

Eastwood

DO THE JOB RIGHT.

Part #12746

TIG 200 AC/DC WELDER

ASSEMBLY & OPERATING INSTRUCTIONS



TIG Welding is the most controllable, efficient and most versatile method of welding many metals including steel, stainless steel, aluminum and more. Your **Eastwood TIG 200 Welder** with High-Frequency Inverter Technology is capable of welding thin or heavy gauge steel and aluminum with precision and ease. The Voltage self-sensing circuitry automatically detects a power source range of 110 to 240 Volts and delivers from 10 up to 200 Amps of AC or DC current at super-high frequency with the added advantage of a light weight unit. The included foot pedal provides the operator with the precise Amperage control required when welding. A high frequency start feature guarantees an instant arc strike with no tungsten contamination.

STATEMENT OF LIMITED WARRANTY

The Eastwood Company (hereinafter "Eastwood") warrants to the end user (purchaser) of all new welding and cutting equipment (collectively called the "products") that it will be free of defects in workmanship and material. This warranty is void if the equipment has been subjected to improper installation, improper care or abnormal operations.

WARRANTY PERIOD:

All warranty periods begin on the date of purchase from Eastwood. Warranty Periods are listed below, along with the products covered during those warranty periods:

3 Year Warranty on Material, Workmanship, and Defects:

- Eastwood TIG 200 AC/DC Welder

Items not covered under this warranty: Collets, collet bodies, tungsten, nozzles, and ground clamp and cable.
All other components are covered by the warranty and will be repaired or replaced at the discretion of Eastwood.

2 Years:

- All Welding Helmets.

CONDITIONS OF WARRANTY TO OBTAIN WARRANTY COVERAGE:

Purchaser must first contact Eastwood at 1-800-345-1178 for an RMA# before Eastwood will accept any welder returns.
Final determination of warranty on welding and cutting equipment will be made by Eastwood.

WARRANTY REPAIR:

If Eastwood confirms the existence of a defect covered under this warranty plan, Eastwood will determine whether repair or replacement is the most suitable option to rectify the defect. At Eastwood's request, the purchaser must return, to Eastwood, any products claimed defective under Eastwood's warranty.

FREIGHT COSTS:

The purchaser is responsible for shipment to and from Eastwood.

WARRANTY LIMITATIONS:

EASTWOOD WILL NOT ACCEPT RESPONSIBILITY OR LIABILITY FOR REPAIRS UNLESS MADE BY EASTWOOD. EASTWOOD'S LIABILITY UNDER THIS WARRANTY SHALL NOT EXCEED THE COST OF CORRECTING THE DEFECT OF THE EASTWOOD PRODUCT. EASTWOOD WILL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES (SUCH AS LOSS OF BUSINESS, ETC.) CAUSED BY THE DEFECT OR THE TIME INVOLVED TO CORRECT THE DEFECT. THIS WRITTEN WARRANTY IS THE ONLY EXPRESS WARRANTY PROVIDED BY EASTWOOD WITH RESPECT TO ITS PRODUCTS. WARRANTIES IMPLIED BY LAW SUCH AS THE WARRANTY OF MERCHANTABILITY ARE LIMITED TO THE DURATION OF THIS LIMITED WARRANTY FOR THE EQUIPMENT INVOLVED. THIS WARRANTY GIVES THE PURCHASER SPECIFIC LEGAL RIGHTS.
THE PURCHASER MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

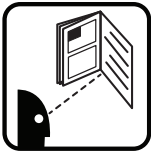
SPECIFICATIONS

Output Amperage Range	Maximum Output No Load Voltage	Input Voltage	Rated Duty Cycle	Pre Gas Flow	Post Gas Flow	Weight	Overall Dimensions
10-200 A AC/DC	51 V DC	120 VAC 50-60 Hz 220 VAC 50-60 Hz	45% @ 150 A	0.1-1.0 Sec	2-8 Sec	45 Lbs.	19.1" (486 mm) x 9.8" (248 mm) x 20.0" (508 mm)

DUTY CYCLE

The Rated Duty Cycle refers to the amount of welding that can be done within an amount of time. The Eastwood TIG 200 has a duty cycle of 45% at 150 Amps. It is easiest to look at your welding time in blocks of 10 Minutes and the Duty Cycle being a percentage of that 10 Minutes. If welding at 150 Amps with a 45% Duty Cycle, within a 10 Minute block of time you can weld for 4.5 Minutes with 5.5 Minutes of cooling for the welder. To increase the Duty Cycle you can turn down the Amperage Output control. Going above 150 Amps will yield a lower duty cycle.

SAFETY INFORMATION



READ INSTRUCTIONS!

Thoroughly read and understand this instruction manual before using the welder.



ELECTRIC SHOCK CAN KILL!

- Improper use of an electric welder can cause electric shock, injury and death! Read all precautions described in this manual to reduce the possibility of electric shock.
- Do not touch any electrical components that may be live.
- Separate yourself from the welding circuit by using insulating mats to prevent contact from the work surface.
- **Always wear dry, protective clothing and leather welding gloves and insulated footwear.**
- Always operate the welder in a clean, dry, well ventilated area. Do not operate the welder in humid, wet, rainy or poorly ventilated areas.
- Be sure that the work piece is properly supported and grounded prior to beginning an electric welding operation.
- The electrode and work (or ground) circuits are electrically “hot” when the welder is on. Do not touch these “hot” parts with your bare skin or wet clothing.
- **Disconnect from power supply before assembly, disassembly or maintenance of the torch or replacement of consumable torch components such as electrodes and collets.**
- Always attach the ground clamp to the piece to be welded and as close to the weld area as possible. This will give the least resistance and best weld.



FUMES AND WELDING GASES CAN BE DANGEROUS!

- Do not breathe fumes that are produced by the welding operation. These fumes are dangerous. Keep your head and face out of welding fumes.
- Always work in a properly ventilated area. Wearing an OSHA-approved respirator when welding is recommended!
- Never weld coated materials including but not limited to: cadmium and galvanized plating or lead based paints.
- Refer to the MSDS (Material Safety Data Sheet) for any consumables or materials used during welding for additional safety instructions.



WELDING SPARKS CAN CAUSE FIRE OR EXPLOSION!

- Do not operate electric arc welder in areas where flammable or explosive vapors are present.
- Always keep a fire extinguisher nearby while welding.
- Use welding blankets to protect painted surfaces, upholstery, dash boards, engines, etc.
- Ensure power supply has properly rated wiring to handle power usage.
- Do not use on or near combustible surfaces.
- Remove all flammable items within 35 feet of the welding area.
- Do not attempt to use on frozen or water filled pipes.

SAFETY INFORMATION



ARC RAYS CAN BURN!

- Use a shield with the proper filter (a minimum of #13) to protect your eyes from sparks and the rays of the arc when welding or when observing open arc welding. (see ANSI Z49.1 and Z87.1 for safety standards)
- Use suitable clothing made from durable flame-resistant material to protect your skin. Protect nearby individuals with a non-flammable barrier.
- Wear safety glasses with side shields under your welding helmet.
- If other persons are in the welding area, use welding screens to protect them from sparks and arc rays.



HOT METAL WILL BURN!

- Electric welding operations cause sparks and heat metal to temperatures that will cause severe burns!
- Use protective gloves and clothing when performing any welding operations. Always wear long pants, long-sleeved shirts and leather welding gloves.
- Make sure that all persons in the welding area are protected from heat, sparks and ultraviolet rays. Use additional face shields and flame resistant barriers as needed.
- Never touch work piece until it has completely cooled.



ELECTROMAGNETIC FIELDS MAY BE DANGEROUS!

- The electromagnetic field that is generated during arc welding may interfere with and damage sensitive electrical and electronic devices such as cardiac pacemakers, cell phones, computers, cameras, and watches. Keep this equipment at least 30 ft. from welding area.
- Exposure to electromagnetic fields while welding may have other health effects which are not known.



FLYING METAL CHIPS CAN CAUSE INJURY!

- Welding, brushing, hammering, chipping, and grinding can cause flying metal chips and sparks.
- To prevent injury wear approved safety glasses.



MAGNETIC FIELDS CAN AFFECT PACEMAKERS!

Anyone with a pacemaker should consult with their physician prior to performing any electric welding operations.



NOTICE!

Do not touch the electrode with the unit turned "ON". Turn the unit "OFF" and unplug from power source before changing electrodes and collet parts, or cleaning the nozzle.

REQUIRED ITEMS

Before you begin using the Eastwood TIG Welding System, make sure you have the following:

- Our TIG 200 is supplied with the popular NEMA 50P plug, requiring a NEMA 50 receptacle. If a 220-240 VAC, 30 Amp outlet is used a UL listed 30 Amp plug may be installed by a licensed and qualified electrician.
- The TIG 200 will also operate on a 110-120 VAC 20 Amp circuit. To operate on this voltage it is necessary to connect the included adaptor cord to the plug hard wired to the TIG 200.
- A clean, safe, well-lit, dry and well-ventilated work area.
- A non-flammable, long sleeve shirt or jacket (Eastwood #12762L, XL, XXL).
- Heavy Duty Welding Gloves (#12590)
- An Auto Darkening Welding Mask (Eastwood #13203, #13212, #14425 or equivalent) to provide eye protection during welding operations. **NOTE:** MUST be a #11 lens or darker.
- A compressed gas cylinder containing 100% Argon (must be used when TIG welding and is available at any welding supply facility).
- Dedicated stainless steel wire welding brush for each material to be welded.
- A dedicated fine grit synthetic stone grinding wheel or a Tungsten Sharpener.

POWER REQUIREMENTS

The Eastwood TIG 200 AC/DC is Voltage sensing; it will automatically operate on 110-120 VAC, 50/60 Hz., or 220-240 VAC, 50/60 Hz. Eastwood recommends at a minimum a properly grounded 110-120 VAC 50/60Hz., 20 Amp circuit or 220-240 VAC 50/60Hz., 30 Amp circuit.

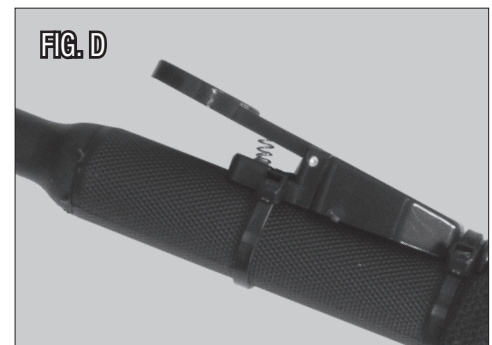
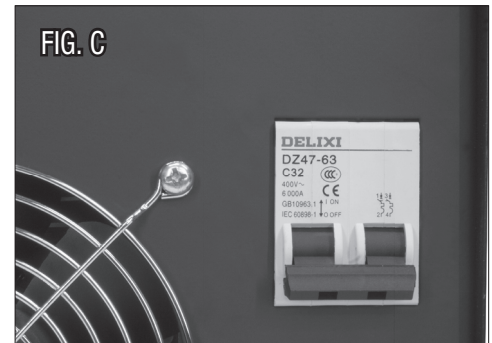
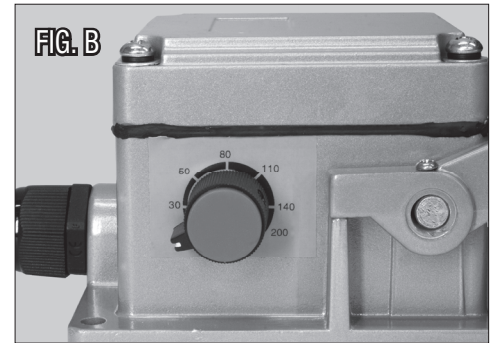
BEFORE YOU BEGIN

Remove all items from the box. Compare with list below to make sure unit is complete.

- TIG 200 AC/DC Welder with NEMA50-P Plug
- Shielding Gas Regulator
- Shielding Gas Hose
- Ground Cable with Clamp (10')
- TIG Torch (17 Series) which accepts industry standard cups, collets and collet bodies (14')
- Foot Pedal for Amperage Control
- 110-120 VAC to 220-240 VAC Adaptor Plug
- Instruction Manual
- Hand Held Shield
- Hammer/Brush
- #7 Gas Nozzle (7/16")
- #6 Gas Nozzle (3/8")
- #5 Gas Nozzle (5/16")
- Long Back Cap
- Short Back Cap
- 3/32" Collet Body
- 3/32" Collet
- 1/16" Collet
- 1/16" Red (Thoriated Tungsten)

COMPONENTS AND CONTROLS

- Power Switch** – The Power Switch also serves as the overload Circuit Breaker and is located at the right of the rear panel (Fig. C).
- Amperage (Front Panel)** – Set the Output Amperage Knob marked “A” (Fig. A) located at upper left of the top panel to an appropriate setting based on the thickness and type of the metal being welded. **(Refer to Data Chart for actual settings.)**
- Amperage (Foot Pedal)** – Same operation as the panel control but is used while the foot pedal is in use (Fig. B).
- Clearance Effect** – The Clearance Effect Knob (Fig. A) is located at the upper right of the top panel. Clearance Effect will control how much cleaning versus penetration occurs. The more negative the value will result in greater penetration and less cleaning and the more positive the value will result in less penetration but greater cleaning.
- Pre Flow** – The Pre Flow Knob located at the lower left of the top panel (Fig. A) controls the time (in seconds) that the shielding gas starts to flow after the trigger or foot pedal is press before the arc starts. **(Refer to Data Chart for actual settings.)**
- Post Flow** – The Post Flow Knob located at the lower right of the top panel (Fig. A) controls the time (in seconds) that the shielding gas continues to flow after the trigger or foot pedal is released. **(Refer to Data Chart for actual settings.)**
- Gas Flow** – The included regulator limits the shielding gas flow from the bottle and also displays how much gas is left in the bottle. The Gas Flow Indicator Gauge is located on the left side and is generally set between 12 to 21 SCFH. **(Refer to Data Chart for actual settings.)** This is explained in further detail in the Preparing to Weld section of this manual. The gauge on the right indicates the pressure left in the tank.
- AC/DC** – The DC setting is used for welding steel and stainless steel while the AC setting is used for welding aluminum (Fig. A). **(Refer to Data Chart for actual settings.)**
- Foot Pedal/Panel Control** – The Foot Pedal/Panel Control selection switch is located at the upper right of the top panel and when set in the ‘Foot Pedal’ position, the Foot Pedal control is activated. When set to the ‘Panel Control’ position, the Torch Trigger is activated (Fig. A).
- Torch Switch** – The switch on the torch (Fig. D) controls starting and stopping the arc. When using the torch switch the Amperage is set on the adjustment knob on the front panel of the welder.
- Foot Pedal** – The foot pedal is for starting and stopping the arc as well as controlling the Amperage during the weld. When using the foot pedal the Amperage is set by the adjustment knob on the side of the foot pedal (Fig. B).



DATA CHART (ALSO LOCATED ON TOP OF WELDER)

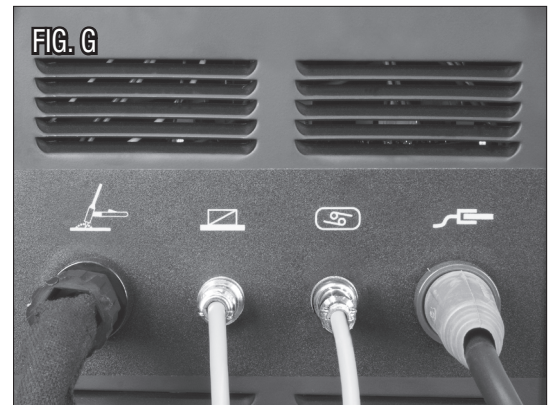
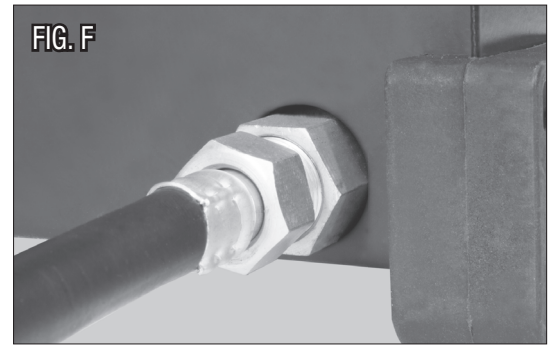
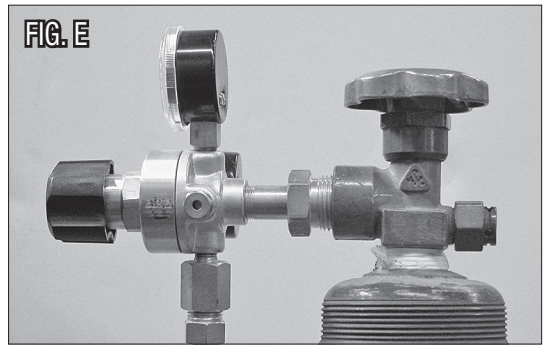
MATERIAL	MATERIAL THICKNESS	POLARITY	AMPERAGE	TUNGSTEN COLOR	TUNGSTEN DIA.	FILLER METAL	FILLER METAL DIA.	PRE FLOW (sec)	POST FLOW (sec)	TORCH CUP SIZE	GAS FLOW RATE (scfh)	CLEARANCE EFFECT
Aluminum	1/16"	AC	55-75	Green, Red, Purple	1/16"	4043	1/16"	0.4	5	1/4 - 3/8"	15	-3 to 0
Aluminum	3/32"	AC	70-100	Green, Red, Purple	1/16"	4043	1/16"	0.4	5	1/4 - 3/8"	15	-3 to 0
Aluminum	1/8"	AC	90-140	Green, Red, Purple	3/32"	4043	3/32"	0.4	6	3/8 - 7/16"	17	-3 to 0
Aluminum	3/16"	AC	125-180	Green, Red, Purple	3/32"	4043	3/32"	0.4	6	7/16 - 1/2"	21	-3 to 0
Steel	1/16"	DC-	45-80	Gray, Red, White, Purple	1/16"	ER70S-2	1/16"	0.4	5	1/4 - 3/8"	12	0
Steel	3/32"	DC-	70-110	Gray, Red, White, Purple	1/16"	ER70S-2	1/16"	0.4	5	1/4 - 3/8"	12	0
Steel	1/8"	DC-	75-125	Gray, Red, White, Purple	1/16"	ER70S-2	3/32"	0.4	6	1/4 - 3/8"	12	0
Steel	3/16"	DC-	110-200	Gray, Red, White, Purple	3/32"	ER70S-2	1/8"	0.4	6	1/4 - 3/8"	14	0
Stainless Steel	1/16"	DC-	50-90	Gray, Red, White, Purple	1/16"	ER308/308L	1/16"	0.4	5	1/4 - 3/8"	12	0
Stainless Steel	3/32"	DC-	80-120	Gray, Red, White, Purple	1/16"	ER308/308L	1/16"	0.4	5	1/4 - 3/8"	12	0
Stainless Steel	1/8"	DC-	85-140	Gray, Red, White, Purple	1/16"	ER308/308L	3/32"	0.4	6	1/4 - 3/8"	12	0
Stainless Steel	3/16"	DC-	125-200	Gray, Red, White, Purple	3/32"	ER308/308L	1/8"	0.4	6	1/4 - 3/8"	14	0

SETUP

SHIELDING GAS CONNECTION

A Shielding Gas Bottle is not included with your Eastwood TIG 200 but is necessary while TIG welding. A Shielding Gas Bottle can be bought at most local Welding Supply Stores. Eastwood recommends the use of 100% Argon shielding gas when TIG welding Steel, Aluminum, and Stainless Steel.

1. Place the Eastwood TIG 200 in its dedicated area or on a welding cart.
2. Secure your Shielding Gas Bottle to a stationary object or mount to your welding cart if it is equipped to hold one so that the cylinder cannot fall over.
3. Remove the cap from the Shielding Gas Bottle.
4. Insert the large brass male fitting on the Shielding Gas Regulator into the female fitting on the Shielding Gas Bottle (Fig. E). **NOTE:** Do not use White Teflon Tape on this connection as it is a tapered thread and does not require it, if you have a leak check for burrs or dirt in the threads. If the leak persists, use gas type sealing tape.
5. Tighten the fitting with a wrench till snug, do not over tighten.
6. Connect either end of the Gas Line included with your Eastwood TIG 200 to the fitting on the regulator and tighten with a wrench until snug.
7. Connect the other end of the gas line to the fitting on the rear of the Eastwood TIG 200 and tighten with a wrench until snug (Fig. F).



↑ Gas Flow Through Power Cable ↑ Foot Pedal ↑ Torch Switch/Foot Pedal ↑ Ground Cable

TORCH CONNECTION

1. Install the plastic connection cover onto the brass torch fitting on the torch cable.
2. Connect the female brass fitting on the torch cable to the male brass fitting on the welder (Fig. G).
3. Use a wrench and tighten until snug. **DO NOT OVERTIGHTEN.**
4. Connect the black 4 pin plug to the Torch Switch Connection as shown in (Fig. G). (**NOTE:** Omit this step if you will be using the foot pedal for Amperage control.)

GROUND CABLE CONNECTION

1. Locate the Ground Cable and Clamp.
2. The Ground Cable connection is located at the far right of the front panel as shown in (Fig. G). With the Key on the connector in the 12 O'clock position, insert the connector and turn 180° clockwise to lock in the connector.

FOOT PEDAL CONNECTION

1. If you are going to be using the switch on the torch to start the welding arc, omit this step.
2. Connect the Black 4 pin plug on the Foot Pedal to the Switch Connection as shown in (Fig. G).
3. Connect the Metal 2 Pin Plug on the Foot Pedal to the Foot Pedal Connection as shown in (Fig. G).

PREPARING TO WELD

TORCH DISASSEMBLY/ASSEMBLY

DISASSEMBLY:

1. Make sure the welder is turned off and unplugged.
2. Remove the back cap from the torch.
3. If there is a tungsten installed in the torch pull it out of the front of the torch
4. Slide the collet out of the torch.
5. Unscrew and remove the gas nozzle.
6. Unscrew and remove the collet body.

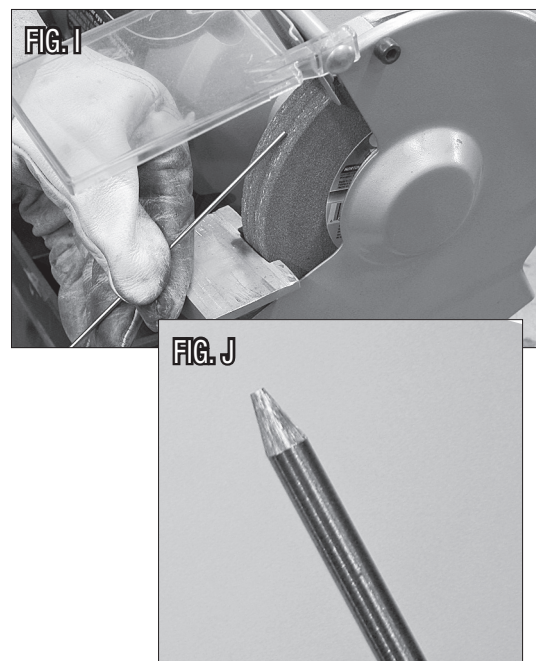
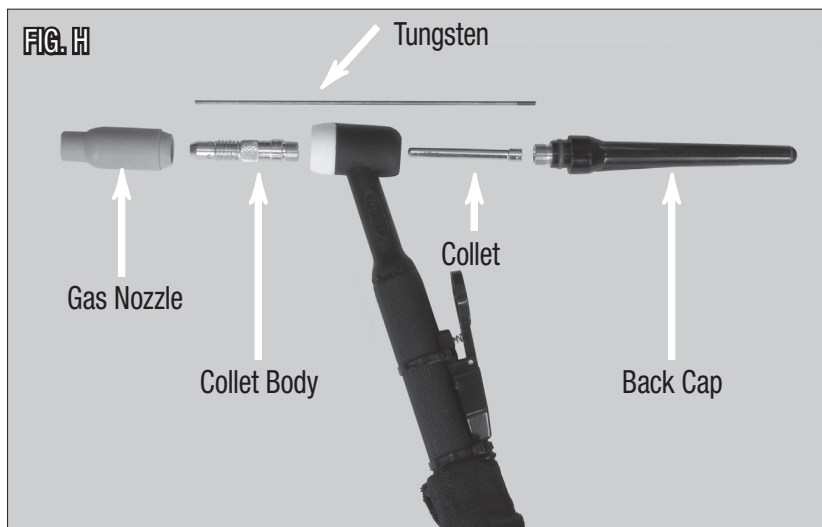
ASSEMBLY:

1. Select a collet body that matches your tungsten diameter size and thread it back into the front of the torch.
2. Select a collet that matches your tungsten diameter size. Insert the tungsten into the collet and put the collet and tungsten back into the torch.
3. The cup size should be changed according to shielding gas requirements for the material being welded. This size can be referenced on the suggested settings chart. Select the correct gas nozzle and thread it onto the collet body.
4. Reinstall the back cap to lock the tungsten in place. Always make sure the tungsten protrudes 1/8" to 1/4" beyond the gas nozzle.

SHARPENING THE TUNGSTEN

To avoid contamination of the Tungsten and ultimately the weld, it is imperative to have a dedicated grinding wheel used for Tungsten grinding only. A fine grit standard 6" synthetic stone grinding wheel on a bench top grinder is sufficient or specifically designed Tungsten Grinders are available.

1. Shut off the welder.
2. Make sure the Tungsten and Torch are sufficiently cooled for handling then loosen and remove the Back Cap then the Collet (Fig. H) and remove the Tungsten from the FRONT of the Torch only (Removing from the rear will damage the Collet).
3. If the tungsten is used and the end is contaminated, use pliers or a suitable tool to grip the tungsten above the contaminated section and snap off the end of the Tungsten.
4. Holding the Tungsten tangent to the surface of the grinding wheel, rotate the tungsten while exerting light pressure until a suitable point is formed (Fig. I).
5. The ideal tip will have the length of the conical portion of the sharpened area at 2-1/2 times the Tungsten rod diameter (Fig. J).
6. Replace the Tungsten in the Collet with the tip extending 1/8"-1/4" beyond the Gas Nozzle, then re-tighten the Back Cap.



SETTINGS SELECTION

With the materials selected of which you will be welding you can begin to set up the welder for the specific material.

1. **AC/DC** – The type of current will need to be selected depending on the type of material being welded. For the most part when welding steels the switch will be set to DC and when welding aluminum the switch will be set to AC.
2. **Clearance Effect** – This step can be omitted if welding in DC. If welding in AC this will need to be set. The more negative the value will result in greater penetration and less cleaning and the more positive the value will result in less penetration but greater cleaning. For suggested settings refer to the data chart on the welder.
3. **Foot Pedal/Panel Control** – Determine whether you will be using the switch on the torch or the foot pedal for arc starting and stopping and put the selector switch in the appropriate position. Note that some connections changes will be necessary also when switching the control type. These connection changes are covered in the Set-Up section of this manual.
4. **Amperage** – If welding using the switch on the torch to control the arc, Set the Output Amperage Knob marked “A” (Fig. A) located at upper left of the top panel to an appropriate setting based on the thickness and type of the metal being welded. **(Refer to Data Chart for actual settings)**. If welding using the foot pedal to control the arc, it uses the same operation as the panel control but is adjusted on the side of the foot pedal rather than the front panel (Fig. A).
5. **Pre Flow** – This adjustment controls the time (in seconds) that the shielding gas starts to flow before the arc starts. **(Refer to Data Chart for actual settings)**.
6. **Post Flow** – This adjustment controls the time (in seconds) that the shielding gas flows after the arc stops. **(Refer to Data Chart for actual settings)**.
7. **Power Switch** – Once all of the settings have been selected and the torch assembled and ready to use, the welder can be plugged in and turned on.
8. **Shielding Gas Flow** – Set the Gas Flow Rate to the appropriate value with the Knob located at the left side of the regulator.

SHIELDING GAS FLOW ADJUSTMENT

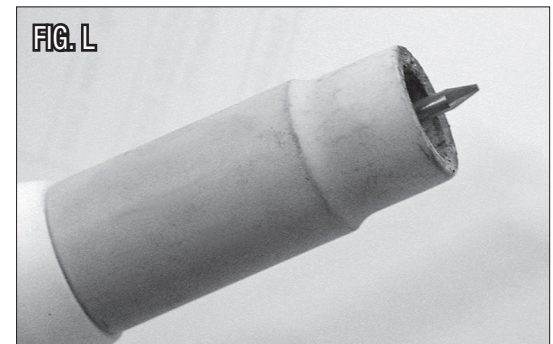
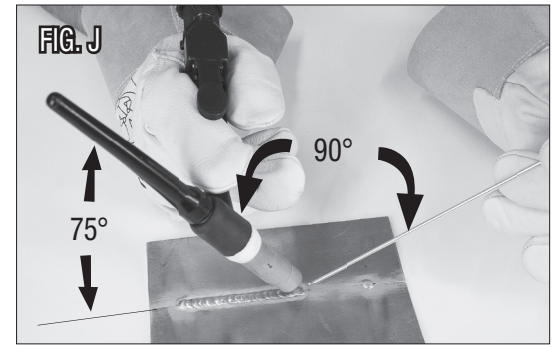
After connecting your Shielding Gas Regulator, the gas flow rate needs to be adjusted so that the proper amount of Shielding Gas is flowing over your weld. If there is too little gas flow there will be porosity in your welds as well as excessive spatter, if there is too much gas flow you will be wasting gas and may affect the weld quality. The included regulator has 2 gauges on it; the gauge on the left is your flow rate while the gauge on your right is your tank pressure.

1. Open your Shielding Gas tank valve all the way.
2. Adjust the knob on the regulator to ~20 CFH.
3. Turn on the welder and trigger the torch switch or foot pedal which will start the gas flow.
4. As you trigger the torch switch or foot pedal, you will notice that as the gas flow starts the needle on the gauge drops to a steady reading. The reading while flowing is the value you want to read.
5. The gas flow should be set to 12-21 CFH while flowing depending on the material and thickness being welded. The CFH (Cubic Feet per Hour) scale is the inside scale in red on your flow gauge. 20 CFH is the most typical flow rate but it may need to be adjusted in some cases depending if there is a slight breeze or some other instance where additional shielding gas is required to prevent porosity in the weld.
6. When finished welding remember to close the gas valve on the bottle.

WELDING

IMPORTANT NOTE:

These instructions are intended only to provide the user with some familiarity of the Eastwood TIG 200. TIG welding is a highly complex procedure with many variables. If you have no experience with TIG welding; it is extremely important to seek the advice of someone experienced in TIG welding for instruction, enroll in a local technical school welding course or study a comprehensive how-to DVD and obtain a good quality reference book on TIG welding as there is a moderate learning curve necessary before achieving proficiency in TIG Welding. Before attempting to use this unit on an actual project or object of value, practice on a similar material as there are many variables present and settings required when TIG welding different metals such as steel or aluminum. It is also strongly recommended that the user adhere to the American Welding Society guidelines, codes and applications prior to producing welds where safety is affected.



1. Turn the Power Switch/Circuit Breaker to the on position.
2. Slowly open the gas cylinder valve. **NOTE:** Always open valve fully to avoid shielding gas leakage.
3. Depress gun trigger switch or foot pedal and adjust the flow regulator. **(Refer to Data Chart for actual settings).**
4. Grounding is very important, place the Ground Cable Clamp on a clean, bare area of your work piece as close to the welding area as possible to minimize the chance of shock. Scrape, wire brush, file or grind a bare area to achieve a good ground to assure safety.
5. Use a dedicated stainless steel brush or flap-disc to clean the areas to be welded. This is particularly critical on aluminum as a microscopic layer of oxidation can prevent an arc and actually produce a poor-quality, contaminated weld. Do not use the brush or flap-disc for any other purpose and keep one for steel and one for aluminum.
6. Make sure all your safety gear is in place (Welding Mask, Welding Gloves, Non-Flammable Long Sleeve Apparel) and the area is completely free of flammable material.
7. Although it is a matter of developing a personal style, a good starting point for best results is achieved by holding the tip at a 75° angle. Hold the Filler Metal Rod at a 90° angle to the Tungsten Tip (Fig. J). Never allow the Tungsten Tip to touch the welding surface or material rod. Doing so will quickly destroy the tip and contaminate the weld. If this happens, remove the Tungsten and regrind the tip. It is best to hold the tungsten 1/8" from the surface.
8. With your Welding Shield and all safety gear in place, depress the foot pedal or trigger and practice "Forming A Puddle" with the Tungsten Tip. Once you become familiar with this step. Practice the "Dip and Pull" technique with the Filler Metal Rod and Torch. "Dip and Pull" is the practice of forming a puddle, moving the torch while maintaining the puddle and adding filler rod metal to the puddle by "dipping and pulling" as you go; being careful not to allow the tungsten to contact the puddle or rod.
9. Keep in mind that you **MUST** let the shielding gas flow over the weld after releasing the trigger or pedal. Failure to do so will allow the welded area to oxidize compromising the weld integrity.
10. Constantly be aware that TIG welding quickly generates heat in the work piece and torch. Severe burns can quickly occur by contacting hot metal pieces.
11. When done, shut off the Power Switch and close the Shielding Gas Tank valve completely.

TROUBLESHOOTING

<u>Problem</u>	<u>Cause</u>	<u>Fix</u>
Arc is triggered but will not start	Incomplete Circuit	Check Ground connection. Make sure that the ground is on a freshly cleaned surface and close to the welding area. It is suggested to weld towards the ground connection.
	Incorrect Tungsten	Consult chart for proper tungsten for the base metal being welded. In most cases Pure Tungsten will be for aluminum and Thoriated will be for steel.
	No shielding gas	Make sure the shielding gas cylinder is turned all the way open and set at the correct flow rate.
	Wrong Polarity	Make sure polarity is set for the correct material. AC should be used for aluminum while DC should be used for steel.
Arc wanders and it is hard to concentrate heat in a specific area	Poorly prepped tungsten	Follow guidelines for prepping tungsten.
	Poor Gas Flow	Adjust the flow rate of the shielding gas (refer to settings chart). Check for loose fittings where gas could be leaking.
	Contaminated Tungsten	Remove tungsten from torch and break off contaminated section and resharpen.
	Incorrect arc length	Make sure the tungsten is held 1/8 to 1/4 inch off the work piece.
	Incomplete circuit	Check Ground connection. Make sure that the ground is on a freshly cleaned surface and close to the welding area. It is suggested to weld towards the ground connection.
	Contaminated base metal	Clean base metal making sure to remove any oil, debris, coatings, or moisture. If base metal is aluminum make sure all of the oxide is removed using either a dedicated stainless brush or flap wheel.
	Incorrect Clearance Effect (AC)	Shift more negative on the Clearance Effect knob so less heat is going into the tungsten.
Porosity in weld bead	Poor Gas Flow	Adjust the flow rate of the shielding gas (refer to settings chart). Check for loose fittings where gas could be leaking.
	Contaminated filler metal	Clean filler metal making sure to remove any oil, debris, or moisture.
	Contaminated base metal	Clean base metal making sure to remove any oil, debris, coatings, or moisture.
	Poor Shielding	Make sure to be in an area with no wind and with any fans turned off. Wind or fans will blow the shielding gas away from the weld causing porosity.
	Incorrect Tungsten Stick Out	Adjust the tungsten so that 1/8 to 1/4in is sticking out of the collet.

TROUBLESHOOTING

<u>Problem</u>	<u>Cause</u>	<u>Fix</u>
Contamination in weld bead	Contaminated Tungsten	Remove tungsten from torch and break off contaminated section and resharpen.
	Contaminated Filler Metal	Clean filler metal making sure to remove any oil, debris, or moisture.
	Contaminated Base Metal	Clean base metal making sure to remove any oil, debris, coatings, or moisture. If base metal is aluminum make sure all of the oxide is removed using either a dedicated stainless brush or flap wheel.
Melting Tungsten	Poor Gas Flow	Adjust the flow rate of the shielding gas (refer to settings chart). Check for loose fittings where gas could be leaking.
	Improper Clearance Effect (AC)	Shift more negative on the Clearance Effect knob so less heat is going into the tungsten.
	Wrong Size Tungsten	Increase tungsten diameter. Refer to chart for proper sizing.
	Not enough post flow	Increase post flow time to allow the gas to cool the tungsten.
	Incorrect Shielding Gas	Only use 100% Argon when TIG Welding.
Poor Penetration (Aluminum)	Low Amperage	Amperage setting is too low for material/thickness. Increase as needed and reference chart on welder.
	Incorrect Clearance Effect (AC)	Shift the clearance effect more to the negative side as this will transfer more heat to the material being welded.
Poor Penetration (Steel)	Low Amperage	Amperage setting is too low for material/thickness. Increase as needed and reference chart on welder.
Tungsten Contaminated	Contact of Tungsten with Base Metal	Keep tungsten 1/8 to 1/4 inch from the base metal. If tungsten comes in contact break off end and resharpen immediately.
Poor Weld Appearance	Incorrect positioning	The angle between the filler metal and the torch must be less than 90 degrees other wise the filler metal will prematurely melt and glob off causing poor weld appearance.
Crater in the End of the Weld Bead	Insufficient Shielding	Keep the torch on the base metal while the post flow shielding gas flows to protect and cool the metal and tungsten.
	Not Enough Filler Material	Reduce current with pedal and add more filler at end of weld. It may also be beneficial to back step to ensure no crater will form.
Weld Bead is Cracking	Too much heat in material	Reduce heat and allow more time between passes.
	Base Metal is absorbing too much heat	Preheat base metal (consult welding codes for requirements)
	Incorrect Filler Wire	Reduce filler wire size.
Material is Warping	Insufficient Clamping	Clamp work piece tightly and weld while clamps are in place.
	Insufficient Tack Welds	Add more tack welds until rigidity and stiffness is developed.
	Too Much Heat in Material	To reduce heat it is best to spread the welding out around the area. This can be done by using stitch welding techniques, alternating sides, and/or taking your time and allowing the pieces to cool between passes.

ACCESSORIES

TIG WIRE & TUNGSTEN:

- **#12253** – ER70S-2 Steel TIG Wire 1/16-36"
- **#12254** – ER70S-2 Steel TIG Wire 3/32-36"
- **#12375** – 4043 Aluminum TIG Wire 1/16-36"
- **#12376** – 4043 Aluminum TIG Wire 3/32-36"
- **#12463** – 308L Stainless TIG Wire 1/16-36"
- **#12464** – 308L Stainless TIG Wire 3/32-36"
- **#20176** – E³ Purple Tungsten 1/16-7" 2pc
- **#20177** – E³ Purple Tungsten 3/32-7" 2pc

NOTE: E³ Purple Tungsten is universal and can be used on steel, aluminum, and stainless steel.

REPLACEMENT ITEMS:

- **#13483** – TIG 200 Collet Body (1.6mm; 1/16")
- **#13484** – TIG 200 Collet Body (2.4mm; 3/32")
- **#12822** – TIG 200 Collet (1.6mm; 1/16")
- **#12824** – TIG 200 Collet (2.4mm; 3/32")
- **#12825** – TIG 200 Long Back Cap
- **#12819** – TIG 200 Gas Nozzle (9.8mm; 3/8")
- **#12821** – TIG 200 Gas Nozzle (11.2mm; 1/2")
- **#13953** – TIG Accessory Kit

OTHER WELDING ACCESSORIES:

- **#11947** – Flap Disc 60 Grit 4.5" Diameter 7/8" Hole
- **#12590** – Welding Gloves Large
- **#12589** – Welding Gloves Medium
- **#12099** – Auto Darkening Welding Helmet
- **#19079S** – Stainless Steel Brush
- **#51139** – Copper 3 x 3 Welders Helper Set
- **#50739** – Master Welder's Helper Panel Holding Kit
- **#19015** – Welders Pliers
- **#12762L, XL, XXL** – Welding Jacket
- **#11616** – TIG 200 Welding Cart

NOTES

NOTES

If you have any questions about the use of this product, please contact

The Eastwood Technical Assistance Service Department: 800.544.5118 >> email: techelp@eastwood.com

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