

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

**MIG/ARC WELDER** Model 95424  
**DUAL MIG WELDER** Model 95629

**ASSEMBLY AND OPERATION INSTRUCTIONS**



Model 95424 shown.

Due to continuing improvements, actual product may differ slightly from the product described herein.



3491 Mission Oaks Blvd., Camarillo, CA 93011

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

**TO PREVENT SERIOUS INJURY, READ AND UNDERSTAND  
ALL WARNINGS AND INSTRUCTIONS BEFORE USE.**

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

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## PLEASE NOTE

Models **95424 MIG/ARC WELDER** and **95629 DUAL MIG WELDER** have identical features except for the **ARC option mode** available in the **95424 MIG/ARC Welder**. The other features are the same, as shown in the Specifications chart below.

## SPECIFICATIONS

Model	95424 MIG/ARC Welder	95629 Dual MIG Welder
Welding Current	30 ~ 250 A	
Duty Cycle	100% @ 125 Amps / 30% @ 250 A	
Power Consumption	230V / 60 Hz / Single Phase / 40 A	
Open Voltage	16 - 36 V	
Power Plug Type	3-Prong, 220 VAC, polarized, twist lock (not included) NEMA #L6-40 or equivalent	
Power Cord Rating	8 AWG x 3C	
Gas Inlet Size	1/4" Diameter (Barbed Fitting)	
Ground Cable	8' 7" L with grounding clamp	
Torch Power Cable	8' 7" L including torch	
Welding Wire Size	0.03" to 0.045"	
Thermal Overload Protection	Auto shutdown, indicator light, and restart after cool down	
Wire Drive Assembly Protection	If welding wire jams, auto shutdown, unit beeps, and wire automatically restarts after jam remedied	
Torch Tip Size	0.03"	
Overall Dimensions	35-1/2" L X 14" W x 27-1/4" H	
Wire Speed	1-10 Wire Speed Settings	
Net Weight	124.6 lb.	122 lb.
<b>Both products include:</b> Wheel Kit, Grounding Head, Bottle Rack, Torches and two wire reels (without wire).		
<b>ARC Mode Features, 95424 Model Only</b>		
Electrode Holder Cable	8' 7" L with electrode holder	n/a
Electrode Size	1/16" to 3/16" Diameter	
Welding Current	30 ~ 200 Amps, AC Voltage	

## SAVE THIS MANUAL

You will need this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures, parts list and assembly diagram. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep this manual and invoice in a safe and dry place for future reference.

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## GENERAL SAFETY RULES

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 **WARNING!**

**READ AND UNDERSTAND ALL INSTRUCTIONS**  
**Failure to follow all instructions listed below may result in**  
**electric shock, fire, and/or serious injury.**  
**SAVE THESE INSTRUCTIONS**

### WORK AREA

1. **Keep your work area clean and well lit.** Cluttered benches and dark areas invite accidents.
2. **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.
3. **Keep bystanders, children, and visitors away while operating a power tool.** Distractions can cause you to lose control. Protect others in the work area from debris such as chips and sparks. Provide barriers or shields as needed.

### ELECTRICAL SAFETY

1. **Grounded tools must be plugged into an outlet properly installed and grounded in accordance with all codes and ordinances. Never remove the grounding prong or modify the plug in any way. Do not use any adapter plugs. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded.** If the tools should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user.
2. **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.
3. **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
4. **Do not abuse the Power Cord. Never use the Power Cord to carry the tools or pull the Plug from an outlet. Keep the Power Cord away from heat, oil, sharp edges, or moving parts. Replace damaged Power Cords immediately.** Damaged Power Cords increase the risk of electric shock.
5. **When operating a power tool outside, use an outdoor extension cord marked “W-A” or “W”.** These extension cords are rated for outdoor use, and reduce the risk of electric shock.

## PERSONAL SAFETY

1. **Stay alert. Watch what you are doing, and use common sense when operating a power tool. Do not use a power tool while tired or under the influence of drugs, alcohol, or medication.** A moment of inattention while operating power tools may result in serious personal injury.
2. **Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts.** Loose clothes, jewelry, or long hair can be caught in moving parts.
3. **Avoid accidental starting. Be sure the Power Switch is off before plugging in.** Carrying power tools with your finger on the Power Switch, or plugging in power tools with the Power Switch on, invites accidents.
4. **Remove adjusting keys or wrenches before turning the power tool on.** A wrench or a key that is left attached to a rotating part of the power tool may result in personal injury.
5. **Do not overreach. Keep proper footing and balance at all times.** Proper footing and balance enables better control of the power tool in unexpected situations.
6. **Always wear eye, hearing, and breathing protection.** For welding safety equipment, refer to number 9 on page 7.

## TOOL USE AND CARE

1. **Use clamps (not included) or other practical ways to secure and support the workpiece to a stable platform.** Holding the work by hand or against your body is unstable and may lead to loss of control.
2. **Do not force the tool. Use the correct tool for your application.** The correct tool will do the job better and safer at the rate for which it is designed.
3. **Do not use the power tool if the Power Switch does not turn it on or off.** Any tool that cannot be controlled with the Power Switch is dangerous and must be replaced.
4. **Disconnect the Power Cord Plug from the power source before making any adjustments, changing accessories, or storing the tool.** Such preventive safety measures reduce the risk of starting the tool accidentally.
5. **Store idle tools out of reach of children and other untrained persons.** Tools are dangerous in the hands of untrained users.
6. **Maintain tools with care. Keep tools in good condition.** Properly maintained tools will get the job done better. Do not use a damaged tool. Tag damaged tools "Do not use" until repaired.

7. **Check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the tool's operation. If damaged, have the tool serviced before using.** Many accidents are caused by poorly maintained tools.
8. **Use only accessories that are recommended by the manufacturer for your model.** Accessories that may be suitable for one tool may become hazardous when used on another tool.

## **SERVICE**


1. **Tool service must be performed only by qualified repair personnel.** Service or maintenance performed by unqualified personnel could result in a risk of injury.
2. **When servicing a tool, use only identical replacement parts. Follow instructions in the “*Inspection, Maintenance, And Cleaning*” section of this manual.** Use of unauthorized parts or failure to follow maintenance instructions may create a risk of electric shock or injury.


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## **SPECIFIC SAFETY RULES**

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1. **Ground this product.** This Welder requires the attachment and use of a UL-listed, 230 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. To comply with the National Electric Code, and to provide additional protection from the risk of electrical shock, this product should only be connected to a 230 volt, 3-hole outlet that is properly grounded.
2. **Maintain labels and nameplates on the Welder.** These carry important information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
3. **Avoid unintentional starting.** Make sure you are prepared to begin work before turning on the Welder.
4. **Never 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.
5. **Industrial applications must follow OSHA guidelines.**
6. **Never stand on the Welder.** Serious injury could result if the Welder is tipped or if hot surfaces are accidentally contacted.
7. **Maintain a safe working environment.** Keep the work area well lit. Make sure there is adequate surrounding workspace. Always keep the work area free of obstructions, grease, oil, trash, and other debris. Do not use a power tool in areas near flammable chemicals, dusts, and vapors. Do not use this product in a damp or wet location.

8.  **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 goggles 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.

10.  **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 approved 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.

11. **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.
  - Work in a confined area only if it is well ventilated, or while wearing an air-supplied 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 recommendations for the specific welding or cutting situation.


## Inhalation Hazard

### Welding Produces TOXIC FUMES and GASSES.



**Exposure to welding gasses 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 gasses or fumes are:**





- Early onset of Parkinson's Disease
- Damage to the reproductive organs
- Inflammation of the small intestine or stomach
- Respiratory diseases such as emphysema, bronchitis or pneumonia
- Heart Disease
- Ulcers
- Kidney damage



**Safety precautions, such as using natural or forced air ventilation and wearing a NIOSH-approved respirator, are ESSENTIAL to reduce the risk of developing the above illnesses.**

12. **Read and understand all instructions and safety precautions as outlined in the manufacturer's manual for the material you will weld or cut.**
13. **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.



14. **Protect yourself from electric shock.** Do not use outdoors. Insulate yourself from the workpiece 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.
15. **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.
16.  **Cylinders can explode when damaged:**
- Never weld on a pressurized or a closed cylinder.
  - Never lay a welding torch on a cylinder.
  - Never allow a welding electrode to touch the cylinder.
  - Keep cylinders away from any electrical circuits, including welding circuits.
  - Keep protective cap in place over the valve except when the cylinder is in use.
  - Use only correct gas shielding equipment designed specifically for the type of welding you will do. Maintain this equipment properly.
  - Always protect gas cylinders from heat, being struck, physical damage, slag, flames, sparks, and arcs.
  - Always use proper procedures to move cylinders.
17. **Use the right tool for the job.** Do not attempt to force small equipment to do the work of larger industrial equipment. There are certain applications for which this Welder was designed. It will do the job better and more safely at the rate for which it was intended. Do not modify this Welder, and do not use this Welder for a purpose for which it was not intended.
18.  **WARNING!** People with pacemakers should consult their physician(s) before using this product. Electromagnetic fields in close proximity to a heart pacemaker could cause interference to or failure of the pacemaker.
19.  **WARNING!** The warnings and cautions discussed in this 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.
20.  **WARNING!** This product, when used for welding and similar applications, 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.*)

**SAVE THESE INSTRUCTIONS**

## Grounding

**NOTE: This Welder requires the installation of a 3-Prong, 230 VAC, polarized, twistlock Power Cord Plug (not included). NEMA configuration # L6-40 or equivalent. The Plug must be installed by a certified electrician.**

### **WARNING!**

**Improperly connecting the grounding wire can result in risk of electric shock. Check with a qualified electrician if you are in doubt as to whether outlet is properly grounded. Do not modify power cord plug used with tool. Never remove grounding prong from plug. Do not use tool if the power cord or plug is damaged. If damaged, have it repaired by a service facility before use. If the plug will not fit the outlet, have a proper outlet installed by a qualified electrician.**






### **GROUNDED TOOLS: TOOLS WITH THREE PRONG PLUGS**

1. Tools marked with “Grounding Required” have a three wire cord and three prong grounding plug. The plug must be connected to a properly grounded outlet. If the tool should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user, reducing the risk of electric shock.
2. The grounding prong in the plug is connected through the green wire inside the cord to the grounding system in the tool. The green wire in the cord must be the only wire connected to the tool’s grounding system and must never be attached to an electrically “live” terminal.
3. Your tool must be plugged into an appropriate outlet, properly installed **by a certified electrician** and grounded in accordance with all codes and ordinances.

## Extension Cords

**AN EXTENSION CORD MUST NEVER BE USED WITH THIS ITEM. Use of an extension cord could result in damage to the item or fire.**

## Symbology

	Double Insulated
	Canadian Standards Association
	Underwriters Laboratories, Inc.
	Volts Alternating Current
	Amperes

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## UNPACKING

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When unpacking, make sure all parts shown on the **Parts Lists near the end of this manual** are included. If any parts are missing or broken, call Harbor Freight Tools.

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## ASSEMBLY INSTRUCTIONS

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**⚠ WARNING!** Always turn off the Welder and unplug the unit from its electrical outlet prior to performing any assembly, maintenance, or service.

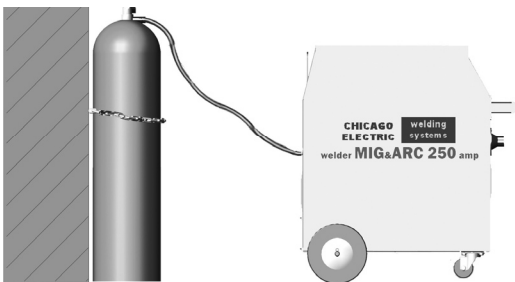
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### ATTACHING THE WHEELS

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Attaching wheels to case can be done for stationary cylinder use or mobile use.

#### Stationary

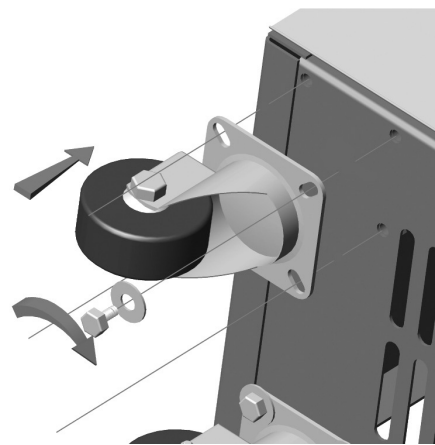
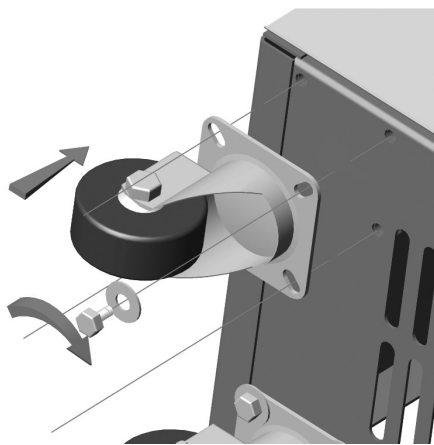


Attach the two Swivel Wheels (27A) at the front and two Back Wheels (37A) and Axle (36A) at the Base (28A) of the unit, using the Clips (38A), Bolts and Washers provided. (See Assembly Diagram on page 32 and the following steps.)

#### Mobile



Attach the two Swivel Wheels (27A) at front of the Support (35A), Arm (5A), two Back Wheels (37A) and Axle (36A) at the rear of the Base (28A) of the unit, using the Clips (38A), Bolts and Washers provided. (See Assy. Diagram on page 32 and the following steps.)



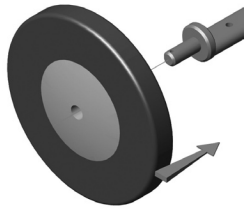
1. For both Stationary and Mobile modes, set the Swivel Wheel (27A) against the front corner of the case, making sure to align the holes. Screw the Bolts through the Washers and into the Case. (See Figures 1.)

## ASSEMBLY INSTRUCTIONS (CONTINUED)

### Stationary

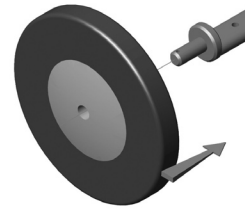
### Mobile

2.



Install the Back Wheels (37A) at the Axle (36A).

2.



Install the Back Wheels (37A) at the Axle (36A).

3.



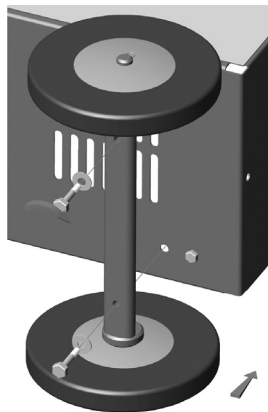
Fix the Back Wheels(37A) with the Clips (38A).

3.



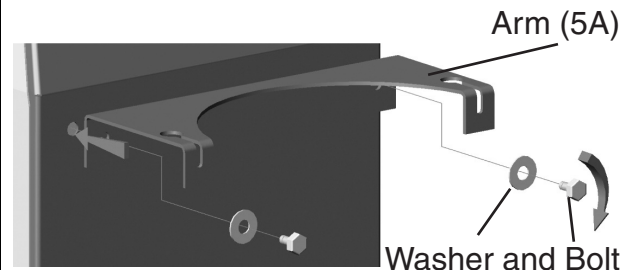
Fix the Back Wheels (37A) with the Clips (38A).

4.



Set the Axle (36A) with the Back Wheels (37A) attached against the bottom of the case. Then, screw the Bolts through the Washers and into the bottom of the case. **(See Figure 4, above left.)**

4.



Set Arm (5A) against the top back of the welder case. Screw the Bolts through Washers and into the welder case. **(See Figure 4, above right.)**

Set the Support (35A) against the bottom back of the case. Align the holes and screw the Bolts through the Washers and into the case.

Set the Axle (36A) with the Back Wheels (37A) against the bottom of the Support (35A). Screw the Bolts through the Washers and into the Support.

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## ASSEMBLY INSTRUCTIONS (CONTINUED)

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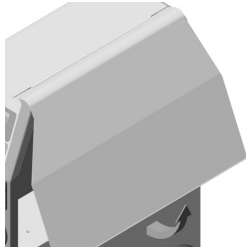
### INSTALLING A WIRE SPOOL

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Assembling the Wire Spool depends on whether you are using a 7" Spool or an 11" Spool.

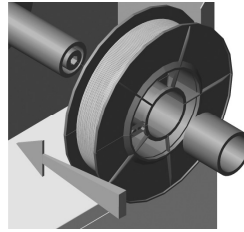
#### For use with a 7" Spool:

1.



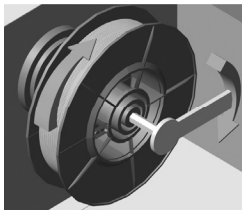
Lift the Door (14A) of the Welder to expose the Wire Drive Assembly.

2.



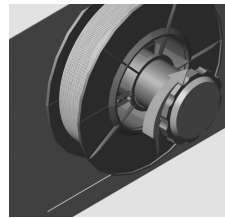
Insert the Spool and the Pressing Cartridge onto the Threaded Shaft (11A). **Making sure the Spool's Welding Wire unwinds from the bottom (clockwise).**

3.



When a slight force is needed to turn Spool, tension is set.

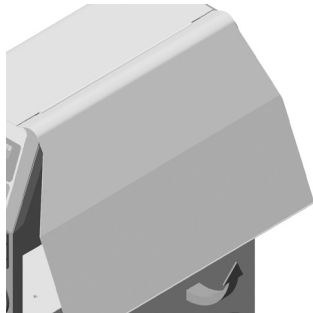
4.



Screw the Fixing Cover into the Threaded Shaft (11A).

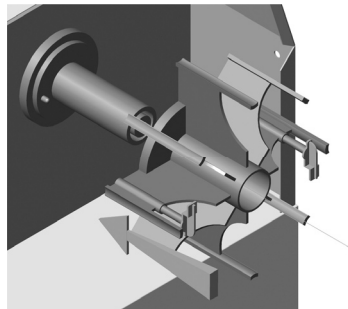
#### For use with a 11" Spool:

1.



Lift the Door (14A) of the Welder to expose the Wire Drive Assembly.

2.



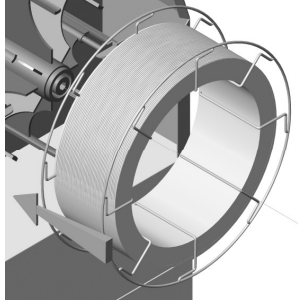
Insert the Spool's Holder onto the Threaded Shaft (11A).

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## ASSEMBLY INSTRUCTIONS (CONTINUED)

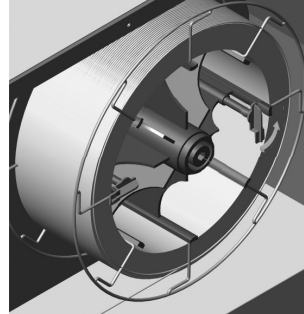
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3.



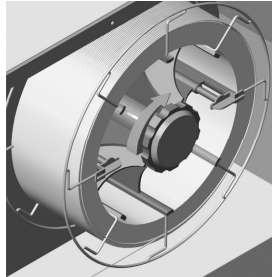
Insert the Spool onto the Spool's Holder. **Making sure the Spool's Welding Wire unwinds from the bottom (clockwise).**

4.



Attach a Spool with the help of latch.

5.



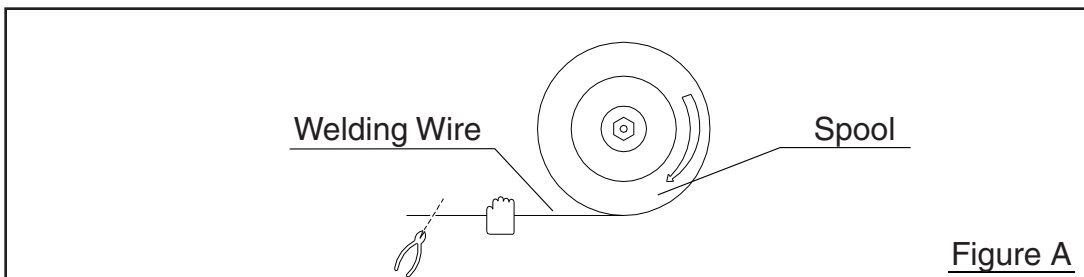
Screw the Fixing Cover into the Threaded Shaft (11A).

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## ROUTING THE WIRE

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**Note:** When installing wire of different size or composition, you will also need to change wire settings, set gun polarity, and, possibly, install gas cylinder. (See pages 18 to 20.)



1. **IMPORTANT:** Securely hold onto the end of the Welding Wire and keep tension on it during the following steps. If this is not done the Welding Wire will spring backward, creating a tangled "bird's nest" and resulting in wasted wire. (See Figure A.)
2. Hold the Welding Wire securely while you cut enough Wire off the end of the Spool to remove all bent and crimped Wire. Make sure the cut end has no burrs or sharp edges (cut again, if needed). (See Figure A.)

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## ASSEMBLY INSTRUCTIONS (CONTINUED)

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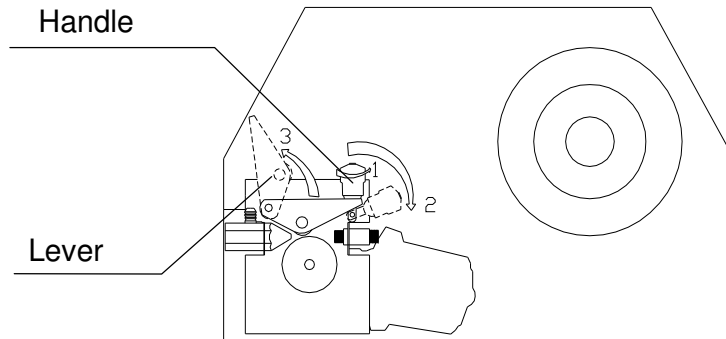


FIGURE B

3. Loosen and lower the Tension Adjusting Knob on the Wire Feed Assembly. Then, raise the Swing Arm. **(See Figure B.)**

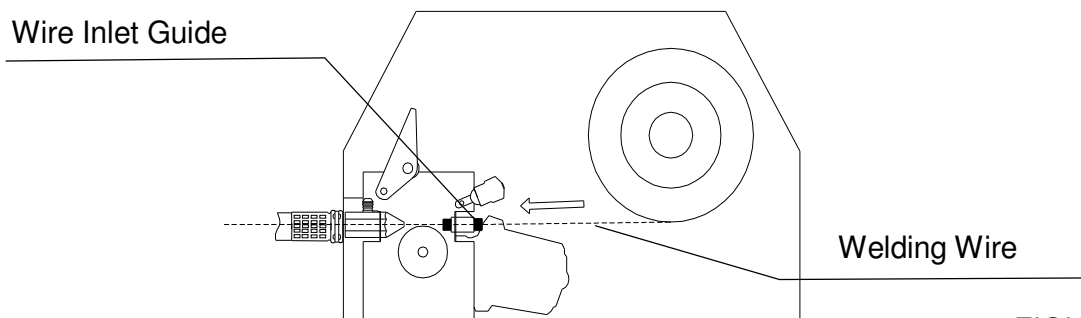


FIGURE C

4. Keep tension on the Welding Wire, and guide at least 12 inches of Wire into the Wire Feed Leader. **(See Figure C.)**

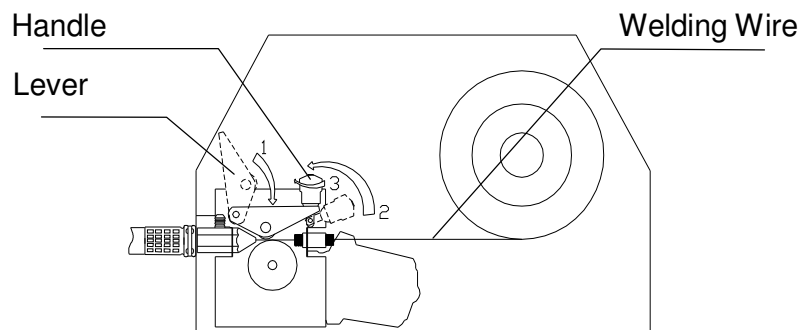


FIGURE D

5. Lower the Level on the Wire Drive Assembly. Raise and tighten the Handle. Once the Wire is held in place, you may release it. **(See Figure D.)**



## ASSEMBLY INSTRUCTIONS (CONTINUED)

- Lay Torch Cable out in a straight line so Welding Wire moves through it easily. Leave Door (14A) of the Welder open so Wire Feed Assembly can be observed.
- Remove the Gun Nozzle (1E) and Contact Tip (2E). (See Figure E.)

### WARNING!

#### EXERCISE EXTREME CAUTION - RISK OF FIRE AND/OR ELECTRIC SHOCK!



The following steps require powering the Welder. Do not touch anything with Torch Handle or Welding Wire or an arc will be ignited. Do not touch internal components of while unit is plugged in.



- After having certified electrician install power cord plug, insert the Power Cord (1A) into its 230 volt, grounded, electrical outlet. Turn Power Switch (1C) to **ON**.
- Point Torch Handle away from all objects. Squeeze Trigger Switch (13E) on Torch Handle until Welding Wire feeds through the Head Tube (4E) of the Torch Handle about 2 inches. If necessary, move the Torch Handle slightly in a circular motion to help feed the Welding Wire properly out of the Head Tube. (See Figure E.)
- NOTE:** If the Welding Wire does not feed properly, and the Spool is stationary, turn the Welder **OFF**. Unplug the Welder. Slightly tighten the Handle (4D) on the Wire Feed Assembly. (See Figure D.)
- To check the tension on the Wire Feed Assembly, feed the Welding Wire against a piece of scrap wood from 2 to 3 inches away. If the Wire stops instead of bending, turn the Welder **OFF**. Unplug the unit from its electrical outlet. Then, slightly tighten the Handle (4D) on the Wire Feed Assembly.  
Reminder: When installing wire of a different size or composition, you will also need to change wire settings, set the gun polarity, and possibly install a gas cylinder.

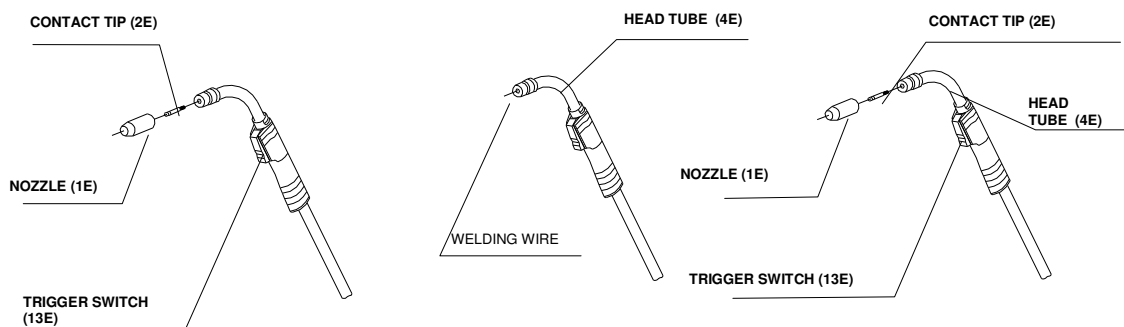


FIGURE E

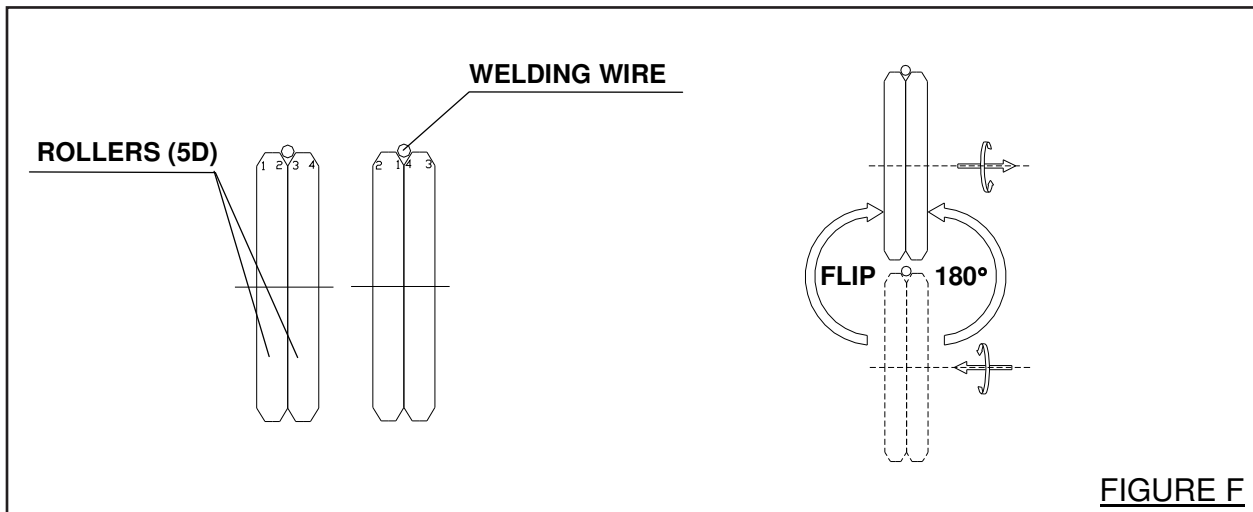
- Turn the Welder OFF, unplug it, and discharge the electrode to ground. Insert the Contact Tip (2E) onto the Welding Wire and screw it firmly into the Head Tube (4E) of the Torch Handle. Replace the Nozzle (1E), and cut off any excess Welding Wire over 1/2 inch. Then, close the Access Panel of the Welder. (See Figure E.)

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## CHANGING WIRE SETTINGS

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1. **⚠ WARNING!** Make sure to turn off the Welder and unplug it from its electrical outlet prior to changing wire settings.
2. Lift the Door (14A) of the Welder to expose the Wire Feed Assembly.
3. Loosen, and lower the Handle (4D) on the Wire Feed Assembly.
4. Remove the Screw that secures the Roller (5D) in place. Then remove the two Rollers.



5. Flip each Roller 180 degrees. **(See Figure F.)**  
**Note:** The two Rollers are “keyed”, which means they can only be reinstalled one way.
6. Reinstall the two Rollers and secure the Rollers in place with the Screw. **(See Figure F.)**
7. Install the Spool of Welding Wire and route the Wire to the Torch Gun. Then, test and, if necessary, adjust the Wire Feed Assembly as discussed in the previous pages of this manual.

---

## ATTACHING THE GROUND CABLE WITH CLAMP

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Insert the Connecting Plug to the Ground Cable (22A) into the Terminal Ground (7C) and twist the Connecting Plug to lock in place. (See Parts List on Page 31).

---

## ATTACHING THE ELECTRODE CABLE (ARC WELDER ONLY)

---

Insert the Connecting Plug to the Ground Cable (22A) into the Terminal Electrode (6C) and twist the Connecting Plug to lock in place. (See Parts List on Page 31).

## SETTING POLARITY FOR WELDING TYPE

**WARNING!** Always turn welder off and disconnect it from it's electrical supply before opening the case or performing any adjustment, including the following procedure.

1. **Set for Electrode Positive (DCEP) for gas welding with solid-core wire**

- Red electrode cable (C) to positive terminal (A);
- Black ground cable (D) to negative terminal (B).

**SEE ILLUSTRATION, TOP RIGHT INITIAL SETUP.**

2. **To reverse polarity**

1. Remove the nuts.
2. Change the places of the cables (C, D).
3. Replace and tighten the nuts.

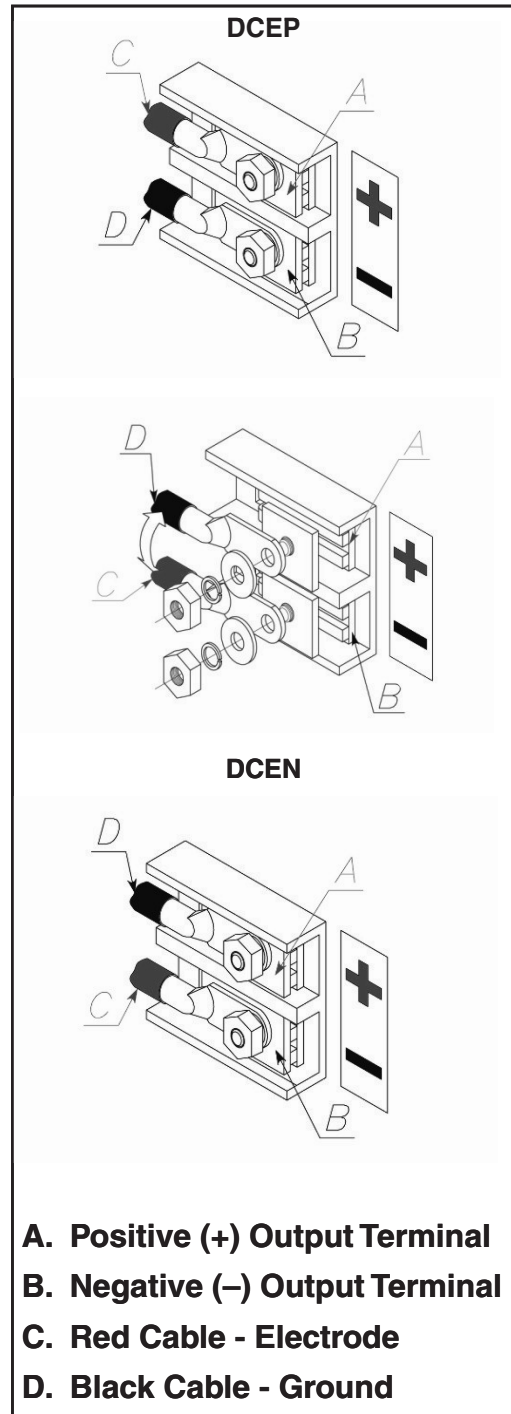
When connecting the weld output terminals, you should keep the square washers in place.

3. **Set for Electrode Negative (DCEN) for gasless flux core wire:**

- Red electrode cable (C) to negative terminal (B);
- Black ground cable (D) to positive terminal (A).

**(See illustration, bottom right.)**

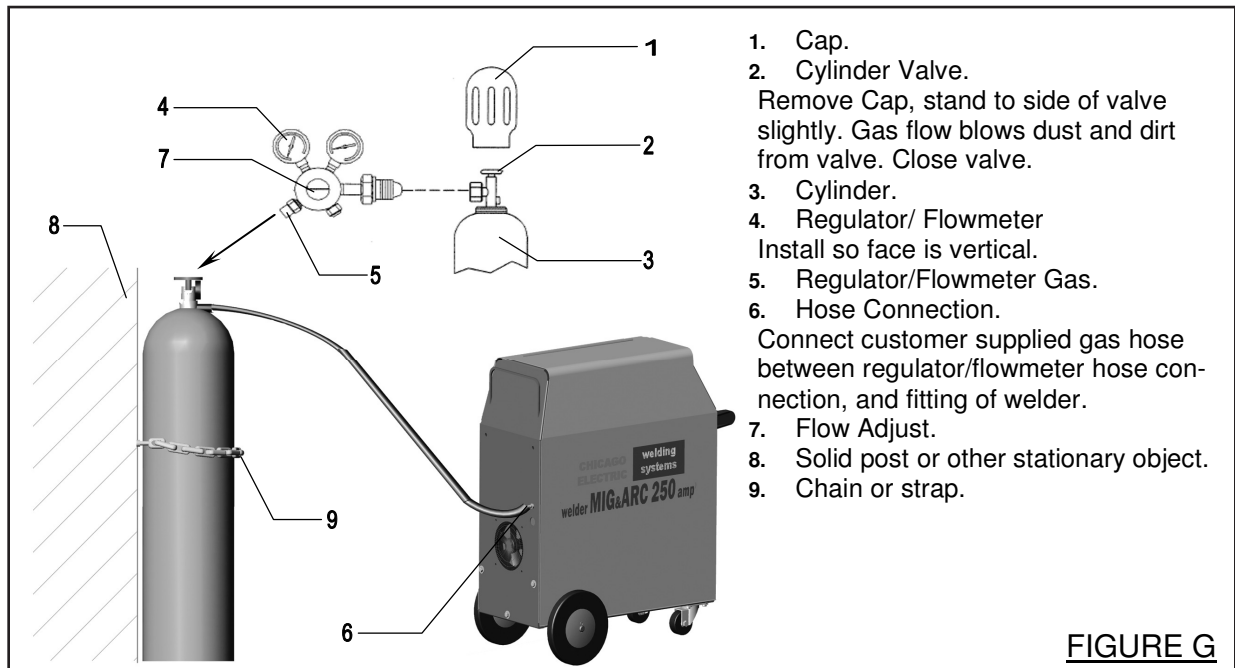
4. Always read and follow wire manufacturer's recommended polarity.



## INSTALLING A GAS CYLINDER

**⚠ WARNING:** Using an oversized gas cylinder can cause tipping, resulting in cylinder and equipment damage and personal injury. **NEVER exceed maximum cylinder weight of 100 lb.**

1. **CAUTION!** Do not use an Argon/Mixed pressure regulator/flow meter with CO<sub>2</sub> shielding gas. To use CO<sub>2</sub> shielding gas, you must install a CO<sub>2</sub> gas pressure regulator/flow meter (neither one included).



2. With help, set cylinder (not included) upright against post or other stationary object. Use chain or heavy-duty strap (neither included) to secure cylinder in place. **(See Figure G.)**
3. Remove the protective cap from the cylinder. Stand to the side of the cylinder valve, and open the valve slightly to blow dust and dirt from the valve. Then, close the valve. **(See Figure G.)**
4. Make sure the Flow Adjust on the Pressure Regulator/Flow Meter is turned off. Then, screw the Pressure Regulator/Flow Meter (not included) firmly onto the cylinder valve. **(See Figure G.)**
5. Attach the Gas Hose for the Pressure Regulator/Flow Meter to the Gas Inlet Valve located on the Rear Panel of the Welder. **(See Figure G.)**
6. Adjust the flow rate of the gas by turning the Flow Adjust. The typical flow rate is 20 CFH (cubic feet per hour). **Make sure to check the Welding Wire manufacturer's recommended flow rate.**

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# OPERATING INSTRUCTIONS

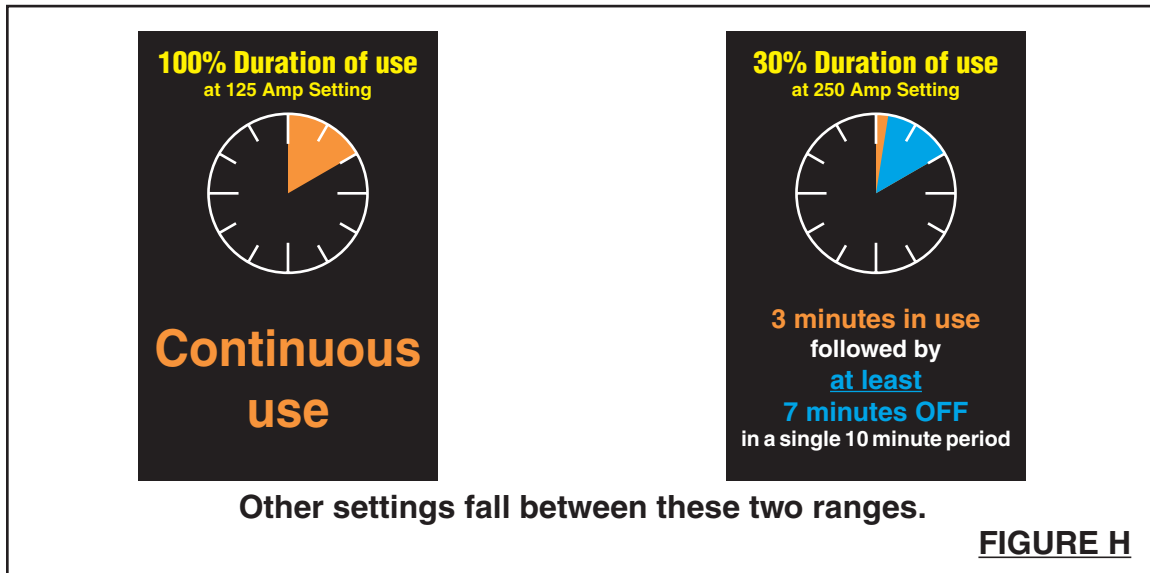
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## BEFORE YOU BEGIN WELDING

Good welding requires a high degree of skill and experience. You should practice a few sample welds on scrap metal before you begin welding your first project. Additional practice periods are recommended whenever you weld a different thickness of material, wire, or weld a different type of connection.

## UNDERSTANDING DUTY CYCLE (DURATION OF USE)

1. **CAUTION!** Avoid damage to the Welder by not leaving the unit on for more than the prescribed duty cycle time.



2. 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 30% duty cycle at 250 Amps must be allowed to rest for at least 7 minutes after every 3 minutes of continuous weld at 250 Amps. (See Figure H.)**
3. Failure to carefully observe duty cycle limitations can easily over-stress a Welder's power generation system, contributing to premature Welder failure.
4. This Welder is equipped with an internal thermal protection system to help prevent over stressing the unit. When the unit overheats, it automatically shuts down, then automatically returns to service when it cools down.

**Note:** Once the unit returns to service, follow a more conservative duty cycle routine to help prevent excess wear to the Welder. **(See Figure H.)**

---

## SETTING UP THE WELD

---



**WARNING!**

**Before welding, make sure to read and understand all safety precautions and warnings discussed on pages 4 through 10.**

1. **Power Switch (1C):** Always make sure the Power Switch is in its “OFF” position before plugging the Welder into a 230 volt, grounded, electrical outlet. **(See Figure J).**
2. **Overload Protector (2C):** If too much current is drawn from the Welder, the Overload Protector will activate. The **RED** Overload Indicator Light will illuminate and the Welder will automatically turn off until it cools down. If this happens, turn the Power Switch (1C) to its “OFF” position and wait approximately 2 to 5 minutes. **(See Figure H.)** When the **RED** Overload Indicator illuminates and the sound is audible, the welding wire that was welded on the NOZZLE (1E) or the Wire Drive Assembly (16A) has failed.
3. **Wire Speed Control Knob (3C):** The Scale surrounding the Knob is relative value, not wire feed speed. Adjust the Wire Feed Speed Knob based on thickness of the metal being welded. **(See Figure L.)**
4. **Voltage Selector Knob (5C):**



**WARNING!**

**DO NOT SWITCH THE VOLTAGE SELECTOR KNOB DURING THE WELDING!**



**WARNING!**

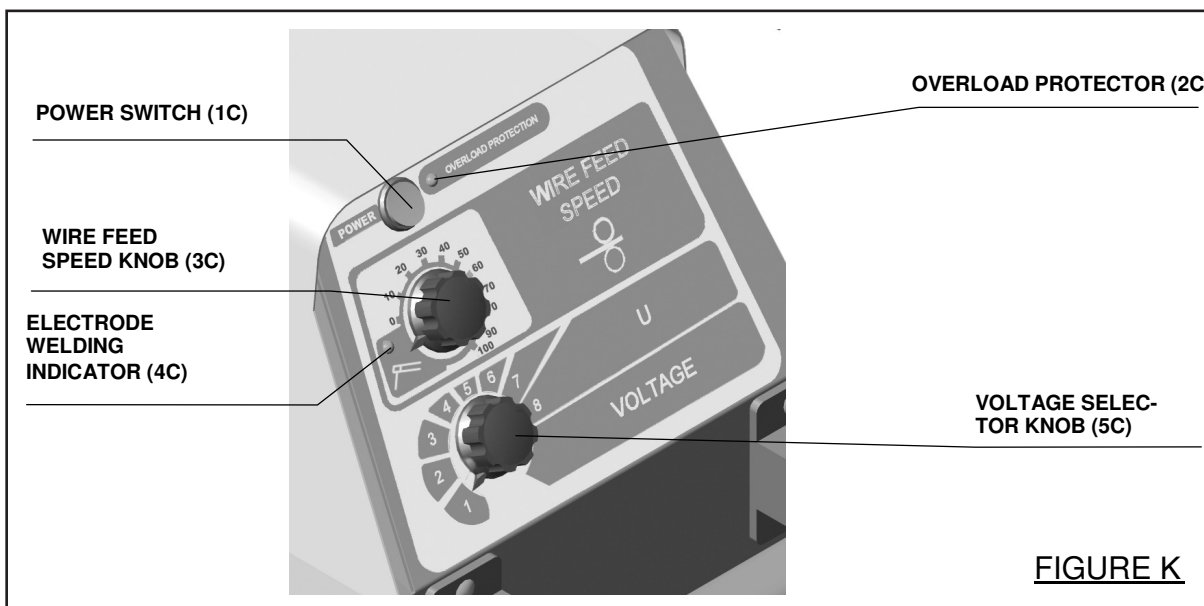
**BEFORE USING THE WELDER, SET THE VOLTAGE SELECTOR KNOB IN THE 3-5 RANGE AND KEEP IN THAT SETTING FOR 10-15 MINUTES!**

The Scale surrounding the Knob is relative value, not voltage. Adjust the Voltage Selector Knob based on thickness of the metal being welded. **(See Figure J.)**

5. Securely clamp the Ground Clamp (22A) as close as possible to the metal object to be welded, or to the metal workbench where the object is mounted and electrically connected.
6. **NOTE:** The workpieces should be firmly held together and in position while welding. Use clamps (not included) to hold the workpieces so you can concentrate on the job at hand. The distance (if any) between the two workpieces must be controlled properly to allow the weld to hold both sides securely while allowing the weld to penetrate fully into the joint.

## MIG WELDING SET UP

7. If using solid-core wire, connect and secure an Argon/ CO<sub>2</sub> gas hose to the rear of the Welder. (If using flux core wire, protective gas is not required.)



8. Set the desired welding voltage and wire speed for the thickness of metal being welded, using the Voltage Selector Knob (5C) and Wire Feed Speed Knob (3C). **(See Figures K & J.)**
9. While holding the Welding Gun (20A), with the Welding Wire clearly out of the way of any grounded objects, turn the Power Switch (1C) to its “ON” position. **(See Figure K.)**
10. Momentarily squeeze the Trigger (13E) of the Welding Torch to test the wire feed speed. If necessary, adjust the speed by turning the Wire Speed Control Knob (3C). **(See Figure K.)**
11. Orient yourself on the area to be welded, then place a Face Shield over your eyes.

### **ARC (STICK) WELDING SET UP (FOR MODEL 95424 ONLY)**

12. Turn the **Wire Feed Speed Knob (3C)** to the appropriate sector. The RED Electrode Indicator (4C) will light up and the wire will not move. **(See Figure K.)** Below are recommended positions of the **Voltage Selector Knob (5C.)**

Diameter of electrode	Voltage Selector Knob position
1/16”	1-4
1/8”	3-6
3/16”	5-8



# MIG WELD SETTINGS CHART

## FIGURE J

This Chart is intended to show general guidelines for different wire sizes and for different thickness of material. The settings should only be used at the beginning of a weld and must be adjusted after stopping and carefully inspecting the weld. Proper welding takes good technique and practice.

Welding Material	Shielding Gas	Electrode Polarity	Wire Type / Diameter	Choice Positions of Voltage Selector and Wire Feed Speed Selector Based on Thickness of Metal Being Welded																
				Position of Voltage Selector	Thickness of Metal Being Welded, mm															
					0,6	0,8	1,0	1,2	1,5	2,0	2,5 - 4,0	3,5 - 7,0	6,0 - 9,0	8,0 - 10,0						
Position of Wire Feed Speed Selector <span style="font-size: 2em;">➔</span>																				
Steel	CO <sub>2</sub>	Positive	Steel / 0,8mm	1	10 - 20	10 - 25	20 - 35													
				2		10 - 15	10 - 20	15 - 35	20 - 45											
				3		15 - 20	15 - 25	20 - 35	25 - 40	30 - 50										
				4				15 - 20	15 - 30	20 - 35	30 - 50									
				5						10 - 20	10 - 25	20 - 55								
				6							10 - 15	10 - 65	20 - 75							
				7								15 - 75	20 - 90							
				8									25 - 70	45 - 100	100					
	Steel	No Gas	Negative	Flux Core / 1,2mm	1			35	35											
					2				30	30 - 35	30 - 40									
					3					35	35 - 40									
					4						35	35 - 40								
					5								25 - 35							
					6								15 - 30	15 - 35	30 - 40					
					7									10 - 20	10 - 45					
					8										10 - 25	15 - 50				
Stainless Steel	Ar	Positive	Stainless Steel / 1,0mm	1			40	40 - 45												
				2					40											
				3					40	40 - 45	40 - 70									
				4						40	40 - 70	45 - 85								
				5							40 - 75	45 - 90								
				6							40 - 85	40 - 100	80 - 100							
				7							20 - 40	20 - 80	45 - 100	85 - 100						
				8								10 - 30	10 - 60	40 - 100						
Aluminium	Ar	Positive	Aluminium / 1,0mm	1						70 - 75	70 - 75									
				2						70 - 75	70 - 85	80 - 85								
				3						65 - 75	65 - 85	80 - 85								
				4						60 - 65	60 - 100	70 - 100								
				5							60 - 85	60 - 90								
				6							60 - 75	60 - 90	75 - 90							
				7							40 - 45	40 - 65	50 - 80							
				8								35 - 50	35 - 75	60 - 75						

FIGURE J

## **Arc (Stick) Welding Set Up (continued, for Model 95424 Only)**

13. Turn the Power Switch (1C) to its “**OFF**” position. Clamp the bare end of the selected electrode in the electrode holder.

Electrode	Penetration	Attributes
NI-CL	Shallow	For cast Iron
308L	Shallow	For stainless steel
6011	Deep	Little preparation needed, high spatter
6013	Shallow	All purpose
7014	Moderate	Easy to use, quick
7018	Shallow	Creates stronger welds
7024	Shallow	For flat/fillet welds, easy to use, quick

14. **TO PREVENT FIRE OR ELECTRIC SHOCK:**  
**Trim all welding wire off the end of the Welding Gun (20A). Insulate the MIG Welding Gun (20A) wrapping it in electrical tape so that an arc is not accidentally ignited. Coil Welding Gun cable up away from all conductive objects.**
15. While holding the Electrode Holder (21A), with the electrode clearly out of the way of any grounded objects, turn the Power Switch (1C) to its “**ON**” position.
16. Orient yourself on the area to be welded, then place a Face Shield over your eyes.

### **HOLDING THE WELDING TORCH/ELECTRODE HOLDER** **(FOR ALL WELDING TYPES)**



**⚠ WARNING! Never look at the ignited arc without ANSI-approved, arc-shaded, eye protection in a full face shield with appropriate shaded lens. Permanent eye damage or blindness can occur. Skin burns can occur. Never breathe arc fumes. (See page 8.)**

17. Hold the Welding Torch/Electrode Holder in one hand and a one-handed face shield in the other. If a hands-free welding shield is used, then both hands can be used to control the Torch/Holder.
18. **Starting a weld arc (for stick (arc) welding only):**  
There are two usual methods to ignite an arc when stick welding: scratch or tap.
- **Scratch** – stroke the Electrode across work piece like striking a match, then lift electrode slightly.
  - **Tap** – Bring electrode straight down against workpiece and then back up slightly.
- If either of these methods are done properly, an arc is ignited.  
If the arc goes out, the electrode was lifted too far from the workpiece.

If the electrode fuses to the workpiece, quickly twist to release it and lift it slightly farther on your next attempt.

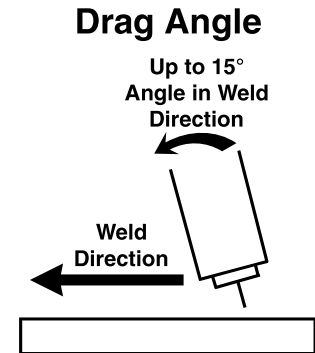
19. The Welding Wire/Electrode should be directed straight into the joint. This gives an angle of 90 degrees (straight up and down) for groove (end to end) welds, and an angle of 45 degrees for fillet (T-shaped) welds.

20. The end of the Torch/Holder should be tilted so that the Welding Wire/Electrode is angled anywhere in between straight on and 15 degrees in the direction of the weld. The amount of tilt is called the “**drag angle**”.

(See Figure L.)

21. **MIG welding only:**

The Welding Wire should extend no more than 1/2” past the Nozzle (1E) of the Welding Torch. This distance is called “stickout”. (See Figure L.)



**FIGURE L**

22. For a wider weld, draw the Welding Wire/Electrode back and forth across the joint in a curve. This is called a “**weave bead**”. For arc (stick) welding, the weave width must not be more than 2.5 times the electrode diameter.

**Note:** If too much current is drawn from the Welder, the internal Thermal Overload Protector will activate. The Overload Indicator Light (2C) will illuminate and the Welder will automatically turn off. If this happens, turn the Power Switch to its “**OFF**” position and wait 3 to 5 minutes for the unit to cool down.

23. After a few seconds, stop. Switch off the Welder, and check your progress. Compare your weld’s appearance with the diagrams and descriptions shown in the included “*Weld Diagnosis*” pamphlet. After making any necessary adjustments, continue the weld while carefully following the DUTY CYCLE guidelines.

---

## WHEN THE WELD IS COMPLETED

---

24. Lift the Welding Wire/Electrode completely away from any grounded object. Set the face shield down. Then, turn the Power Switch (1C) to its “**OFF**” position.
25. Unplug the Power Cord (1A) from the electrical outlet. Then, make sure to set the Welding Torch/Electrode Holder on a nonflammable, nonconductive surface.
26. A wire brush/hammer (not included) can now be used to clean up the weld.



**CAUTION!** The weld may still be quite hot, and sparks/chips may fly when cleaning. Make sure to continue wearing ANSI-approved safety impact eye goggles and other protective wear when cleaning a weld.

---

## INSPECTION, MAINTENANCE, AND CLEANING

---

 **WARNING!**

**Before performing any maintenance on the Welder, unplug the Power Cord (1A) from its electrical outlet and allow all components of the Welder to completely cool.**

1. Periodically open the Door (14A) from the unit and, using compressed air, blow out all dust and debris from the interior.
2. Always store the Welder in a clean, dry, safe location out of reach of children and other unauthorized people.
3. For optimal MIG weld quality, clean and inspect the Contact Tip (2E) and Nozzle (1E) before each use, as follows:

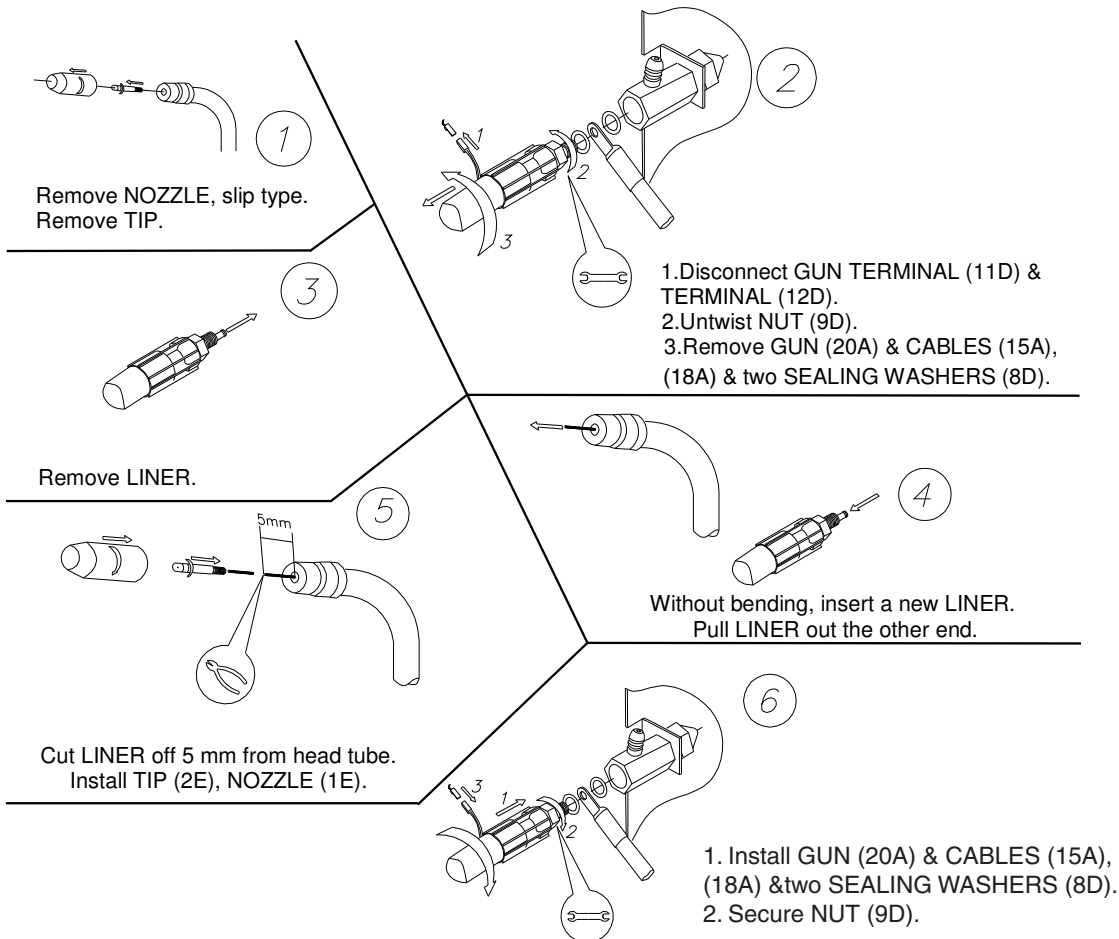
### **NOZZLE INSPECTION, CLEANING, AND REPLACEMENT (MIG ONLY)**

1. Turn the Nozzle (1E) counterclockwise while pulling to remove.
2. Scrub the interior of the Nozzle (1E) clean with a wire brush.
3. Examine the end of the Nozzle (1E). The end should be flat and even. If the end is uneven, chipped, melted, cracked, or otherwise damaged, the Nozzle will adversely effect the weld and should be replaced.
4. Reinstall the Nozzle (1E) after inspecting and cleaning the Contact Tip (2E).

### **CONTACT TIP INSPECTION, CLEANING, AND REPLACEMENT (MIG ONLY)**

1. Make sure the entire Welding Gun (20A) is completely cool before proceeding.
2. Remove the Nozzle (1E) as explained above. Then remove the Contact Tip (2E).
3. Scrub the exterior of the Contact Tip (2E) clean with a wire brush. Check that the Contact Tip is the proper type for the wire size used.
4. Examine the hole at the end of the Contact Tip (2E) for the following problems:  
**Shape:** The hole should be an even circle, and should not be oblong or have any bulges in it.  
**Size:** The Contact Tip will decrease in efficiency as the center hole enlarges. A Contact Tip that measures 150% or more the original size\* should be replaced.  
**(\* .045" or more for .030" Tips; .067" or more for .045" Tips.)**
5. If any problems are noted with a Contact Tip (2E), have it replaced.
6. When inspection and maintenance is completed, reinstall the Contact Tip (2E) and Nozzle (1E).

## REPLACING THE WELDING TORCH LINER (MIG ONLY)



## WARRANTY

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

### LIMITED 90 DAY/1 YEAR 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 for a period of ninety days from date of purchase that the torch, liner, wire feed mechanism (if applicable), welding clamps, electrode holders, cables and accessories packed with the welder are free of defects in materials and workmanship. **This Limited 90 Day/1 Year Warranty shall not apply to consumable parts such as tips, welding wire, and gas nozzles.** Harbor Freight Tools also warrants to the original purchaser, for a period of one year from date of purchase, that the transformer and rectifier are free from defects in materials and workmanship. This warranty does not apply to damage due directly or indirectly to misuse, abuse, negligence or accidents; repairs or alterations outside our facilities; 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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## PARTS LISTS AND DIAGRAMS

### PARTS LIST A

Part	Description	Qty.	Part	Description	Qty.
1A	Power Cord (8 AWG x 3C: 250V)	1	20A	Gun (SB 250)	1
2A	Power Cord Clip	1	21A	Electrode Cable w/ Holder (only for 95424 MIG/ARC Welder)	1
3A	Chain	1	22A	Ground Cable w/ Clamp	1
4A	Hose Connector	1	23A	Front Panel/Base (see Fig. N)	1
5A	Arm	1	24A	Voltage Selector Switch w/ Cable	1
6A	Rear Panel/Base	1	25A	Power Negative Cable	1
7A	Fan w/ Cable	1	26A	Wire Speed Selector w/ Cable (only for 95424 MIG/ARC Welder)	1
8A	Filter Reactor	1	27A	Swivel Wheel	2
9A	Valve (12VAC, 2-Way Custom Port)	1	28A	Base w/ Front Panel, Rear Panel, Center Baffle	1
10A	Valve Connection Cable	1	29A	Power Switch Cable	1
11A	Threaded Shaft	1	30A	Trigger Switch Cable	1
12A	Polarity Switch	1	31A	Controller Block BCN-4U	1
13A	Square Washer	2	32A	Power Block (see Fig. M)	1
14A	Door	1	33A	Cable BCN-4U-BC-4 connection	1
15A	Power Positive Cable	1	34A	Side Panel (B)	1
16A	Wire Drive Assembly (See Fig. O)	1	35A	Support	1
17A	Gear Motor Cable w/ Beeper	1	36A	Axle	1
18A	Power Connection Cable (Only for 95424 MIG/ARC Welder)	1	37A	Back Wheel	2
19A	Liner Sleeve	1	38A	Clip	2

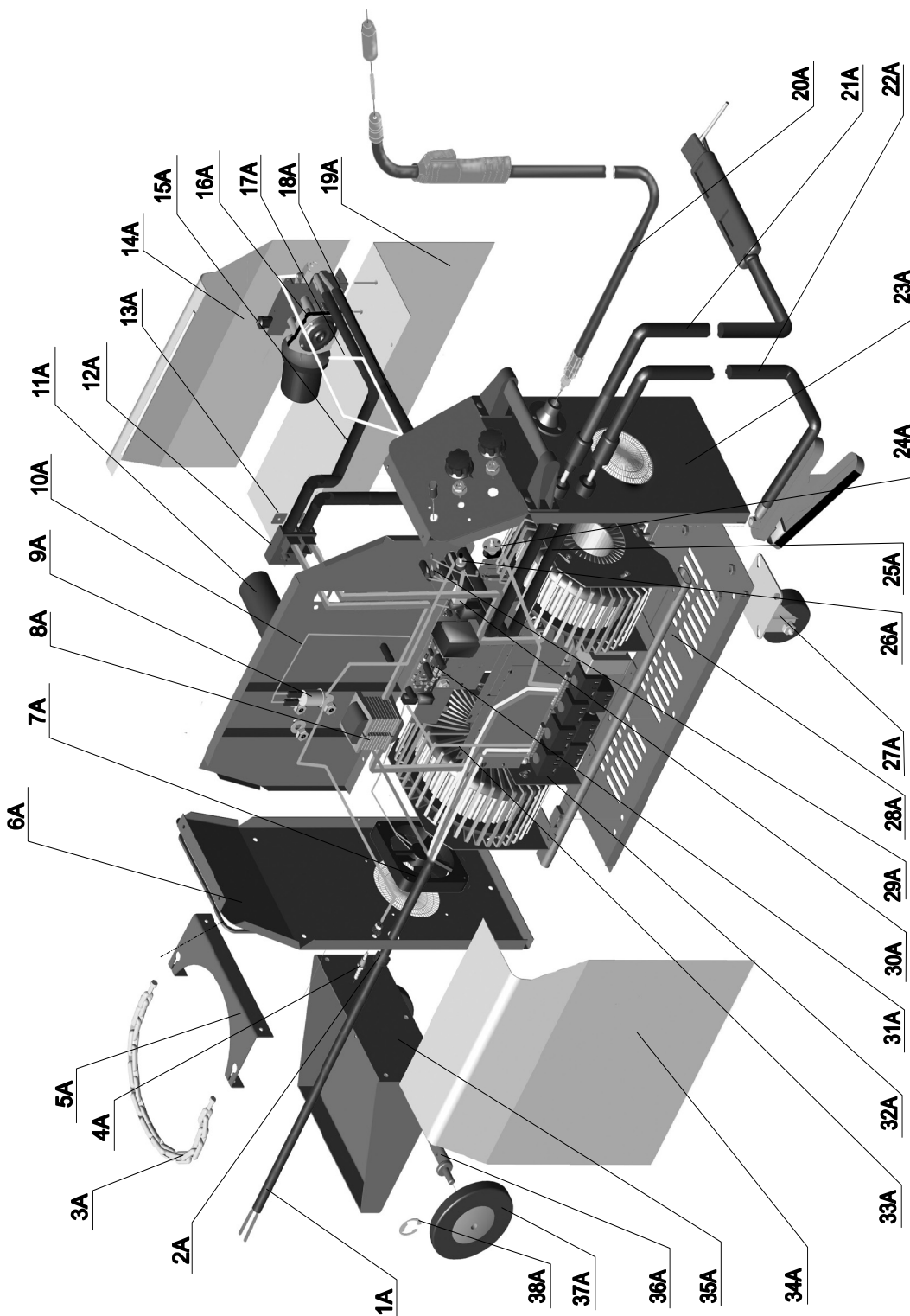
#### PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER NOR 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.



# ASSEMBLY DIAGRAMS

Figure L



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

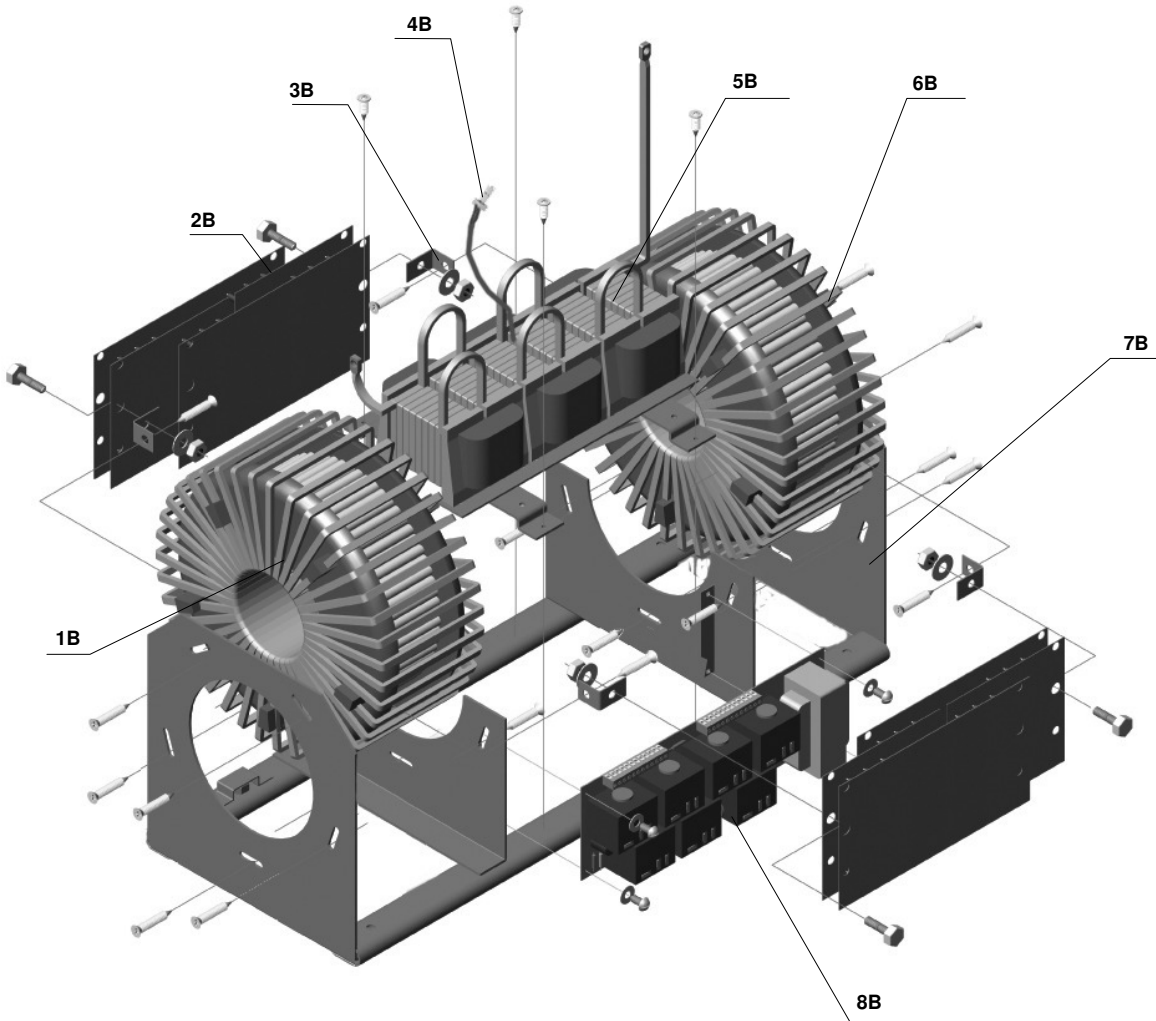


## ASSEMBLY DIAGRAMS (CONTINUED)

### Power Block #32A

Part	Description	Qty.	Part	Description	Qty.
1B	Main Transformer	1	5B	Filter Reactor w/ Thermo Resistor	1
2B	Rectifier	2	6B	Auxiliary Transformer Tr2	1
3B	Fixing Corner	1	7B	Basis	1
4B	Hose Connector	1	8B	Connection Block BC-4	1

**Figure M**



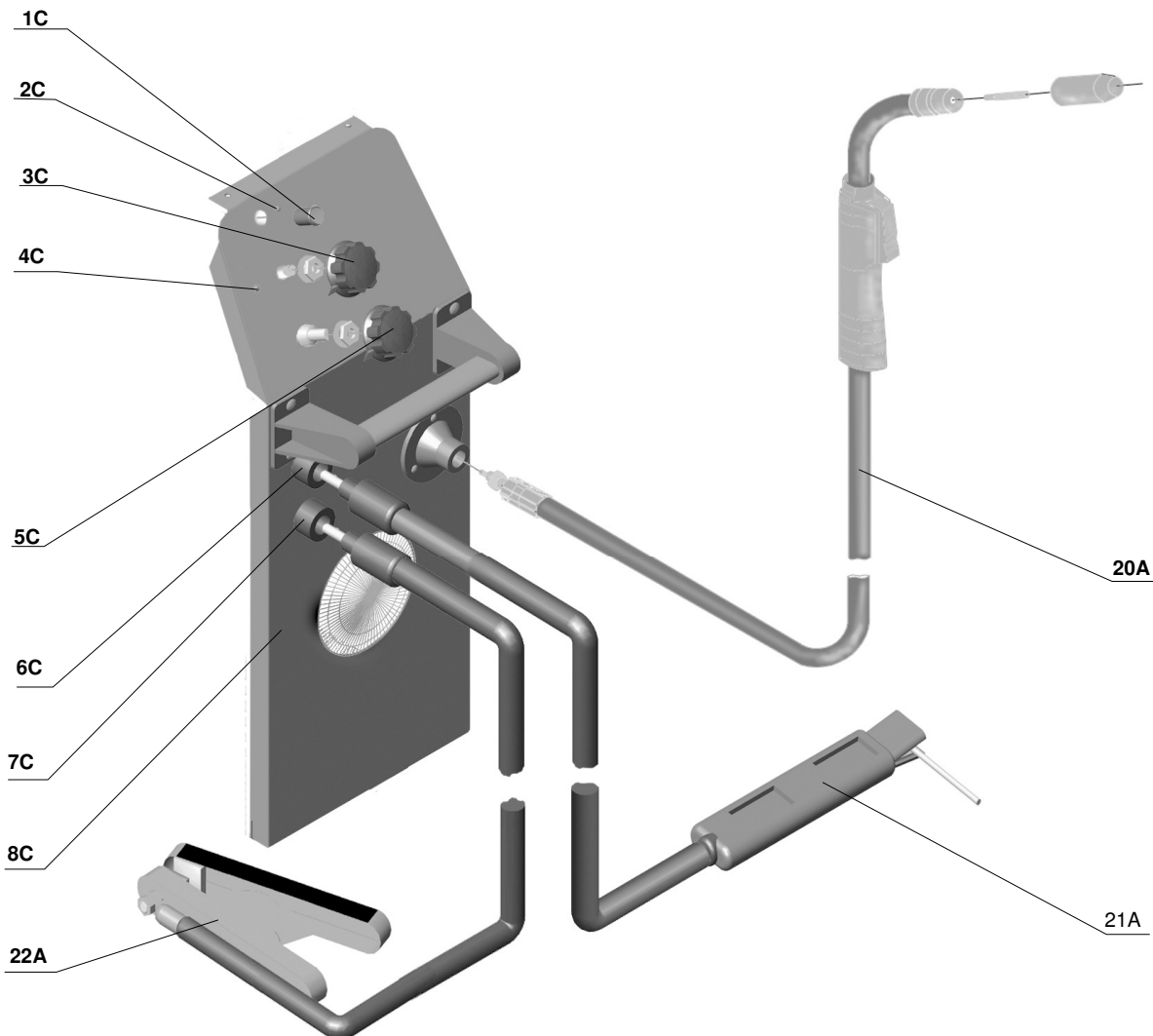
## ASSEMBLY DIAGRAMS (CONTINUED)

### Front Panel #23A

Part	Description	Qty.
1C	Power Switch	1
2C	Overload Indicator	1
3C	Wire Feed Speed Knob	1
4C	Electrode Welding Indicator (only for 95424 MIG/ARC Welder)	1
5C	Voltage Selector Knob	1
6C	Terminal Electrode (only for 95424 MIG/ARC Welder)	

Part	Description	Qty.
7C	Terminal Ground	1
8C	Front Panel	1
20A	Gun (SB 250) (see Fig. P)	1
21A	Electrode Cable w/ Holder (only for 95424 MIG/ARC Welder)	1
22A	Ground Cable w/ Clamp	1

**Figure N**

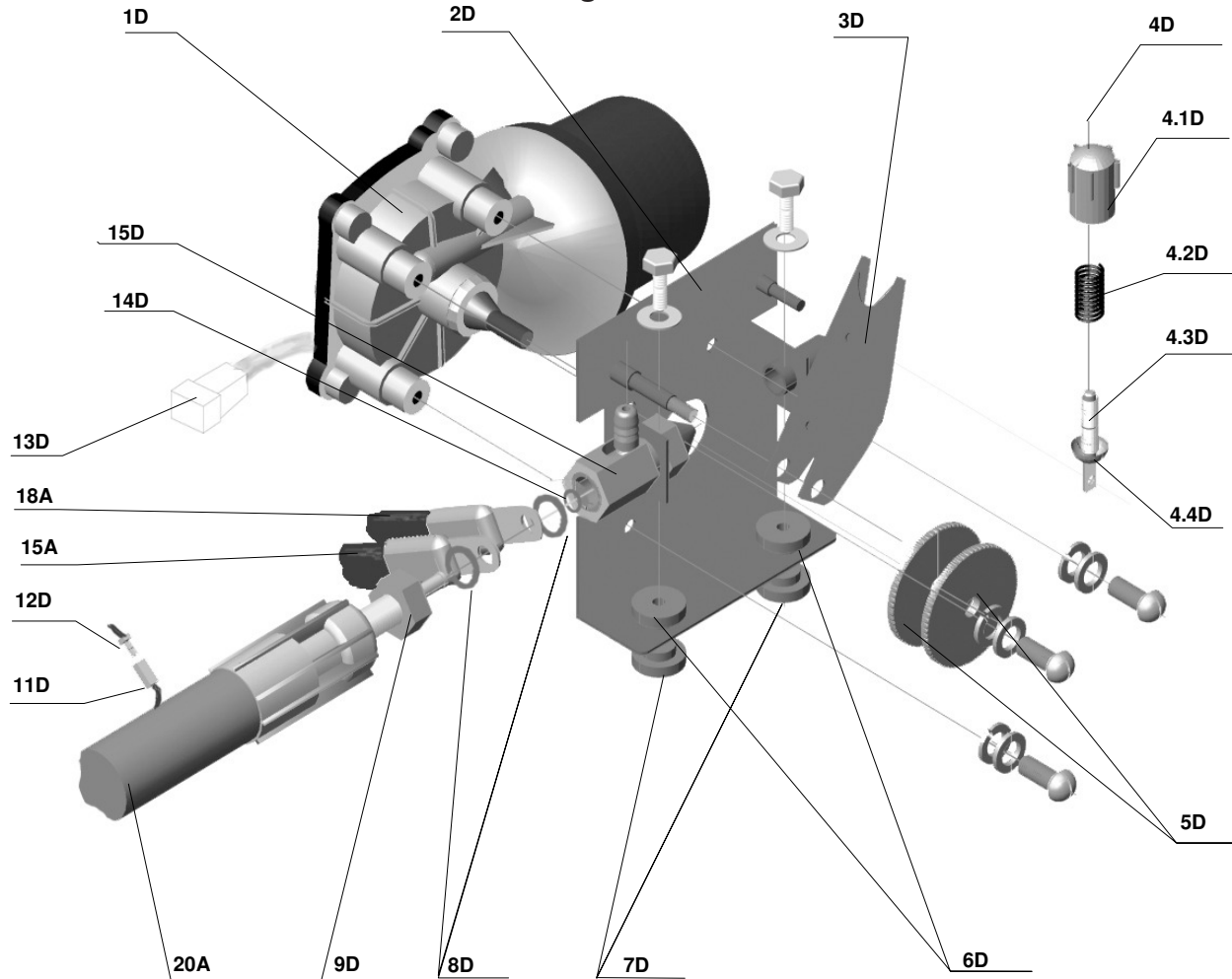


## ASSEMBLY DIAGRAMS (CONTINUED)

### Wire Drive Assembly #16A

Part	Description	Qty.	Part	Description	Qty.
1D	Gear Motor	1	8D	Sealing Washer	2
2D	Base	1	9D	Nut (M10)	1
3D	Lever	1	20A	Gun (SB 250)	1
4D	Drive Handle (4D)	1	11D	Gun Terminal (OHU-2)	1
4.1D	Handle (4D)	1	12D	Terminal (Flat Cable-10 WF-2)	1
4.2D	Spring	1	13D	Gear Motor Power Connector	1
4.3D	Axle	1	14D	Sealing Ring	1
4.4D	Washer (Semi-Spherical)	1	15D	Connector Gun Block	1
5D	Roller	2	18A	Power Connection Cable (only for 95424 MIG/ARC Welder)	1
6D	Top Isolator	2	15A	Power Positive Cable	1
7D	Bottom Isolator	2			

**Figure O**



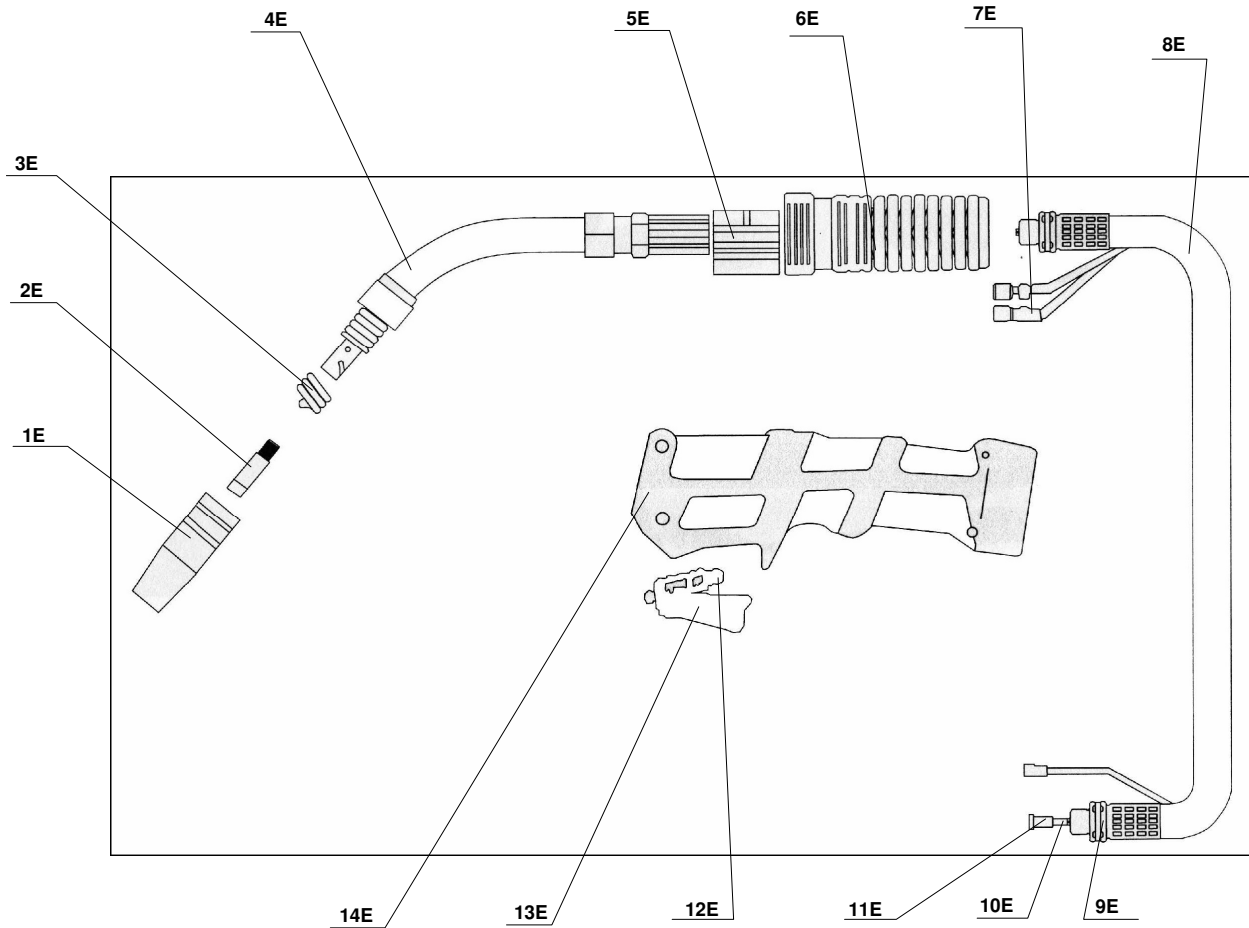
## ASSEMBLY DIAGRAMS (CONTINUED)

### Gun (SB 25) #20A

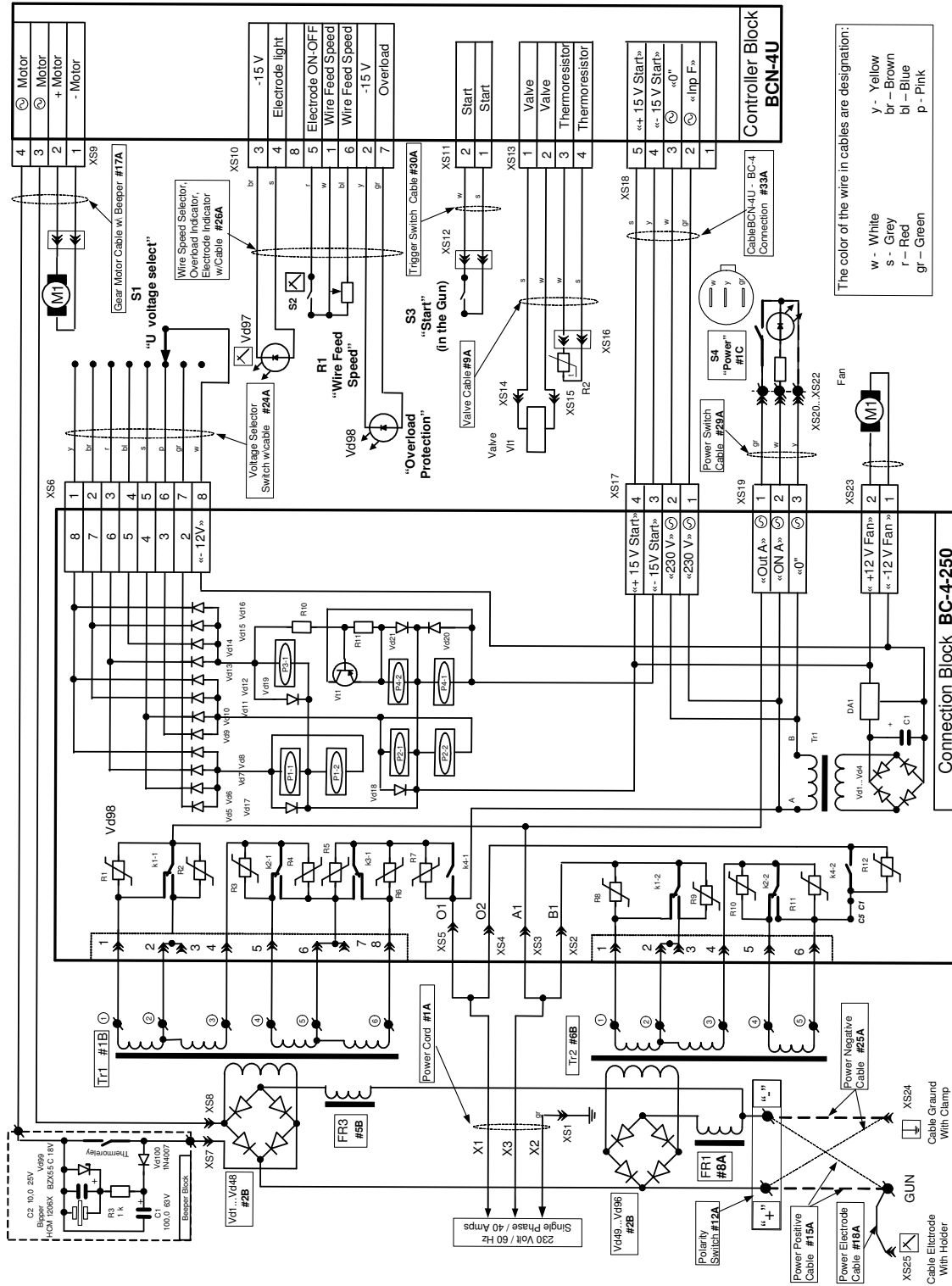
Part	Description	Qty.
1E	Nozzle (Slip Type)	1
2E	Contact Tip	1
3E	Spring	1
4E	Head Tube	1
5E	Sealant	1
6E	Spring	1
7E	Terminal;	1
8E	Feeder Connector	1

Part	Description	Qty.
9E	Nut (M12)	1
10E	Liner	1
11E	Liner Terminal	1
12E	Switch Trigger Terminal	1
13E	Trigger Switch	1
14E	Base	1
15E	Complete Torch Assembly	1

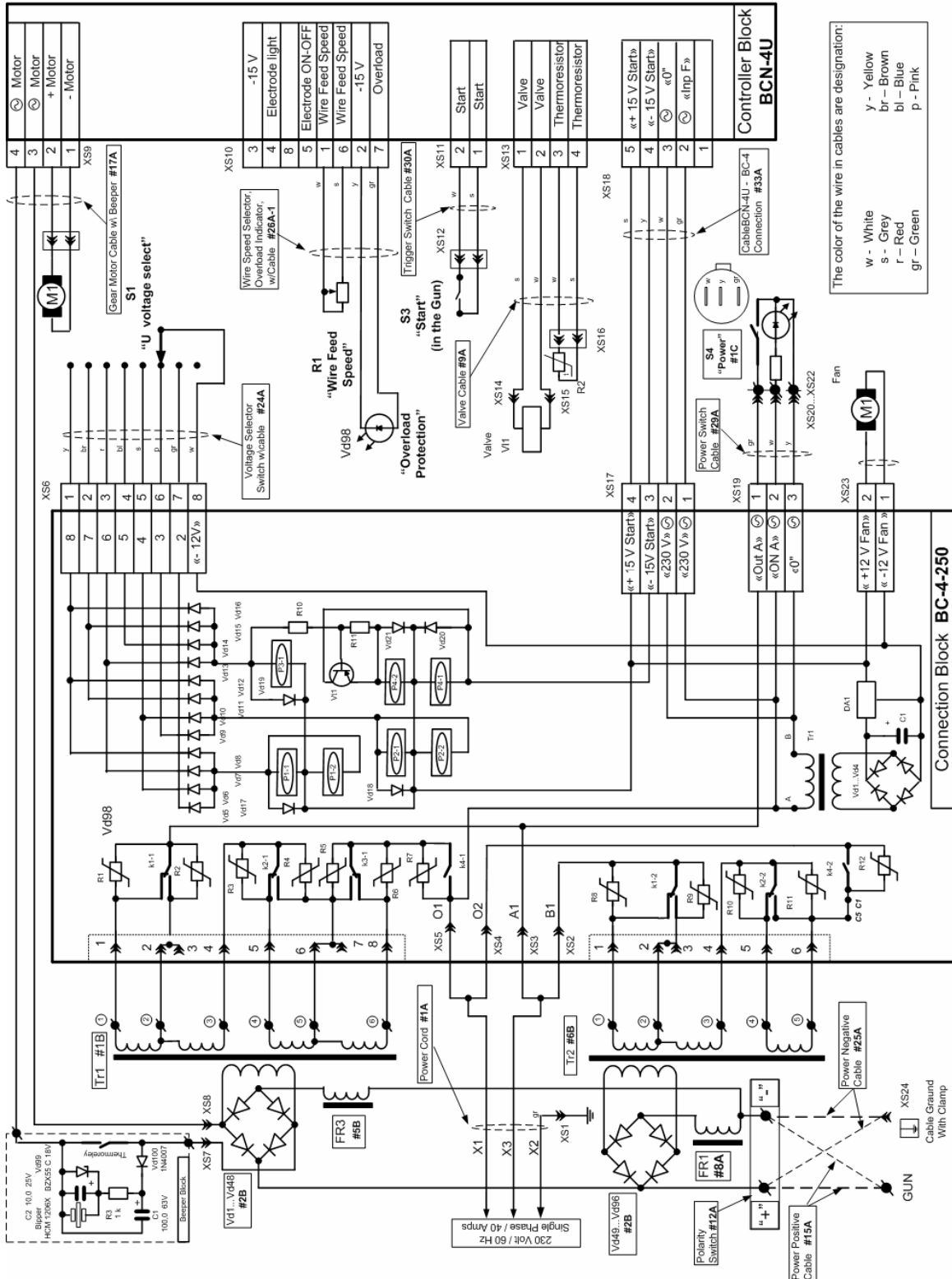
**Figure P**



# MIG/ARC WELDER (95424) – ELECTRICAL SCHEMATIC



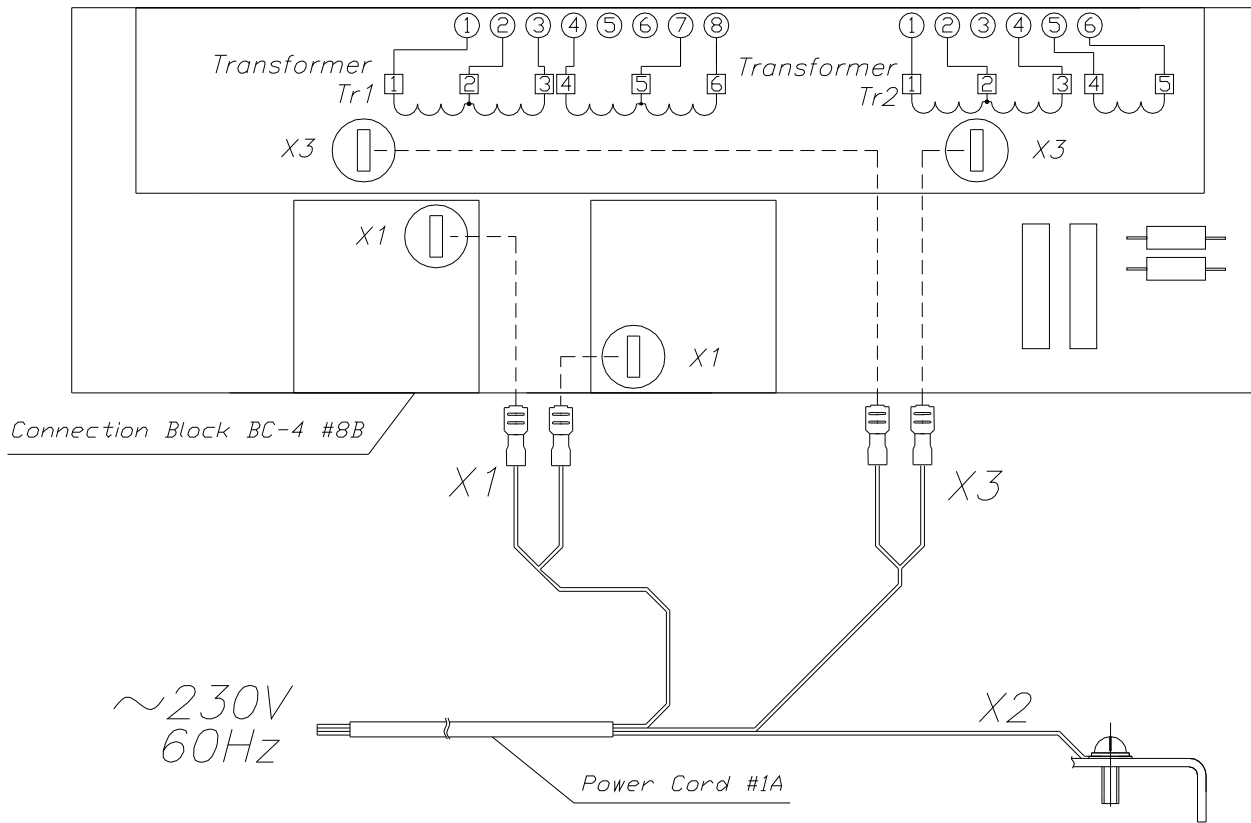
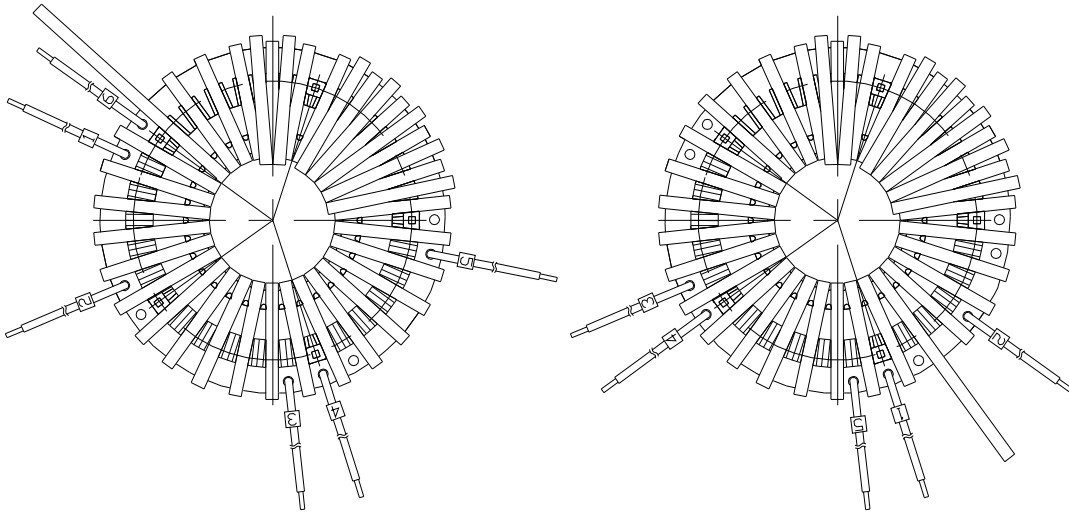
# MIG DUAL WELDER (95629) – ELECTRICAL SCHEMATIC



# POWER CORD, CONNECTION BLOCK BC-4 & TRANSFORMERS CONNECTION SCHEMATIC

Transformer Tr1 #1B

Transformer Tr2 #6B





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## TROUBLESHOOTING

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### IMPORTANT!

Be **CERTAIN** to shut off the Welder, disconnect it from power, and discharge the torch to ground before adjusting, cleaning, or repairing the unit.

---

### Welder does not function when switched on

#### POSSIBLE CAUSES AND SOLUTIONS

1. **Tripped thermal protection device:**  
Shut the welder's switch to off and allow it to cool for at least 20 minutes.  
Reduce duration or frequency of welding periods to help reduce wear on the welder.  
Refer to ***Duty Cycle*** section on page 20.
2. **Faulty or improperly connected Trigger Switch (13E):**  
Have a technician check and secure/replace Trigger Switch (13E).
3. **Internal fuse blown:**  
Have a qualified technician check/replace.

---

### Weak arc strength

#### POSSIBLE CAUSE AND SOLUTION

##### **Incorrect line voltage:**

Check the line voltage and, if insufficient, have a licensed electrician remedy the situation.

---

### Welding arc not stable

#### POSSIBLE CAUSES AND SOLUTIONS

1. **Wire not feeding properly (MIG welding only):**  
See first ***Troubleshooting*** section above.
2. **Incorrect contact tip size (MIG welding only):**  
Replace with the proper tip for the wire size used.
3. **Incorrect wire feed speed (MIG welding only):**  
Adjust wire feed speed to achieve a more stable arc.
4. **Loose torch cable or ground cable:**  
Check to ensure that all connections are tight.
5. **Damaged torch or loose connection within torch:**  
Have a qualified technician inspect and repair/replace as necessary.

---

If the steps above do not solve the problem or if the repairs involved are too complex, contact a qualified technician.

---

## TROUBLESHOOTING (continued)

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### IMPORTANT!

Be **CERTAIN** to shut off the Welder, disconnect it from power, and discharge the torch to ground before adjusting, cleaning, or repairing the unit.

---

### Wire feed motor runs but wire does not feed (MIG welding only)

#### POSSIBLE CAUSES AND SOLUTIONS

1. **Insufficient wire feed pressure:**  
Increase wire feed pressure properly - follow instructions on page 14 - 17.
2. **Incorrect wire feed roll size:**  
Replace with the proper one - follow the *Installing The Wire Spool* instructions on page 14.
3. **Damaged torch, cable, or liner assembly:**  
Have a qualified technician inspect these parts and replace as necessary.

---

### Wire creates a bird's nest during operation (MIG welding only)

#### POSSIBLE CAUSES AND SOLUTIONS

1. **Excess wire feed pressure:**  
Adjust wire feed pressure properly - follow instructions on page 14 -17.
2. **Incorrect contact tip size:**  
Replace with the proper tip for the wire size used.
3. **Gun end not inserted into drive housing properly:**  
Loosen gun securing bolt and push gun end into housing just enough so that it does not touch wire feed mechanism.
4. **Damaged liner:**  
Have a qualified technician inspect and repair/replace as necessary.

---

### Wire feeds, but arc does not ignite (MIG welding only)

#### POSSIBLE CAUSES AND SOLUTIONS

1. **Improper ground connection:**  
Make certain that the workpiece is contacted properly by the Ground Clamp and that the workpiece is properly cleaned near the ground clamp and the welding location.
2. **Improperly sized or excessively worn Contact Tip (2E):**  
Verify that Contact Tip (2E) is the proper size for the welding wire used. Check that the hole in the tip is not deformed or enlarged. Also, check that the tip is not dirty; this would prevent a good connection. If needed, replace Contact Tip (2E) with proper size and type.

---

If the steps above do not solve the problem or if the repairs involved are too complex, contact a qualified technician.

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## TROUBLESHOOTING (continued)

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### IMPORTANT!

Be **CERTAIN** to shut off the Welder, disconnect it from power, and discharge the torch to ground before adjusting, cleaning, or repairing the unit.

---

### Wire feeds, but shielding gas does not flow (MIG welding only)

#### POSSIBLE CAUSES AND SOLUTIONS

1. **Empty Gas Cylinder:**  
Check gas cylinder.
2. **Nozzle Plugged:**  
Clean nozzle. If damaged, replace.
3. **Regulator or cylinder valve closed:**  
Make sure both valves are adjusted properly.
4. **Gas line blocked:**  
Check external hose, and hose within Torch cable.
5. **Gas solenoid broken or not connected properly:**  
Have a qualified technician check/replace.

---

### Wire feed motor does not run (MIG welding only)

#### POSSIBLE CAUSES AND SOLUTIONS

1. **If beeping is heard, the wire is likely jammed somewhere in the torch, cable, or wire feed mechanism.**  
Carefully examine welding wire and welding wire route to determine the cause of the jam. Whenever possible, keep the welder off while the jam is being remedied to help prevent injury when the wire restarts.
2. **(Model 95424 only.) Wire Feed Speed Knob (3C) in stick (arc) position.**  
Change knob setting to proper speed.

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### Electrode Fuses to Work (Stick/Arc welding, model 95424, only)

#### POSSIBLE CAUSES AND SOLUTIONS

1. **Electrode too close to workpiece:**  
Hold electrode slightly farther from workpiece.
2. **Moist or damaged electrodes:**  
Use dry electrodes that have been stored correctly.

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If the steps above do not solve the problem or if the repairs involved are too complex, contact a qualified technician.