability of application. Furthermore, Everlast Power Equipment INC. does not accept liability for injury or damages, consequential or incidental, resulting from the use of this product or resulting from the content found in this document or accept claims by a third party of such liability. This manual has been compiled in an attempt to give a basic overview of operation and offers practical information centered around safe use of the welder for some one with a basic level of welding knowledge. Since welding is inherently dangerous, this manual is no substitute for common sense and formal safety training. Ultimately, only the operator of this welder can ensure that safe operating practices are being followed in and around the work area. Take time to read this manual thoroughly. Pay attention to safety notations and other important notations made throughout this manual. If you do not possess the skill and training needed to safely and competently operate this welder, do not use this welder until professional consultation and instruction is received.

**Dear Customer,**

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

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

**Please review and download the official warranty statement, located on our website [www.everlastwelders.com](http://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 of its terms and conditions.**

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, and must cover all aspects to properly diagnose the problem. Depending upon your issue, it is advisable to have basic tools handy such as screwdrivers, wrenches, pliers, and even an inexpensive test meter with volt/ohm functions before you call.**

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

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

Sincerely,

Everlast Customer Service



Serial number: \_\_\_\_\_  
Model number: \_\_\_\_\_  
Date of Purchase \_\_\_\_\_

**Everlast US:**

Everlast consumer satisfaction email: [sales@everlastwelders.com](mailto:sales@everlastwelders.com)  
Everlast Website: [everlastwelders.com](http://everlastwelders.com)  
Everlast Technical Support: [tech@everlastwelders.com](mailto:tech@everlastwelders.com)  
Everlast Support Forum: <http://www.everlastgenerators.com/forums/index.php>  
Main toll free number: 1-877-755 WELD (9353)  
Tech Support Extension: 207  
Welding Support Extension: 204  
FAX: 1-650-588-8817  
Sales Hours: 9am—5pm PST M-F  
Tech Support Hours: 9am-5pm EST M-F

**Everlast Canada:**

Everlast consumer satisfaction email: [sales@everlastwelders.ca](mailto:sales@everlastwelders.ca)  
Everlast Website: [everlastwelders.ca](http://everlastwelders.ca)  
Everlast Technical Support: [sales@everlastwelders.ca](mailto:sales@everlastwelders.ca)  
Telephone: 905-637-1637 FAX: 1-905-639-2817  
Operating Hours: 9am-4:30pm EST M-F

**Everlast Australia:**

Sydney: 5A Karloo Parade Newport NSW 2106  
(02) 9999 2949  
Port Macquarie: 2B Pandorea Place Port Macquarie  
(02) 8209 3389  
After hours support: 0413 447 492  
Everlast Technical Support: [support@pickproducts.com](mailto:support@pickproducts.com)

## Safety Precautions

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



Safe operation and proper maintenance is your responsibility.

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

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

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



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

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



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

## Safety Precautions



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



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



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



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



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



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



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



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



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

## Safety Precautions



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



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

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



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

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

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



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



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



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



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



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

continued



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



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



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

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



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



**WARNING! Faulty or poorly maintained equipment can cause injury or death.** Proper maintenance is your responsibility. Make sure all equipment is properly maintained and serviced by qualified personnel. Do not abuse or misuse equipment. Keep all covers in place. A faulty machine may shoot sparks or may have exploding parts. Touching uncovered parts inside machine can cause discharge of high amounts of electricity. **Do not allow employees to operate poorly serviced equipment.** Always check condition of equipment thoroughly before start up. Disconnect unit from power source before any service attempt is made and for long term storage or electrical storms.



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



# PowerTig 185 DV and Accessories



17 Series Air-Cooled Torch  
12 ft. (Style May Vary)



10 ft. Cable with Work Clamp



Argon Regulator (CFH)



Optional Foot Pedal Assembly  
(22K Ω)



Optional Stick Electrode Holder  
and Cable Assembly



Consumable Kit  
(Tungsten not included)

NOTE: Accessory and consumable style and quantities are subject to change without notice.

PowerTIG 185 DV TIG/Stick Welder	Specification
Process	AC/DC Pulse TIG /Stick Welder (GTAW/SMAW)
Minimum/Maximum Rated Output TIG	120V: DC: 5A/10.2V-125A/15V AC: 20A/10.8V-120A/15V 240V: DC: 5 A/10.2 V-185 A/17.4 V AC: 20 A/10.8V-185 A/17.4 V
Minimum/Maximum Rated Output Stick	120V: DC: 5A/20.2V-100A/24V AC: 20A/20.8V-100A/24V 240V: DC: 5 A/20.2 V-150 A/26 V AC: 20 A/20.8 V-150 A/26 V
Start Type	HF and Lift Start
HF Point Gap	.023"-.035" (.030" suggested)
TIG Duty Cycle @ Rated Amps/Volts	110V: 35% @ 125A/15V 60% @ 100A/14V 100% @ 80A/13.2V 220V: 35% @ 185A/17.4V 60% @ 145A/15.8V 100% @ 110A/14.4V
Stick Duty Cycle @ Rated Amps/Volts	110V: 35% @ 100A/24V 60% @ 80A/23.2V 100% @ 60A/22.4V 220V: 35% @ 150A/26V 60% @ 120A/24.8V 100% @ 90A/23.6V
OCV (U0) TIG/Stick	74V/74V
Voltage Input (U1)/Hz	120/240 V (± 10%) 50/60Hz
Maximum Inrush Amps (I1MAX) (For Breaker selection)	120V: 32.6A/ 240V: 20A
Maximum Operating Amps (I1EFF) (For wire selection)	120V: 29.6 A/ 240V: 18A
Gas Pre-Flow Time	Auto @ .3-.5 Seconds
Gas Post Flow Time	Adjustable @ 0-25 Seconds
Down Slope Time	0-10 Seconds
Pulse	Preset choice of 1 Hz or 50 Hz
AC Frequency Control	20-250 Hz
AC Balance Control	10-90% of EP
Minimum Water Ingress Protection	IP21S
Efficiency	>85%
Cooling Method	Full Time Fan
Dimensions	12.5" H X 7.25" W X 19" L
Weight (Bare Unit)	30 lbs
Recommended Generator Size/Type*	120V: 4500 Watts continuous 240V: 8500 Watts continuous Clean power: <5% THD

\* Operating the PowerTIG 185 DV with generators, generator/welders or power sources that are considered to provide "dirty" power may damage the electronic components. Damaged caused by operation on dirty power is not covered under warranty. Use only with generators rated by the generator manufacturer as "clean power". Clean power is typically defined as less than 5% Total Harmonic Distortion (THD) in the sine wave. Everlast does not keep an approved list of generators or manufacturers due to frequent changes and model updates by manufacturers. Using a name brand generator does not ensure the quality of power produced. Always check with the manufacturer to see if the model is rated for clean power. Clean powered generators are considered safe for TV's, computers and other electronic items.

**GENERAL POLARITY RECOMMENDATIONS\***

\*Follow manufacturer of stick electrode for complete polarity recommendations

PROCESS	TORCH POLARITY	WORK POLARITY
TIG (GTAW)	-	+
STICK (SMAW)	+	-

**TIG (GTAW) OPERATION GUIDE\***\*As a general rule, set amperage using 1 amp for every .001" of metal thickness for aluminum.  
Less is required for DC.

METAL THICKNESS	WELDING AMPS (A)	TUNGSTEN DIA.	Ar FLOW RATE
1-3 mm/.040"-1/8"	40-80	1-2 mm/.040"-3/32"	8-15 CFH /4-7 lpm
3-6 mm/ 1/8"-3/16"	80-185	2-3 mm/ 3/32"-1/8"	15-25 CFH/ 7-14 lpm

**STICK (SMAW) OPERATION GUIDE**

METAL THICKNESS	ELECTRODE SIZE	WELDING AMPS
< 1 mm/.040"	1.5 mm/ 1/16"	20-40
2 mm/.080"	2 mm/3/32"	40-50
3 mm/ 1/8"	3.2 mm/1/8"	90-110
4-5 mm/ 3/16"	3.2-4 mm/ 1/8"	90-130
6-10 mm/ 1/4"-3/8"	4-5 mm/ 1/8"	130-150

**TUNGSTEN SELECTION GUIDE**

PROCESS	TUNGSTEN TYPE	DESIRED POINT SHAPE
AC	Red2% Thoriated, Gold 1.5% or Blue 2% Lanthanated Orange/Gray2% Ceriated Do not use Green (Pure) for AC in Inverter welders. Arc will not be stable.	Sharpen point 2.5 x's diameter Lower amps: Sharp Higher amps: Slight Truncated Point should form slight "dome". <b>Do not ball tungsten.</b> Re-sharpen when contaminated.
DC	Red2% Thoriated, Gold, 1.5% or Blue 2% Lanthanated Orange/Gray Ceriated 2% Do not use Green( Pure)	Sharpen point 2.5 x's diameter Low Amps: Sharp High Amps: Slight Truncation Point should remain sharp. Re-sharpen when it point is dull or contaminated.

**NOTE: This manual has been compiled to give an overview of operation and is designed to offer information centered around safe, practical use of the welder.** Only YOU, the operator of this welder, can ensure that safe operating practices are followed, through the exercise of common sense and training. Do not operate this welder until you have fully read the manual.

### 1.1 Brief overview and basic care:

1. **To ensure that your PowerTIG 185 DV is in top condition when you receive it, carefully inspect the welder for damage upon opening the box, looking for damage on the surface of the unit and to the machine itself and all its accessories.** Do this immediately upon receipt of product. Any damage issues must be resolved right away. The product should be tested at the same time for proper operation, even if it is to be stored for a while. Check to make sure all passages, connections and fittings are clear of any packing material or other obstruction. Failure to test and check the unit may result in denial of shipping damage and warranty claims. Record the welder's serial number on the page provided in this manual. Include purchase date for warranty reference. Serial numbers are located on the top, side or rear of the machine, wherever the specification sticker is located (may vary). Be sure to register your unit online as well. Please, locate, download and read your current warranty statement found online at [www.everlastgenerators.com](http://www.everlastgenerators.com), listed under the warranty link.

2. **The PowerTIG 185 DV is designed for day-to-day fabrication and repair activities.** Overall function and design has been geared toward simple, trouble free operation, without sacrificing the basic necessities that make a sound weld. As of 2016 model years, the new digitally-controlled IGBT inverter incorporates several new features, which includes a pulse that offers 2 choices for frequency, 1 and 50 Hz. The pulse amps and pulse balance features are preset, and non-adjustable. These have been optimized by Everlast to work well for most welding situations where pulse is required. In comparison to other similar AC/DC TIG welders the PowerTIG 185 offers simple, intuitive controls and features. This new digital generation of the PowerTIG 185DV features a downslope control along with true 2T/4T capability for improved operation with the torch switch. While it is small, it doesn't compromise per-

formance or features. Other features include a 5 amp DC start, a 20 amp AC start, a fully adjustable AC frequency control and a fully adjustable AC balance control. This welder is designed to satisfy the basic TIG welding demands of hobbyists or pros who are regularly welding metals 3/16" or under. The PowerTIG 185 DV is an ideal portable AC/DC jobsite TIG welder and can be operated on 120V or 240V single phase power (50-60 Hz). Due to its low input amp requirement, it can be operated with clean powered generators or welder/generators that produce clean power. Consult the generator manufacturer regarding the generator's capability of providing clean power, which is considered to be less than 5% Total Harmonic Distortion (THD).

3. **Be careful to observe the duty cycle of this welder.** This welder has been equipped with a safety interrupt and duty cycle light as a measure of protection, but intentionally and repeatedly running the unit until the duty cycle safety is triggered can cause premature failure of the unit. Operating the welder too close to air flow obstructions, in hot or humid environments or can reduce the duty cycle. A welder not regularly maintained and that is dirty or dusty on the inside may also experience cooling issues. The duty cycle established for the PowerTIG 185DV is as follows:

TIG: 120V, 35% @ 125A; 240V, 35% @ 185A (40°C)  
Stick: 120V, 35% @ 100A; 240V, 35% @ 150A (40°C)

4. **The unit should be stored in a dry place for long term storage.** Humid/wet conditions can contribute to the eventual decay of the circuitry in the machine. For safety reasons, do not use this machine directly in the rain or with soaked clothing or damp protective gear. The service rating for this unit is IP21S, sufficient for protection against vertical dripping water, but is not recommended for wet environments.

5. **Use the carry strap provided to lift and carry the welder. Don't suspend the unit by the strap.**

6. **Make sure that the cooling fan and exhaust vents are kept free of obstruction.** Before every operating cycle, inspect the unit for unexpected obstructions. From time-to-time, cleaning of the machine with low pressure air and a small plastic bristle brush will be necessary to ensure long life. It's recommended that the unit be cleaned once a month in dusty conditions or when in daily use. If it is in light use, clean three

to four times a year otherwise. On these occasions only, unplug the welder and remove the rear panel and main cover to access the interior. **Do not remove the front panel as it is an integral part of the structure and is not necessary to access or service most parts of the unit.** Concentrate the air pressure on the aluminum heat sinks, fan and plastic vents. Remember, keep a minimum of 18 inches distance from any obstruction on the front, rear and sides of the unit during operation.

**NOTE: This unit meets the latest national electrical and safety standards for welders. Contact Everlast directly if more product information is required.**

### 1.2 Expanded Descriptions, Purpose and Features.

**1. Dual Voltage.** This unit is capable of operating on 120V or 240V input voltage. This unit is supplied with an adapter that will adapt the existing 240V, NEMA 6-50 plug down to the standard 120V NEMA 5-15P. The unit will automatically sense the reduction in voltage. **Note: Output is reduced while operating on 120V, but should allow up to 125A output while welding in TIG mode and up to 100A output while welding in Stick mode.** At minimum, a 30 amp slow trip breaker ( or slow blow fuse) and heavier wiring will be required to operate on 120V when using the welder at sustained maximum output. This larger 120V breaker requirement is comparable to other brands, and is not unique to Everlast. Consult with a licensed electrician in your area for proper information about upgrading your wiring. Wire size requirements are de-rated according to duty cycle, per the NEC. A licensed electrician can figure this requirement and determine if an upgrade of the wire is necessary. The unit may be operated on a lesser rated breaker or fuse, but will cause repeated tripping of the breaker if operated at maximum output.

**2. HF Start/Lift Start.** High Frequency starting makes initiating the arc a touch-free process and helps keep the tungsten contamination free in both DC and AC welding. It is always best to select HF start to weld aluminum. To start the arc, the torch should be as close to the metal as practical without actually touching, no more than 1/8". Pressing the trigger or pedal down will initiate the arc. High Frequency is used only to start the weld. It turns off after the arc is started. On older transformer units, while welding AC, the HF would remain on constantly

and create an "overlay current" because of the slow switching speeds. Without it, the arc would extinguish itself multiple times per second during the transition between positive and negative polarity. Inverters switch fast enough to prevent the arc from going out, so the HF is not needed during the actual welding on AC. Lift start is primarily designed for DC use, and requires a brief "touch" and "lift" of the tungsten to the work piece after the trigger or foot pedal is pressed to start the arc. Use of this feature in AC will result in contaminated tungsten. If you must use this feature in AC, start the arc on a piece of nearby copper, then transfer the arc over to the work to start welding.

**2. TIG: 5-185 Amps DC, 240V; 5-125 Amps DC, 120V.** Low amp start capability allows welding on the thinnest of metals without burn through and blow outs. Direct Current (DC) allows you to weld most any metal except Aluminum and Magnesium.

**3. TIG: 20-185 Amps AC, 240V; 20-125A AC, 120V.** A decent 20 amp start allows for most light gauge Aluminum welding. Due to the rapid heat dissipation of Aluminum, 20 amps is sufficient for all but the very thinnest gauges of Aluminum alloy. If less heat is needed to weld thinner material, raise the Alternating Current (AC) balance level to 40% or greater to reduce heat on the metal. (Tungsten may begin to ball.)

**4. Automatic Pre-Flow.** The PowerTig 185 uses an automatic pre-flow that is preset to provide a short pre-weld flow of gas that remains constant in length.

**5. Adjustable Post Flow.** Gives greater flexibility in post weld shielding and cooling. A quick tap on the pedal or switch will engage the post flow and it can act as pre-flow if longer pre-flow time is needed.

**6. Adjustable Down Slope.** This function allows the user to gradually automatically decrease the arc intensity (amperage) and fill the crater at the end of the weld to help prevent cracking and other defects caused by terminating the weld abruptly. This feature is used almost exclusively with the torch switch. When using the unit with the optional foot pedal, turn this setting to "0", or an undesirable flare of the arc at the end of the weld will be experienced.

**7. 2T/4T/Foot Pedal operation.** When using the torch switch, this feature is use to change how the

torch switch functions. In 2T mode, the torch switch serves as a simple on/off button, requiring you to press and hold the button to start and maintain an arc. When released, the arc will enter the downslope phase, and automatically terminate the arc. In 4T mode, to start the arc, quickly press the trigger to start the arc, and release. The unit will continue to weld without the trigger being pressed. When you are ready to terminate the arc, press the trigger again and hold it. Then, the unit will begin the downslope cycle to terminate the arc. If the unit has not fully down-sloped, the torch switch may be cycled again to return to normal welding. This action can be used as an additional heat control feature. Having the option of welding without a foot pedal, greatly increases the versatility of the PowerTIG 185 DV. The torch switch enables greater flexibility, especially when welding in tight areas where a foot pedal is not practical, such as in a roll cage or welding overhead. Of course many prefer to control the amps with the foot pedal because it offers on-demand control of the amps by varying the position of the foot pedal. It is useful for making slight changes in amps to accommodate varying issues with fit up, heat build up and changes in torch position without stopping to make adjustments. To start the arc, simply press on the pedal with the foot and hold the pedal down, slowly varying the pressure and position of the foot pedal to control the intensity of the heat. While the foot pedal is in use, you can limit the maximum amps at the panel and the pedal will control the amps throughout the range. Correct use of the foot pedal is accomplished through experience and practice. While learning to TIG weld, practice with the torch switch control before moving on to the foot pedal, to be able to focus on basic techniques and coordination. **NOTE: When using this unit with the optional foot pedal, the 2T setting must be selected or improper operation of the foot pedal will occur. The Foot Pedal is an optional item on the PowerTIG 185 DV and must be purchased separately from Everlast. Several options exist for foot pedals (including deluxe models) so be sure to ask about the different pedals available when you contact your Everlast purchase point.**

8. **Pulse.** Pulse is simply the unit's ability to oscillate between two different predefined amp values at a certain number of times in one second (defined as Hz). The PowerTIG 185 DV features a simplified version of pulse by offering two basic pulse frequency settings. The first setting is a pulse frequency of 1 Hz. This setting allows you to time your addition of filler

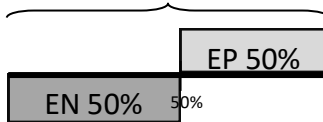
metal. This improves bead appearance and also does control the heat wicking to some extent. The second setting provides a pulse frequency of 50 Hz. This setting is designed primarily to control heat and constrict the arc cone to provide improved directional capability of the arc. In either mode, due to the characteristic of the pulse to "average" the amp output, you will notice a cooler puddle overall, but you should still be able to retain a significant degree of penetration in the area directly under the arc. Other settings normally associated with pulse such as "pulse amps" and "pulse balance" are preset and not user adjustable, in order to simplify pulse setup while still offering a valuable feature. These other pulse settings are factory-optimized for most general welding work. For many situations, however, pulse may not be needed, and can be turned to "off". **NOTE: Due to the way the pulse operates, the unit may seem to display randomly generated numbers on the meter. This is because the pulse is operating at a different frequency than the amp meter samples. As the amp meter displays a reading, it is sampling the amperage at various points between the rise and fall of the amps, several times a second resulting in a different reading each time.**

9. **35% Duty Cycle.** The duty cycle refers to the percentage of time out of 10 minutes the PowerTIG 185 DV should be able to operate before overheating. 35% of 10 minutes is 3.5 minutes of operation. This is rated at maximum amps. Using less amps will increase duty cycle. 3.5 minutes of welding is longer than it may seem when actually welding and provides sufficient time at maximum amps to make quality welds with minimal interruption. Actual uninterrupted welding time may vary somewhat with ambient temperature, humidity, fan blockage, and poor power sources. Running extended lengths of time with short rest cycles will also be an contributing factor for thermal buildup and limiting duty cycles. Running extreme frequency or balance settings (greater than 50%) while welding in AC mode may reduce duty cycle as well.

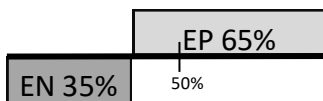
10. **AC balance and AC Frequency and their usefulness in welding aluminum.** An AC current "alternates" rapidly, several times a second, between positive (+) and negative (-) poles. This alternating action provides both Positive (Reverse) and Negative (straight) polarity which result in a more violent arc. When the polarity (or flow of the electrons) changes to a positive polarity, during welding,

the oxides that are formed on the metal break up into small flakes or pieces. This action is needed to be able to weld aluminum and magnesium. Both metals form an oxide layer that is difficult to deal with when welding. This oxide layer isn't always apparent, and may even appear to "shine." However, unless these metals are freshly cut, milled, or brushed, oxidation will always exist to an extent, and it will re-form rapidly. The oxide layer is tough and is excellent at preventing further corrosion. However, it must be removed to be successful at TIG welding aluminum and magnesium. The crust-like oxide layer formed on the aluminum and magnesium melts at a much higher temperature than the underlying metal. By the time the oxide layer is ready to begin melting, the underlying metal is already molten. This is one of the reasons that inexperienced users will often see a large "blow out" of metal when welding aluminum. When beginning to weld Aluminum, it is always helpful to pre-clean the metal and then grind or use a stainless steel brush to remove as much of the oxidation as possible. This alone will not be enough. The cleaning portion of the AC will provide the rest of what is needed to remove the oxidation. With an inverter, the **AC balance** can be skewed to favor more time spent in one part of the AC cycle than the other. In reality, you may still obtain good cleaning with a setting as low as 20% electrode positive or even lower if conditions are right. However, a good starting point is around 35%. You can then fine tune the AC balance to provide the amount of cleaning needed. See the diagrams below.

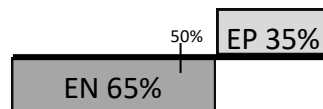
**EXAMPLE: AC EP (+) BALANCE**  
1 Hz (one full AC cycle)



Standard transformer welder balance: 50% EN/EP  
Balling tungsten, light penetration, wide cleaning area.

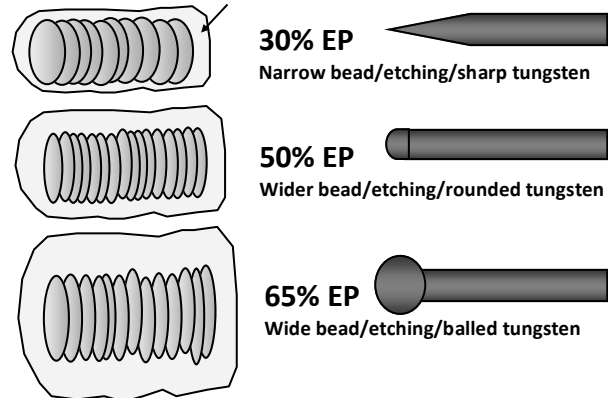


Extreme cleaning setting. 65% EP:  
Shallow penetration, balling tungsten, excessive cleaning area.



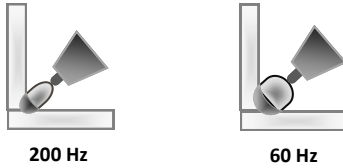
Good penetration setting 35% EP:  
Deeper penetration, sharper tungsten, narrow cleaning area.

Cleaning/Frosted Area of Aluminum



A setting of 30-35% usually allows plenty of "penetration," with most of the heat going directly into the metal and not into the tungsten tip. When more cleaning is used, usually over a 40% setting, the heat will eventually ball or consume the tungsten, which in turn will destabilize the arc. A higher AC balance setting will also require more amps to weld the same material than it would with a lower AC balance setting. In fact, to extend the range of your welder a little, you can thoroughly pre-clean your aluminum and use a much lower balance setting. Combined with a good gas lens cup setup, you may be able to weld with a setting that is as low as 10% positive polarity if all other conditions are perfect. *If a higher balance setting is needed for cleaning or salvaging heavily oxidized material, use a larger tungsten to prevent consumption of the tungsten.* **AC Frequency** is simply the number of times per second that the polarity oscillates from negative to positive and back to the start of the negative. 1 Hz represents one complete cycle of the polarity. The Power TIG 185 DV can be adjusted between 20 Hz and 250Hz. Older transformer welders were typically fixed at 60 Hz, the standard electrical input from the power line. Basically, whatever hertz were put into it, that's what came out. But inverters are able to greatly modify this operating frequency and the result allows you to adjust the arc performance while welding in AC mode. The greater the frequency, the more narrow, and defined the arc becomes. Operating at low frequencies, the arc becomes more broad, lazy, and sometimes will even wander about. The higher frequency, well defined arc can be used to pinpoint the heat. The result, though is that more amps will be required to weld. Using a lower frequency will extend the range of the welder somewhat, as to how thick it will weld. But using a frequency lower than 50-60Hz can result in arc instability. The arc will seem rough and unrefined at low

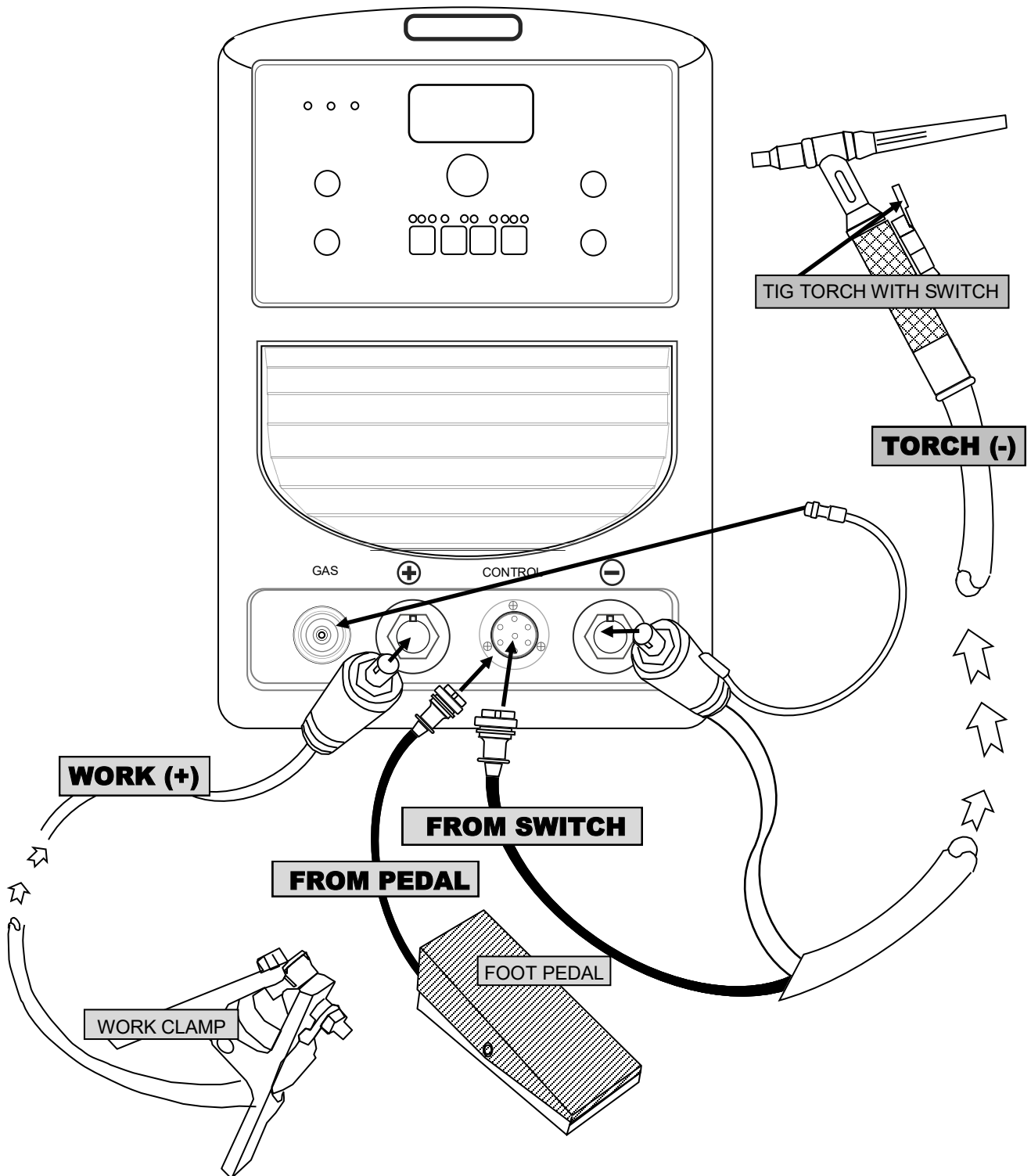
settings. At the lowest settings, the arc may seem to flutter. Although it is possible to lower the frequency to 20 Hz, doing so is not likely to provide a lot of added benefit.



11. **AC vs. DC Welding.** AC welding is useful for Aluminum and Magnesium welding. Situations requiring the welding of predominately magnesium alloys are fairly uncommon. Aluminum is much more common, though there are a lot of Aluminum alloys that include a significant amount of magnesium as an alloying element. Note that not all types of aluminum are considered weldable, particularly hardened types. Cast aluminum often presents difficulty in welding due to inclusions and impurities in the base metal due to the casting process. For the balance of TIG welding needs, use DC polarity. Stainless (Inox), chrome moly, copper, titanium, mild steel and many carbon steels can be welded with DC. But again, that does not mean that every type of steel, stainless steel, or other metals, such as cast iron is considered weldable by normal means or without special equipment. Always try to figure out the type of metal you are using before you start to save yourself a lot of frustration. New stock is usually labeled. But in many repair situations, the only way to determine this and the weldability of the metal is if you call the manufacturer of the product you are repairing. If you are welding or practicing on a mystery metal, take this into consideration if you experience difficulty welding it.



**QUICK SETUP GUIDE  
(US/Canada)**

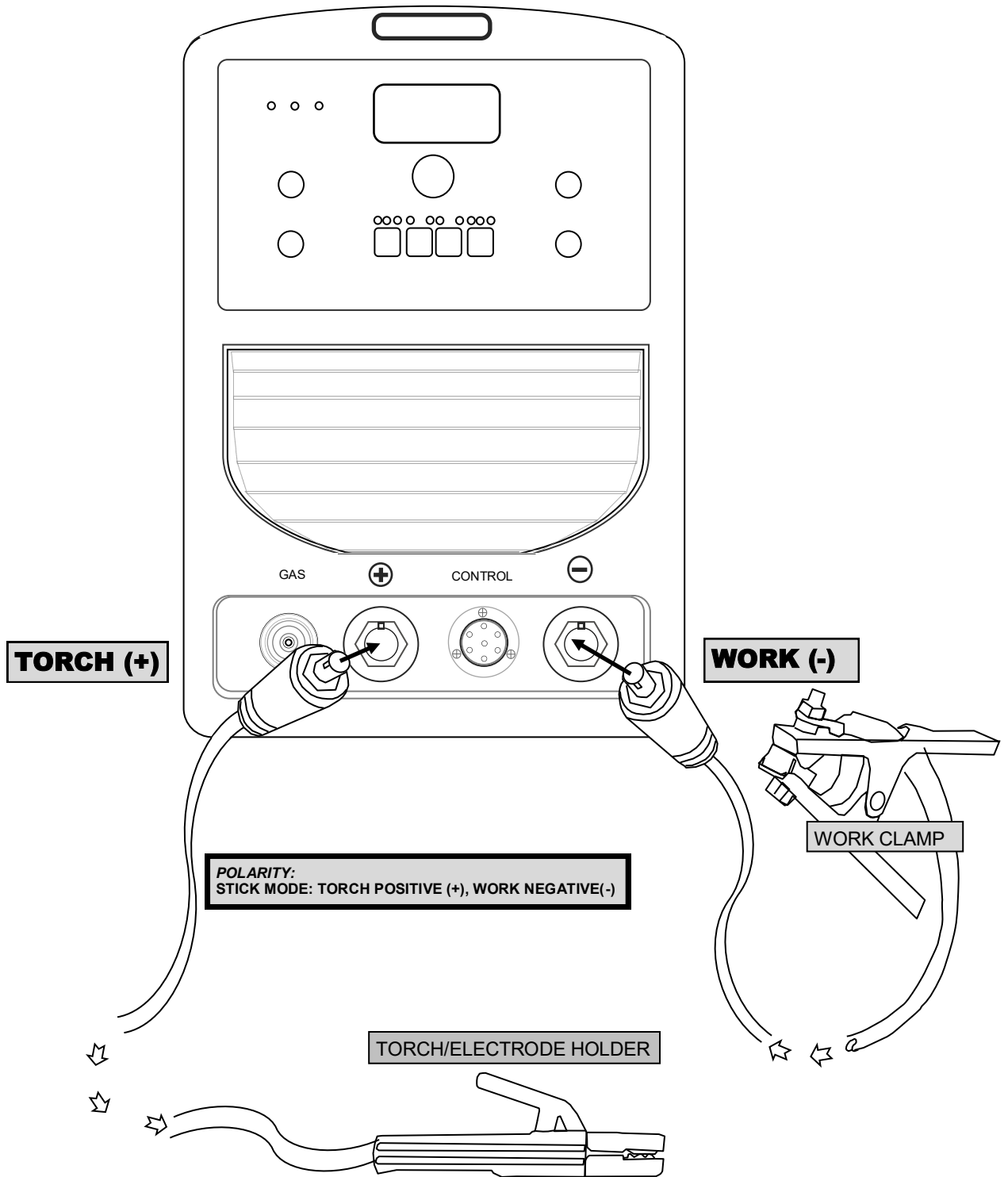


**NOTE:** FOOT PEDAL IS OPTIONAL.  
FOOT PEDAL AND TORCH SWITCH CONNECT AT "CONTROL."  
PEDAL AND SWITCH CANNOT BE CONNECTED AT THE SAME TIME.

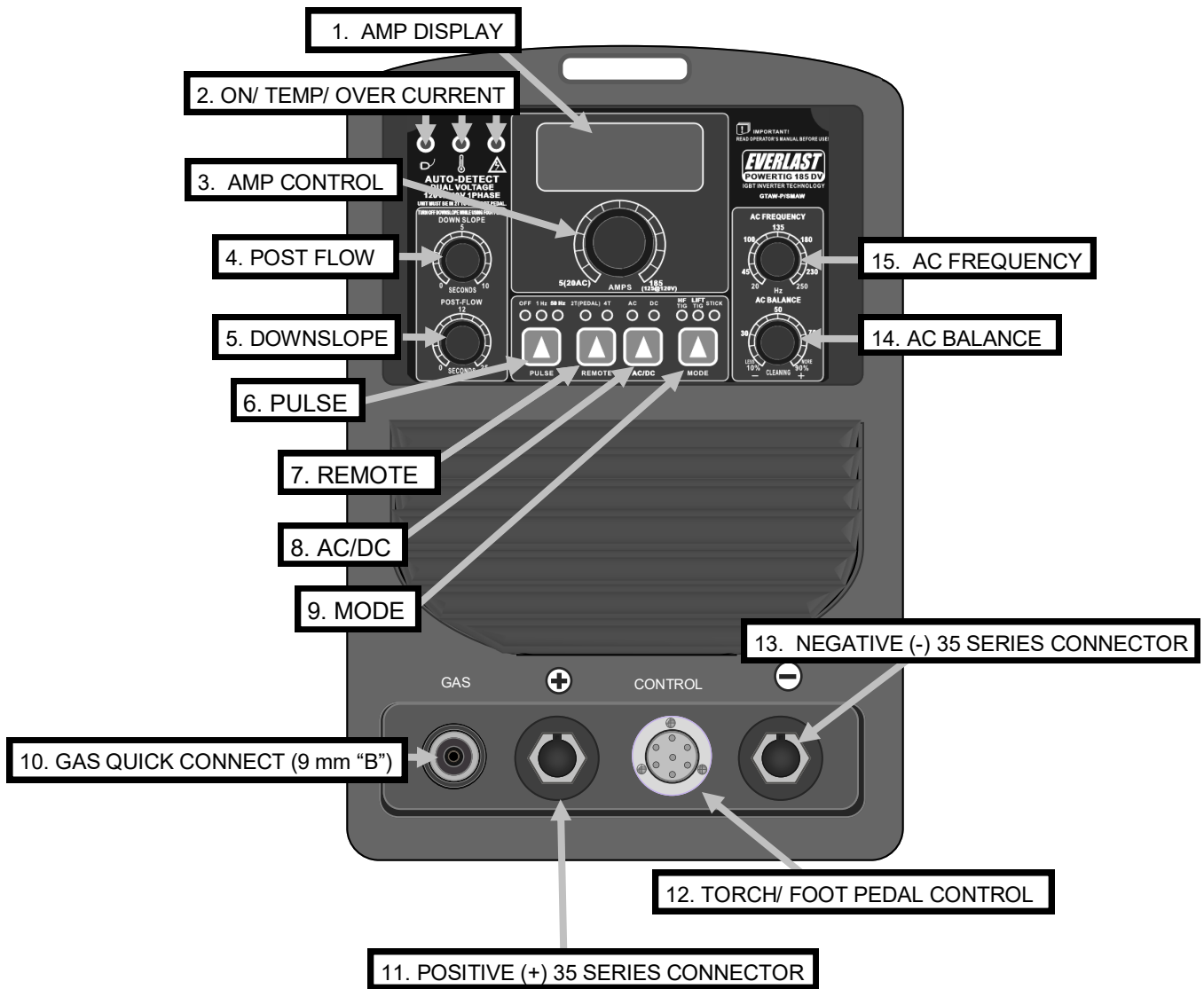
**POLARITY:**  
TIG MODE: TORCH NEGATIVE (-), WORK POSITIVE(+)

### Optional Stick Electrode Holder Polarity Configuration (US/Canada)

NOTE: Unit is not recommended for use with E6010. However, E 6011 may be used.



# Front Panel View



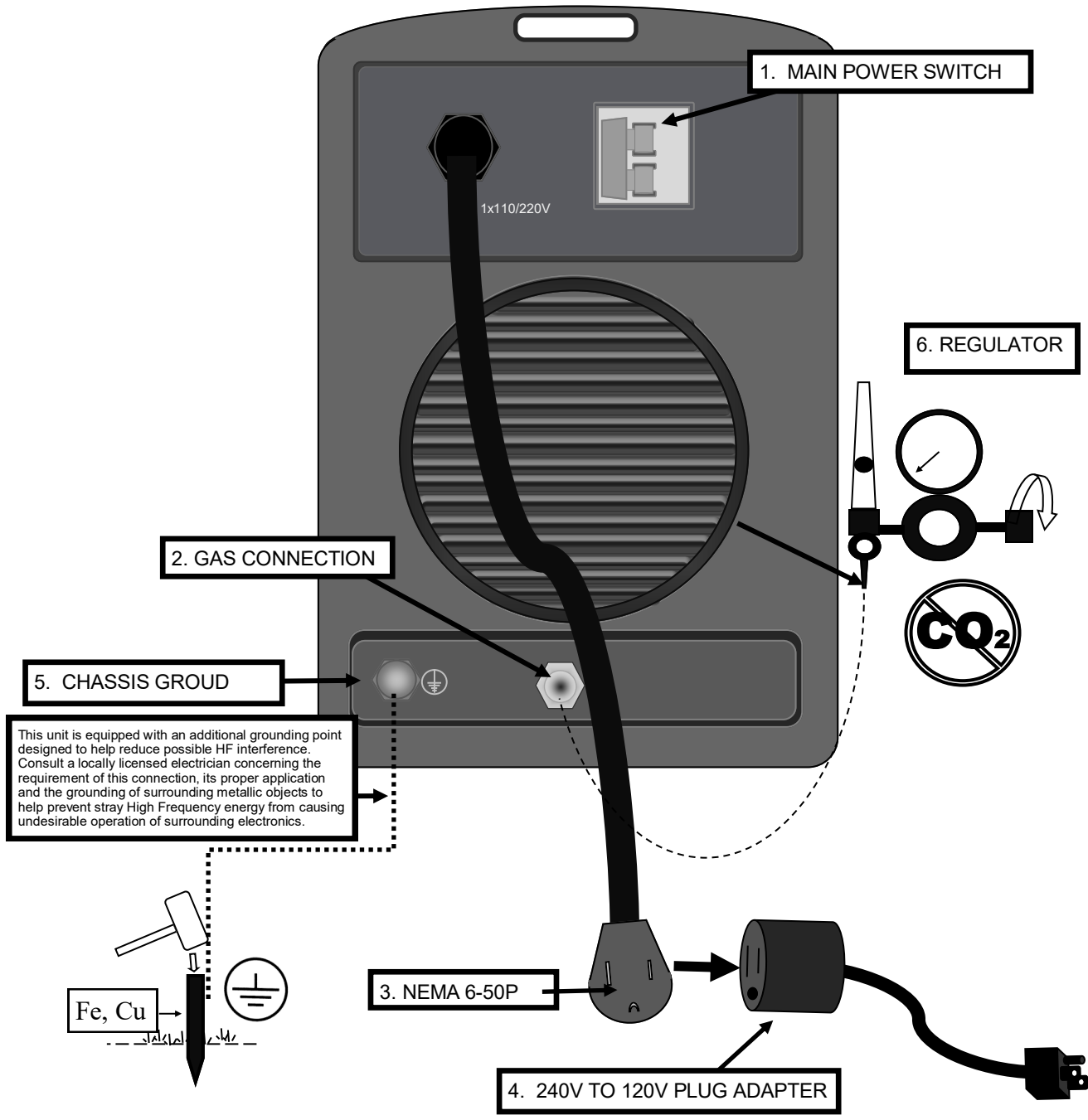
**2.1 Front Panel Features.** The Everlast PowerTig 185 (DV) has a simple panel layout with basic but functional controls and features.

1. **Digital Display.** The display posts the maximum welding amps selected. After the arc is started with the torch switch or the foot pedal, the display function changes to read actual amp output while welding. The display will show the final welding amperage for a few seconds after the arc stops before reverting to the static amp display. In pulse mode, variability in the readout will be noticed. This is normal due to the sampling rate of the display. **Note:** Display accuracy is  $\pm 3\%$ .
2. **On/Temperature/Over Current LED Indicator.** The **On** LED should come on anytime the unit is switched on. If not check wiring and receptacle. If this does not resolve the problem contact Everlast technical support. The **On** LED may remain lit for a few seconds after powering off while the capacitors are discharging. This is normal and not a defect. The **Temperature** LED (indicated by the thermometer symbol) will illuminate when the temperature sensor indicates that safe operating temperatures have been exceeded. Ambient air temperature over  $40^{\circ}\text{C}$ , air flow restrictions, and dirty internal components are all factors that may reduce the duty cycle of the welder. Also, while operating the welder at high AC frequency and AC balance settings, the duty cycle of the unit may be less than normal. If the unit's thermally controlled duty cycle safety feature is engaged, do not turn the machine off. Allow the machine to continue to run and cool for 15 minutes before resetting the machine by cycling the power switch off and back on. Do not attempt to shorten the cooling cycle by prematurely cycling the switch. The machine can be forced into resetting once the temperature at the sensor is below the trip threshold, but before the full 15 minutes expires. However, it may not have been able to adequately dissipate some of the residual heat transferred to the circuits and can cause long term damage. When the **Over Current** LED ( indicated by a triangular shaped symbol) is triggered, welding output will cease. Check for excessive extension length, undersized cables, or improper wiring. Overly warm extension cords or power input lines are a symptom of undersized wiring, particularly while operating on 120V. Attempting to operate the welder on a generator not certified by the generator manufacturer as "clean power" can also trigger this condition. If no known fault exists, contact Everlast if cycling the welder off and on does not clear the condition.
3. **AMP Control.** Sets the welding Amp value. While setting amps in AC mode, the minimum value that the amps can be set at is 20 Amps. In DC mode, minimum set amps will be 5 Amps. (all minimum and maximum settings of the unit are subject to a leeway of  $\pm 3\text{A}$ )
4. **Post Flow Control.** Adjusts the gas flow time after the welding arc is stopped. Use it to provide extra shielding while the weld cools. It is also important for torch head cooling. Use one second for every 10-15 amps as a general rule. **Note:** The post flow feature can also be used to add extra pre-flow time. To do so, quickly tap the pedal or torch switch without striking an arc
5. **Downslope.** When using 2T or 4T with the torch switch, this controls the ramp down time of the arc. The downslope allows the user to gradually taper off the heat while filling the end of the weld to prevent a crater which can lead to the weld cracking. This is the final stage before the weld terminates.
6. **Pulse.** The pulse feature of this machine offers two basic settings. The pulse amps and pulse balance are preset at the factory and are not adjustable items. Only the frequency may be changed. The welder offers a 1 Hz and 50Hz frequency setting. The 1 Hz setting is designed to assist in bead appearance by offering enough gap between the high stage and low stage of the pulse to stack your bead. To an extent, the 1 Hz setting does offer some heat control. However, the 50 Hz setting is designed to help constrict the arc and improve overall heat control. The 50 Hz setting will also help directability of the arc. Bead appearance may have marginal improvement due to the change in the bead profile. **Note:** The pulse will average the heat according to the frequency used, so overall maximum welding thickness may be reduced while the pulse is on. While in Pulse mode, the display may seem to generate random numbers. This is normal and not a defect.
7. **Remote 2T/Pedal/4T Switch.** This switch is used to switch the machine from 2T to 4T mode. To use this machine with the foot pedal, make sure the 2T/Pedal LED is lit or the machine will not operate properly with the foot pedal. 2T offers a simple press and hold operation to weld, while the 4T offers stepped control using the torch switch to toggle between stages of the welding cycle. After the weld is started, the torch switch does not need to be held down to weld. When ready to

- downslope, touch and hold the torch switch again. Release the trigger to complete the 4T cycle.
8. **AC/DC Switch.** Select DC for Steel, Stainless Steel, Chrome Moly, Titanium and most other metals. Select AC for Aluminum and Magnesium alloys. Note: When selecting between AC and DC, you do not need to change the polarity of the torch. The torch should always remain in the negative connector.
  9. **Mode.** Select between High Frequency (HF) Start TIG, Liftstart TIG, and Stick welding. HF start is ideal for both AC and DC TIG starts. The HF start allows the arc to be started without contacting the metal. Simply place the tungsten above the metal about 1/8" or less, and press the torch switch or foot pedal and the arc will start momentarily, after a brief gas flow period. HF can cause interference with other electronic devices. Lift start is an alternative method of starting an arc where HF is problematic. Do not use this method with AC because contamination of the tungsten will occur unless the arc is struck on a copper strip first and the arc transferred to the weld area. Lift start is accomplished by touching the metal with the tungsten and then quickly lifting the tungsten when the torch switch or foot pedal is pressed. If done properly, an arc will be drawn. **Note:** This is not the scratch start method where the tungsten is rubbed across the surface of the metal to draw an arc. You must press the switch or foot pedal to start the arc in Lift Start mode.
  10. **Gas Quick Connect, 9mm (B style).** This connector serves as the gas connector for the TIG torch. This is a quick release/connect style similar to automotive air couplers. The sleeve will remain retracted until the male fitting from the torch is inserted. It will then slide forward and lock the fitting into place. To remove, simply push back on the fitting's outer sleeve and the male fitting can be removed.
  11. **Positive Connector (+).** DINSE 35 style (1/2"). Simply insert the male connector and twist clockwise. Hand tighten only. For TIG welding, connect the work clamp to the positive connector. For Stick welding, connect the electrode holder (torch) to the positive connector.
  12. **Torch/Foot Pedal Control.** The TIG foot pedal or the torch switch should be connected to the 7 pin connector. There is only one control connector, so only one may be connected at a time.
- Tighten the collar on the connector only hand tight. Do not over tighten. **Note:** Do not attempt to use the foot pedal to control the stick amperage.
13. **Negative Connector (+).** DINSE 35 style (1/2"). Simply insert the male connector and twist clockwise. Hand tighten only. For TIG welding connect the torch to the negative connector. For Stick welding, connect the work clamp to the negative connector.
  14. **AC Balance Control; 10-90 %.** Adjusting this control between Electrode Positive (+) and Electrode Negative (-) polarity regulates the amount of cleaning action (cathodic etching) provided while welding. To increase the amount of etching, turn the control knob clockwise. To reduce the amount of etching, turn it counter clockwise. The purpose of this feature is to improve weld appearance and quality. A setting of 20-40% is recommended, with a setting of 30% generally considered ideal for general purpose AC welding. If the AC balance is adjusted higher than 40%, balling and rapid wear of the tungsten may be experienced. If the AC balance is adjusted to less than 20%, the welds may gradually appear contaminated and dull, unless a helium/argon mix is used, and/or the oxidation layer has been thoroughly removed. **Note: The AC balance setting percentage on the PowerTig 185 DV, refers to the amount of cleaning provided and not the amount of penetration.** It refers to it by designating it as a PERCENT of time the welder spends (during one complete AC cycle) in the Positive (+) polarity part of the cycle. This may be different from some other brands that refer to percent of Negative (often referred to as penetration. If you are accustomed to running a balance setting that refers to electrode negative, simply use the reciprocal value to figure the same setting on the PowerTIG 185 DV.
  15. **AC Frequency Control; 20-250 Hz.** Increasing or decreasing AC frequency changes arc performance while welding in AC mode, affecting arc cone width, and penetration. A setting of around 100-120Hz for most aluminum welds is a good starting point. Low Frequency settings, particularly below 60 Hz, will make the arc lazy and wide and prone to wandering. Higher Frequency settings make the arc cone narrowly defined, deeper penetrating, and more stable.

# Rear Panel View

**CONSULT A LICENSED ELECTRICIAN AND LOCAL CODES BEFORE WIRING YOUR FACILITY FOR YOUR UNIT. EVERLAST IS NOT RESPONSIBLE FOR DAMAGE OR INJURIES RESULTING FROM IMPROPER WIRING.**



**IMPORTANT:** USE THE 240V TO 120V ADAPTER TO SAFELY ADAPT THE NEMA 6-50P (INDUSTRY STANDARD 240V WELDER PLUG) TO THE STANDARD NEMA 5-15P WHEN OPERATING ON 120V. THIS PLUG ADAPTER PRESERVES THE POLARITY REQUIREMENT FOR OPERATION ON 120V.

**2.2 Rear Panel Features.** The PowerTIG 185 (DV) rear panel contains the main power switch and connection points for power and shielding gas supply.

1. **Main Power Switch.** The On/Off operation of the welder is controlled by the main power switch. The switch should operate smoothly. The switch also serves as a type of circuit breaker in case of an internal machine fault but should not be relied upon for circuit protection. If the unit experiences an internal failure or an excessive current flow this switch will trip and move the switch to the “tripped” position midway between the normal on and normal off position. If the switch trips, identify the cause of the fault before switching the machine fully off and back on. Contact Everlast if the cause cannot be identified.
2. **Gas Connection.** This is a 5/8” -18 CGA female gas compression fitting (US and Canada 2014 models and newer). This is the standard argon gas fitting for North America. The regulator supplied with the unit includes a hose pre-fitted with the male connector. Due to the compression design, thread tape and thread sealant should not be used. Carefully snug the connections using two wrenches, one to hold the male fitting and the other to hold the female fitting to prevent damage the back panel and internal solenoid. Brush the connection with mild soapy water to test for leaks and retighten if necessary.
3. **NEMA 6-50P Power Plug and Cable.** The unit is equipped with a standard NEMA 6-50P power plug and 6 ft. cable (US and Canada). This is the standard power plug used in the North American market for welders operating on 240V, 1 phase current. Welders do not require a neutral circuit to operate and this is the default plug for welder service. Removal of the plug is not recommended. Adapting the plug or cable to fit outlets with 4 wires, which include both a ground and a neutral is not recommended and may violate code. Consult a licensed electrician before adapting any connection or installing on any circuit not previously wired for welder service to make sure the circuit is properly wired and equipped with the appropriate sized circuit breaker for service of the welder and other machines operating on the same circuit.
4. **240V-120V adapter plug.** The adapter cord helps to safely and easily adapt the unit for 120V operation. This adapter features a 240V female NEMA 6-50R and a 120V NEMA 5-15P. The NEMA 120V 5-15P is an appropriately sized connector within

the limits of the NEC recommendations for duty cycle limited machines even though operating amp draw may exceed 20 amps at maximum output operating on 120V. To operate on 120V power no switching or internal changeover of wires is required. The unit automatically senses the voltage change and adapts operation and reduces output for 120V operation. No other effort is required. Consult with a locally licensed electrician to determine if your circuit is appropriately wired and circuit protected for operation with the welder and other devices on the same circuit.

5. **Ground Bolt.** This ground bolt is provided for situations that require additional grounding to protect against HF bleed back and chassis ground to prevent to offer additional ground protection. This bolt should be used to connect an additional ground wire to the metal rod driven in the ground. **All surrounding metal objects should be grounded to a separate grounding rod including the table, metal water pipes, walls, etc. to prevent electrical interference with other circuits. Do not couple this ground connection to the ground provided in the breaker panel.** Consult with a locally licensed electrician if HF interference is suspected or to determine if the use of this additional ground connection is required for your application.
6. **Regulator.** The regulator controls gas flow from the argon tank. The regulator supplied with the unit requires some assembly which is limited to attaching the gas hose and fitting to the regulator. The gas hose provided will have the 5/8” argon connector already attached to one end. All that is necessary is to install the hose onto the hose barb fitting supplied with the regulator and use a hose clamp to secure the hose onto the barb and snug the fitting to the regulator using a wrench. Check the regulator for leaks once installed by brushing on a solution of mild soapy water. Wipe dry after test. Note: US and Canadian markets regulator’s are marked in CFH (Cubic Feet per Hour) to determine flow rate. Read flow rate from the middle of the ball.

**NOTES:**

1. Make sure you swap the torch and work clamp polarity when you change between processes. This is an often overlooked and common issue. Make sure the TIG torch is always in the negative and the work clamp in the positive, even in AC. Make sure the stick electrode holder is in positive (for most welding rods) and the work clamp is in the negative.
2. When welding AC (aluminum or magnesium), start with a setting of 30-35% for the AC balance and a setting of 100-120 Hz for the AC Frequency for most welding tasks.
3. Never use pure tungsten, even for welding AC in the PowerTIG 185 DV. Pure tungsten will cause a ball and an unstable arc.
4. Small amounts of Helium may be mixed with Argon to add greater welding capability. Do not exceed 25% Helium in the Argon/Helium mix or arc starting may become difficult. If difficulty is experienced with arc, contamination or rapid electrode consumption, especially after changing Argon cylinders, check to make sure the correct gas is used, or suspect contamination of the supplied gas. Other sources of contaminated gas can be from a slight breeze or air current flowing around the work area.
5. For best results on aluminum, thoroughly pre-clean your weld with a dedicated stainless steel brush and safe-to-use aluminum cleaner. Do not use brake fluid cleaner, or any chlorinated solvents. Severe injury or death can occur after welding on metals contaminated with traces of these solvents.
6. When connecting the rear gas connection, use two wrenches. Use one to hold the 5/8" female CGA connector to prevent it from turning in the welders housing while tightening with the other wrench. Do not use thread tape or other pipe sealant. If a sealant must be used to prevent leaking, only use a small amount of thread tape. Using only a minimal amount will help prevent excess tape from getting stuck in the solenoid valve and causing malfunction.

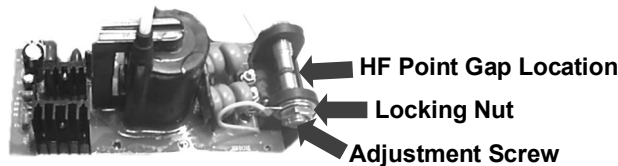


## POINT GAP ADJUSTMENT

**Note:** Although point gap adjustment is usually considered a part of regular maintenance, and is not an item covered by warranty, the following adjustment process is intended for experienced users only. If you suspect you have a problem with the point gap due to hard starting of the arc, contact Everlast Tech Support before proceeding with point gap adjustment for proper diagnosis and a more detailed adjustment procedure.

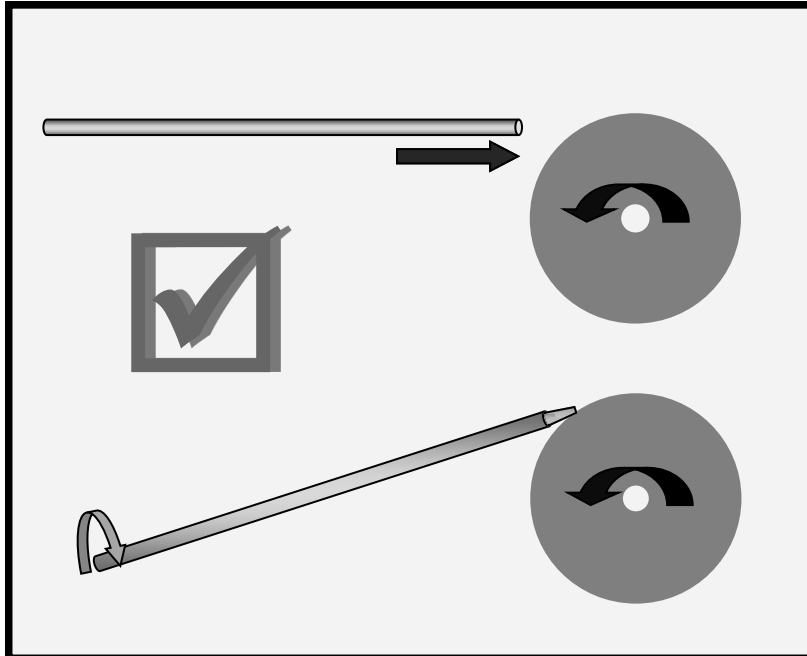
**To open the unit to adjust the point gap:**

- 1) **Unplug the welder. Wait 20 minutes to allow capacitors to discharge to prevent possible shock and injury. WARNING: If possible, do not touch unrelated circuits and components, especially capacitors, during this adjustment process to reduce the chance of possible shock and injury.**
- 2) Remove the Rear plastic cover by removing screws with a small screw driver, remembering to remove screws holding the cover that are located on the bottom. There is no need to remove the front cover.
- 3) Remove screws in metal cover. Gently spread the bottom of the cover with your fingers about 1" on either side. Simultaneously slide the metal cover toward the rear and pull up to remove the cover from the chassis.



- 4) Locate the HF board located toward the front of the unit. This board is mounted under the top metal pan and the points should be visible from the left side (side determined by facing the front of the unit). The points will have two carbon contacts hanging under the bottom of the metal pan. These will be held in place by two brass nuts that are used to lock the contacts in place. Check the point gap with either a feeler gauge by sliding it between the points. Access may be tight, but try several angles to get the feeler gauge in between the points. The gap should be set to anywhere between .023 "and .035", with .030" being preferred.
- 5) If adjustment is needed, loosen the locking nuts slightly so that the end of the brass contact holder can be rotated with a small flat bladed screw driver. Slowly adjust the points until slight contact is made with the feeler gauge. When completed hold the contact in place with the screw driver while the locknut is retightened, making sure the contact holder does not rotate in the process.
- 6) Recheck the point gap. Make any necessary re-adjustments. Reassemble the unit.

### TUNGSTEN PREPARATION

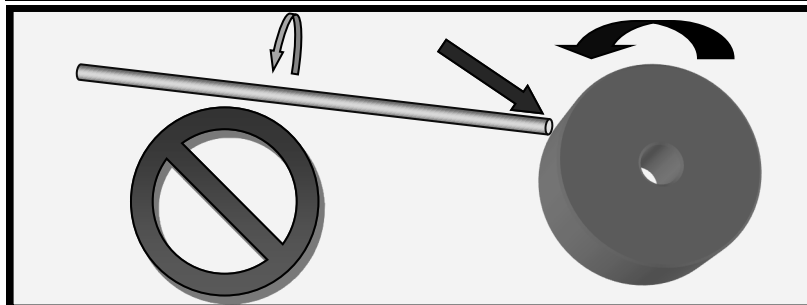


1. Use a dedicated grinding wheel or contamination may result. Do not breath grinding dust! Wear eye protection and gloves.

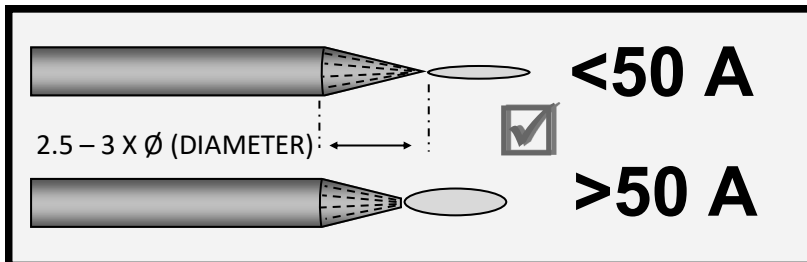
2. Hold Tungsten firmly.

3. Grind perpendicular to grinding wheel face. Allow tungsten to grind away slowly, creating point.

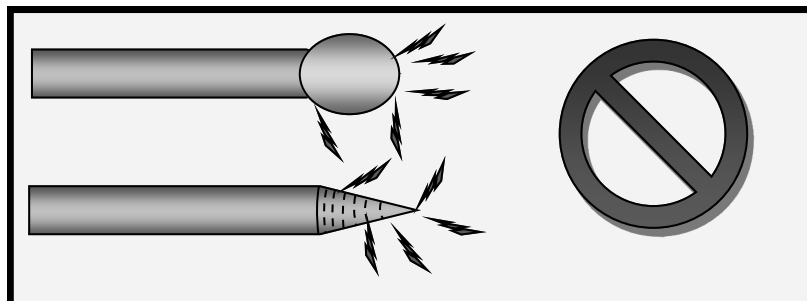
4. Rotate tungsten quickly as it is being ground to keep point even and symmetrical.



DO NOT GRIND TUNGSTEN PARALLEL TO WHEEL FACE OR AN UNSTABLE ARC WILL RESULT.



Use a point for low amp use to help control arc. Create a slight truncation on the tip for higher amp use for best arc stability. Grind the tip so that it is 2.5- 3 times longer than the tungsten is wide (Diameter).



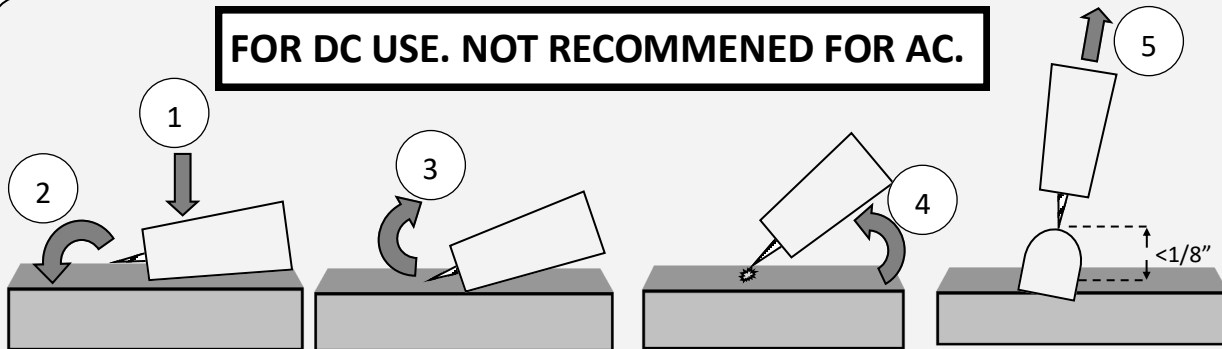
DO NOT BALL TUNGSTEN WHILE WELDING. AN ERRATIC ARC WILL RESULT. MAKE SURE GRINDING MARKS RUN PARALLEL TO THE TUNGSTEN'S TIP. CONCENTRIC MARKS WILL CAUSE AN UNSTABLE ARC.

**NEVER USE PURE (GREEN) TUNGSTEN IN AN INVERTER WELDER.**  
SEE FOLLOWING RECOMMENDATIONS ABOUT TUNGSTEN SELECTION FOUND IN THIS MANUAL ON PAGE 11.

## LIFT START TIG OPERATION

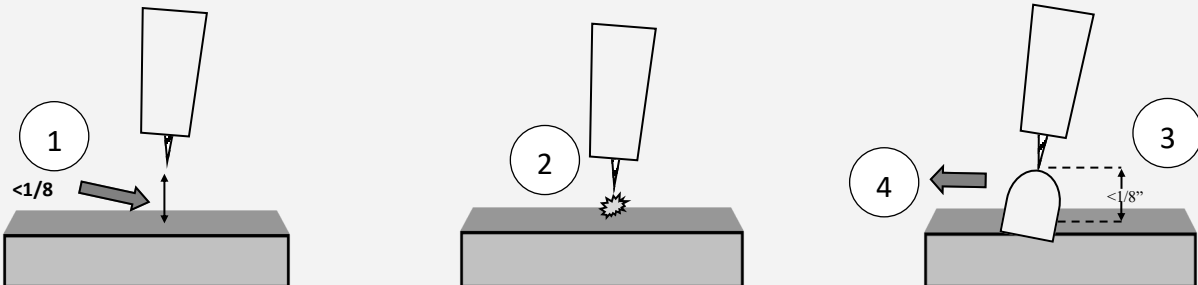
**Note:** A Lift TIG start should be done with a nearly seamless motion. Use a light touch and a quick motion for best results.

**FOR DC USE. NOT RECOMMENDED FOR AC.**



1. Position the edge of the ceramic cup on the metal. Press and hold the torch switch or press the foot pedal. Wait for the Pre-flow to start. (Starting will be delayed by the pre-flow period.)
2. Quickly rotate cup so that the tungsten comes in brief contact (< .5 seconds) with the metal.
3. After contact with the metal, quickly rock the torch back so that the tungsten breaks contact with the metal.
4. An arc should form. As the arc grows, raise the cup up off the metal and slowly rotate the torch into welding position.
5. Leave 1/8" or less gap between the tungsten tip and the metal. Proceed with welding, leaving the torch inclined at a 15° angle.

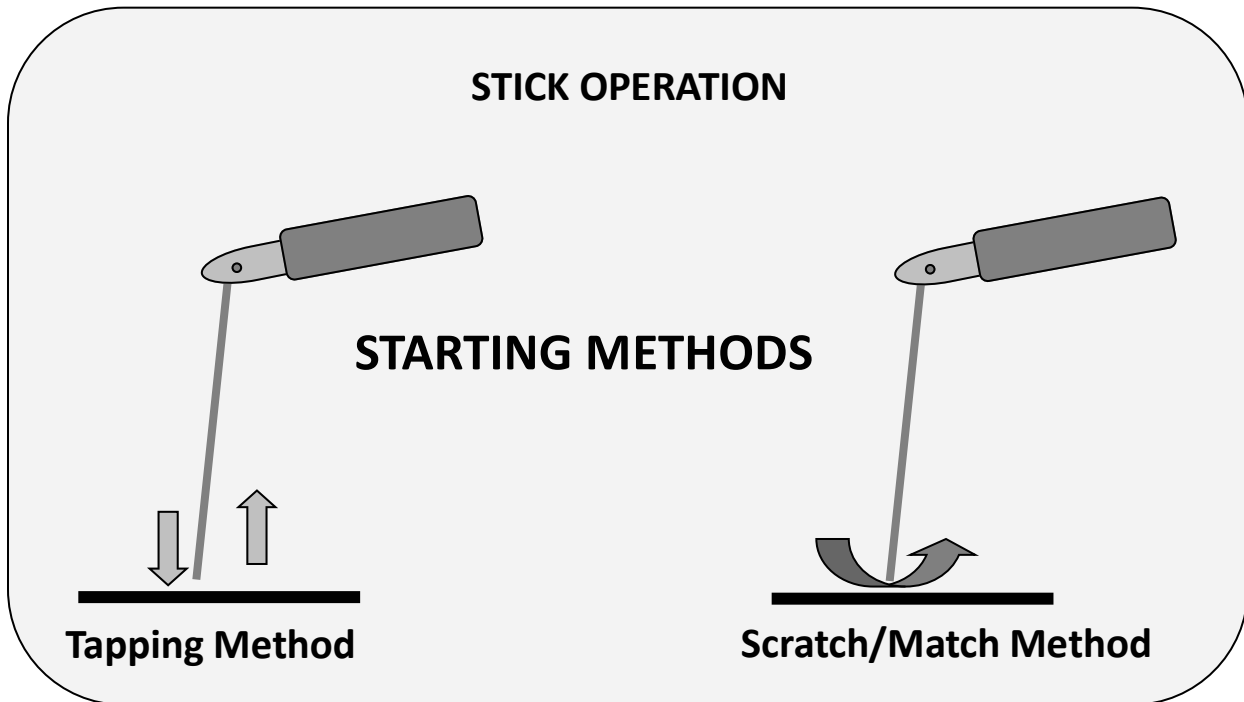
## HIGH FREQUENCY START TIG OPERATION



1. Position the point of the sharpened tungsten about 1/8" or less above the metal.
2. Press the torch trigger or press the foot pedal to initiate the arc. The HF arc will be initiated. It may appear briefly as a blue spark.
3. An arc should form, almost immediately after the pre-flow cycle is completed. HF arc initiation will be delayed by the amount of pre-flow time used. If arc does not start after the pre-flow interval, and the HF is creating a spark, then check the work clamp contact with the work piece. Move the tungsten closer to the work. Repeat steps 1 and 2.
4. Leave 1/8" or less gap between the tungsten tip and the metal and proceed with welding, leaving the torch inclined at a 15° angle.

### General TIG Arc Starting Steps

1. Turn unit on, allow time for power up cycle to complete its start up process.
2. Select either HF or Lift Start TIG with the HF/Lift Start/Stick selector switch.
3. Plug in Torch and select 4T or 2T mode with the selector switch **OR** plug in foot pedal and select 2T.
4. If using the torch switch, down slope time by rotating the knob to increase/decrease the ramp down time of the amperage.
5. Adjust amps with amp control knob.
7. Start arc as depicted above.
7. If using 2T, continue to hold the torch switch until you are ready to stop welding. Release the switch. The arc will then cease after downslope. If using pedal raise foot fully off the pedal and arc will stop automatically, provided the downslope is set at the minimum setting "0".
8. If using 4T, release the switch, after arc initiates. Continue to weld without holding the switch down. To stop, press and release the switch again. The downslope will begin. Arc will terminate automatically. Use this time to fill the crater.

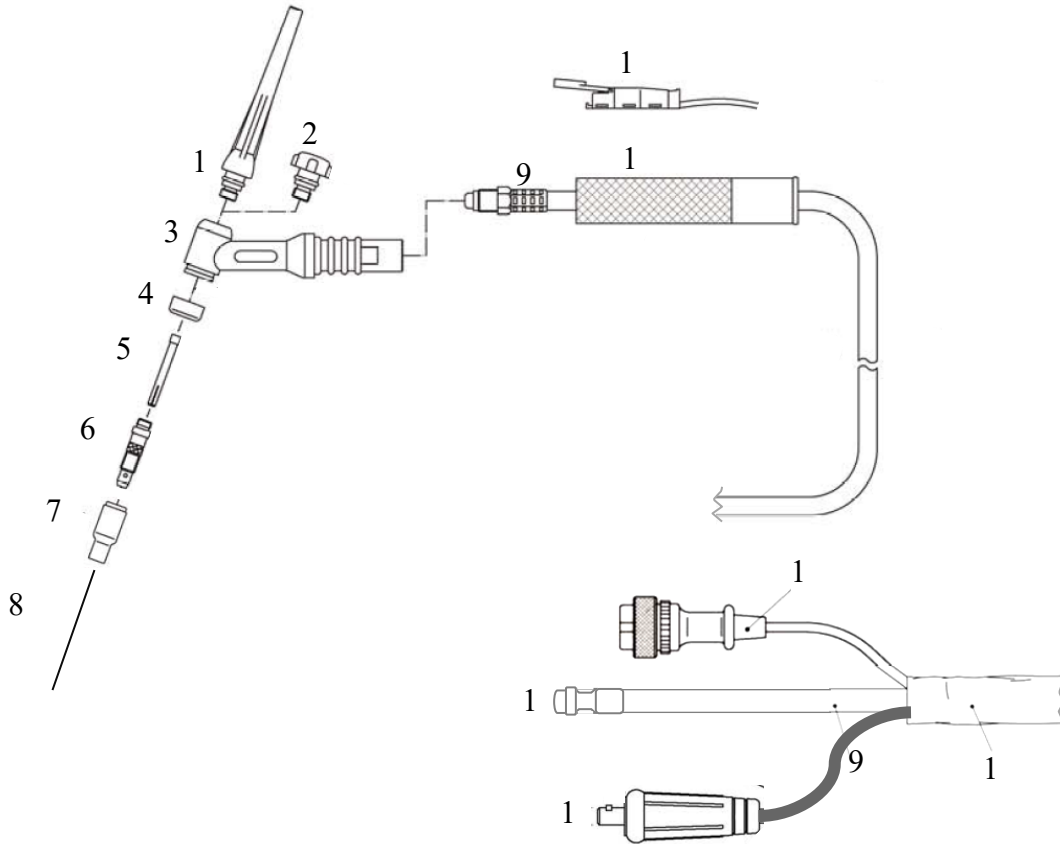


1. Turn on the power switch on the rear of the unit. Allow unit to cycle through its start up program.
2. Select the Stick mode with the HF/Lift Start/Stick selector switch.
3. Make sure electrode holder is hooked into the positive connector and the work clamp is hooked the negative connector.
4. Select the amps desired. Use the electrode diameter selection chart in this manual to determine the approximate range of amps suitable for the rod size selected. Consult the welding electrode manufacturer's recommendation for proper amperage range. Each manufacturer has specific recommendations for its electrodes.
5. Strike the arc with either the tapping method or the match strike method. Beginners usually find that the match strike method yields best results. Professionals tend to gravitate toward the tapping method because of its placement accuracy which helps prevent arc striking outside of the weld zone.

**IMPORTANT:** Do not weld in the TIG mode with the stick electrode holder still attached.

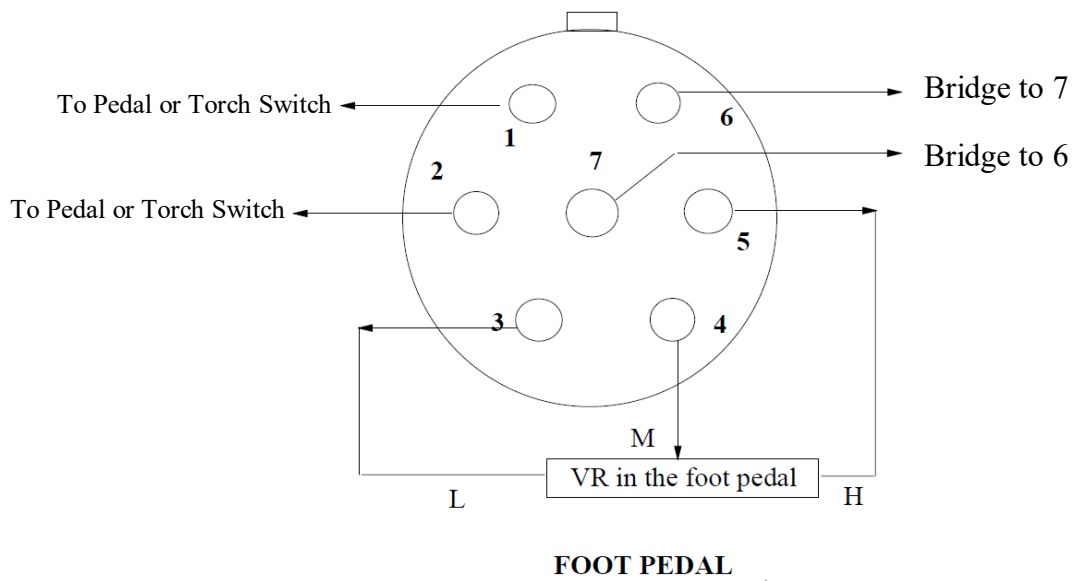
### EXPANDED VIEW OF TIG TORCH

(Actual appearance may vary slightly from what is listed.)



NO.	PARTS FOR 17 Series Torch ( STYLE MAY VARY)	QTY.
1	Long Back Cap with O-Ring	1
2	Short Back Cap	Opt.
3	Torch Head	1
4	Insulator	1
5	Collet 1/16 or 3/32	1
6	Collet Holder	1
7	Ceramic Cup #5,6, or 7	1
8	Tungsten (customer supplied)	0
9	Torch Cable	1
10	Torch Handle (Blue ergo handle std, not pictured)	1
11	Torch Switch (Built into ergo handle, separate on straight handle)	1
12	Torch Switch Connector	1
13	9mm (1/8") b quick connect coupling (male)	1
14	Power Connector	1
15	Protective Synthetic Rubber Cover	1

### 7 PIN CONNECTOR FOR 22K $\Omega$ FOOT PEDAL



TROUBLE:	CAUSE/SOLUTION
<b>Machine will not turn on. No display or fan.</b>	Check cords and wiring in the receptacle/plug. Check circuit breaker. Broken Power switch
<b>Machine runs, but will not weld in either mode.</b>	Check for good work clamp connection. Make sure ground cable and TIG Torch are securely fastened to the Dinse connector. Duty Cycle or Over Current has been triggered. Check Code. See next page for codes. Reset welder by cycling power switch after allowing unit to cool if duty cycle has been exceeded. If over current has been triggered, evaluate cause and reset unit by cycling power switch. If this does not resolve either condition, contact Everlast Technical Support.
<b>Arc will not start unless lift started. Difficult to start or unstable.</b>	Check adjust and clean HF point gap. See section in this manual to set to .030" or contact Everlast Technical Support. Check Polarity. Check for metal contaminating (esp. Aluminum) tungsten. Regrind Tungsten. Using Helium in mix greater than 25%. Also try to touch and lift tungsten to metal briefly before attempting arc start. Then immediately try to start arc as normal with HF. Too large of tungsten with low amp starts.
<b>Tungsten is rapidly consumed.</b>	Inadequate gas flow. Too small of tungsten or cup. Wrong shielding gas. Use only Ar. Using green tungsten. Use red or other. Wrong polarity. Too much AC cleaning set. Too low of AC frequency.
<b>Tungsten is contaminated, arc appears to change to a green color while welding.</b>	Tungsten is dipping into weld. Arc may be hard to restart. Check and adjust stick out to minimum 1/8 inch. Tungsten is melting due to under-sizing or wrong type. Reduce amperage or increase tungsten size. Check manual for size and type recommendations on page 11.
<b>Porosity of the Weld. Discolored weld color. Tungsten is discolored.</b>	Low flow rate of shielding gas. High flow rate of shielding gas. Too short of post flow period. Wrong TIG cup size. Wrong torch Angle. Possible gas leaks internally or externally due to loose fittings. Check fittings by brushing warm soapy water at all connections and lines. Base metal is contaminated with dirt or grease. Use gas lens to help correct. Shielding gas contaminated with CO <sub>2</sub> . Change to new cylinder/supplier. Poor quality shielding gas is major cause of this problem.
<b>Weld quality is poor. Weld is dirty/oxidized.</b>	Eliminate drafts. Use a small candle to test for drafts. Do not place welder in line or close to the welding area. Move welder to a distance of at least 8 ft and on a different level if possible. Also, check if there is sufficient shielding gas left in tank. Check gas flow rate. Adjust for higher flow of gas. Listen for audible click of gas solenoid. If no click is heard, then contact Everlast Support. Clean weld properly, especially in Aluminum. Too short of post flow. Shielding gas is contaminated with CO <sub>2</sub> . Change cylinder or gas supplier. (Common issue)
<b>Display shows error code. Machine runs, but no output when actively trying to weld.</b>	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 voltage input. Do not continue to repeatedly cycle power switch if code does not clear. Shut the machine down immediately, and contact Everlast as soon as reasonably possible for further diagnosis and repair instructions.
<b>Unstable Arc.</b>	Poorly ground or shaped tungsten. Contaminated Tungsten. Regrind to proper point. Too much AC positive polarity. Reduce balance to 30% or less. Drafty work area. Low AC frequency. Increase AC Frequency. Indirectly connected work clamp. Too large of Tungsten at low amps. Reduce tungsten size. Using more than 25% He mix.
<b>Unit powers up normally but fan does not run or runs slowly.</b>	Too cold, below recommended operating temp of 21 F degrees. Warm unit up. Possibly damaged fan from shipping issue. Fan worn.
<b>Pre Flow does not start. Post flow does not shut off after timing out</b>	Solenoid sticking or wires disconnected to control board. Sticking solenoid by have dirt, rust or debris in valve body. Can be cleaned. Call Everlast to receive instructions on cleaning/checking.

## Error Codes

Error Code	Meaning	Possible Cause
E01	Over Voltage/ Under Voltage	Check Power Source, Turn welder off and unplug to check and correct circuit wiring. Operating on poor quality power (i.e. Using with a generator not rated as "clean power" output < or = to 5% THD.) Voltage source could have intermittent problem. If unable to resolve, contact Everlast as soon as reasonably possible.
E02	Over Current	Operating machine on too small of a conductor or too far from source. Internal machine fault. If code will not clear by cycling machine on and off contact Everlast as soon as reasonably possible. Do not continue to cycle more than twice. Poor quality power from generator. Use a generator with 5% THD or less.
E04	Over Temperature	Duty Cycle exceeded. Blocked cooling. Fan inoperable or damaged. Allow unit to cool for 15 minutes. Reset unit by turning off and on after cool down period if needed. If code does not clear or fan does not run, contact Everlast for further diagnosis.
E05	Stuck Switch	Torch switch or foot pedal is held down too long without attempting to strike an arc. (>3 Seconds) Foot Pedal Switch misadjusted or malfunctioning. Do not hold pedal down. If code does not automatically clear. Reset unit by cycling the unit off and then back on. If this does not reset the condition, unplug foot pedal/torch switch to see if this condition continues. If code is not cleared, or problem persists, contact Everlast for further diagnosis procedures.