

CHICAGO **welding**
ELECTRIC **systems**

240 VOLT ARC/TIG INVERTER WELDER AND TIG WELDING TORCH

Model 66787

SET UP AND OPERATING INSTRUCTIONS



Visit our website at: <http://www.harborfreight.com>



**Read this material before using this product.
Failure to do so can result in serious injury.
SAVE THIS MANUAL.**

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For technical questions or replacement parts, please call 1-800-444-3353.

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SAVE THIS MANUAL

Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual (or month and year of purchase if product has no number). Keep this manual and the receipt in a safe and dry place for future reference.

IMPORTANT SAFETY INFORMATION

In this manual, on the labeling, and all other information provided with this product:



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to personal injury.

CAUTION

CAUTION, without the safety alert symbol, is used to address practices not related to personal injury.

General Safety Rules



WARNING! Read all instructions. Failure to follow all instructions listed below may result in electric shock, fire, and/or serious injury. The term "power tool" in all of the warnings listed below refers to your line-operated (corded) ARC/TIG Inverter Welder.

SAVE THESE INSTRUCTIONS

1. **Work area safety**
 - a. Keep work area clean and well lit. Cluttered or dark areas invite accidents.
 - b. Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. Power tools create sparks which may ignite the dust or fumes.
 - c. Keep children and bystanders away while operating a power tool. Distractions can cause you to lose control.
2. **Electrical safety**
 - a. Avoid body contact with grounded surfaces such as pipes, radiators, ranges and refrigerators. There is an increased risk of electric shock if your body is grounded.

- b. Do not expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.
- c. Do not abuse the cord. Never use the cord for pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts. Damaged or entangled cords increase the risk of electric shock.
- d. When operating a power tool outdoors, use an extension cord suitable for outdoor use. Use of a cord suitable for outdoor use reduces the risk of electric shock.

3. Personal safety

- a. Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating power tools may result in serious personal injury.
- b. Use safety equipment. Always wear eye protection. Safety equipment such as arc shaded, impact safety full face shield, dust mask or respirator, heavy-duty work gloves, non-skid safety shoes, or hearing protection used for appropriate conditions will reduce personal injuries.
- c. Avoid accidental starting. Ensure the switch is in the off-position before plugging in. Carrying power tools with your finger on the switch or plugging in power tools that have the switch on invites accidents.
- d. Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.

4. Power tool use and care

- a. Do not force the power tool. Use the correct power tool for your application. The correct power tool will do the job better and safer at the rate for which it was designed.
- b. Do not use the power tool if the switch does not turn it on and off. Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- c. Disconnect the plug from the power source before making any adjustments, changing accessories, or storing power tools. Such preventive safety measures reduce the risk of starting the power tool accidentally.
- d. Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. Power tools are dangerous in the hands of untrained users.
- e. Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.
- f. Use the power tool and its accessories in accordance with these instructions and in the manner intended for the particular type of power tool, taking into account the working conditions and the work to be performed. Use of the power tool for operations different from those intended could result in a hazardous situation.

5. Service

- a. Have your power tool serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the power tool is maintained.

Specific Safety Rules

1. Maintain labels and nameplates on the tool. These carry important safety information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
2. Do not touch the tip of the Torch when the welder is connected to power. The Torch will immediately activate when it is plugged in. The operator must carefully direct the torch whenever the welder is connected to power. When the operator is not holding the Torch, it must be sitting on a nonconductive, nonflammable surface.
3. Feed the filler metal being used into the arc with a properly insulated holder.
4. Avoid electrical shock. Do not permit electrically live parts, cables, or electrodes to contact skin, clothing, or gloves. Wear ANSI-approved protective clothing. This unit draws enough current to cause serious injury or death. Before turning the Welder on, check the electrode holder to be sure that there are no protruding screw heads, and that all insulation is secure. Do not weld unless you are insulated from ground and the work piece.
5. Avoid eye and body damage. Arc rays and infrared radiation can injure eyes and burn skin. Wear ANSI approved eye and body protection. Do not allow viewing by visitors without proper eye and body protection. Use a Face Shield with arc shaded filter plate.
6. Move flammable and explosive material at least 35 feet from the welding arc to prevent welding sparks or molten metal from starting a fire. Keep a type ABC fire extinguisher within easy reach. Thoroughly clean the object being welded of any paint, grease, or other foreign material.
7. Avoid unintentional starting. Prepare to begin work before turning on the Welder.
8. Do not leave the Welder unattended when it is plugged into an electrical outlet. Turn off the tool, and unplug it from its electrical outlet before leaving.
9. Use clamps (not included) or other practical ways to secure and support the work piece to a stable platform. Holding the work by hand or against your body is unstable and may lead to loss of control.
10. This product is not a toy. Keep it out of reach of children.
11. Industrial applications must follow OSHA guidelines.
12. People with pacemakers should consult their physician(s) before use. Electromagnetic fields in close proximity to heart pacemaker could cause pacemaker interference or pacemaker failure. In addition, people with pacemakers should:

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- Avoid operating alone.
- Do not use with power switch locked on.
- Properly maintain and inspect to avoid electrical shock.
- Any power cord must be properly grounded. Ground Fault Circuit Interrupter (GFCI) should also be implemented – it prevents sustained electrical shock.

13. **WARNING:** This product, when used for welding, produces chemicals known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code § 25249.5, *et seq.*)

14.  Prevent eye injury and burns. Wearing and using ANSI-approved personal safety clothing and safety devices reduce the risk for injury.

- Wear ANSI-approved safety impact eye glasses underneath welding eye protection featuring at least a Number 10 shade lens rating.
- Leather leggings, fire resistant shoes or boots should be worn when using this product. Do not wear pants with cuffs, shirts with open pockets, or any clothing that can catch and hold molten metal or sparks.
- Keep clothing free of grease, oil, solvents, or any flammable substances. Wear dry, insulating gloves and protective clothing.
- Wear an approved head covering to protect the head and neck. Use aprons, cape, sleeves, shoulder covers, and bibs designed and

approved for welding and cutting procedures.

- When welding/cutting overhead or in confined spaces, wear flame resistant ear plugs or ear muffs to keep sparks out of ears.

15.



Prevent accidental fires. Remove any combustible material from the work area.

- When possible, move the work to a location well away from combustible materials. If relocation is not possible, protect the combustibles with a cover made of fire resistant material.
- Remove or make safe all combustible materials for a radius of 35 feet (10 meters) around the work area. Use a fire resistant material to cover or block all open doorways, windows, cracks, and other openings.
- Enclose the work area with portable fire resistant screens. Protect combustible walls, ceilings, floors, etc., from sparks and heat with fire resistant covers.
- If working on a metal wall, ceiling, etc., prevent ignition of combustibles on the other side by moving the combustibles to a safe location. If relocation of combustibles is not possible, designate someone to serve as a fire watch, equipped with a fire extinguisher, during the cutting process and for at least one half hour after the cutting is completed.
- Do not weld or cut on materials having a combustible coating or combustible internal structure, as in walls or ceilings, without an ap-

- proved method for eliminating the hazard.
- Do not dispose of hot slag in containers holding combustible materials. Keep a fire extinguisher nearby and know how to use it.
 - After spot welding, make a thorough examination for evidence of fire. Be aware that easily-visible smoke or flame may not be present for some time after the fire has started. Do not weld or cut in atmospheres containing dangerously reactive or flammable gases, vapors, liquids, and dust. Provide adequate ventilation in work areas to prevent accumulation of flammable gases, vapors, and dust. Do not apply heat to a container that has held an unknown substance or a combustible material whose contents, when heated, can produce flammable or explosive vapors. Clean and purge containers before applying heat. Vent closed containers, including castings, before preheating, welding, or cutting.
16. Do not touch live electrical parts. Wear dry, insulating gloves. Do not touch electrode or conductor tong with bare hand. Do not wear wet or damaged gloves.
 17. Protect yourself from electric shock. Do not use outdoors. Insulate yourself from the work piece and ground. Use nonflammable, dry insulating material if possible, or use dry rubber mats, dry wood or plywood, or other dry insulating material big enough to cover your full area of contact with the work or ground.
 18. Ensure that the unit is placed on a stable location before use. If this unit falls while plugged in, severe injury, electric shock, or fire may result.
 19. Ground this product. This Welder requires the attachment and use of a **UL-listed, 240 volt, grounded, 3-prong, electrical Power Cord Plug** (not included). Only a qualified electrician should install the Power Cord Plug. Never remove the grounding prong or modify the Power Cord Plug in any way. Do not use adapter plugs with this product.
 20. Avoid overexposure to fumes and gases. Always keep your head out of the fumes. Do not breathe the fumes. Use enough ventilation or exhaust, or both, to keep fumes and gases from your breathing zone and general area.
 - Where ventilation is questionable, have a qualified technician take an air sampling to determine the need for corrective measures. Use mechanical ventilation to improve air quality. If engineering controls are not feasible, use an approved respirator.
 - Follow OSHA guidelines for Permissible Exposure Limits (PEL's) for various fumes and gases.
 - Follow the American Conference of Governmental Industrial Hygienists recommendations for Threshold Limit Values (TLV's) for fumes and gases.
 - Have a recognized specialist in Industrial Hygiene or Environmental Services check the operation and air quality and make recommenda-

tions for the specific welding or cutting situation.

21. **WARNING:** Handling the Power Cord on this product will expose you to lead, a chemical known to the State of California to cause cancer, birth defects, and other reproductive harm. Wash hands after handling. (*California Health & Safety Code § 25249.5 et seq.*)

23. The warnings, precautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

⚠ WARNING	
	
INHALATION HAZARD: Welding and Plasma Cutting Produce TOXIC FUMES.	
Exposure to welding or cutting exhaust fumes can increase the risk of developing certain cancers, such as cancer of the larynx and lung cancer. Also, some diseases that may be linked to exposure to welding or plasma cutting exhaust fumes are:	
<ul style="list-style-type: none">• Early onset of Parkinson's Disease• Heart disease• Damage to the reproductive organs• Inflammation of the small intestine or stomach• Respiratory diseases such as emphysema, bronchitis, or pneumonia• Ulcers• Kidney damage	
Use natural or forced air ventilation and wear a respirator approved by NIOSH to protect against the fumes produced to reduce the risk of developing the above illnesses.	

 **SAVE THESE INSTRUCTIONS.**

SPECIFICATIONS

Electrical Requirements	240V~ / 60 Hz / 25A max. Power Cord: SJT 12AWG x 3C Power Plug: 3-Prong, 240 VAC (Not Included)
Output Amperage Range	10-130 Amps
Maximum Open Circuit Voltage	61V
Duty Cycle	40% @ 130 Amps 60% @ 120 Amps 100% @ 80 Amps
Maximum Welding Capacity	1/4" - For Welding Steel Only
Electrode Diameter Capacity	For Use With 1/16", 3/32" and 1/8" Diameter Rods
Electrode Holder Head Ground Cable	75" 65"
Torch Cable Length	12' 9"
Gas Hose	8' 6" L, 0.34" OD, .19" ID
Additional Features	May be used for both arc and tig welding. Quick starting with high open voltage. Anti-Stick circuit works with rutile, basic steel, stainless steel, and cast iron electrodes. Additional amperage during short arc length conditions increases electrode penetration.

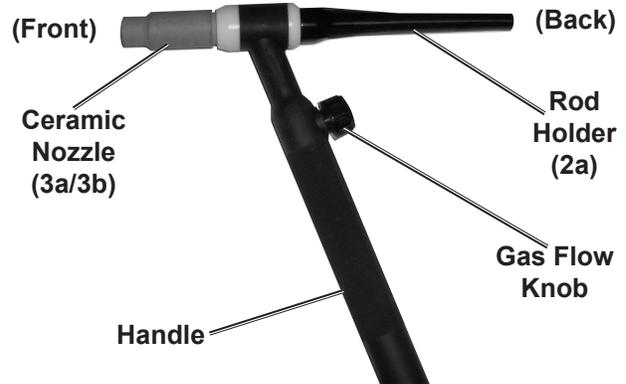
UNPACKING

When unpacking, check to make sure that the item is intact and undamaged. If any parts are missing or broken, please call Harbor Freight Tools at the number shown on the cover of this manual as soon as possible.

Note: For TIG Welding Torch Parts List and Diagram, refer to page 17.

TORCH ASSEMBLY

1. When assembling Torch, make sure Torch Cable is not connected to Welder or argon gas supply.

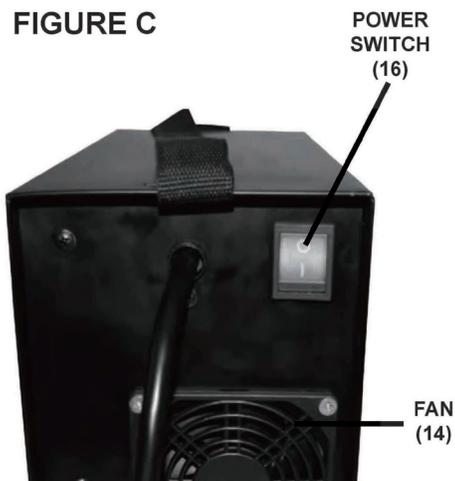
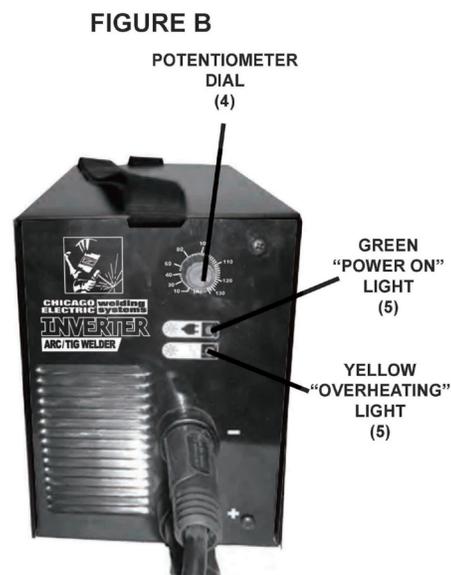
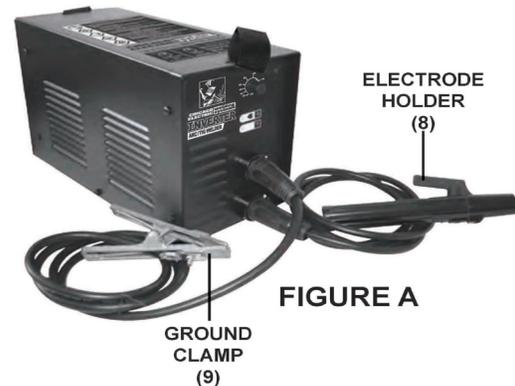


2. Thread either Rod Holder (2a) or Plug (6a) securely into back of Torch (1a).
3. Choose a matching set of Collet and Collet Holder, either 1/16" (4a & 5a) or 3/32" (4b & 5b), depending on the rod to be used. Insert the Collet, narrower end first, into the Collet Holder, and then thread the Collet Holder loosely into the front of the Torch.
4. Place a prepared tungsten welding rod (the correct diameter for the Collet used) into Collet. Tighten Collet Holder in place.
5. Attach desired Ceramic Nozzle (3a or 3b) onto Collet Holder. **Do not over-tighten.** Ceramic Nozzles of larger sizes will contain shielding gas in a larger area, but may require more gas flow to be effective.
6. Connect the gas hose securely to the regulator on the argon bottle. Set the argon regulator to 18-22 PSI. Follow the gas cylinder manufacturer's instructions for set-up and use.
7. Connect the cable to the Welder. Twist to lock in place.

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WELDER FEATURES

1. **Electrode Holder (8):** Connect the Electrode Holder Cable to the POSITIVE Terminal located at the front of the Welder. (See Figure A.)
2. **Ground Clamp (9):** Connect the Ground Clamp Cable to the NEGATIVE Terminal located on the front of the Welder. (See Figure A.)
3. **Potentiometer Dial (4):** Turn the Dial clockwise or counterclockwise to regulate the welding current (from 10 to 130 amps). (See Figure B.)
4. **Green “Power On” Light (5):** When illuminated, indicates the Welder is receiving electrical power and is ready for use. (See Figure B.)
5. **Yellow “Overheating” Light (5):** When illuminated, indicates overheating caused by an excessively intense duty cycle. In this case, stop welding and wait until the welder has cooled down. The welder will automatically restart after the yellow “overheating” light turns off. (See Figure B.)
6. **Fan (14):** The Fan must operate continuously when operating the Welder to prevent the unit from overheating. (See Figure C.)
7. **Power Switch (16):** The Power Switch must illuminate before welding operations can begin. (See Figure C.)
8. **Tig Welder Torch**



OPERATING INSTRUCTIONS



Read the **ENTIRE IMPORTANT SAFETY INFORMATION** section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

Note: For additional information regarding the parts listed in the following pages, refer to the Assembly Diagram near the end of this manual.

Tool Set Up

⚠ WARNING TO PREVENT SERIOUS INJURY FROM ACCIDENTAL OPERATION:
Turn the switch to its off position before performing any inspection, maintenance, or cleaning procedures.

1. **IMPORTANT:** This Welder requires the attachment and use of a **UL® listed, 240 volt, grounded, 3-prong, electrical Power Cord Plug** (not included). Only a qualified electrician should install the Power Cord Plug. Never remove the grounding prong or modify the Plug in any way. Do not use adapter plugs with this Welder.
2. Connect the Ground Clamp (9) Cable to the **NEGATIVE (-)** terminal. (See Figure A.)
3. Connect the Electrode Holder (8) Cable to the **POSITIVE (+)** terminal. (See Figure A.)

Work Piece and Work Area Set Up

1. Designate a work area that is clean and well-lit. The work area must not allow access by children or pets to prevent injury and distraction.
2. Route the Power Cord (17) along a safe route to reach the work area without creating a tripping hazard or exposing the Power Cord to possible damage. The Power Cord must reach the work area with enough extra length to allow free movement while working.
3. Secure loose work pieces using a vise or clamps (not included) to prevent movement while working. The work pieces should be firmly held together and in position while welding. The distance (if any) between the two work pieces must be controlled properly to allow the weld to hold both sides securely while allowing the weld to penetrate fully into the joint.
4. There must not be hazardous objects, such as utility lines or foreign objects, nearby that will present a hazard while working.
5. A barrier, such as a welding curtain or welding shroud should be put up to protect others in the work area and limit the spray of sparks.

General Operating Instructions

⚠ DANGER Please Note: The following instructions are for Arc Welding using the Electrode Holder

Protective gear must be worn when using the Welder; ANSI-approved, arc shaded, eye protection, a full face shield, heavy duty work gloves, a welding apron, respirator, and heavy-duty work clothes without pockets should be worn when using this product. Do not look at the ignited arc without eye protection. Light from the arc can cause permanent damage to the eyes. Light from the arc can burn the skin. Do not breathe arc fumes.

1. The **duty cycle** defines the number of minutes, within a 10 minute period, during which a given Welder can safely produce a particular welding current. For example, this Welder, with a 40% duty cycle at 130 Amps (maximum setting), must be allowed to rest for at least **6 minutes** after every **4 minutes** of continuous weld at 130 Amps.
 - Failure to carefully observe duty cycle limitations can stress a Welder's power generation system, contributing to premature Welder failure.
 - This Welder is equipped with an internal thermal protection system to help prevent damage to the unit. When the unit overheats; it automatically shuts down, then returns to service when it cools down.
 - Once the unit returns to service, follow a more conservative duty cycle routine to help prevent excess wear to the Welder.
2. Mount the metal to be welded to the metal work table. It should be mounted so that the welding debris falls to the cement floor.
3. Place the Welder no closer than six feet from the workpiece to be welded and attach the Tig Torch, if desired.
4. Securely attach the Ground Clamp (9) to a part of the workpiece or metal table. **(See Figure A.)**
5. Place the bare end of an Electrode (not included) in the Electrode Holder (8). NOTE: Always keep the jaws of the Electrode Holder clean to ensure proper electrical contact with the Electrode. **(See Figure A.)**
6. Set the desired current on the Potentiometer Dial (4) from 10 to 130 amps for the type of metal being welded. Thin metals use low current and heavy metals use high current. **(See Figure B.)**
7. Make sure the Power Switch (16) is **OFF**. Then plug the Welder's Power Cord (17) into the nearest 240 volt, dedicated, grounded, electrical outlet with delayed action type circuit breaker or fuse. **(See Figure C.)**
8. While gripping the Handle of the Electrode Holder (8), with the Electrode clear of grounded objects, turn the Power Switch (16) **ON**. **(See Figure C.)**
9. Hold the Electrode Holder (8) firmly. **CAUTION!** The Electrode Holder is "live". **(See Figure A.)**
10. **WARNING!** Never look at the ignited arc without ANSI-approved, arc shaded, eye protection in a full face shield. Permanent eye damage or blindness can occur. Skin burns can occur.

Wear a NIOSH-approved respirator to avoid breathing arc fumes.

11. Stroke the area to be welded with the Electrode to ignite the arc. Never tap the Electrode into the welding surface to ignite the arc. This damages its external coating on the Electrode which prevents oxygen in the air from coming into contact with the molten metal, causing it to oxidize.
12. Once the arc is ignited, tilt the Electrode forward at an angle of approximately 30° and hold it at a distance from the welding object equal to the diameter of the Electrode.
13. **NOTE:** If too much current is drawn from the Welder, the internal Thermal Overload Protector will activate. The Yellow “Overheating” Light (5) will illuminate, and the Welder will automatically shut off until it cools down. Please wait until the welder automatically restarts after the yellow “overheating” light turns off.
(See Figures B and C.)
14. When the weld is complete, lift the Electrode clearly away from any grounded object. Then turn the Power Switch (16) **OFF**.
(See Figure C.)
15. Unplug the Power Cord (17) from its electrical outlet.
16. Remove the Ground Clamp (9) from the workpiece it is clamped onto. Then remove the Electrode from the Electrode Holder (8).
(See Figure A.)
17. Allow all components of the Welder to completely cool. Then clean and store the Welder indoors out of reach

of children and other unauthorized persons.

18. **IMPORTANT:** Refer to the included “*Weld Diagnoses*” pamphlet for tips and suggestions regarding proper welding.

TIG Torch Operating Instructions

⚠ DANGER

Please Note: The following

instructions are for Tig Welding using the Tig Torch.

TO PREVENT SERIOUS INJURY AND DEATH:

Do not touch the tip of the Torch when the welder is connected to power. The Torch will immediately activate when it is plugged in. The operator must carefully direct the torch whenever the welder is connected to power. When the operator is not holding the Torch, it must be sitting on a nonconductive, nonflammable surface. Feed the filler metal being used into the arc with a properly insulated holder (not included).

1. To use Tig Torch, first disconnect Electrode Holder (8).
2. Attach the welder’s Ground Clamp to a clean uncoated metal part of the workpiece near the welding location.
3. Close the Gas Flow Knob on the torch completely, turning it clockwise until it stops. Turn the argon gas supply on.
4. **Hold the torch in a safe direction, plug the welder’s power cord into a**

grounded, 240 V~, GFCI-protected receptacle and turn the Welder on.

5. Turn the Gas Flow Knob on the torch counterclockwise to allow the shielding gas to flow.
6. Tilt the torch forward, towards the workpiece. Keep a constant distance between the torch and the workpiece but do not contact it.
7. **Feed the filler metal into the arc with a properly insulated holder (not included).**
8. Turn Gas Flow Knob on TIG torch to adjust the flow of shielding gas.
9. After welding, hold Torch in a safe direction, turn off the welder, close the Gas Flow Knob on the torch (clockwise), and unplug the welder. Then, place the torch on a nonconductive, nonflammable surface, and close the argon supply at the argon bottle.

TO PREVENT SERIOUS INJURY FROM TOOL FAILURE: Do not use damaged equipment. If abnormal noise or vibration occurs, have the problem corrected before further use.

1. BEFORE EACH USE, inspect the general condition of the Welder. Check for loose screws, misalignment or binding of moving parts, cracked electrode holder head or other broken parts, damaged electrical wiring, and any other condition that may affect its safe operation.
2. PERIODICALLY, clean out the cooling Vent (15) and Fan (14) with compressed air.
3. The Ceramic Nozzle (3a/3b) on the Tig Torch will occasionally need to be cleaned of spatter from welding. Clean it with a metal brush. When the nozzle deteriorates or can no longer be cleaned, it will need to be replaced. Unscrew the nozzle and replace it with a new one.
4. **For welding quality and ability, maintain a point on the tip.**
5. AFTER USE, clean external surfaces of the Welder with a clean cloth.
6. **⚠️WARNING!** If the Power Cord (17) of this Welder is damaged, it must be replaced only by a qualified service technician.

MAINTENANCE AND SERVICING



Procedures not specifically explained in this manual must be performed only by a qualified technician.

⚠️WARNING TO PREVENT SERIOUS INJURY

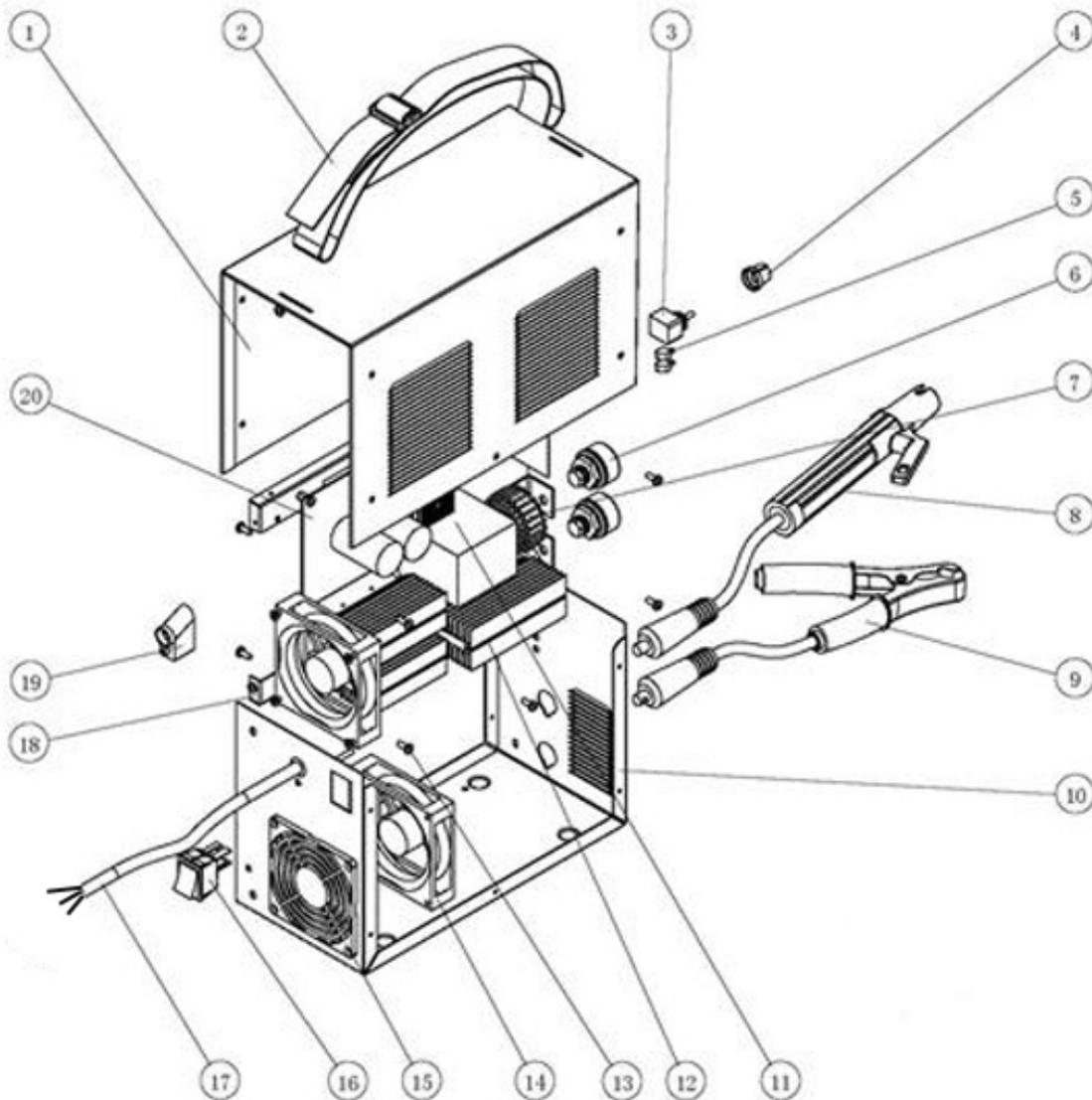
FROM ACCIDENTAL OPERATION: Turn the Power Switch (16) of the Welder to its “OFF” position and unplug the tool from its electrical outlet before performing any inspection, maintenance, or cleaning procedures.

TROUBLESHOOTING

Problem	Possible Cause(s)	Likely Solution(s)
Welder will not turn on.	<ol style="list-style-type: none"> 1. No power at electrical outlet. 2. Power Cord not connected. 3. Line voltage incorrect. 	<ol style="list-style-type: none"> 1. Check power at electrical outlet. 2. Check that Power Cord is plugged in. 3. Make sure the Welder is plugged into a 240VAC electrical outlet.
No weld output with ready light on.	<ol style="list-style-type: none"> 1. Weld Cable loose. 2. Improper Ground Clamp-to-workpiece connection. 	<ol style="list-style-type: none"> 1. Tighten Weld Cable connection at Welder. 2. Make sure the area where the Ground Clamp is attached is clean, exposed metal, and free of dirt, paint, and oil.
No weld output with high temperature light on.	<ol style="list-style-type: none"> 1. Welder overheated. 2. Duty cycle or amps too high. 3. Airflow is blocked. 	<ol style="list-style-type: none"> 1. Allow unit to cool with Fan on. 2. Reduce duty cycle or amps. 3. Clean Vents and Fan out with compressed air.
Erratic or improper arc or welding output.	<ol style="list-style-type: none"> 1. Bad connections. 2. Polarity incorrect. 3. Workpiece painted or dirty. 	<ol style="list-style-type: none"> 1. Clean and tighten all connections. 2. Connect polarity correctly. 3. Clean workpiece thoroughly.
Fan not operating.	<ol style="list-style-type: none"> 1. Fan blocked. 2. Fan dirty. 3. Fan burnt out. 	<ol style="list-style-type: none"> 1. Remove obstruction. 2. Clean out Fan with compressed air. 3. Have the Fan replaced by a qualified service technician.
Main supply fuse shuts off frequently.	<ol style="list-style-type: none"> 1. Circuit Breaker is too low amperage. 	<ol style="list-style-type: none"> 1. Install a dedicated 25 amp Circuit Breaker.
 Follow all safety precautions whenever diagnosing or servicing the Welder. Disconnect power supply before servicing.		

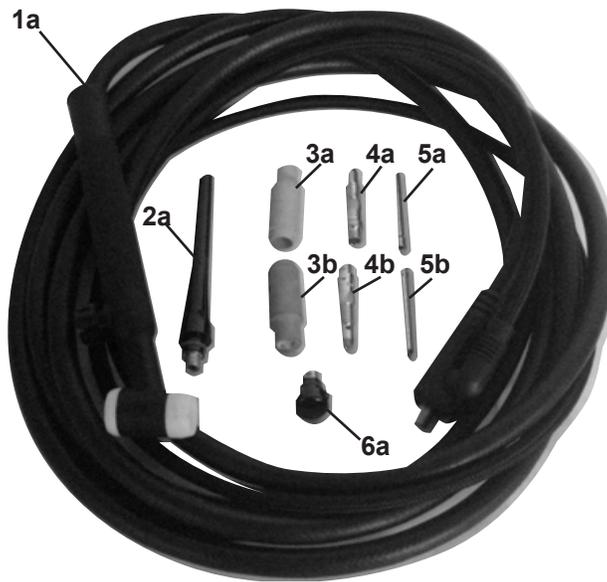
WELDER PARTS LIST AND ASSEMBLY DIAGRAM

Part #	Description	Qty.	Part #	Description	Qty.
1	Housing	1	11	Transformer	1
2	Strap	1	12	Heat Sink	3
3	Potentiometer	1	13	Tapping Screw (4.2 x 9.5)	14
4	Potentiometer Dial	1	14	Fan	2
5	LED Light	2	15	Cooling Vent	1
6	Quick Connector	2	16	Power Switch	1
7	Inductor	1	17	Power Cord	1
8	Electrode Holder	1	18	PCB Support	1
9	Ground Clamp	1	19	Cable Clip	1
10	Steel Base	1	20	PCB	1



TIG TORCH PARTS LIST AND ASSEMBLY DIAGRAM

Part	Description	Qty.
1a	Torch and Cable	1
2a	Rod Holder	1
3a	Ceramic Nozzle size 5	1
3b	Ceramic Nozzle size 6	1
4a	Collet Holder 1.6 mm (1/16")	1
4b	Collet Holder 2.4 mm (3/32")	1
5a	Collet 1.6 mm (1/16")	1
5b	Collet 2.4 mm (3/32")	1
6a	Plug	1



PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS LIST AND ASSEMBLY DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER OR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT, OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS, AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

LIMITED 90 DAY WARRANTY

Harbor Freight Tools Co. makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that this product is free from defects in materials and workmanship for the period of 90 days from the date of purchase. This warranty does not apply to damage due directly or indirectly, to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, criminal activity, improper installation, normal wear and tear, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation of exclusion may not apply to you. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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Record Product's Serial Number Here: _____

Note: If product has no serial number, record month and year of purchase instead.

Note: Some parts are listed and shown for illustration purposes only, and are not available individually as replacement parts.