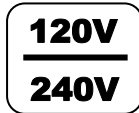
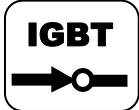


# EVERLAST

## POWERTIG 200DV

Digitally controlled Dual Voltage AC/DC PulseTIG/Stick Welder



### ***Operator's Manual for the PowerTIG 200DV Safety, Setup and General Use Guide***

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

Rev. 2 0 01112716ETL



1-877-755-9353

329 Littlefield Ave. South San Francisco, CA 94080 USA

Specifications and Accessories subject to change without notice.

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**NOTE:** Product Specifications and features are subject to change without notice. While every attempt has been made to provide the most accurate and current information possible at the time of publication, this manual is intended to be a general guide and not intended to be exhaustive in its content regarding safety, welding, or the operation/maintenance of this unit. Everlast Power Equipment INC. does not guarantee the accuracy, completeness, or authority of the information contained within this manual. The owner of this product assumes all liability for its use and maintenance. Everlast Power Equipment INC. does not warrant this product or this document for fitness for any particular purpose, for performance/accuracy or for suitability of application. Furthermore, Everlast Power Equipment INC. does not accept liability for injury or damages, consequential or incidental, resulting from the use of this product or resulting from the content found in this document or accept claims by a third party of such liability.

**Dear Customer,**

**THANKS!** You had a choice, and you bought an Everlast. 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 basic diagnosis 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: \_\_\_\_\_

#### Contact Information

##### Everlast US:

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

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

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

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

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

FAX: 1-650-588-8817

##### Everlast Canada:

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

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

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

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

FAX: 1-905-639-2817

##### Everlast Australia:

Sydney: 5A Karloo Parade Newport NSW 2106

(02) 9999 2949

Port Macquarie: 2B Pandorea Place Port Macquarie

(02) 8209 3389

After hours support: 0413 447 492

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



**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.** Welding is inherently dangerous. Only you, the operator of this welder, can ensure that safe operating practices are followed through the exercise of common sense practices and training. Do not operate this machine until you have read and reviewed the manual, including the safety section. If you think that you do not have the skill or knowledge to safely operate this welder, do not use this welder until formal training is received.

## Safety Precautions

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



Safe operation and proper maintenance is your responsibility.

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

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

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



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

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



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



**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!**



**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 represent 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 you are comfortable with proper operation and are able to assume inherent risks of cutting or welding.



**PowerTIG 200DV**



Air-cooled, 26 Series Torch Assembly  
12 Ft (3 m) with built in 2T/4T switch  
(Style may vary)



Argon Regulator



Consumable Kit  
(Does not include Tungsten)



Work Clamp



22K  $\Omega$   
Foot Pedal Assembly



Stick Electrode Holder

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

PowerTIG 200 DV TIG/Stick Welder	Specification
Process	AC/DC GTAW-P/DC SMAW
Inverter Type	Digital, IGBT Construction
Minimum/Maximum Rated Output TIG	240 V: DC: 5 A/10.2 V - 200 A/18V AC: 20 A/10.8 V - 200 A/18 V 120 V: DC : 5A/10.2 - 120 A/14.8V AC : 20 A /10.8 - 120A/14.8V)
Minimum/Maximum Rated Output Stick	240 V: DC: 5 A/20.2 V - 160 A /26.4 V AC: 20 A/ 10.8 V-160 A/26.4 V 120 V: DC: 5 A /20.2 V -100 A/24 V AC: 20 A/20.8 V - 100 A/ 24 V
Start Type	HF and Lift Start
HF Point Gap	.030"-.045" (.035" suggested)
TIG Duty Cycle @ Rated Amps/Volts (US Version rated at 40° C)*	240 V: 60% @ 200 A/ 18 V; 100% @ 160 A/ 16.4 V 120 V: 60% @ 125 A/ 15 V; 100% @ 100 A/14 V
Stick Duty Cycle @ Rated Amps/Volts	240 V: 35% @ 160 A/ 26.4 V; 60% @ 130 A/ 25.2 V; 100% @ 100 A/ 24.0 V 120 V: 35% @ 100 A/24 V; 60% @ 80 A/23.2 V; 100% @ 60 A/22.4 V
OCV (U <sub>0</sub> )	68V
Voltage Input (U <sub>1</sub> )	Dual Voltage: 120/240V 50/60 Hz 1 Phase
Maximum Inrush Amps (I <sub>1MAX</sub> )	31 A @ 240 V 35 A @ 120 V
Maximum Operating Amps (Rated Effective) (I <sub>1EFF</sub> )	23 A @ 240 V 24 A @ 120V
Gas Pre-Flow /Post Flow Time	0-10 Seconds/ 0-25 Seconds
Down Slope	0-10 Seconds
AC Frequency Control	20-150 Hz
AC Balance Control	30-70% of Electrode Positive (EP)
Pulse Frequency Hz (Pulses Per Second)	.5-150 Hz
Pulse Amps (Ratio)	5-95%
Pulse Time On (Balance)	10-90%
Stick Arc Force Control	0-100%
Stick Surge Amp Control (Available late 2013)	0-100%
Minimum Water Ingress Protection Standard	IP21S
Efficiency	>85%
Cooling Method	Full Time High Velocity Fan with Tunnel design
Dimensions (rounded)	18" H X 10" W X 25" L
Weight (Bare Unit)	65 lbs

\*Canadian version rated at maximum amps at 35% duty cycle @ 47° C (2014 Canadian standard)

Dual Voltage Model Optional. Standard model is 240 V only. Output Specifications for both models are same while operating on 240V.

**General overview:** The PowerTIG 200 DV features AC/DC pulse TIG and Stick welding capability. With a new digitally controlled IGBT inverter design, this welder is designed for years of use. The PowerTIG 200DV model features dual 120V/240V input operating capability. New circuits have been designed to minimize weight and maximize serviceability with an improved plug and play design of the major PCB. It retains the same basic performance specifications of While operating on 120V, output is reduced to a maximum output of 120A TIG and 100 Amps Stick. The lowered output is still a serviceable for many applications and allows the unit to be operated almost anywhere an outlet is present. Several key design elements give the PowerTig 200DV a competitive edge:

- A. Componentized design improves reliability while make servicing a unit quicker, and more cost efficient. Most electronic items are standard components reducing the cost of long term repair.
- B. A Full bridge rectifier and soft switching technology further extends IGBT component life and extends performance capabilities.
- C. Improved HF design offers better and more stable arc starts, even at lower amperages.
- D. Automatic over-voltage, over-current and duty cycle (over heat) interrupt helps protect electronics.
- E. The square wave design creates a stable arc in AC, with a fast melting puddle and good wet in.
- F. New, improved panel design offers more intuitive adjustments and protection against damage.

**General Use and Care:** The welder is designed for use in many environments. However, care should be taken to keep the unit out of direct contact with water. The unit is rated IP21S, which rates it for light contact with dripping water, but should never come in contact with water. It is a good idea to remove the welder from the vicinity of any water or moisture source to reduce the possibility of electrocution or shock. Never operate in standing water or wet surfaces.



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

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

Do not restrict air flow or movement of air around the welder. Allow a buffer distance of 2 ft. from all sides if possible, with a minimum distance of at least 18" clearance. Do not operate the welder immediately in the weld area or the force of the fan will cause welding issues such as unstable arc, or porosity. Do not mount in areas that are prone to severe shock or vibration. Lift and carry the welder by the handle. Do not direct metallic dust or any dirt intentionally toward the machine, particularly in grinding and welding operations. Make sure the panel is protected from damage during welding and cutting operations by flipping down the clear protective cover.

**Duty Cycle.** The TIG duty cycle is rated for 60% at 200 amps and Stick duty cycle is rated for 35%@160A. Duty cycle is expressed as a percent of a 10 minute period of time a welder can operate at temperatures up to 40° C (US version). This means that the unit is capable of TIG welding 6 out of every 10 minutes at 200 amps and stick welding for 3.5 minutes out of every 10 minutes at 160 amps. **The welder should be allowed to rest while switched on for the remainder of the 10 minutes to properly cool.** The temperature light will come on and the welder will automatically stop welding when an overheat condition has occurred. Do not shut the welder down if this occurs. Allow the unit to continue to cool for 15 minutes if an overheat has occurred. Once cooled, cycle the power switch off and back on to reset and clear the overheat condition. The duty cycle safety interrupt is controlled by a temperature sensor and not a timer. Shorter but frequent welds that do not allow sufficient cooling time (equivalent to the 4 minute cumulative rest time) may overheat the unit, particularly when used for applications where high inrush current is being generated such as fast, high amp tacking. When welding in AC mode, excessive AC balance settings greater than 50% cleaning can lead to shorter duty cycle times as well. Welding in humid, or hot conditions can negatively affect duty cycle. If overheat condition occurs, allow the unit to run for 15 minutes before resetting the unit.

**Overcurrent.** This unit is equipped with a safety interrupt and light to indicate an over current or voltage has occurred. If the over current light is lit, and welding is interrupted, immediately switch the unit off and identify the cause of the overcurrent (usually poorly regulated or wrong power supply or improper sized extension cord). Power the unit off and back on to clear the light and resume welding. If after correcting

the cause of the overcurrent, and cycling the power switch does not clear the condition, an internal fault may have occurred. Discontinue operation and contact Everlast technical support for further diagnosis.

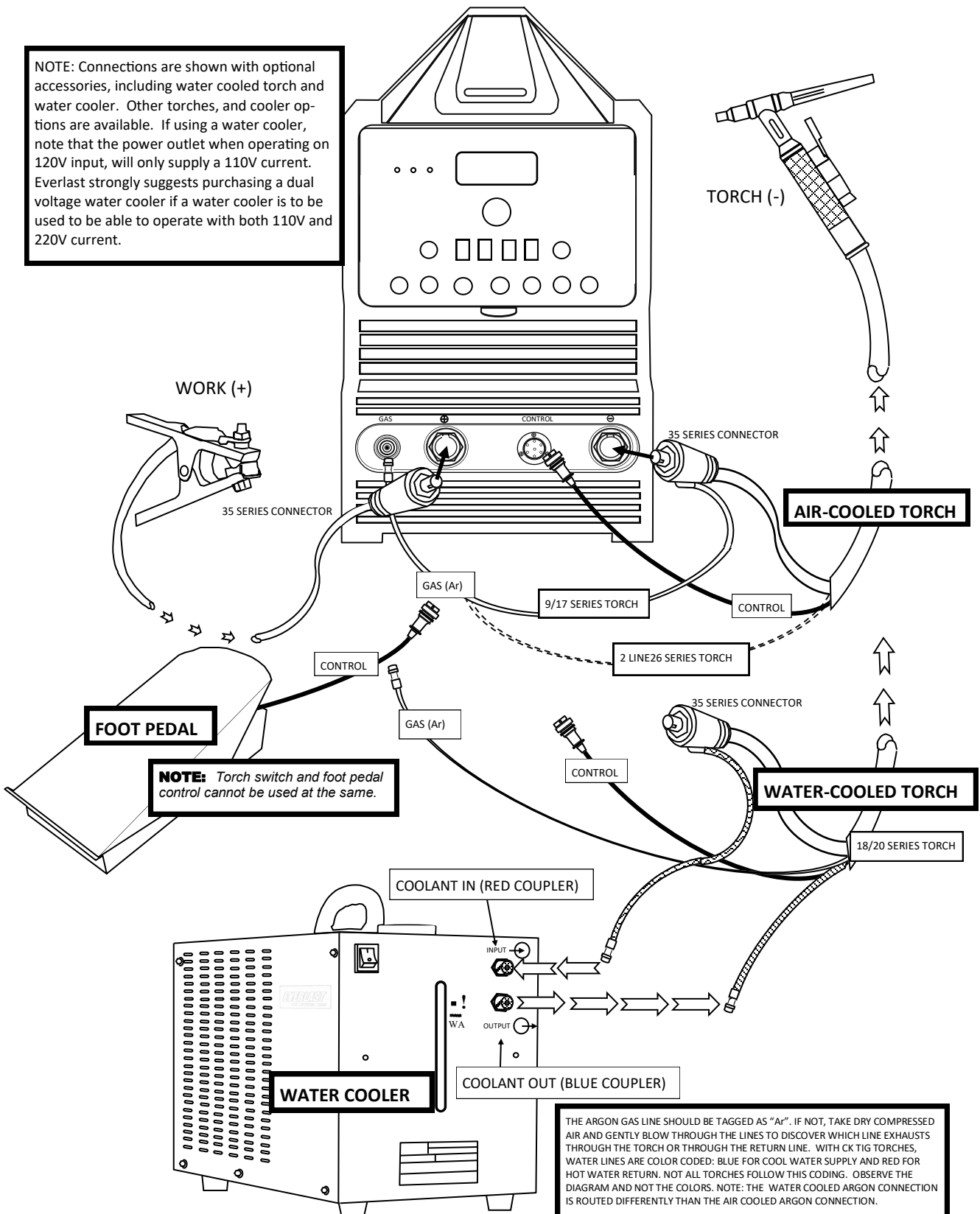
**HF Start.** The welder uses High Frequency to start the arc. HF is generated by a point gap system similar to an automotive point/coil system. A slight buzz, or hiss may be heard immediately upon start as the HF energizes. A bright blue light may be emitted from the front or side panel as the spark energizes. This is normal and safe as long as the covers are in place.

**Generator operation:** The size and capability of this unit, particularly with the 120V design lends itself to being operated on a generator. When considering operating the welder on a generator, make sure the generator has been certified to generate "clean power", which is generally considered to be less than 10% total harmonic distortion (usually rated at 5% or less). Clean power represents a purer AC sine wave without significant spikes and noise. Everlast does not maintain an approved list of clean power generators. Directly consult the manufacturer of the generator for information regarding clean power output. Operating on dirty power can damage electronics found in an inverter. Many work site generators are dirty power and are designed to operate resistive loads like lights and some power tools. The PowerTIG 200DV should be able to operate on any generator that is rated safe for computers and electronic items. Older engine drive welders that include an AC generating circuit typically are not considered to be clean powered. However, many newer engine driven welders now are considered to supply "clean" power. Again, consult with the manufacturer to determine whether the unit is considered to be a clean power source. For operation at maximum amps on 120V, a 5500 watt continuous output generator is recommended. For operation on 240V, an 9000 watt continuous output generator is recommended. These are minimum suggested ratings figured from welder wattage requirements figured from maximum input volts multiplied maximum input amps (Watts=VxA) Minimum recommendations are based off of theoretical capabilities of the generator and not a guarantee of performance and best operation. Excessive and continuous load may cause the generator to loose RPM. This may result in a drop of in output voltage and AC frequency (Cycles/Hz) below required welder specifications and damage may occur to the welder and/or generator. **The welder warranty does not cover damage caused to the unit as a result of operating on under powered or dirty powered generators and power sources. Always make sure than any extensions are**

**properly sized to accommodate voltage loss and amp requirements of the welder.**

**QUICK SETUP GUIDE: TIG CONNECTIONS**

NOTE: Connections are shown with optional accessories, including water cooled torch and water cooler. Other torches, and cooler options are available. If using a water cooler, note that the power outlet when operating on 120V input, will only supply a 110V current. Everlast strongly suggests purchasing a dual voltage water cooler if a water cooler is to be used to be able to operate with both 110V and 220V current.



**FOOT PEDAL**

**NOTE:** Torch switch and foot pedal control cannot be used at the same.

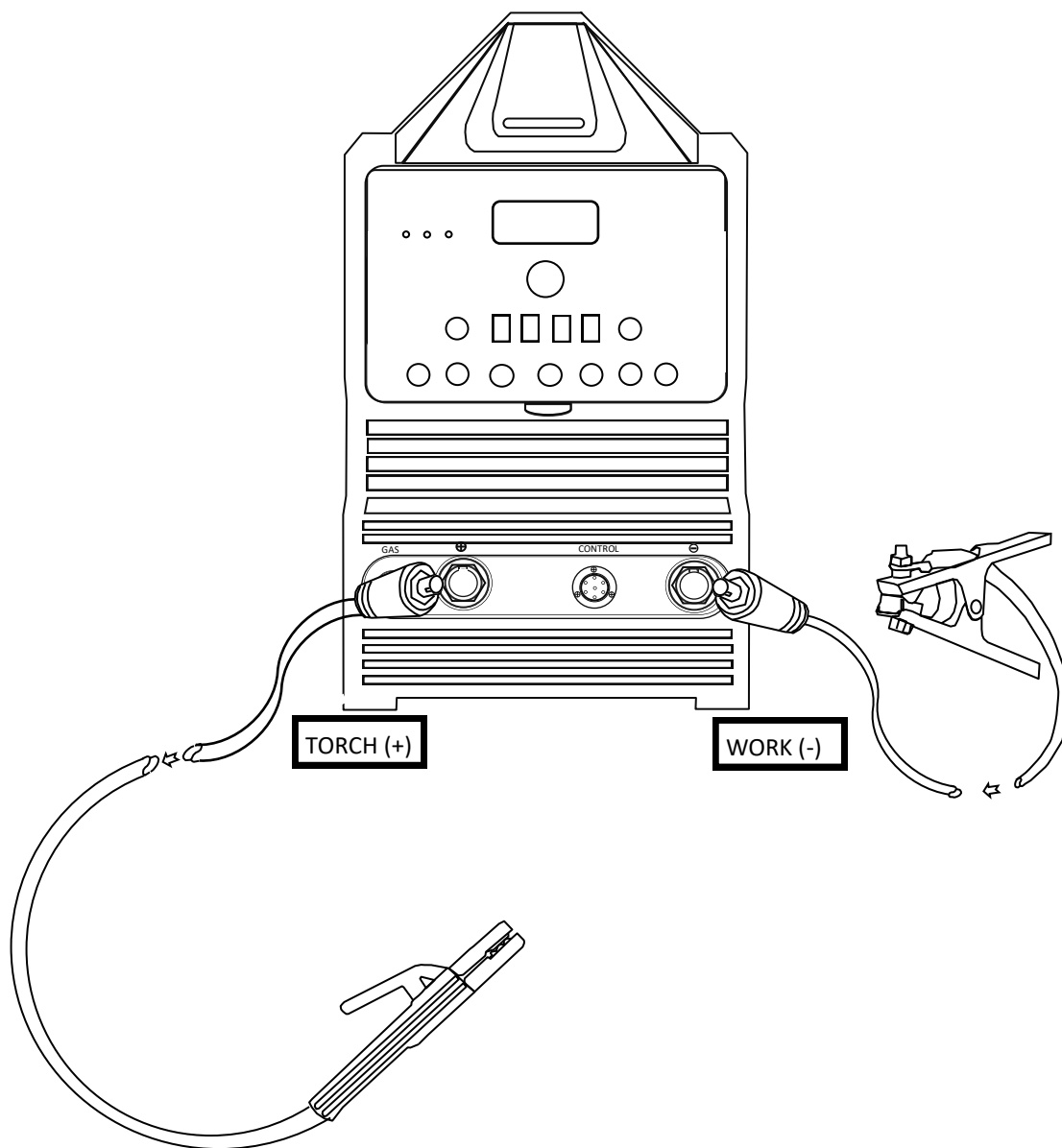
**AIR-COOLED TORCH**

**WATER-COOLED TORCH**

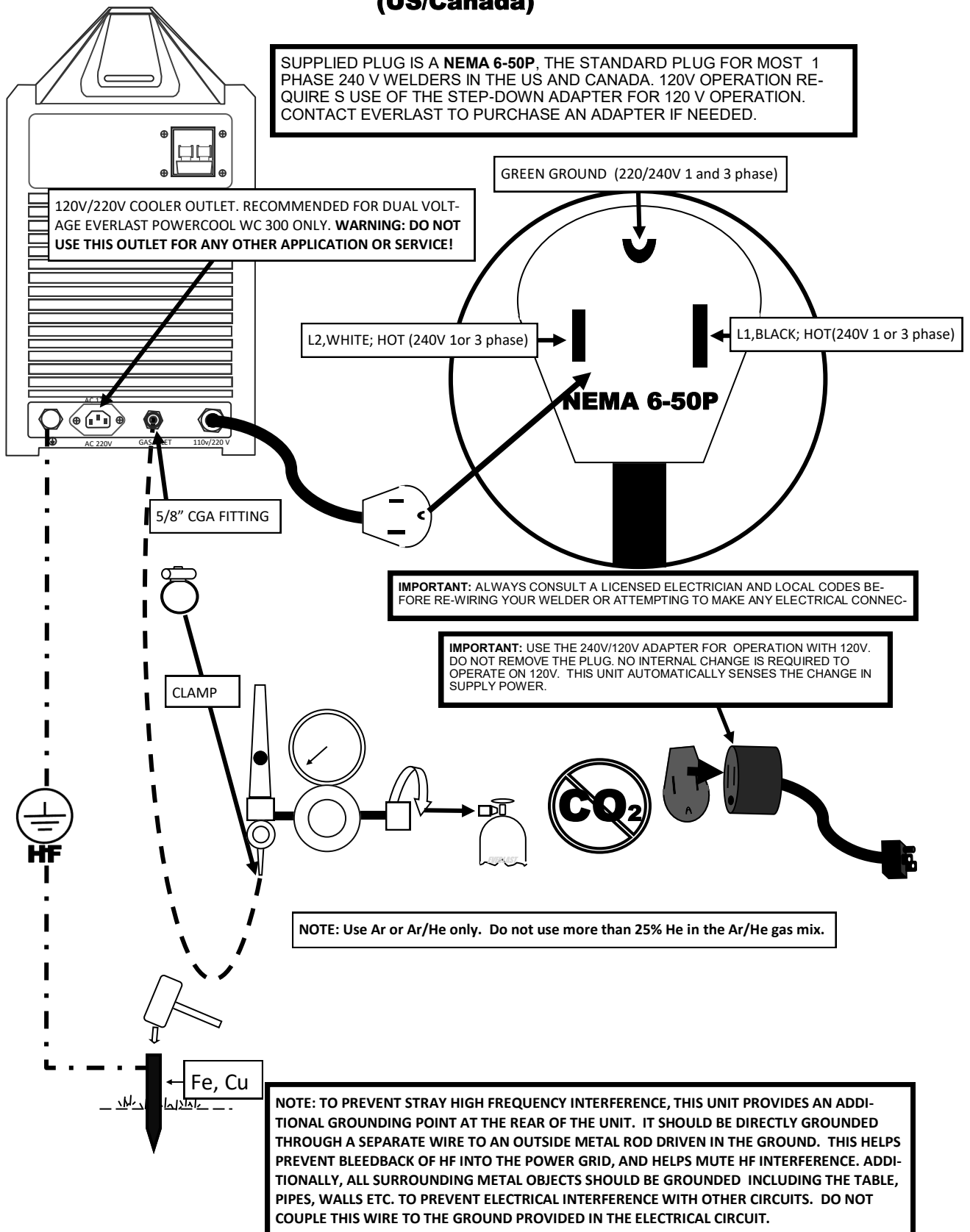
**WATER COOLER**

THE ARGON GAS LINE SHOULD BE TAGGED AS "Ar". IF NOT, TAKE DRY COMPRESSED AIR AND GENTLY BLOW THROUGH THE LINES TO DISCOVER WHICH LINE EXHAUSTS THROUGH THE TORCH OR THROUGH THE RETURN LINE. WITH CK TIG TORCHES, WATER LINES ARE COLOR CODED: BLUE FOR COOL WATER SUPPLY AND RED FOR HOT WATER RETURN. NOT ALL TORCHES FOLLOW THIS CODING. OBSERVE THE DIAGRAM AND NOT THE COLORS. NOTE: THE WATER COOLED ARGON CONNECTION IS ROUTED DIFFERENTLY THAN THE AIR COOLED ARGON CONNECTION.

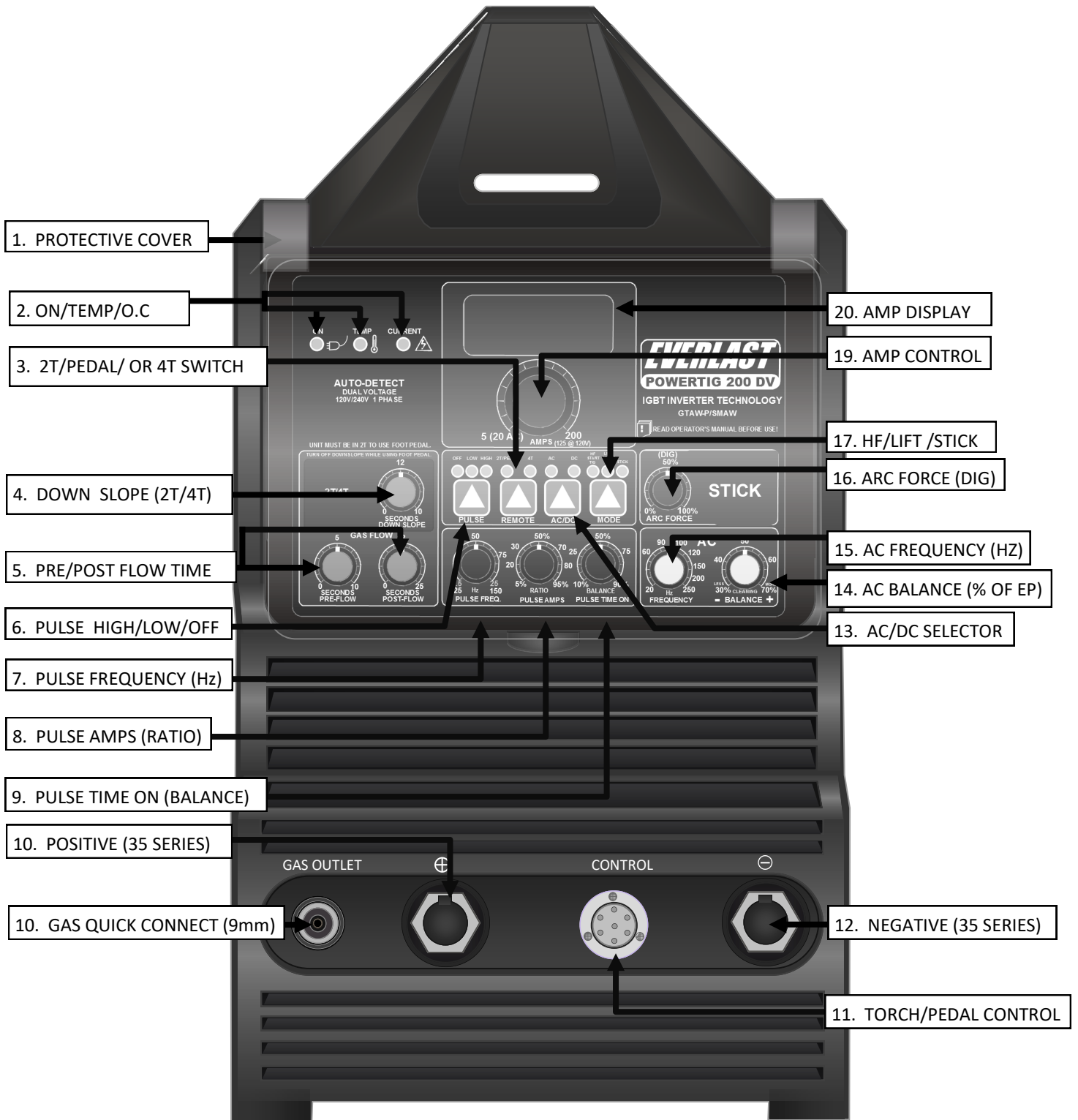
**QUICK SETUP GUIDE: STICK POLARITY AND CONNECTIONS**



**QUICK SETUP GUIDE: REAR CONNECTIONS AND WIRING (US/Canada)**



## FRONT PANEL FEATURES AND CONTROLS



1. PROTECTIVE COVER

2. ON/TEMP/O.C

3. 2T/PEDAL/ OR 4T SWITCH

4. DOWN SLOPE (2T/4T)

5. PRE/POST FLOW TIME

6. PULSE HIGH/LOW/OFF

7. PULSE FREQUENCY (Hz)

8. PULSE AMPS (RATIO)

9. PULSE TIME ON (BALANCE)

10. POSITIVE (35 SERIES)

10. GAS QUICK CONNECT (9mm)

20. AMP DISPLAY

19. AMP CONTROL

17. HF/LIFT /STICK

16. ARC FORCE (DIG)

15. AC FREQUENCY (HZ)

14. AC BALANCE (% OF EP)

13. AC/DC SELECTOR

12. NEGATIVE (35 SERIES)

11. TORCH/PEDAL CONTROL

NOTE: Dual Voltage Model connections are the same in function but the gas connector location is on the far left side and the work clamp connector is to the right of it.



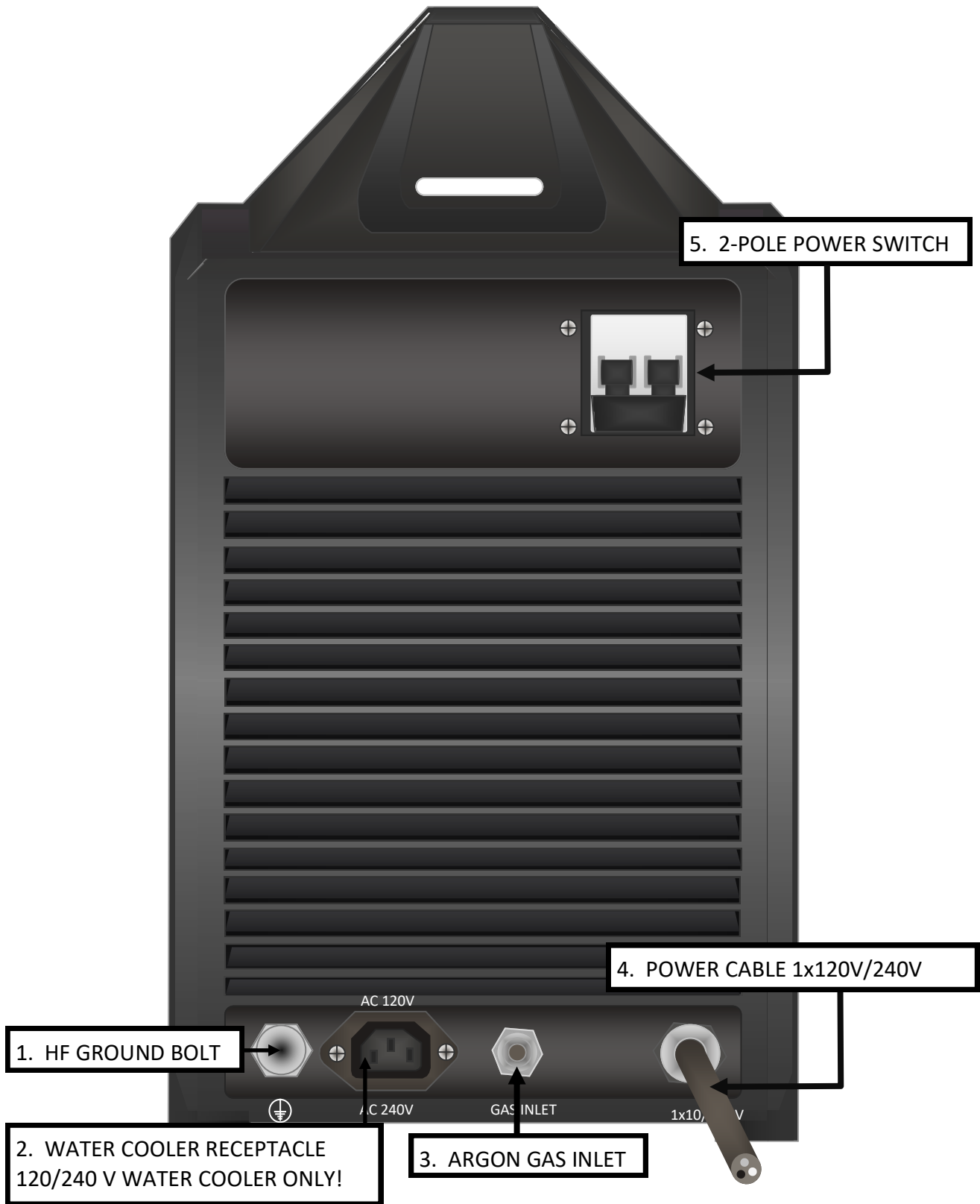
## FRONT PANEL FEATURES AND CONTROLS

POWERTIG 200 DV	PARAMETERS	PURPOSE
1. Protective Cover	N/A	Clear hinged cover protects panel from damage. Keep closed during welding operations.
2. On/Temperature/ Over Current	Indicator/ Warning Or Fault	On Indicator: Confirms unit is switched on. Temperature Indicator: Lights up and stops welding output until the welder has cooled within normal limits. Allow 10 minutes before attempting to reset manually by cycling the power switch. If the light does not go out after the cool down period by cycling the switch, or if comes on again when the arc is struck, contact Everlast. Over Current Indicator: Lights up when a voltage /amp surge has surpassed the units capabilities. Eliminate the source of the surge and manually cycle the power switch to reset. If the light remains on after cycling the switch, this may indicate a unit fault created during the over current event. In this case, contact Everlast.
3. 2T/4T Sequencer Switch	2T -Pedal/4T	Used with the torch switch function. Select 2T for simple press and hold operation of the torch switch. Release the switch to cease operation. Select 4T for advanced use of the down slope control. 1) Press and hold switch to start arc. 2) Release switch to weld at maximum welding amps. 3) Press and hold switch once again to begin downslope. 4) Release switch to terminate the arc. In 4T mode, if the puddle becomes too hot, it can be cooled by lightly tapping the switch to begin downslope and tapping again to restart welding at max amps before the bottom of the down slope is reached. Setting a long downslope helps improve heat control with this feature. IMPORTANT: For foot pedal use: Select 2T, turn down slope to minimum settings or the foot pedal will not operate correctly.
4. Down Slope Control (Part of 2T/4T sequence)	0-10 Seconds	Down Slope will ramp amps “down” from the welding amp value to the factory preset minimum end amp value to give time to gently fill the crater left at the end of the weld bead. Effect is minimal at low welding amperages.
5. Pre/Post Flow Control	0-10/ 0-25 Seconds	Pre-Flow sets the amount of shielding gas flow time before arc starts. It is used to purge and flood the weld area with shielding gas so the arc start is stable and weld is porosity free. The pre-flow will delay the arc start. Set pre-flow for .5 ~1 second for best starting. Post-Flow sets the amount of shielding gas flow time after arc ends to shield the weld to prevent oxidation and cool the torch. Use 1 second post-flow or less for every 10 amps.
6. Pulse Off/High/Low Switch	Off/ Low/ High	Turns pulse on. Low range operates with a fine control from .5-25 Hz. High range operates with a more coarse range of control from 25-150 Hz
7. Pulse Frequency Control	.5-150 Hz	Represented by Hertz (Hz), the pulse frequency adjusts the actual number of times per second the pulse makes one complete cycle between welding amps (Peak value) and pulse amps (Background (low) amp value). This is also commonly referred to as Pulses Per Second (PPS). Low pulse frequencies are ideal for timing when filler metal is added. This helps improve appearance and uniformity. Higher pulse frequencies are useful for welding seams and edges of thin material. Also it is useful for overall heat control for thicker metals. Higher pulse frequencies are useful for automated welding processes. WARNING: WELDING AT HIGH PULSE FREQUENCIES INCREASES THE DECIBEL /NOISE LEVEL OF THE ARC. HEARING PROTECTION IS RECOMMENDED! The adjustment is not 100% linear and symmetrical in adjustment. The further clockwise the control is turned, the more rapidly the value increases.
8. Pulse Amps (Ratio) Control	5-95%	Sets the lower Pulse Amp (base or background current) value during the pulse cycle by adjusting it as a percent of Welding Amps. When pulse mode is selected, the main amp welding knob determines the Welding Amp (upper /peak) value.
9. Pulse Time On (Balance) Control	10-90%	Sets the duty cycle (balance) of the pulse, by dividing or skewing the amount of time the pulse is in the lower or upper stage of the pulse. The pulse consists of two stages: Welding Amps (Peak) and Pulse amps (base/background current). This is represented by a percentage (%) of total time (typically referred to as ratio of time ) the pulse spends in the welding amp (Peak) part of the cycle during one full pulse. The control can be used to increase or decrease peak welding time relative to the Base Amp time of the cycle to help manage heat input and penetration.
10. Positive Connector	35-70 mm <sup>2</sup>	Location of the positive terminal connection. Dinse-style connector. (35 Series) For Stick: Torch connection. For TIG: Work Clamp Connection.
11. Quick Connect Gas Outlet	9 mm	Connects the gas to the TIG torch. To connect: Push the torch fitting into the connector until the collar slides forward with a click. To Release: Slide the collar back.

## FRONT PANEL FEATURES AND CONTROLS CONTINUED

POWERTIG 200 DV	PARAMETERS	PURPOSE
11. Control Connector	7 Pin	Connect the foot pedal or torch switch to this socket to control the welder. Only the foot pedal or torch control connector can be plugged in at one time. If the torch has a torch switch feature, tie the loose connector back or leave it hanging while using the pedal.
12. Negative Connector	35-70 mm <sup>2</sup>	Location of the negative terminal connection. Dinse-style. (35 series) For Stick: Work Clamp Connection. For TIG: Torch Connection
13. AC/DC Selector	AC/DC process	Select DC output for Steel, Stainless and most metals. Select AC output for Aluminum and Magnesium alloys.
14. AC Balance Control	30-70% of EP	Selects the percent of Electrode Positive (EP) used during AC welding to provide cleaning. This divides the amount of time that the AC cycle is in Electrode Positive or Electrode Negative during one full AC cycle. It controls the amount of cleaning and penetration via a ratio to achieve the best balance while welding on AC. When the control knob is rotated left, more Electrode Negative is present and more penetration will be achieved. When the control knob is rotated right, more Electrode Positive is present and more cleaning (cathodic etching) will be achieved. Too much cleaning action will result in tungsten balling or splitting, making a larger tungsten necessary for the same amperage range. Too little cleaning can result in dirty, sooty welds and even a dull weld appearance. NOTE: This is expressed as a percent of full EP Polarity. This unit uses 100% Electrode Positive as the reference, which is just the opposite from some other brands. Using the welder in excess of 50% EP can vaporize the tungsten. It can also reduce the duty cycle of the welder. For most welds, no more than 45% cleaning is needed. Ideally, start with 30% EP for a reference point, and adjust it up from there to achieve best results.
15. AC Frequency Control	20-250 Hz	Controls the number of times per second that the current alternates in AC mode. To achieve greater arc focus (constriction) and increase puddle agitation while welding in AC mode, increase AC frequency. This allows pinpoint use on thin materials, and helps penetration on thicker materials. Ideal adjustment range is usually 100-150 Hertz. For comparison most transformer welders in the US operate on 60 Hz. Greater results can be achieved through the use of the higher frequency range of this welder. Lower Frequencies will widen and soften the arc but reduce the level of control. WARNING: INCREASING THE AC FREQUENCY ALSO INCREASES THE DECIBEL / NOISE LEVEL OF THE AC WELDING ARC. HEARING PROTECTION SHOULD BE WORN!
16. Arc Force Control (DIG)	0-100%	Controls the arc response when an arc is held short and voltage begins to drop. Arc force automatically compensates by modifying the volt/amp curve to maintain the energy needed to weld. Represented as a percent of available amperage.
17. HF Start/Lift Start/Stick Switch	HF/Lift/ Stick	Selects type of TIG start. HF is touch free and activates during start only. Lift start requires brief touch to metal to draw an arc and is good for areas where sensitive electronics are present. Also selects Stick welding process.
29. Amp Control Knob	DC: 5-200 A (TIG) AC: 20-200 A (TIG) DC: 5-160 A (Stick) AC: 20-160 A (Stick)	Sets Maximum limit for Amps with foot pedal or torch. Sets higher amp value for pulse. Minimum amps for AC is 20 amps. If working with extremely thin metals is needed and too much penetration is being achieved or arc start is too high at the minimum setting of 20 amps, increase cleaning percent. This will direct more heat on the tungsten, and may cause balling, and loss of some arc stability, but will reduce the heat placed on the work and can improve weldability on very light gauge aluminum. (<.020") NOTE: 120 V operation limits TIG to maximum output to 120 A and Stick to a maximum output of 100 A.
20. Amp Display	N/A	Displays maximum selected amps until the weld is started. Displays actual amps while welding. Display may cycle rapidly and randomly after pulse has been turned on. This is normal. The meter "samples" the pulse at a fixed rate and is not synchronized with the pulse. Immediately after the pulse is turned on, a short delay is built in that prevents the display from cycling to allow the pulse to be adjusted. Once the adjustment is finished, pulse will begin to cycle after a few seconds if no input is made.

### REAR PANEL FEATURES AND CONTROLS



## REAR PANEL FEATURES AND CONTROLS

POWERTIG 200DV	PARAMETERS	PURPOSE
1. HF Ground Bolt	N/A	HF energy can be devastating to surrounding electronic equipment. If the operating environment includes electronic equipment, this bolt can serve as a direct path to a grounded metal rod that is isolated from the main electrical circuit to help bleed off excess HF circuit. All metal parts inside the building should be grounded as well, including pipes, tables, and even metal siding. HF energy has been known to bleed back into the power grid and disrupt electronic devices further down the grid. If point gap becomes out of adjustment, more HF energy may build up, or even jump across circuitry within the welder. It is highly recommended that a small, separate ground wire be attached at this point while in use.
2. Water Cooler Receptacle	IEC 60320-1 "C-14" 120/240V	This connection is designed to supply power to the Everlast PowerCool 300 110/220V (dual voltage) water cooler. Do not use this connection to power any other device. (4 amp max. output.) When operating on 120V input the welder will only output 120V at this outlet. Similarly, when operating on 240V, output will be 240V. If using with a single voltage cooler, be sure to unplug and discontinue use of cooler until the welder can be operated on the correct voltage needed to supply the cooler or severe damage to the cooler may result.
3. Gas Input Connection	5/8" CGA	This is the point where the shielding gas from the regulator connects. The unit is supplied with tubing and clamps which connect this fitting to the regulator. One end is equipped with a 5/8" CGA fitting that screws into the female coupling on the welder. Use an additional clamp if necessary to prevent leaking. If you suspect leaking, test the connection with a solution of mild soapy water. If bubbles are seen, retighten. Do not use thread tape or thread sealant.
4. Power Cord	120/240 V	The PowerTIG 200 DV operates on 120V/240V power(±10%). The unit uses a NEMA 6-50 plug for 240V power. This is a standard plug designated for welder use. NOTE: There is NO neutral in a standard 240V welder circuit. A welder circuit will only use three wires (two hot 120V power legs and one ground). The unit is also capable of operating on 120V input with a reduced amperage output of 120A and a step down adapter is supplied which adapts the unit for use with 120V automatically. No further switching or rewiring is needed. Keep in mind when operating on 120V the unit will only be capable of supplying 120V to the water cooler outlet. When considering a purchase of a water cooler, be sure to order the dual voltage version so that cooler operation can be maintained with even 120V operation. Always consult a licensed electrician who is aware of local codes before attempting any wiring of the welder or of the power circuits. Everlast is not responsible for any mis-wiring or damage caused to the unit by incorrectly wiring the welder or related damage resulting from use with a water cooler not labeled for dual voltage use.
5. 2-Pole Power Switch	On/Off	This serves as the On/Off switch for the welder. Always turn the welder on and off by the switch first before using any disconnect. If an overload is detected internally, the switch may trip to discontinue operation. Unplug the unit and check for causes of overload before resuming operation by cycling the switch off and back on.

### NOTES:

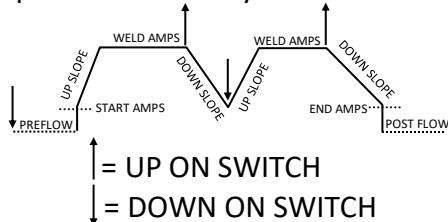
- The gas input connection should be checked for tightness periodically, especially if the machine is moved.
- Never operate welder on a generator that is not certified by its manufacturer to be "clean" power, which is less than 10% total harmonic distortion. Less than 5% is preferred. Operating the unit on square wave output or modified sine wave generators is strictly prohibited. Contact the manufacturer of the generator for this information. Everlast does not maintain an "approved" list of generators. But, if the generator is not listed as clean power by its manufacturer, then it should not be used. Generators that do not at least meet the operating input requirements of the welder are also forbidden to be used with the welders. Surge amp capability of the generator should equal or exceed the maximum inrush demand of the welder. But the surge capability should not be used as the only factor. The regular, running output of the generator should match or exceed the running or "rated" demand of the welder. Any damage done by operating the welder on a generator not specified by its manufacturer to be "clean", will not be covered under warranty.
- To properly size the breaker, the I1MAX should be used in determining breaker size. To size the wiring, the I1EFF rating should be used to help determine the proper wire size. The NEC in Article 630.11 allows a derating of the wire size based off of duty cycle. The requirements are different than the requirements for most other 240V electrical products. However, consult a licensed electrician and local codes before installing any wiring or breakers.
- Use the provided step down adapter when operating on 120V single phase. Do not modify the 240 V plug. No internal changes are necessary. The unit automatically senses the input.
- When operating on 120V at maximum output, larger than standard breaker and wiring circuits may be required.

### Welder Function Summary and Explanations.

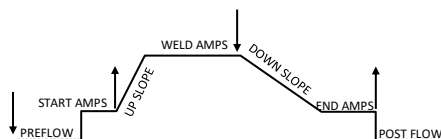
1. *2T/4T sequencer.* The 2T/4T feature allows operation of the TIG welder without a foot pedal. In many circumstances, a foot pedal is not practical for use. So, the 2T/4T function has been created to allow programming of the welder to simulate the activities of the foot pedal while providing more accurate control. The “T” refers to the number of “travels” of the remote switch required to operate the programming of the sequencer. 2T is essentially a “press and hold” operation and all programming is cycled automatically. Releasing the switch begins the final stage of programming. 4T operates differently in the fact that each touch activates a different stage of the programming, allowing for greater control. Also, in 4T, while actually welding at full amps, no finger contact with the switch is required. Following the graphic lines below, you can visually trace the activity and function of each part of the welding cycle. In either 2T or 4T operation the programming can be reset to “upslope” before reaching the end amp stage by pressing the switch once more. See the graphics below for further explanation. The up and down arrows indicate the switch travel direction.

**NOTE:** Start, End Amps and Up Slope, a usual feature of 2T/4T control are preset on the PowerTIG 200DV. These features cycle automatically in conjunction with the slope cycle. No adjustment of Start or End amps can be made. Up Slope is fixed at less than .3 seconds. Upslope in 2T or 4T will seem quick. Down slope is adjustable and can be used to cool and slowly fill the weld though and can be toggled back and forth in the 4T mode to help manage heat while using the torch switch.

#### 2T Torch Operation Effect on Weld Cycle



#### 4T Torch Operation Effect on Weld Cycle

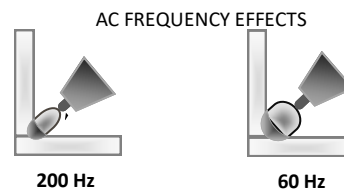


The 2T/4T section on the welder panel are devoted to the use of the 2T/4T operation and should not be used with foot pedal. The following features are exclusive features that can only be used with the 2T/4T sequencer function of the PowerTIG 200DV:

A) Down Slope. All other features are non-adjustable.

2. *Pre-Flow and Post-Flow.* These are features that work in conjunction with both the foot pedal and the 2T/4T sequencer. The start will be delayed until the pre-flow cycle has finished. Set for .5-1 seconds for best results. Add more pre/post flow time for larger welds or welds with larger open roots or gaps.

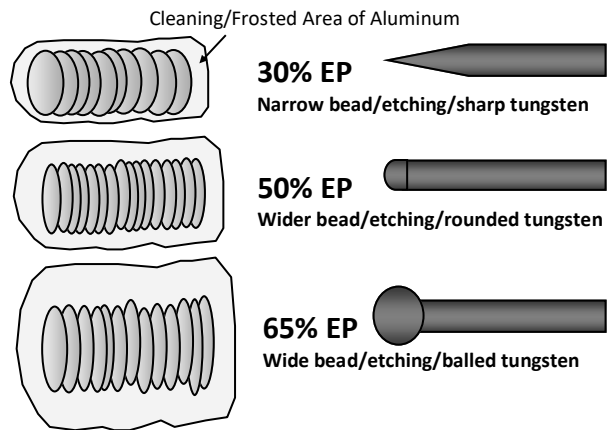
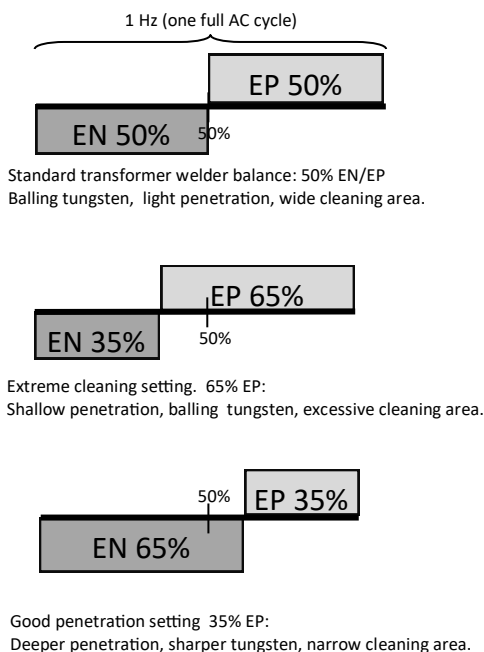
3. *AC Frequency.* The AC frequency only applies to the AC mode. Standard transformer welders typically have a fixed frequency of 60 Hz which is essentially the line input frequency supplied by the power company. But with inverters, the AC frequency adjustment is practically limitless due to the IGBT components that create the welding power. Frequency adjustment is useful to help improve the directional control of the arc, and to focus the arc so that a narrower bead profile can be achieved. Also, at higher frequencies, the puddle agitation is greater which improve the breakup of undesirable oxides. A setting of 100-120 Hz is a good starting point. See the graphic below.



4. *AC Balance.* The advanced form of AC square wave output is formed by alternating polarity rapidly between electrode negative and electrode positive, creating a wave form that resembles a square “sine” wave when viewed on an oscilloscope. Normally, with standard transformer welders, both standard sine wave and even square wave welders have little or no way to adjust the balance of EN to EP, which results in having to weld with a molten ball at the tip of the tungsten and a less stable arc. Electrode negative (EN) provides penetration in the TIG welding process. Electrode positive (EP) creates a strong reverse flow of electricity that breaks up the weld-resistant oxidation that covers aluminum and magnesium components. EP also places a lot of heat on the tungsten. In a “balanced” wave where both EP and EN are equal in time length (50%), penetration is reduced and over-cleaning results in wide etch lines

running parallel to the side of the weld. Not all weld conditions will be alike, so more cleaning is required at times than others. Similarly, more penetration will be required at times than others. Ordinarily, about 30-35% electrode positive is considered an ideal amount (65-70% electrode negative). This means that more heat is put into the work than is placed on the tungsten. A sharper point can be used. Cleaning is still sufficient at that level. Good results can be achieved with about 30% EP. The cleaning action is still visible at this level but usually not excessive. Ideally, the cleaning action should be adjusted until a small amount of frosting can be seen no more than 1/8" distance from the edge of the weld. If a piece of metal is particularly heavily oxidized or dirty, more cleaning action will be required. If too much cleaning action is used, the tungsten will begin to ball and even may start to burn away. If this much cleaning action is needed, then switch to a larger size of tungsten that can handle the increased heating level. Signs of too little cleaning action while welding aluminum include soot, porosity, and dull looking (scummy) welds. A dedicated stainless steel brush and suitable aluminum cleaner such as acetone should be used before starting any aluminum weld to help break up the heaviest oxide layer so less EP is needed and better penetration can be achieved.

**EXAMPLE: AC EP (+) BALANCE**



**NOTES:**

1. Due to the rapid switching of the inverter, High Frequency (HF) is not used except to start the arc. In a transformer welder, the HF would remain on to stabilize the AC arc, but in an inverter, this is not necessary. So, the HF switch refers only to the Start of the arc, and not to AC operation. However to reduce tungsten contamination, you should only operate the AC mode with the HF start selected.
2. The addition of Helium to Argon can increase the welding capacity of the welder and alter the amount of cleaning typically needed. Do not exceed 25% however or arc starts will be difficult and erratic.
3. If arc wandering in AC is a problem, reduce cleaning percent, then if it continues, reduce gas flow and then check for drafts.
4. Yellow-coded AC controls only apply to AC operation, and do not affect the settings on DC.
5. If cleaning lines are excessive at low settings, it is likely not a welder issue, but rather, a speed/heat issue. The longer the electrode remains in the same place, the more the cleaning area will widen. If you find yourself with this issue, try increasing the amperage to travel faster. If overheating is feared, then use pulse to increase forward travel speed to reduce the cleaning lines. You should only suspect a welder issue if adjusting the AC balance to above 40-60% does not begin to ball the tungsten.
6. If tungsten balling is experienced at settings below 40%, make sure that the torch is in the negative connector and that pure tungsten is NOT being used.
7. Do NOT use pure tungsten or Zirconiated tungsten in an inverter to weld in AC or DC mode.

5. *Pulse*. The pulse creates two amp values, a high and a low value that cycle back and forth between each other while welding. The upper amperage is called the “welding amps” (sometimes called “peak” current) and the lower amperage is called “pulse amps” (sometimes called “background” or “base” current). This creates a situation where penetration can be achieved without overheating the metal, particularly on metals that are prone to structural deterioration or burn through. In effect you are creating an average of amps. The PowerTIG series feature three adjustable parameters concerning the pulse:

A. *Pulse Amps*. Both welding amps and pulse amps are independently set. Adjust the welding amps with the main control knob and the pulse amps with the pulse amp knob. However, when you adjust the pulse amps, you are actually setting a fixed ratio of amps expressed as a percentage of Welding Amps. When setting Welding Amps, the welder will display actual amp value when the pulse is turned on. However, after about 3-5 seconds, if you do not begin adjustment of the pulse amps, the meter will begin to fluctuate rapidly (depending upon frequency setting), sampling the pulse setting at odd points along the pulse cycle. To be able to read and set the pulse after the default setup time expires, turn the pulse frequency to the minimum setting first, then adjust the pulse amps. (If the default time expires before you are able to set the pulse amps, you may get a fairly accurate reading of the pulse amperage while it is pulsing slowly.) Alternatively, you can turn the pulse off and back on to reset the default display time. The display is not synchronized with the pulse so it samples at a set rate that is independent of pulse changes, which yields randomly fluctuating numbers. As you increase welding amperage, the pulse will maintain the same ratio of amps you have selected. To adjust the pulse amps to a desired setting using an example of 100 Welding Amps, setting the pulse amps to 50% yields a 50 amp value for the pulse amps. The foot pedal will control both Welding Amps and Pulse Amps according to the % (Ratio) selected on the panel.

B. *Pulse Frequency*. Pulse speed or frequency as it is referred to is measured in the standard unit “Hertz”. Simply, it is the number of pulses per second that occur. Pulse frequency controls the arc constriction and also helps with heat management.

C. *Pulse Time On (Balance)*. Pulse Balance is the per-

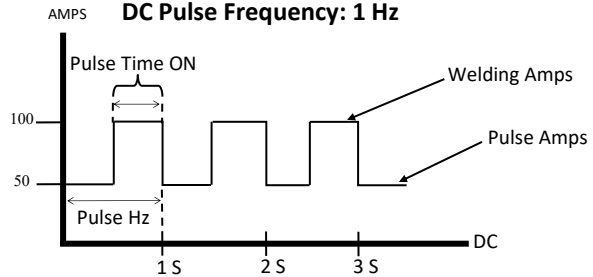
#### EXAMPLE 1

**Welding Amps: 100 amps,**

**Pulse Amps: 50%**

**Pulse Time On: 50%**

**DC Pulse Frequency: 1 Hz**



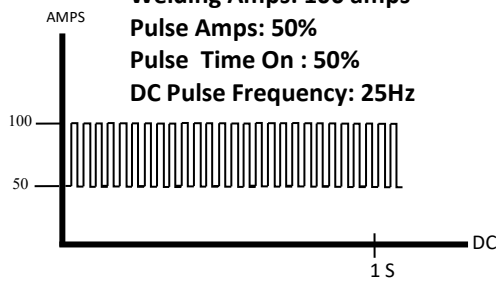
#### EXAMPLE 2

**Welding Amps: 100 amps**

**Pulse Amps: 50%**

**Pulse Time On : 50%**

**DC Pulse Frequency: 25Hz**



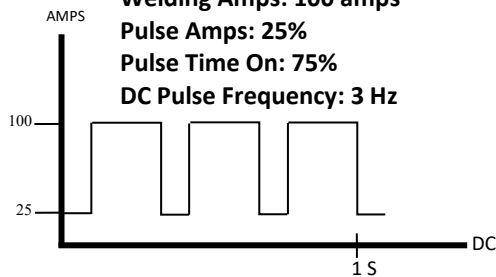
#### EXAMPLE 3

**Welding Amps: 100 amps**

**Pulse Amps: 25%**

**Pulse Time On: 75%**

**DC Pulse Frequency: 3 Hz**



centage (%) of time that the pulse stays in the welding amp (Peak) stage of the cycle. Increasing the Pulse time on will increase the duration the Peak amp stage of the cycle which in turn will increase heat and penetration. Lowering the Pulse time on will decrease heat and penetration, which in turn will result in a faster freezing puddle.

Setting up the pulse is not a process with a fixed adjustment procedure. Changes to frequency, balance, and time will skew the final result. A slow pulse with an equal 50% pulse time on and somewhere around a

50-75% Pulse Amp setting is typically used to help with timing the addition of filler metal to the weld puddle. A higher pulse frequency level combined with variations in Pulse Time On and a narrow/wider ratio can be used to prevent burn through and speed up welding on thin materials. It can also help maintain a proper bead on a thin edge weld or prevent burn through on extremely thin metal. A fast pulse speed will make fine ripples in the weld while a slow pulse speed will give a much more coarse, but visually appealing result. There are limitless ways to adjust the pulse. Keep in mind though, that the basic purpose of the pulse is to average the heat input while maintaining penetration. **Do not attempt to use pulse while in stick mode.**

6. *Arc Force Control/Auto Hot Start.* When stick welding, arc force is used to help improve performance of the welder with certain metals and welding rods. The arc force boosts and decreases current flow to match the demands of arc length and position. As arc length is decreased, voltage tends to drop so extra amps are introduced to help maintain a steady arc. Hot start amps boost the starting amperage automatically to heat up the welding electrode and weld area so the arc starts cleanly, without sticking or porosity. Both features are inactive while welding in TIG mode.

7. *Foot Pedal. 47k  $\Omega$ .* Select 2T on the panel. Select the maximum amp value desired on the panel. The foot pedal will only control amps up to the range governed by the main amp control. If more amperage is needed raise the amp level on the panel. The foot pedal also controls both Welding Amps, and Pulse Amps through the ratio established by selecting the pulse Amp % on the panel. Welding with pulse and the foot pedal takes practice, as it will seem the welder is welding at less amps than it is. Always set the panel amps to about 25% more than what is needed. Increasing the amps more than this margin on the panel will reduce the accuracy of the foot pedal by lowering the resolution of the foot pedal. Be sure to turn up/down slope to the minimum settings or the 2T programming will be active and interfere with pedal operation. The pedal cannot override the 2T amp slope controls. For more accurate and responsive control, Everlast offers a US made foot pedal available as an additional option. **Do not attempt to control the stick function with the foot pedal.**

8. *Air-cooled torch.* A water cooler is not necessary for use with the standard PowerTIG 200DX torch. The

units are equipped with a WP 26 air-cooled torch. However any after market water cooled torch may be used provided the proper 35 series DINSE style connector is used. Remember: Using a water-cooled torch even briefly without water can seriously and permanently damage your torch. Everlast water cooled torches used without water-coolers cannot be warranted unless cleared by Everlast. Everlast carries water-coolers designed to cool the maximum amp capacity of the welder. All consumables should be interchangeable with other brand torches with similar designations. They should be available for local purchase. No special consumables are required. Although a small starter kit of consumables is included, you will need more consumables fairly quickly. **No Tungsten is included with the starter kit. Actual starter kit contents may vary.** Contact Everlast if you desire to purchase an air cooled torch that is complete, ready to go.

9. *DINSE style connector.* Everlast uses a 35-70mm<sup>2</sup> connector for both negative and positive connectors, which is a standard connector within the welding industry. This is commonly known as a 1/2" or 50 series DINSE-style connector. The connector allows the use of almost any brand or style of TIG torch.

10. *7 pin remote/foot pedal connector.* This 7 pin connector is available from Everlast should it become damaged. See Pin-out reference found near the end of this manual.

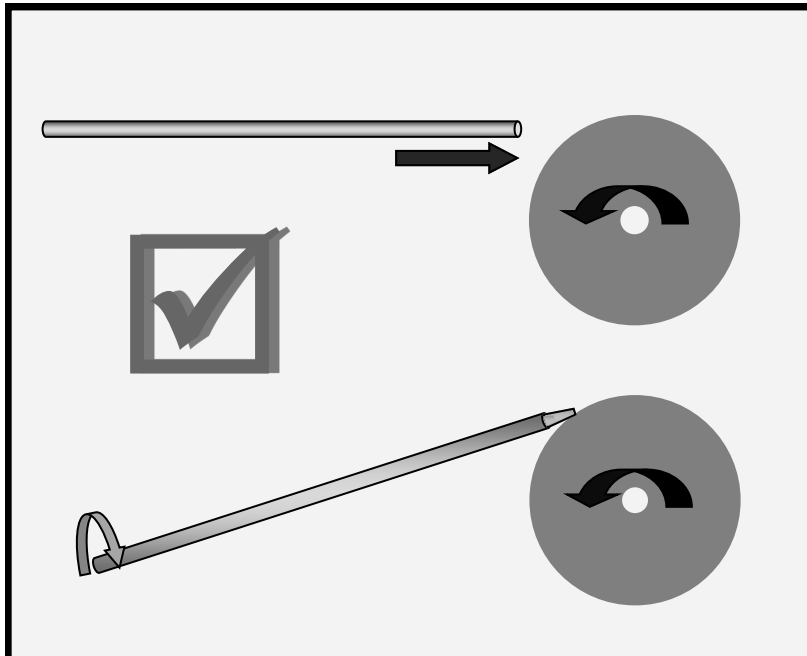
11. *Argon quick connect.* This is a 9 mm size quick connect nipple. These are commonly available from Everlast or online sites which carry torches and fittings. Should you need a new one for your torch or damage yours, consult Everlast. Do not use a nipple that is scarred, bent or otherwise deformed. Damage to the female connector may result. Serious leaks may occur.

12. *Low amp starts.* The units have been configured to be able to start and weld at approximately 5 DC and 20 AC ( $\pm 3$ ) amps. However, to obtain the most stable starts, a slightly higher amp setting may be required, or a smaller tungsten may be necessary. After the arc is started, amps may be reduced to a minimum level (with the foot pedal). This is accomplished by pressing down more on the foot pedal until the arc stabilizes, then backing the amps down slowly until the arc stabilizes at the minimum selected amps.

13. *Argon Regulator.* The argon regulator is calibrated in lpm, not in cfh. (subject to change)



## TUNGSTEN PREPARATION

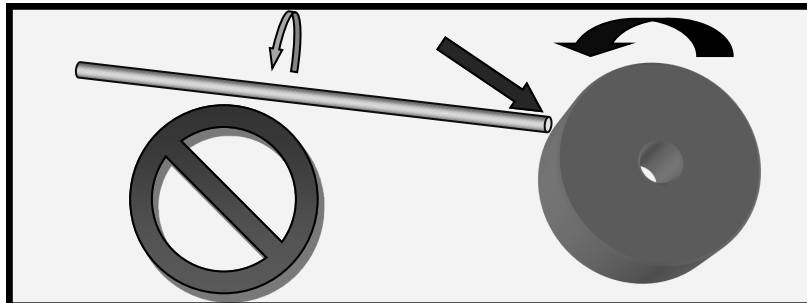


1. Use a dedicated grinding wheel or contamination may result. Do not breath grinding dust! Wear eye protection and gloves.

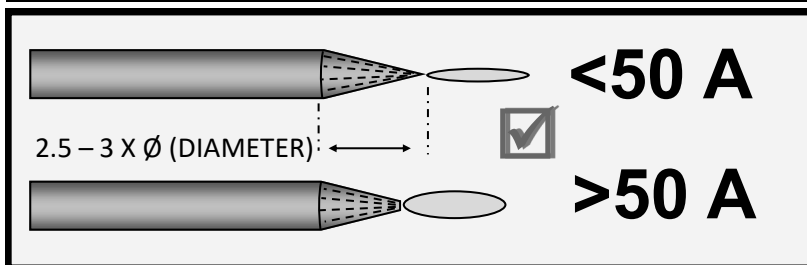
2. Grip the Tungsten firmly.

3. Grind the Tungsten perpendicular to the wheel face. Allow tungsten to grind slowly without much pressure.

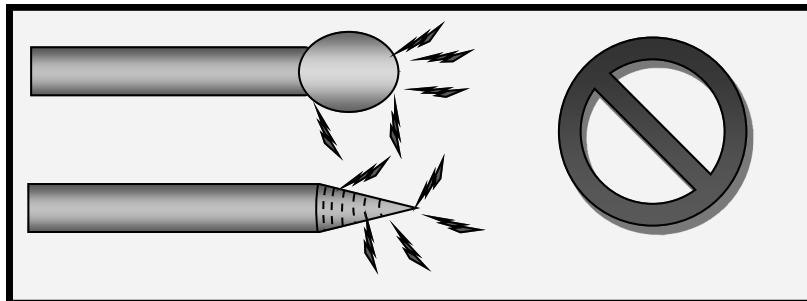
4. Rotate the Tungsten quickly as it is being ground to keep the point even and symmetrical.



Do not grind the Tungsten parallel to wheel face or an unstable arc will result.



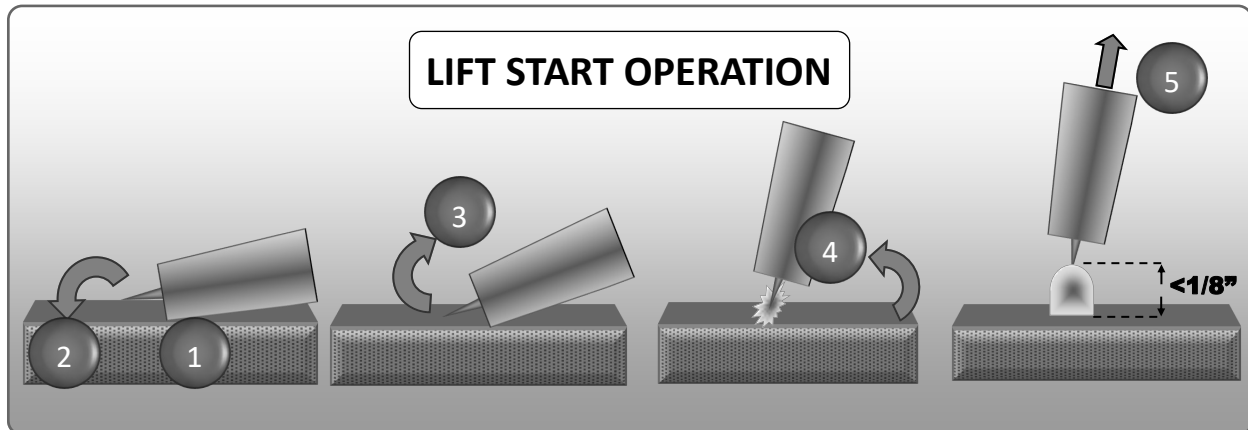
Use a point for low amp use to help control arc. Create a slight truncation on the tip for higher amp use for best arc stability. Grind the tip so that it is 2.5- 3 times longer than the tungsten is wide (Diameter).



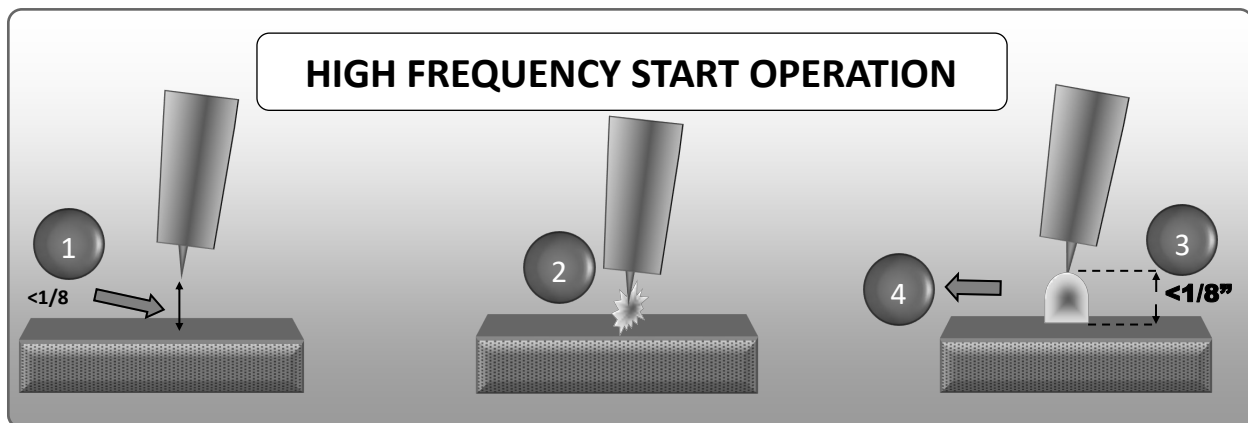
Do not ball the Tungsten while welding, or an erratic arc will result. Make sure that the grinding marks run parallel to the tip. Concentric marks will also cause an erratic arc.

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

**Note: A TIG lift start should use a nearly seamless motion. Use a light touch and a quick motion for best results.**



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. (Make sure pre-flow is set for less than .4 seconds or start will be noticeably delayed.)
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 tip of the Tungsten and the metal. Proceed with welding, leaving the torch inclined at a 15° angle.

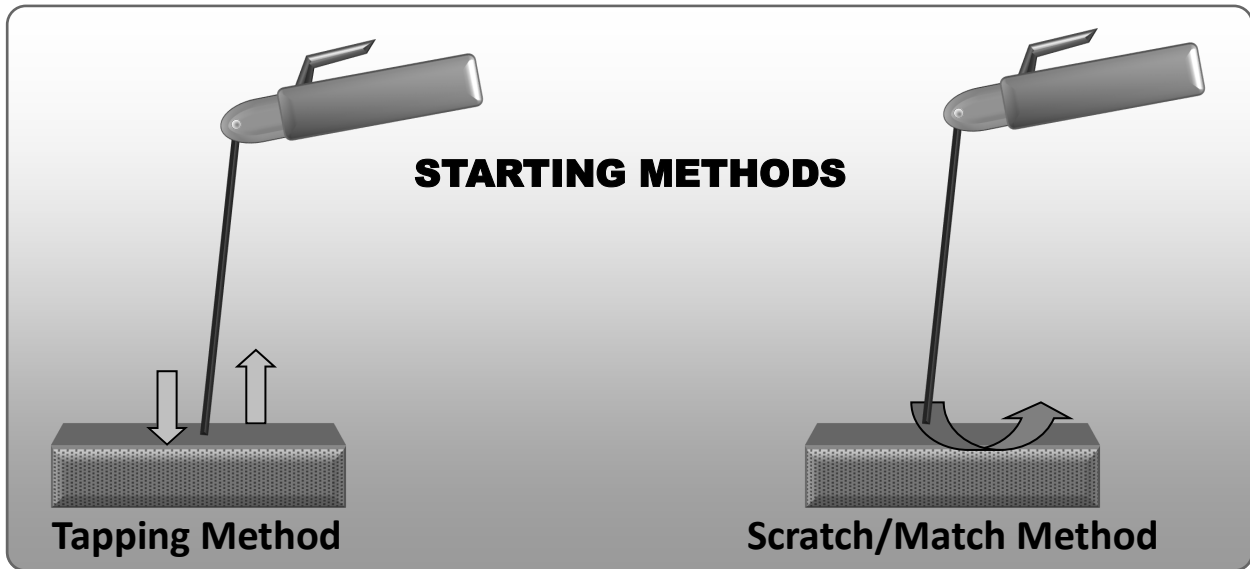


1. Position the point of the sharpened tungsten about 1/8" or less above the metal.
2. Press the torch trigger or press the foot pedal to initiate the arc. The HF arc will be initiated. It may appear briefly as a blue spark.
3. An arc should form, almost immediately after the pre-flow cycle is completed. HF arc initiation will be delayed by the amount of pre-flow time programmed. 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 before selecting TIG or Pulse TIG mode.
2. Select either HF or Lift Start TIG with the "HF/Lift Start" selector switch.
3. Plug in the Torch and select "4T" or "2T" mode with the selector switch **OR** plug in foot pedal and select "Pedal".
4. If using the torch switch, select "Upslope" or "Downslope" time by rotating the knob to increase/decrease the ramp up or ramp down time of the amperage.
5. Adjust amps to the desired maximum settings.
6. 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.
8. If using the foot pedal raise your foot fully off the pedal and arc will stop automatically.
9. 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.

## STICK OPERATION



### Striking the Arc

1. Make sure the unit is turned on and the startup cycle has finished.
2. Select the Stick icon on the Process Selector.
3. Make sure the electrode holder is in the positive connector and the work clamp is in the negative connector.
4. Select the Amp level desired. Use the guide on page 16 to determine approximate amps suitable for the rod size selected. You should consult the welding electrode manufacturer's recommendation for proper amperage as the ultimate authority. No voltage adjustment is available. Select Hot Start Time and Hot Start Amps % (Intensity) to improve starting reliability.
5. Use the arc force control to select the desired arc characteristics, creating the desired arc characteristic and amp response needed to maintain the arc. Cellulose electrodes may not have the same arc force behavior as other welding electrodes, but each brand and size will weld a little differently. Typically rods such as the E6011 will require a setting over 50% for best results. The arc force control setting will vary from person to person as well, with different rod angles, positions, and arc lengths all factoring into the arc force control performance. If you are new to using a transformer welder, there are some aspects that will seem different. One of the main ones is that the arc is better controlled in most situations by "pushing in" when the arc seems to get weak or unstable and the arc force will kick in as the voltage drops. Holding too long of an arc will signal the inverter to shut down and to terminate welding output. This threshold is shorter than most transformers, and an extremely long arc cannot be maintained. However, with a little practice, the arc will be easy to manage.
6. Strike the arc with either the tapping method or the match strike method. Beginners usually find that the match strike method typically yields the best results.

**NOTE:** Pay particular attention to the Arc Force setting as it affects the aggressiveness of the arc and the amp response. Set the Arc force to approximately 30-50% and readjust it from that point to find the optimum setting. Adjust in increments of 5% up or down from there to obtain the best results. Usually, an increase in the arc force for cellulose based flux welding rods is helpful. Lowering the Arc force setting is generally desirable for rods iron powder/Titania based flux. Too much arc force will create overheating of the welding rod, and even cause them to flame up. Too little can lead to sticking and arc snuffing.

If you are accustomed to MIG welding, the weld will be slower than MIG welding speed. One of the most common mistakes for users transitioning from MIG to Stick welding is the travel speed. Allow the metal to fill the puddle as the rod travels forward. Be sure to try to separate the difference between the slag and the molten pool of metal. The slag will coalesce behind the puddle if travel and rod angle is correct. Do not let the slag travel in front of the puddle. Keep the top of the rod inclined to the direction of travel around 10-20 degrees while welding in the flat position (Electrode holder should be in front and inline of the puddle). To begin, simply start the arc, and then drag the rod slowly and carefully along the metal, allowing the rod flux to provide a standoff between the metal filler and the puddle. Be sure to keep feeding the rod steadily downward into the puddle as the rod melts. In the case of E6011, a slight stepping motion in front of the puddle about 1/8"-1/4" in front of the puddle can be used as a key hole opens up in the weld joint, ahead of the puddle. This is also called "whipping" the rod. Do not flip the end of the rod away from the puddle in a arc motion or the arc may terminate while using E6011 or similar cellulosic rods. When experience is gained, numerous manipulation methods may be used with rods such as E7018, 7014, 6013, and 7024. Weave the rod no more than 2.5 times the width of the welding rod. To begin weaving, weave small, tight patterns similar to C's, cursive E's, V's, or even

**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 FOR STEEL (ALUMINUM)\***

\*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 (60-125)	1-2 mm/.040"-3/32"	8-15 CFH /4-7 lpm
3-6 mm/ 1/8"-1/4"	80-200 (125-200)	2-3 mm/ 3/32"-1/8"	15-25 CFH/ 7-14 lpm
6-10 mm 1/4"-3/8"	150-200 (200-250)	3-6 mm/ 1/8"-1/4"	20+ CFH/10-15 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"-5/32"	130-200

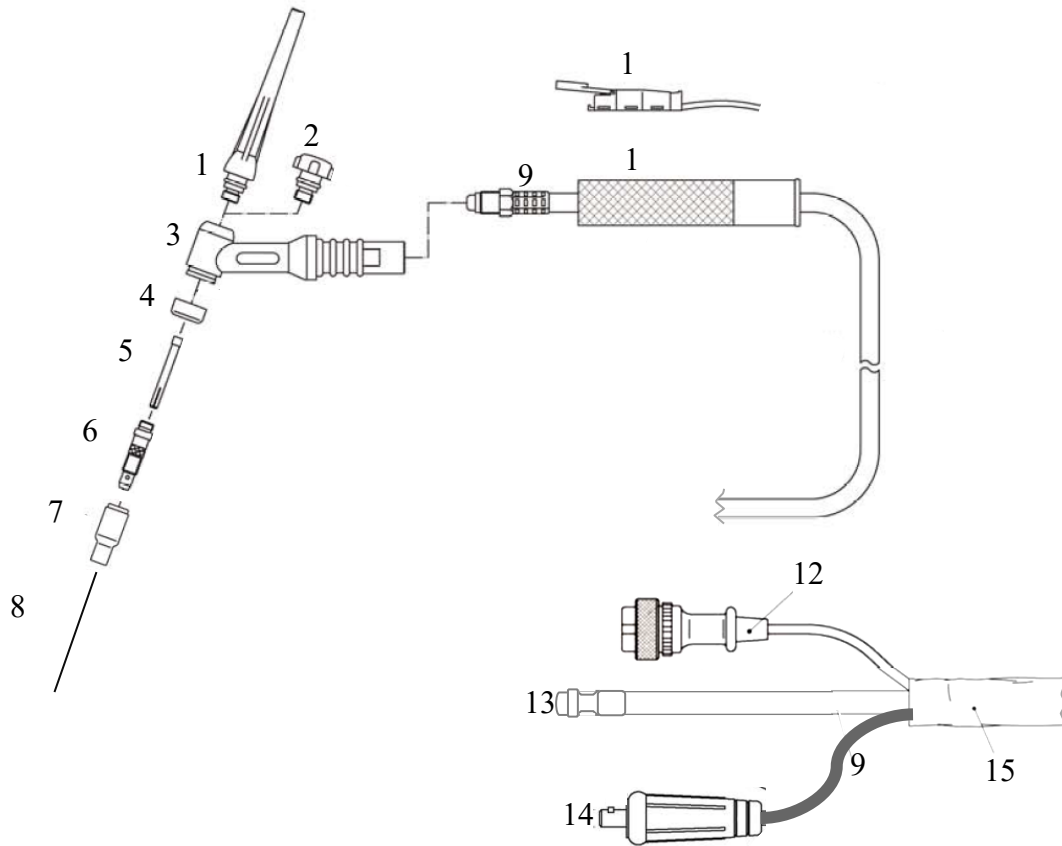
**TUNGSTEN SELECTION GUIDE FOR AN INVERTER**

TYPE	PERCENT	COLOR	PROCESS	RECOMMENDATION
Pure	100% Tungsten	Green	AC	NOT RECOMMENDED! Do not use in an inverter.
Thoriated (slightly radioactive)	2% Thorium	Red	AC/DC	YES. Great for all purpose welding. Most economical.
Ceriated	2% Ceria	Orange	AC/DC	YES. Good for low amp use.
Lanthanated	1.5% Lanthanum	Gold	AC/DC	YES. Best alternative to 2% Thoriated. Tough performer.
Lanthanated	2% Lanthanum	Blue	AC/DC	YES. Slight advantage over 1.5% Lanthanated.
Zirconiated	1% Zirconia	Brown	AC	NOT RECOMMENDED! Do not use in an inverter.

NOTE: Thoriated tungsten is slightly radioactive, but is commonly used in the US. Care should be used when grinding so as not to breath the dust. If you have concerns about Thoriated (red) tungsten, choose from Lanthanated or Ceriated tungsten.

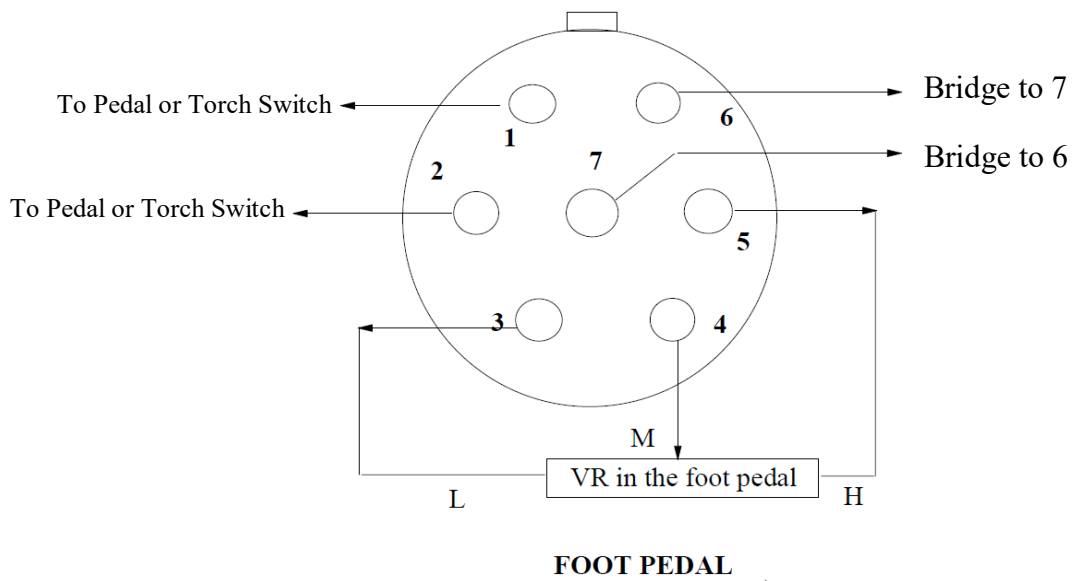
### EXPANDED VIEW OF TIG TORCH

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



NO.	PARTS FOR 26 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 AND REMOTE AMP CONTROLLER ON OPTIONAL TORCH



TROUBLE:	CAUSE/SOLUTION
Machine will not turn on.	Check cords and wiring in the plug. Check circuit breaker.
Machine runs, but will not weld in either mode.	Check for sound work clamp and cable connections. Make sure work cable and TIG Torch are securely fastened to the Dinse style connector. Reset main power switch if overcurrent light is on. Contact Technical Support.
Arc will not start unless lift started.	Check HF point gap. Set to .035" See addendum or contact Technical Support. Make sure unit is set to HF
Tungsten is rapidly consumed.	Inadequate gas flow. Too small of tungsten. Wrong shielding gas. Use only Ar. Using green tungsten. Use red thoriated or other color. Wrong polarity. Too much AC cleaning.
Tungsten is contaminated, arc changes to a green color.	Tungsten is dipping into weld. Check and adjust stick out to minimum 1/8 inch. Tungsten is melting. Reduce amperage or increase tungsten size.
Porosity of the Weld. Discolored weld color. Tungsten is discolored.	Low flow rate of shielding gas. High flow rate of shielding gas. Too short of post flow period. Wrong TIG cup size. Possible gas leaks internally or externally due to loose fittings. Base metal is contaminated with dirt or grease.
Weld quality is poor. Weld is dirty/oxidized.	Eliminate drafts. Check if there is sufficient shielding gas left in tank. Check gas flow. 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. Check tungsten stick out.
Over current/Duty cycle LED illuminates. 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.
Unstable Arc.	Poorly ground or shaped tungsten. Regrind to proper point. Too much AC positive polarity. Reduce balance to 30% or less. Increase AC Frequency.
Other issues.	Contact Everlast support.

