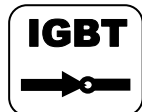


EVERLAST

POWERARC 160STH

ANALOG DC STICK/DC TIG INVERTER WELDER



Operator's Manual for the PowerARC 160STH Safety, Setup and General Use Guide

Rev. 2 1 000701-14

everlastwelders.com

Specifications and accessories subject to change without notice.



1-877-755-9353

329 Littlefield Ave. South San Francisco, CA 94080 USA

TABLE OF CONTENTS

Section.....	Page
Letter to the Customer	3
Everlast Contact Information.....	4
Safety Precautions.....	5
Section 1: Specifications.....	9
Section 2: General Setup and Operation.....	10
General Description, Purpose and Features.....	10
Front Panel.....	12
Rear Panel	13
Stick Welding Configuration.....	14
TIG Torch/Regulator Configuration.....	15
Stick Operation Technique/Information.....	16
Lift Start TIG Operation/Information.....	17
High Frequency Start TIG Operation.....	18
Tungsten Preparation.....	19
Trouble Shooting.....	20
Kit Contents.....	21
Appendix A: Wiring.....	22
Appendix B: Foot Pedal Pin-Outs.....	23
Notes.....	24

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

Dear Customer,

THANKS! You had a choice, and you bought an Everlast. 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 through the main customer service number in your country. Your unit will be registered and warranty will be issued and in full effect. Keep all information regarding your purchase. **In the event of a problem you must contact technical support before your welder can be a candidate for warranty service and returned.**

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

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

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

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

Sincerely,

Everlast Customer Service

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



Contact Information

Everlast US:

Everlast consumer satisfaction email: sales@everlastwelders.com

Everlast Website: everlastwelders.com

Everlast Technical Support: 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

Everlast Website: everlastwelders.ca

Everlast Technical Support: sales@everlastwelders.ca

Telephone: 905-630-8246 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) 6584 2037

After hours support: 0410 661 334

Everlast Technical Support: 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 delivering a satisfactory product to you. That is the reason we offer technical support to assist you with your needs should an occasion occur. With proper use and care your product should deliver years of trouble free service.



Safe operation and proper maintenance is your responsibility.

We have compiled this operator's manual, to instruct you in basic safety, operation and maintenance of your Everlast product to give you the best possible experience. Much of welding and cutting is based upon experience and common sense. As thorough as this welding manual may be, it is no substitute for either. 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 for the use of the machine, but to assist in obtaining the best performance out of your unit. Do not operate the unit until you have read this manual and you are thoroughly familiar with the safe operation of the unit. If you feel you need more information please contact Everlast Support.

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



Note on High Frequency electromagnetic disturbances:

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



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

SAFETY PRECAUTIONS



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



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



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



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



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



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



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



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



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

SAFETY PRECAUTIONS



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



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

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



Welding and cutting processes pose certain inhalation risks. Be sure to follow any guidelines from your chosen consumable and electrode suppliers regarding possible need for respiratory equipment while welding or cutting. Always weld with adequate ventilation. Never weld in closed rooms or confined spaces. Fumes and gases released while welding or cutting may be poisonous. Take precautions at all times. Any burning of the eyes, nose or throat are signs that you need to increase ventilation.

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



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



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



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



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



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

SAFETY PRECAUTIONS

continued



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



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



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

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



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



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



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

PERFORMANCE AND FEATURE COMPARISON

Specification:	PowerARC 160STH
INVERTER TYPE	ANALOG CONTROLLED IGBT
INPUT VOLTAGE $\pm 10\%$; PHASE/FREQUENCY	110/220V; 1PH/50-60Hz
MAXIMUM INPUT AMPS (I_{1max})	32.4A @ 110V/ 31.4A @ 220V
MAXIMUM INPUT RUNNING AMPS (I_{1eff})	19.2A @ 110V/ 19A @ 220V
DUTY CYCLE % @ AMPS	110V: TIG: 35% @ 90A/13.6V Stick: 35% @ 90A/ 23.6V TIG: 60% @ 70A/12.8V Stick: 60% @ 70A/22.8V TIG: 100% @ 55A /22.2V Stick: 100% @ 55A/22.2V 220V TIG: 35% @ 160A/16.4V Stick: 35% @ 160A/26.4V TIG: 60% @ 130A/15.2V Stick: 60% @ 130A/25.2V TIG: 100% @ 100A/14V Stick: 100% @ 100A/24V
OUTPUT	110V: TIG: 10-90A, 10.4-13.6V Stick: 10-90A, 20.4-23.6V 220V: TIG: 10-160A, 10.4-16.4V Stick: 10-160A, 20.4-26.4V
OPEN CIRCUIT VOLTAGE	73 V
LIFT /HF TIG FEATURE	LIFT START TIG /HF start (.035-.045 Point Gap)
WELDING PACKAGE	INCLUDES: Impact resistant carry case, 12 ft. 17 series economy TIG torch with remote switch, electrode holder (stick) with 10ft cable and connector, work clamp with 10 ft cable and connector, and economy regulator. Foot Pedal optional.
CONSTANT CURRENT (CC) OUTPUT TYPE	DC (\pm)
CELLULOSE ROD CAPABLE 6010,6011	YES
DINSE CONNECTOR TYPE	25/50mm ² (DINSE 25 STYLE)
HOT START (SURGE CURRENT)	AUTO
ARC FORCE CONTROL	ADAPTIVE
MAXIMUM SUGGESTED ROD DIAMETER (Stick Electrode)	110V: 3/32" 220: 1/8"
PROTECTION CLASS	IP21S
INSULATION GRADE	F

IMPORTANT: The PowerARC 160STH is DC output only. DC TIG is not recommended for welding aluminum or magnesium.



2.1 General Description, Purpose and Features.

PowerARC 160STH:

The PowerARC 160STH is a compact inverter welder that provides DC stick and DC TIG welding capability (DC SMAW/DC GTAW). The welder is ideal for welding tasks where portability and light commercial performance are required. With 120V/240V capability, the unit can be operated almost anywhere a power outlet is found, and can be used with small clean powered generators. (USA/Canada models)

The Stick arc is smooth and stable. The automatic hot start in stick mode reduces rod sticking while striking an arc by providing a controlled surge of amps to temporarily increase wattage. Similarly, the auto arc force control adapts to the arc length and provides extra current to the arc when the arc length is shortened and voltage begins to fall below 20 volts (approximately). This prevents the arc from extinguishing and helps to improve overall arc performance in all position welds.

The welder is suitable for welding with iron powder, stainless and low hydrogen class rods including E7018, 6013, 7014, and 309, in any position. The unit can be used with E6011 as well. However it is not recommended for E6010 or other cellulosic-flux stick welding electrodes.

Additionally the unit is equipped with both a high frequency and a lift start TIG function and is excellent for many DC TIG applications. The lift start function provided in the TIG mode provides a clean, interference free start for electronically sensitive areas where high frequency (HF) arc starting is restricted or prohibited. The high frequency function allows quick, contamination free starting where HF issues are not a problem. The HF point gap is adjustable and can be readily serviced as points get contaminated or worn.

NOTE: This unit is DC output only. This unit is not designed to TIG weld aluminum or magnesium. However, the unit can be used to stick weld aluminum with specially designed aluminum stick welding electrodes (rods). Flux-coated aluminum stick welding rods are expensive. Other than occasional use for emergency repair, are not generally considered a economically viable alternative to AC TIG welding or MIG welding aluminum. While DC+ and DC- TIG have both been used to weld aluminum in the past, both have technical issues that can create problems. AC

TIG is generally considered to be far superior, and the correct method of welding aluminum.

2.2 Basic Overview and operation.

The PowerARC 160STH package includes both a stick welding and TIG welding package along with a compact carry case which can hold the unit and accessories, offering maximum portability. The stick package includes a stick electrode holder with cable, and a work clamp with cable. Cables are approximately 10 ft. in length. Longer cables lengths can be added to the electrode holder and work clamp and accompanying connectors, if desired. These can be readily sourced at almost any local welding supply store. The TIG torch package includes a 17 series TIG torch. Customer supplied pure argon must be used while operating in TIG mode.

TIG:

The welder features a built in gas solenoid which allows you to automatically turn gas flow on and off as the torch switch or foot pedal is cycled. A short, automatic preflow is provided so a brief delay in arc starting may be experienced. It also features an adjustable post flow which automatically stops gas flow once the arc is terminated. It can also be used to provide extended preflow by quickly tapping the torch switch (or foot pedal if used) to cycle the post flow on and then normally pressing the switch (or foot pedal) to start the arc while the unit is still in post flow mode.

To operate in TIG mode connect the regulator to the unit. Use only pure Argon. Make sure all gas connections are tight, including the torch connections and apply soapy water to the connections to determine if there is any leakage. Leaking gas can create contamination issues, so this step should not be overlooked.

To use the TIG feature, flip the switch toward the TIG icon on the welder. Then select either HF start or Lift TIG start. (See diagrams on pages 17 and 18 for starting procedures.) Ensure the torch cable is located in the negative terminal of the welder and the work clamp cable is located in the positive terminal. Connect the torch switch /foot pedal cable to the control and snap in the gas line from the torch. Adjust welding current with the amp control knob to desired amp level. Make sure the tank is open and the regulator is adjusted for 10-20 CFH (5-10 lpm). If using lift start, place the cup on the metal, then lightly roll the tip of the tungsten to the metal, press the torch switch (or

foot pedal) and quickly lift up to a distance of 1/8" or less to begin welding. If using HF start, simply hold the tungsten above the metal 1/8" or less, then press the torch switch (or foot pedal) to start the arc and begin to develop the weld puddle.

NOTE: To weld, the unit is equipped with a 2T torch function only. This means the torch switch must be continuously held to initiate the arc and continue welding. If this method of operation is undesirable, consider purchasing a foot pedal from Everlast which allows variable amp control as an alternative.

Stick:

The stick function is fairly simple and straight forward. Be sure to flip the switch towards the stick icon before starting to weld. Arc striking can be done quite easily with practice. The hot start reduces sticking during striking. Be sure to double check (especially after TIG welding) that the electrode holder cable is located in the positive terminal, and the work clamp is located in the negative terminal. See page 16 for arc striking technique and general rod size selection. Rod size while operating on 120V volt is generally limited to 3/32" max diameter electrode. Rod size while operating on 240V is generally limited to 1/8" diameter electrode. Oversizing a rod will increase sticking and can create undesirable cold lap. As with any type of welding, practice will usually improve the results.

Foot Pedal (Optional):

The foot pedal is used to start the arc and control the amps within the range set on the foot pedal control knob. Using a low max amp setting will change the resolution and may require further downward travel than normal to start the arc. The HF may stay engaged as a result, appearing as a blue spark and making a snapping/ticking sound, until the pedal is pressed further to over come this.

2.3 Handling and general maintenance.

Duty Cycle and Overcurrent:

Be careful to observe the duty cycle of the welder.

Overheating may occur if the duty cycle is exceeded. Overheating will cause the unit safety cutout to engage, subsequently interrupting output. Allow the unit to rest while remaining switched on for 10 –15 minutes if the duty cycle safety cut out has triggered. After that, reset the unit by cycling the main power switch

on the rear. High heat and humid conditions will also affect the duty cycle of the welder. If the unit overheats or an overcurrent condition is experienced, the duty cycle light will light as well. Welding will resume once the duty cycle light is cleared. If the light is red, this is usually indicates an over/under current condition. An over current or under current condition is usually caused by dirty power conditions, over/under, voltage power supply, faulty breaker or an internal fault. If the light is green or yellow green, this a duty cycle issue. In either case, if the light does not clear and the unit does not resume welding output, by cycling the power switch (after the required amount of rest, if any), contact Everlast.

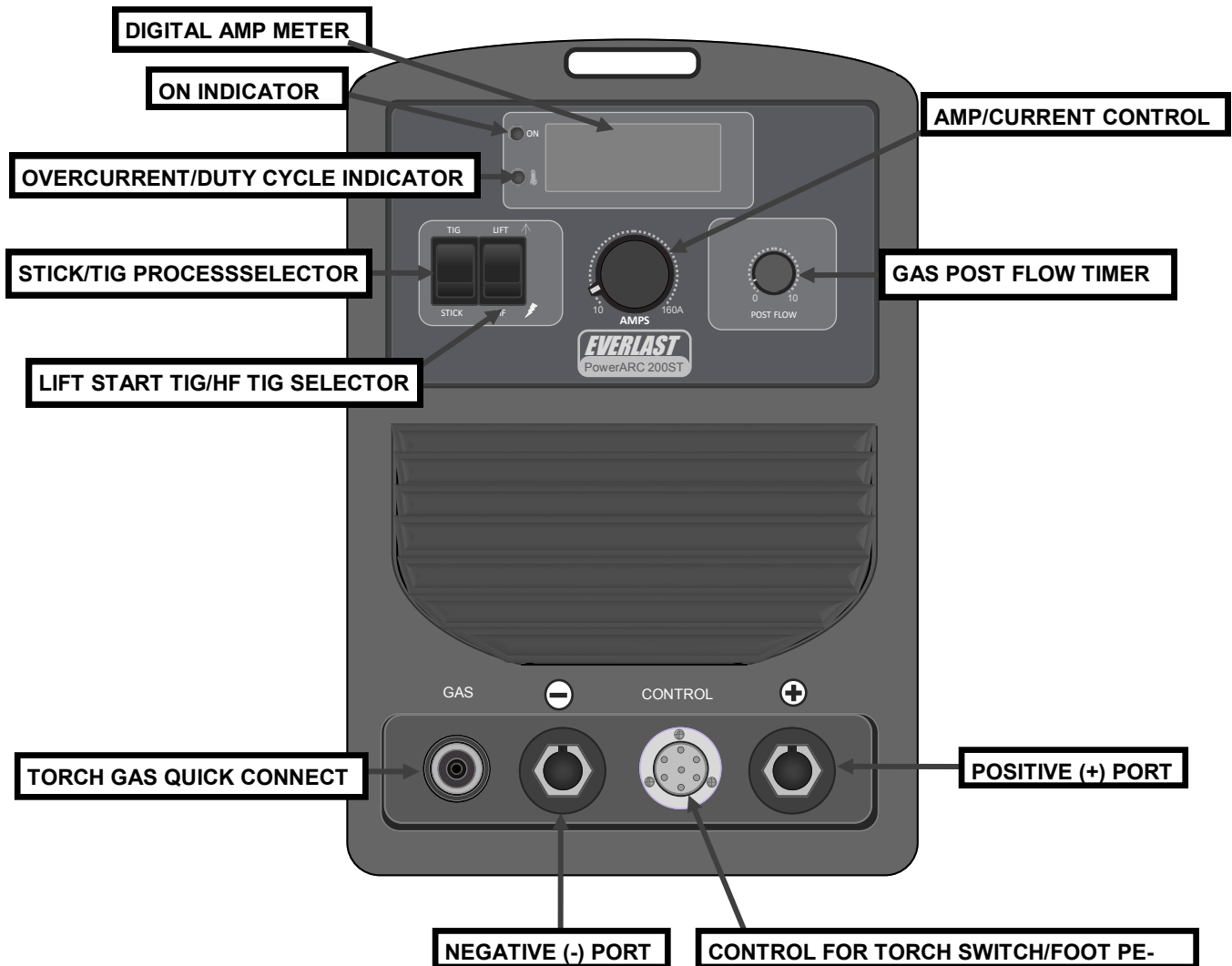
Note: The duty cycle is 35% at the maximum output of 160 amps while operating on 240V. Maximum amp output will be reduced to 90±) amps while operating on 120V to limit current draw. The Duty cycle is re-adjusted to 35% at 90 amps while operating on 120V.

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, and is not designed for wet environment use. **Use the carry strap or handle provided to lift the welder.** Do not suspend the unit in the air by the strap.

Make sure that the unit's cooling fan and exhaust vents are kept free of obstruction. Before every operation, inspect unit for unexpected obstructions such as insect and vermin nests. Once a month, or as needed, clean the machine thoroughly inside and out with compressed air. **Before removing the covers however, unplug the welder for 30 minutes to allow the internal capacitors to discharge to prevent shock, injury and even death.** Afterwards, open the unit by removing the rear plastic cover and the metal cover only. Do not remove the front cover. Do not remove and circuit boards unless authorized. Check all plugs and connections for tightness before replacing the covers. Do not pinch any wires when reinstalling the covers. Wear safety glasses to prevent eye injury from flying particles that may get dislodged while cleaning with compressed air. Do not concentrate compressed air on the skin or injury may occur.

PowerARC 160STH

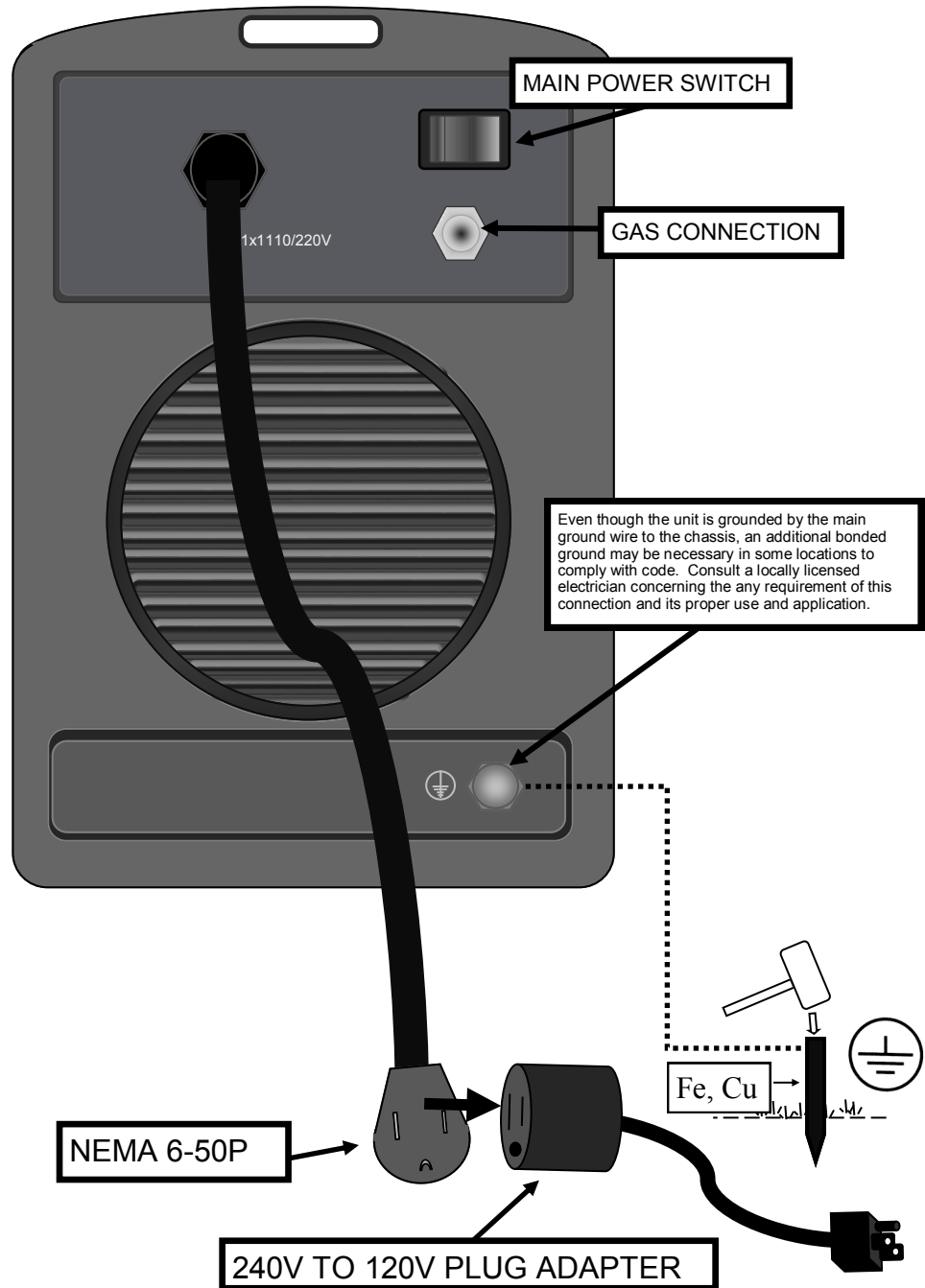
Front Panel View



PowerARC 160STH

Rear Panel View

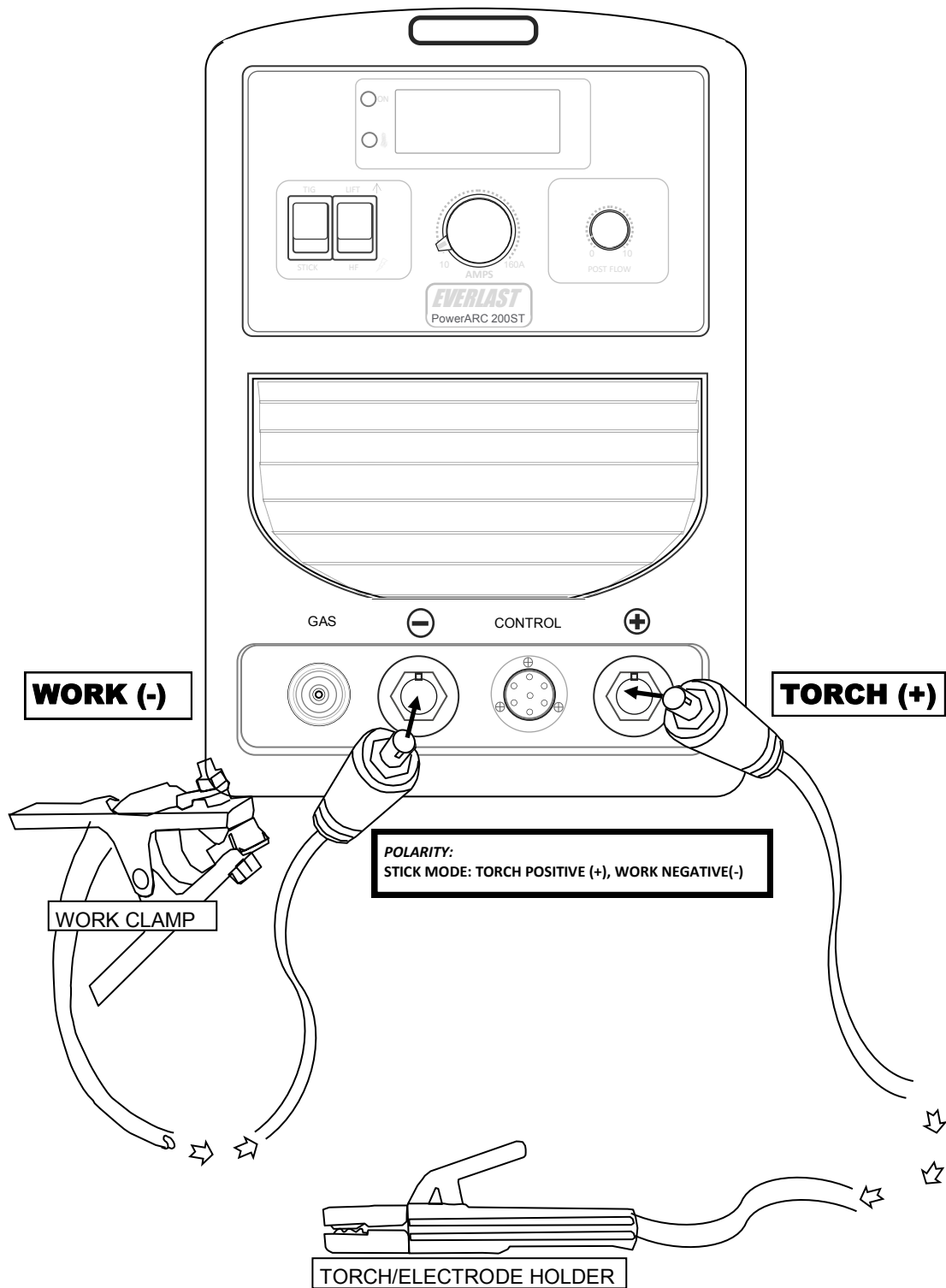
**CONSULT A LICENSED ELECTRICIAN AND LOCAL CODES BEFORE WIRING YOUR FACILITY FOR YOUR UNIT!
EVERLAST IS NOT RESPONSIBLE FOR DAMAGE OR INJURIES RESULTING FROM IMPROPER WIRING.**



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.

PowerARC 160STH

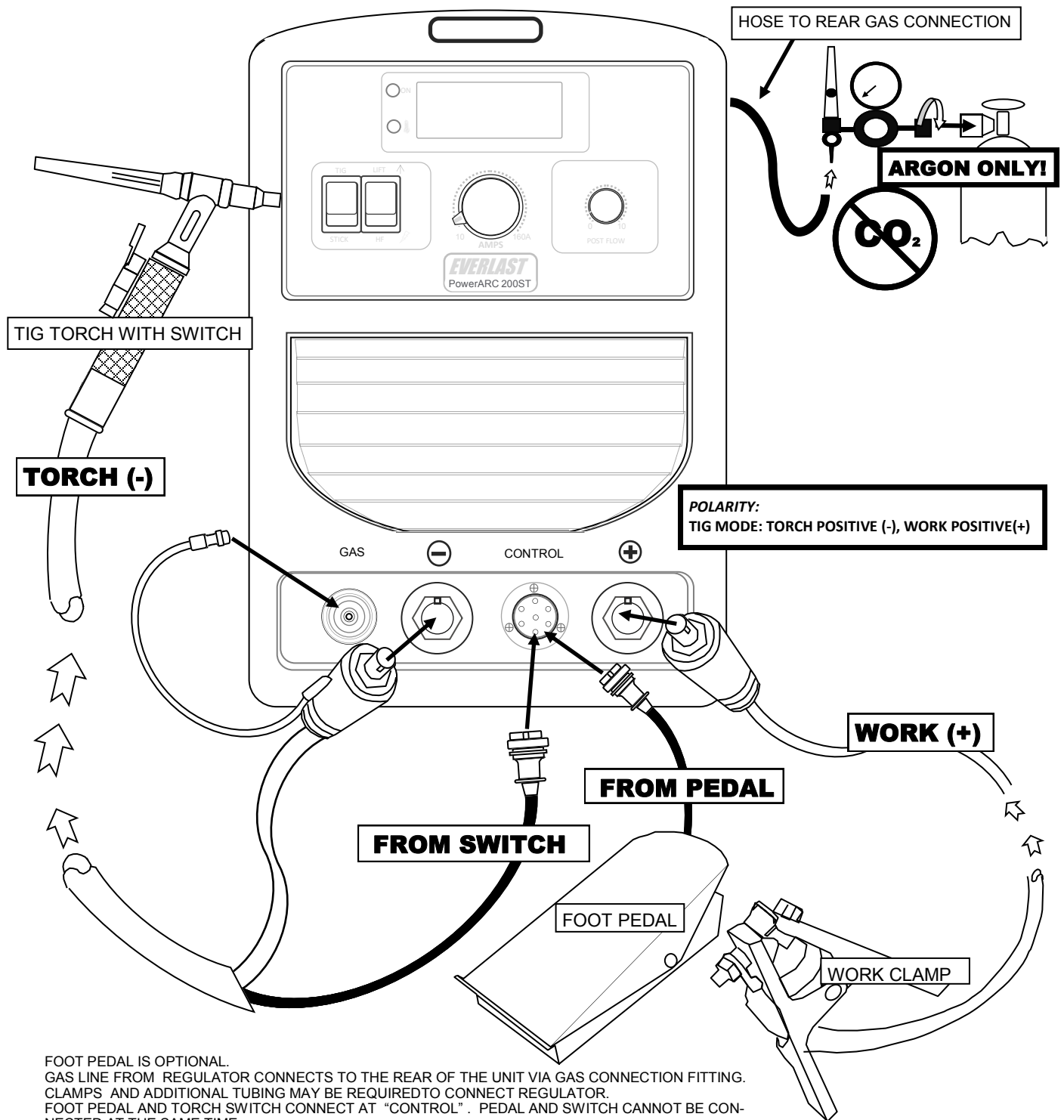
STICK WELDING CONFIGURATION



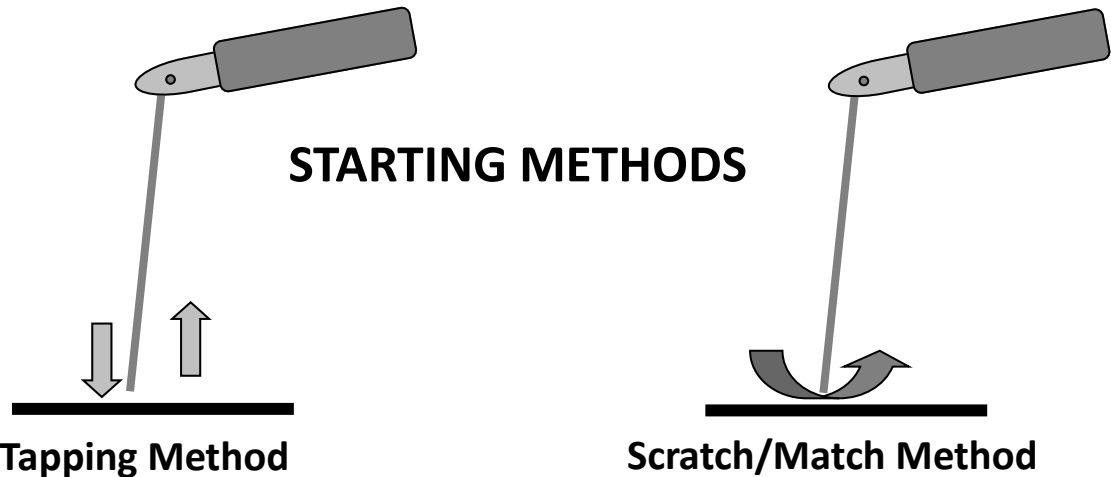
NOTE: Not recommended for use with E6010.

PowerARC 160STH

OPTIONAL TIG TORCH/REGULATOR CONFIGURATION



STICK OPERATION TECHNIQUE



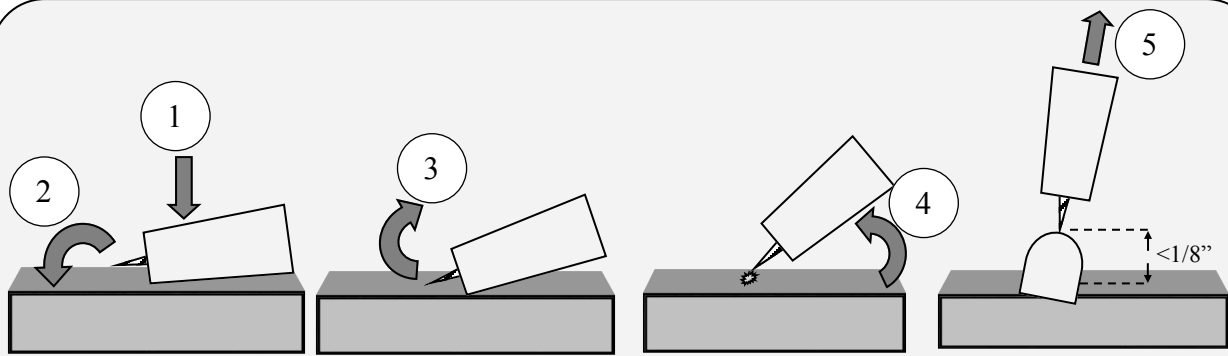
1. Turn on the power switch on the rear of the unit. Allow unit to cycle through its start up program.
2. Select the Stick mode with the TIG/Stick selector switch.
3. Make sure electrode holder is hooked to the positive connector and the work clamp is hooked to the negative connector.
4. Select the amps desired. Use the electrode diameter selection chart below 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 regarding amp range, even though a general range can be determined.
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.

DC 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"	40-90
3 mm/ 1/8"	3.2 mm/1/8"	80-150
4-5 mm/ 3/16"	3.2-4 mm/ 1/8"-3/16"	100-170
6-12 mm/ 1/4"-1/2"	4-5 mm/ 3/16"	130-250
>12mm/>1/2"	>5mm/3/16"	200-300

LIFT START TIG OPERATION

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



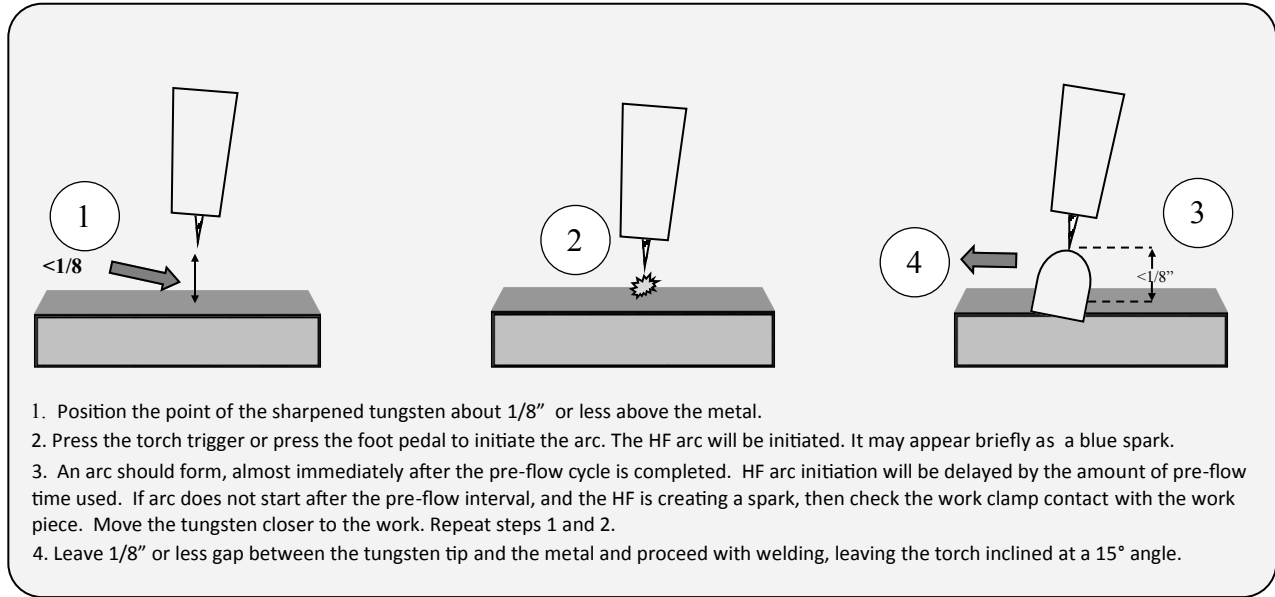
1. Position the edge of the ceramic cup on the metal. Do not touch the tungsten to the metal until ready. The tip is always live.
2. Press and hold the torch switch or foot Pedal. Quickly rotate the cup so that the tungsten comes in brief contact (< .2 seconds) with the metal.
3. After contact with the 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.
6. Poor starts and welding of the tungsten to the surface can be a result of a rapid "double tap" or quick bounce off the surface of the metal and back down. This inadvertently signals the inverter to put out full power until the continuity or arc is broken. If this occurs, fully break the arc by releasing the switch or pedal. Re-sharpen the point if necessary, then allow the point to stop glowing before attempting the start again. Do not scratch start in Lift TIG mode, or the tungsten may stick fast. Performing a scratch start instead of a lift start can also trigger this as the tungsten "skips" along the surface.

Note: This method takes some practice to master to initiate the arc on the first try. However, an arc can usually be struck fairly easily by the beginner, though it may take 2 or 3 times to get one to initiate properly. After it is mastered, arc striking can be done with a light, seamless motion on the first try. Be sure to protect the cup from damage when not in use. The Alumina TIG cups are fragile and can easily crack if dropped or tapped on the surface.

METAL THICKNESS (STEEL)	WELDING AMPS (A)	TUNGSTEN DIA.	Ar FLOW RATE
1-3 mm/.040"-3/32"	30-80	1.5-2 mm/ 1/16"-3/32"	8-15 CFH /4-7 lpm
3-4 mm/ 3/32"-1/8"	50-120	2-3 mm/ 3/32"-1/8"	15-25 CFH/ 7-14 lpm
>4mm/ >1/8"	120-200	1/8"	15-25 CFH/7-14 lpm

Note: These ranges are approximate, and not absolute. There is a range of overlapping capability with each tungsten size, metal thickness and amp settings. Experience will eventually dictate the best range and choice of Tungsten size, filler size etc. As a general rule, select a filler metal that is no more than 1/32" larger or smaller than the Tungsten diameter. Do not use "pure" (green) Tungsten in an inverter. Use only Lanthanated, Thoriated, or Ceriated Tungsten.

HIGH FREQUENCY START TIG OPERATION

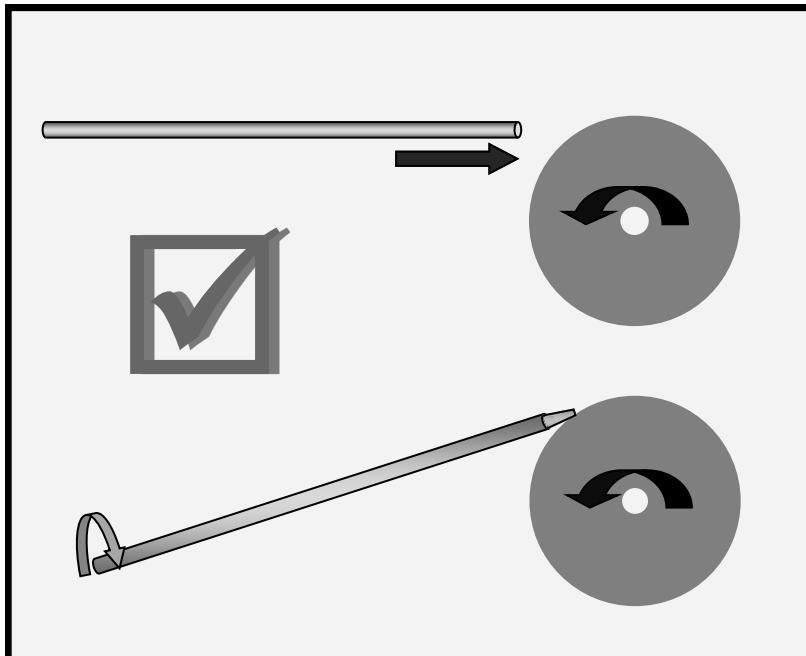


General TIG Arc Starting Steps

1. Turn unit on, allow time for power up cycle to complete its start up process.
2. Select either HF with the HF/Lift start selector switch. Make sure TIG has been selected.
3. Plug in Torch switch connector line **OR** plug in foot pedal.
4. If using the torch switch select amperage by rotating the knob to increase or decrease amps for fixed amp welding during the weld.
5. If using the foot pedal select maximum desired amperage on panel.
6. Start arc as depicted above by either pressing and holding the torch switch or stepping down on the pedal.
7. If using the torch switch, continue to hold the torch switch until you are ready to stop welding. Release the switch. The arc will then cease.
8. If using pedal raise foot fully off the pedal and arc will stop automatically.
9. If arc is broken manually by snapping the torch up before the torch switch is released or pedal has been fully released the arc may try to restart.

NOTE: If clothes, body or gloves are damp with sweat or moisture, HF voltage can pass through the work and/or the torch and give an electrical shock. Always insulate yourself as best as possible from your work.

TUNGSTEN PREPARATION

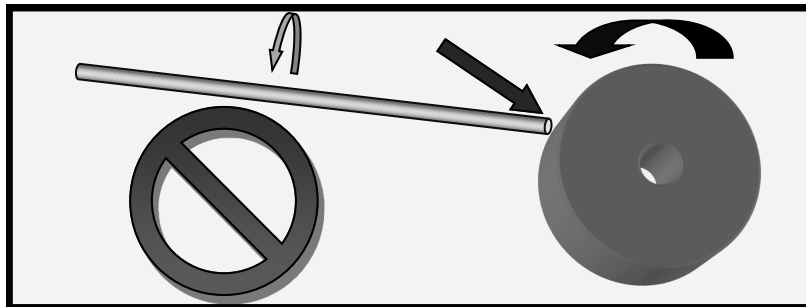


1. Use a dedicated grinding wheel or contamination may result. Do not breath grinding dust! Wear eye protection and gloves.

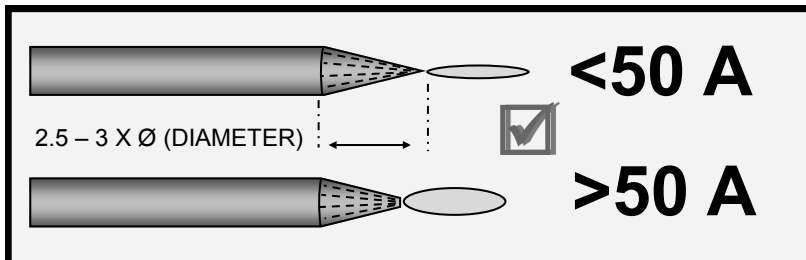
2. Hold Tungsten firmly.

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

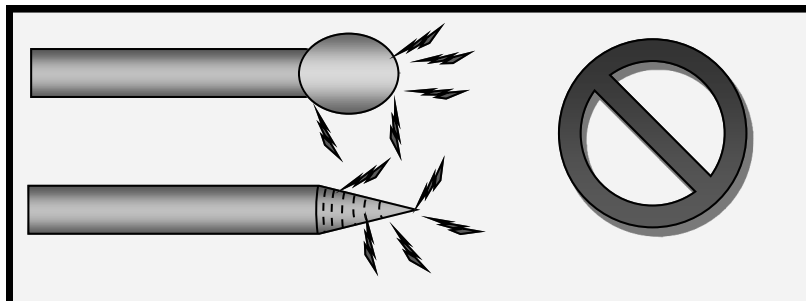
4. Rotate tungsten quickly as it is being ground to keep point even and symmetrical.



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 USING AC. ERRATIC ARC WILL RESULT. MAKE SURE GRINDING MARKS RUN PARALLEL TO TIP. CONCENTRIC MARKS WILL CAUSE AN ERRATIC ARC.

NEVER USE PURE (GREEN) TUNGSTEN IN AN INVERTER WELDER.

SECTION 3**TROUBLE SHOOTING**

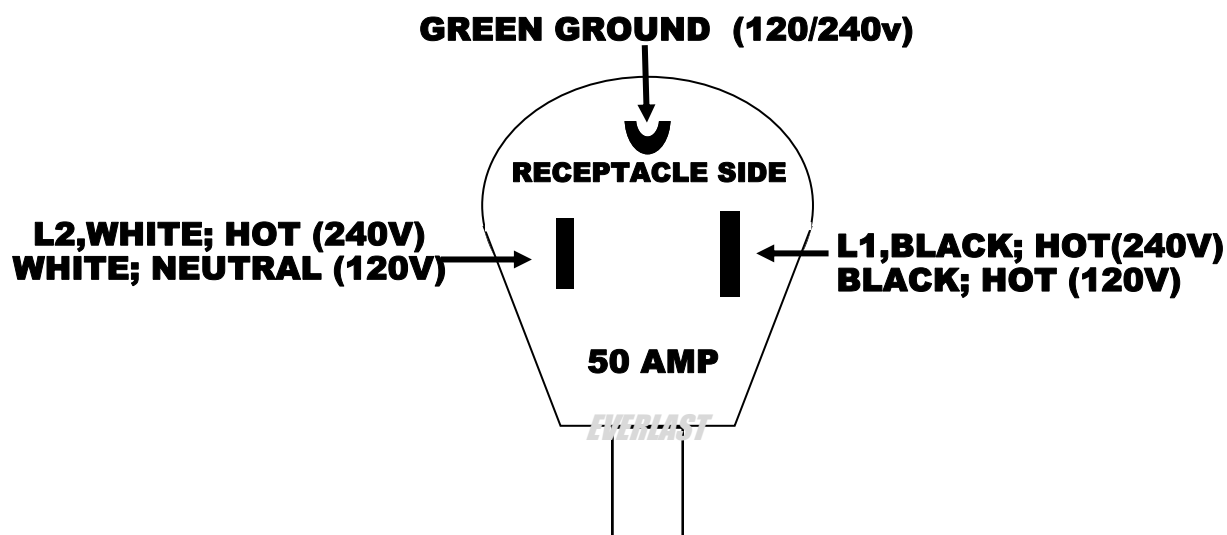
TROUBLE:	CAUSE/SOLUTION
Machine will not turn on	Check cords and wiring to the plug and receptacle. Check circuit breaker. Contact Everlast Technical Support to check and replace main unit fuse.
Machine runs, but will not weld in either mode. Red LED is on.	Red light: Check for sound work clamp connection. Make sure work/Torch cable is securely fastened to DINSE connector. Reset main power switch. Contact Technical Support if light does not go out.
Stick arc has difficulty establishing, welding rod sticking	Wet welding rods. Too low of amperage. Too high of amperage. Use fresh rods. Adjust amps. Wrong polarity.
TIG arc will not start	Point gap wrong or points dirty. Unplug unit, wait 20 minutes then remove rear cover and metal cover. Clean and adjust to .035-.045". Verify point gap issue by performing lift arc start before attempting adjustment. If unit will not strike arc or no power is produced, check torch switch and foot pedal operation. If the torch switch and foot pedal are functioning ok, then contact Everlast for full diagnosis. If one functions and not the other, then it is likely the switch mechanism has failed inside the torch or foot pedal.
Welding rod is rapidly consumed.	Too small of welding rod. Too high of amperage setting. Wrong polarity.
Tungsten is rapidly consumed.	No/low gas flow. Contaminated gas (CO2 or moisture). Wrong torch polarity (+). Open gas valve, readjust flow meter. Change polarity so torch is in negative (-). Scratch starting. For 200ST use only lift start technique.
Porosity of the Weld. Discolored weld color. Too much spatter. Additional TIG symptom: Tungsten is discolored.	Stick: Too long of arc length. Too high of amps. TIG: Same as above/ Low flow rate of shielding gas. Too short of post flow period. Wrong TIG cup size.
Weld quality is poor, unstable arc. Weld is dirty/oxidized.	Clean paint/rust from weld. Make sure work clamp has good contact. Too low of amps/Too large of tungsten. Incorrect wiring of welder. Tungsten (TIG) is poorly ground/contaminated.
LED illuminates yellow/green. Machine runs, but no weld power.	Duty cycle exceeded. Allow machine to cool. Reset main power switch after full cool down period (10-15 minutes). Make sure fan is not blocked. If light does not reset after cool down period contact technical support.
Slight whine or squeal to arc or to welder while turned on.	Normal. Sound may vary.
Circuit breaker trips. Internal Fuse blown.	Wiring fault. Too small of wire or circuit breaker. Welder internal short. Contact Everlast Technical Support before resuming use.

PowerARC 160STH Box Contents



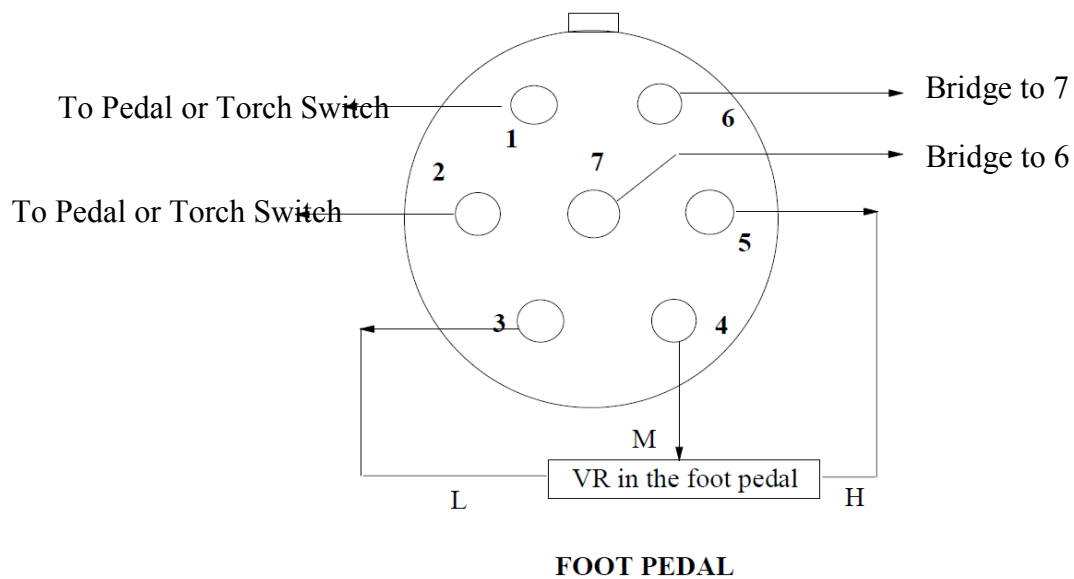
Qty.	Description
1	Tong style Stick electrode holder and cable, 10 ft
1	Steel work clamp and cable, 10 ft
1	17 series economy TIG torch, 12 ft (with starter consumable kit)
1	Economy regulator (floating ball type)
1	PowerARC 160STH DC Stick/DC TIG Inverter welder
1	Manual
1	240V-120V Adapter (optional in some markets)

NOTE: Kit contents, appearance, size and quantity are subject to change without notice.



IMPORTANT: While using the PowerARC 160STH on 120V power, be sure to maintain polarity and use the white wire as the common/neutral, with the black as the “hot” and the green serving as the ground or damage and malfunction may occur. Do not remove the NEMA 6-50 plug to operate on 120V. Use the 240V-120V adapter available from Everlast to adapt the plug to standard 120V power. No other wiring is required. The unit automatically senses the voltage change and adjusts the output accordingly. The unit is provided with a NEMA 6-50P welder plug for 240V operation. This is a standard 50 amp welder plug with a ground, but no neutral. Care should be exercised when wiring a new plug and making any modifications to existing wiring. **A licensed electrician that is familiar with local wiring codes should be consulted before using, adding to or making any changes to existing circuits.** The information given on the graphic located on the welder supplies the necessary information for breaker and wire sizing. This information is found in the **I1max** and the **I1eff** current input ratings on the graphic. The NEC supplies special rules on wiring of welder circuits, but local codes and special circumstances may require a heavier or independent circuit.

7 PIN CONNECTOR FOR FOOT PEDAL



Consult Everlast for appropriate foot pedal before ordering. Pedal ohms are subject to change, and the correct ohm value for your model must be used for proper operation.

NOTES: