



# INVERTER AIR PLASMA CUTTER

**Model 95136**

## ASSEMBLY AND OPERATION INSTRUCTIONS



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.

REV 06I, 07K

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## SPECIFICATIONS

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Rated Input Voltage	230 V~ @ 50 / 60 Hz	Rated Input Current	19.2 Amps
Cutting Current	15 - 40 Amps	Rated Duty Cycle	60% @ 40 A; 80% @ 34.6 A; 100% @ 31 A
Cutting Thickness	½" mild steel Maximum	Air Requirement	60-80 PSI @ 3.5 CFM
Arc Striking System	Pilot Arc	Power Switch	Rocker Type
Unit Size	20" L x 8-1/8" W x 14-3/8" H	Weight	49.6 lb.

### Duty Cycle

**Duty Cycle** is the equipment specification which defines the number of minutes within a 10 minute period that a piece of equipment can safely operate.

**This plasma cutter has a 60% duty cycle at 40 Amps**, which means that it may be used only 6 minutes at 40 Amps out of any 10 minute period, and must be rested the remaining 4 minutes.

**CAUTION:** Failure to observe the duty cycle limitations of this Plasma Cutter can easily damage this equipment, and will void the warranty.

### Save This Manual

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

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## SAFETY WARNINGS AND PRECAUTIONS

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**WARNING:** When using tool, basic safety precautions should always be followed to reduce the risk of personal injury and damage to equipment.

**Read all instructions before using this tool!**



**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 Precautions

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 whether the outlet is properly grounded. If the tool should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user.
2. **Double insulated tools are equipped with a polarized plug (one blade is wider than the other).** This plug will fit in a polarized outlet only one way. If the plug does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician to install a polarized outlet. Do not change the plug in any way. Double insulation eliminates the need for the three wire grounded power cord and grounded power supply system.
3. **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.
4. **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
5. **Do not abuse the Power Cord.** Never use the Power Cord to carry the tool 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.
6. **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. **Use safety equipment. Always wear eye protection.** Dust mask, non-skid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.

### **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 piece 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 cutting tools maintained and clean.** Properly maintained tools are less likely to bind and are easier to control. 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.** 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. **Maintain labels and nameplates on the tool.** These carry important information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
2. **Always wear ANSI approved safety impact eye goggles and heavy work gloves when using the tool.** Using personal safety devices reduce the risk for injury. Safety impact eye goggles and heavy work gloves are available from Harbor Freight Tools.
3. **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.
4. **Avoid unintentional starting.** Make sure you are prepared to begin work before turning on the tool.
5. **Never leave the tool unattended when it is plugged into an electrical outlet.** Turn off the tool, and unplug it from its electrical outlet before leaving.
6. **Always unplug the tool from its electrical outlet before performing and inspection, maintenance, or cleaning procedures.**
7. **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 with a welding helmet 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.
8. **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 welding or cutting, 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.
- Only use compressed air to operate the Plasma Welder/Cutter. Never use other compressed gases. Don't exceed maximum PSI for this product as stated on the specification table on page 2.

## Inhalation Hazard

### Welding/Plasma Cutting Produces TOXIC FUMES and GASSES.



Exposure to welding or cutting 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 or plasma cutting gasses or fumes are:

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| <ul style="list-style-type: none"> <li>• Early onset of Parkinson's Disease</li> <li>• Damage to the reproductive organs</li> <li>• Inflammation of the small intestine or stomach</li> <li>• Respiratory diseases such as emphysema, bronchitis or pneumonia</li> </ul> | <ul style="list-style-type: none"> <li>• Heart Disease</li> <li>• Ulcers</li> <li>• Kidney damage</li> </ul> |
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Safety precautions, such as using natural or forced air ventilation and wearing an ANSI approved respirator, are ESSENTIAL to reduce the risk of developing the above illnesses.

9. **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.
10. **Always keep hoses away from welding/cutting spot.** Examine all hoses and cables for cuts, burns, or worn areas before each use. If any damaged areas are found, replace the hoses or cables immediately.
  11. **Read and understand all instructions and safety precautions as outlined in the manufacturer's manual for the material you will weld or cut.**
  12. **Proper cylinder care.** Secure cylinders to a cart, wall, or post, to prevent them from falling. All cylinders should be used and stored in an upright position. Never drop or strike a cylinder. Do not use cylinders that have been dented. Cylinder caps should be used when moving or storing cylinders. Empty cylinders should be kept in specified areas and clearly marked "empty."
  13. **Never use oil or grease on any inlet connector, outlet connector, or cylinder valves.**
  14. **Use only supplied Torch on this Inverter Air Plasma Cutter.** Using components from other systems may cause personal injury and damage components within.
  15. **WARNING!** This product, when used for cutting and similar applications, contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code § 25249.5, et seq.)
  16. **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.

This product requires a 3-prong, 230 V~, polarized, twist-lock plug (not included). This plug must be installed by a qualified electrician.

## **SYMOLOGY**

	Double Insulated
	Canadian Standards Association
	Underwriters Laboratories, Inc.
	Volts Alternating Current
	Amperes
$n_0$ xxxx/min.	No Load Revolutions per Minute (RPM)

## **Preparing Your Work Area**

1. You must have a sturdy work table that is open below the area you are cutting. Molten slag will be blown through the work metal, and must be able to fall away freely.
2. Your work table must allow the work metal to be firmly clamped to prevent it accidentally falling or moving.
3. The floor and surrounding area of your work site must not be flammable. A clean cement floor is recommended. The cutting process will eject molten metal slag onto the floor, and it will scatter for 8-10 feet or more in any direction. Have an adequate fire extinguisher available if needed.

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## **UNPACKING**

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When unpacking, check to make sure the following parts are included.

*Inverter Plasma Cutter tool with*

*Cutting Torch with Power Cord*

*Ground Cable with Clamp*

If any parts are missing or broken, please call Harbor Freight Tools at the number on the cover of this manual.

## ASSEMBLY

### **Attaching the Electric Plug (not supplied):**

1. Before use, a plug must be wired to the 230 V~ power cable. CAUTION: This operation must only be done by a qualified electrician.
2. The Green wire is ground, the Black and White wires are both 'HOT' 110 V~ conductors.
3. Use the plug appropriate to your 230 V~ service outlet. Be sure the circuit is protected with an appropriate circuit breaker.



### **Grounding the Tool:**

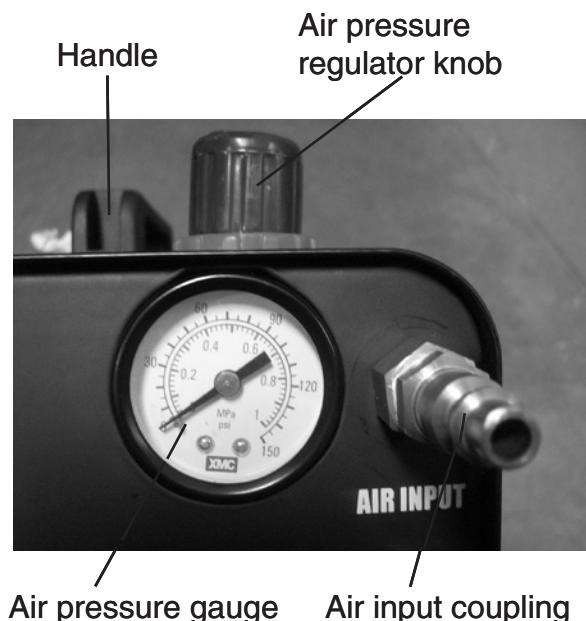
Attach a ground wire of at least 14 Ga. thickness (not supplied) to the screw on the lower left of the back of the tool case. Connect the other end of the wire to an appropriate ground, such as a steel workbench, steel building member or grounding electrode.



### **Attaching the Air Supply:**

**WARNING:** Only use dry air as the gas in this tool. Use of any other gas, such as oxygen, acetylene, etc. may cause explosion.

1. A male quick release adapter is mounted on the rear of the tool. Attach your pressurized air supply using your female quick release adapter. Adjust your air supply to deliver 60-80 PSI at 3.5 CFM.
2. During operation, you can regulate air pressure through the Plasma Cutter by adjusting the knob located on top of the tool.
3. If the tool becomes over pressurized, there is a pressure relief valve on the top of the unit.

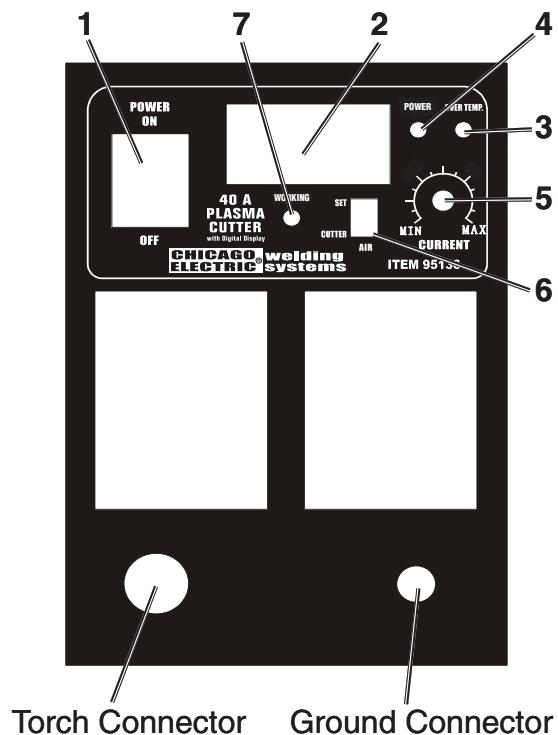


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## CONTROLS AND INDICATORS

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1. **Power Switch.** Up is ON, down is OFF.
2. **Digital Amps Meter.** Shows actual cutting current, which will vary during operation.
3. **Thermal Overload Indicator Lamp.** This light will come on, and the device will shut down if the tool becomes overheated. Stop trying to use the cutter while leaving the power switch ON to allow the cooling fan to operate, and the lamp will turn off automatically when the machine cools down.  
*Please pay attention to the Rated Duty Cycle discussed on page 2.*
4. **Power ON Light.**
5. **Power Supply Controller.**
6. **Mode Selector.** Turns the air supply ON prior to cutting.
7. **Working Indicator Light.** Will be on during cutting operation.



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## OPERATION

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**Note:** *Before beginning, please read and understand all the safety precautions starting on page 2, and especially the section “Specific Safety Rules” starting on page 4.*

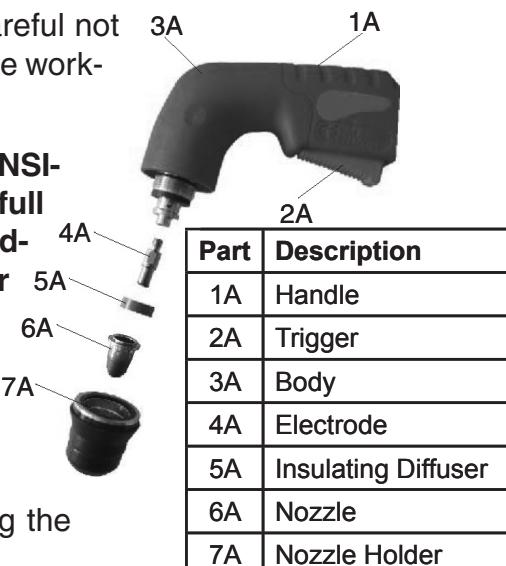
1. Mount the metal to be cut to the metal welding-cutting table. It should be mounted so that the cutting debris falls to the cement floor.
2. Place the Air Plasma Cutter unit no closer than six feet from the workpiece to be cut.
3. Connect an air hose and coupling (not supplied) from the air supply tank to the Air Input Coupling at the rear of the unit. See photo on page 9, bottom. The air supply must be regulated to between 60 and 80 PSI as read on the Air Pressure Gauge. The air supply must be dry. It is recommended to install a moisture filter (not included) on the compressor. Do not use an air oiler.
4. Connect the Torch Cable plug into the twist-lock connector on the lower left unit front. Twist to lock.
5. Plug in the Grounding Cable into the Ground Connector on the lower right of the unit front. Twist to lock.

6. Securely place the clamping end of the Grounding Cable Clamp to a part of the workpiece or metal table that is clean of paint, oil, or dirt. Clamp as close as possible to the workpiece without damaging the cable during cutting.
7. Verify that the Power Switch is in the Off (O) position, then plug the 230 V~ line cord plug into an appropriate 230 V~ outlet.
8. Turn the Power Supply Controller to the desired current (15 to 40 amps).
9. Adjust air pressure by turning the Pressure Regulator Knob on top of the unit (see photo on page 9). Read pressure on Pressure Gauge.
10. When everything is in place for cutting, press the Power Switch UP to the ON position. The green Power On Light will illuminate, but the Torch is not yet energized.
11. Orient yourself to one side of the area to be cut, and move the Welding Helmet Face Shield (not included, see page 5 item 7) over your eyes.
12. **BE CAREFUL! PILOT PLASMA ARC CAN SEVERELY INJURE. Once the trigger is squeezed, the arc will ignite. This unit provides a pilot arc, so the torch does not need to contact the workpiece before the cutting arc ignites.**
13. (Refer to parts diagram below for Torch Handle components.) **Direct torch away from people and flammables** while you squeeze (and hold) the Torch Handle Trigger (2A) to energize the Torch Electrode (4A). The air output is delayed a few seconds to enable a proper arc to begin.

**Caution:** The Torch handle is now energized. Be careful not to touch anything else with the Torch except the workpiece to be cut.

**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. Never breathe arc fumes.

14. Bring the Electrode (4A) of the Torch close to the starting point of the cut. The Working Indicator Light will come on.
15. Slowly move the Torch at a slight angle along the cutting line with the Torch tip trailing. The air causes the molten metal to fall away from the workpiece being cut. If proper cutting is not achieved, adjust the Power Supply Controller to a higher level, and/or increase air flow. To increase air flow, press the Power Switch to the Off (O) position, then adjust the air pressure at the Air Pressure Regulator. The air will continue to come out of the Torch Handle for a few seconds once the trigger is released.



**Note:** If too much current is drawn from the Plasma Cutter (i.e., short circuit), the Thermal Switch, an overload protector, will activate and the red Thermal Overload Indicator Light will light. The Plasma Cutter will turn off until it cools down. To reset you must turn the power OFF then back ON. Press the Trigger to begin cutting again.

16. ***When finished cutting:***

- a. Release the Torch handle trigger and lift the Torch handle from the workpiece,
- b. Press the Power Switch to the Off (O) position,
- c. Set the Torch handle down on the metal workbench,
- d. Turn the air supply off,
- e. Unplug the line cord from the electrical outlet.

### **Plasma Cutting Technique**

Using a plasma cutter is a skill that requires time and effort to do well. Practice striking and maintaining an arc on scrap work pieces before beginning work. This will help you gauge the best settings for the plasma cutter for the material at hand.

1. You can cut any metal that will conduct electricity up to approximately  $\frac{1}{2}$ " thick mild steel or equivalent. Very thin or very thick metals are more difficult to cut cleanly.
2. Generally set the air pressure between 60 and 80 psi. Increased air pressure will increase plasma speed and cutting pressure. Air pressure and amperage should be adjusted in tandem.
3. Generally start with a mid-range amperage setting (32-33 amps) and adjust up or down from there. Increased amperage will increase cutting heat. This is needed with heavier and harder metals. However, increased amperage will reduce Duty Cycle time. (See page 2.)
4. Move the cutting head more slowly for thicker and harder metals, and more quickly for thin or soft metals. Keep the cutting head moving while cutting.

## **How Plasma Cutters Work**

Plasma cutters work by feeding an inert gas (air) through an electric arc. The air is then heated to an extremely high temperature which converts the gas to plasma which cuts the metal.

High temperature and pressure are required to create a plasma. The electric arc provides the temperature, and by exhausting the air through a very small orifice, the pressure is increased far beyond the 60-80 PSI operating pressure of the air supply.

### **What is Plasma?**

Materials in Nature exist in one of four different states: Solid, Liquid, Gas or Plasma. Plasma is very rare on Earth because of its very high temperature, however most of the matter in the universe is plasma. The Sun, stars and galaxies are made of plasma. On Earth, you will find plasma in lightning and a few other places. Neon tubes and fluorescent lights contain low-temperature plasma when lighted.

The difference between water ice, liquid water and water vapor is temperature. In each of these states, temperature energy pushes the molecules of water away from each other to change the state the water is in. At very high temperature and pressure the water molecules themselves break apart, and the atoms begin to ionize. Normal atoms are made up of protons and neutrons in the nucleus, surrounded by a cloud of electrons. In plasma, the electrons separate from the nucleus. The electrons are negatively charged, and they leave behind their positively charged nuclei which are known as ions. When the fast-moving electrons collide with other electrons and ions, they release vast amounts of energy. This energy is what gives plasma its unusual status and great cutting power.

### **How do Plasma Cutters Work?**

Plasma cutters work by sending a pressurized gas through a small channel. In the center of this channel, there is a negatively charged electrode. When power is supplied to the negative electrode, and the tip of the nozzle contacts the work metal, the connection creates a circuit. When the nozzle is lifted away, the arc will continue. As the inert gas passes through the channel, the arc heats the gas until it becomes ionized. This reaction creates a stream of directed plasma, approximately 30,000° F (16,649° C) and moving at approximately 20,000 feet per second (6,096 m/sec), that reduces metal to molten slag.

The plasma itself conducts electrical current. The cycle of creating the arc is continuous as long as power is supplied to the electrode and the plasma stays in contact with the metal that is being cut. In order to ensure this contact, protect the cut from oxidation, and regulate the unpredictable nature of plasma, the cutter nozzle has a second set of channels. These channels release a constant flow of shielding gas around the cutting area. The pressure of this gas flow effectively controls the radius of the plasma beam.

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## MAINTENANCE

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**WARNING! Make sure the Power Switch of the Plasma Cutter is in its “OFF” position and that the tool is unplugged from the electrical outlet before performing any inspection, maintenance, or cleaning procedures.**

1. Before each use, inspect the general condition of the Air Plasma Cutter. Check for loose cable connections, misalignment or binding of the fan, cracked or broken parts, damaged electrical wiring, and any other condition that may affect its safe operation. If abnormal noise or vibration occurs, have the problem corrected before further use. Do not use damaged equipment.
2. Periodically recheck all nuts, bolts, and screws for tightness.
3. Periodically blow the dust from the cooling vents with compressed air.
4. Verify that the cooling fan is operational before cutting.
5. If the unit repeatedly shuts down from thermal overload, stop all use. Have the Air Plasma Cutter inspected and repaired by a qualified service technician.
6. Store the welder and accessories in a clean and dry location.
7. Periodically disassemble and clean the Torch Head components with steel wool. Replace burnt, cracked, distorted, or coated components. Refer to the assembly drawing on page 16.
8. To gain access to the internal components of the unit, remove screws from Main Body Cover. The home user is strongly advised not to remove the tool covers and not to attempt any electronic repairs. Any repairs must be completed by a qualified technician. Opening the tool will void any warranties, and may result in damage to equipment or possible personal injury. Don’t do it.
9. On a daily basis check for any of the following problems: if any are found, take the tool to a qualified repair technician.
  - a. Abnormal vibration, sound or smell.
  - b. Abnormal heating at any cable connection.
  - c. The fan does not work properly.
  - d. Any switch or control does not work properly.
  - e. Any damage to cables.

## **PARTS LIST**

<b>Part</b>	<b>Description</b>	<b>Q'ty</b>
1	Handle	1
2	Main Body Cover	1
3	Control Circuit Board	1
4	Control Transformer	1
5	Power Supply Circuit Board	1
6	Chassis	1
7	Transfer Arc Circuit Board	1
8	Transformer	1
9	Reactor	1
10	Radiator	4
11	Rectifier Circuit Board	1
12	Rectifier Bridge	1
13	Metal Resistor	2
14	Breaker	1
15	Working Indicator	1
16	Mode Selector	1
17	Overheat Indicator	1
18	Power Supply Controller	1
19	Power Indicator	1

<b>Part</b>	<b>Description</b>	<b>Q'ty</b>
20	Torch Cable Connector	1
21	Coil	1
22	Ground Cable Connector	1
23	Lower Cover	1
24	Cement Resistor	3
25	Drive Circuit Board	1
26	Inverter Circuit Board	1
27	Air Pressure Relief Valve	1
28	Air Pressure Gauge	1
29	Fan	1
30	Fan Grill	1
31	Splitter	1
32	Air Supply Solenoid	1
33	Insulated Foot	4
34	Reactor Bracket	1
35	Power Cord	1
36	Digital Display	1
37	Reactor	1

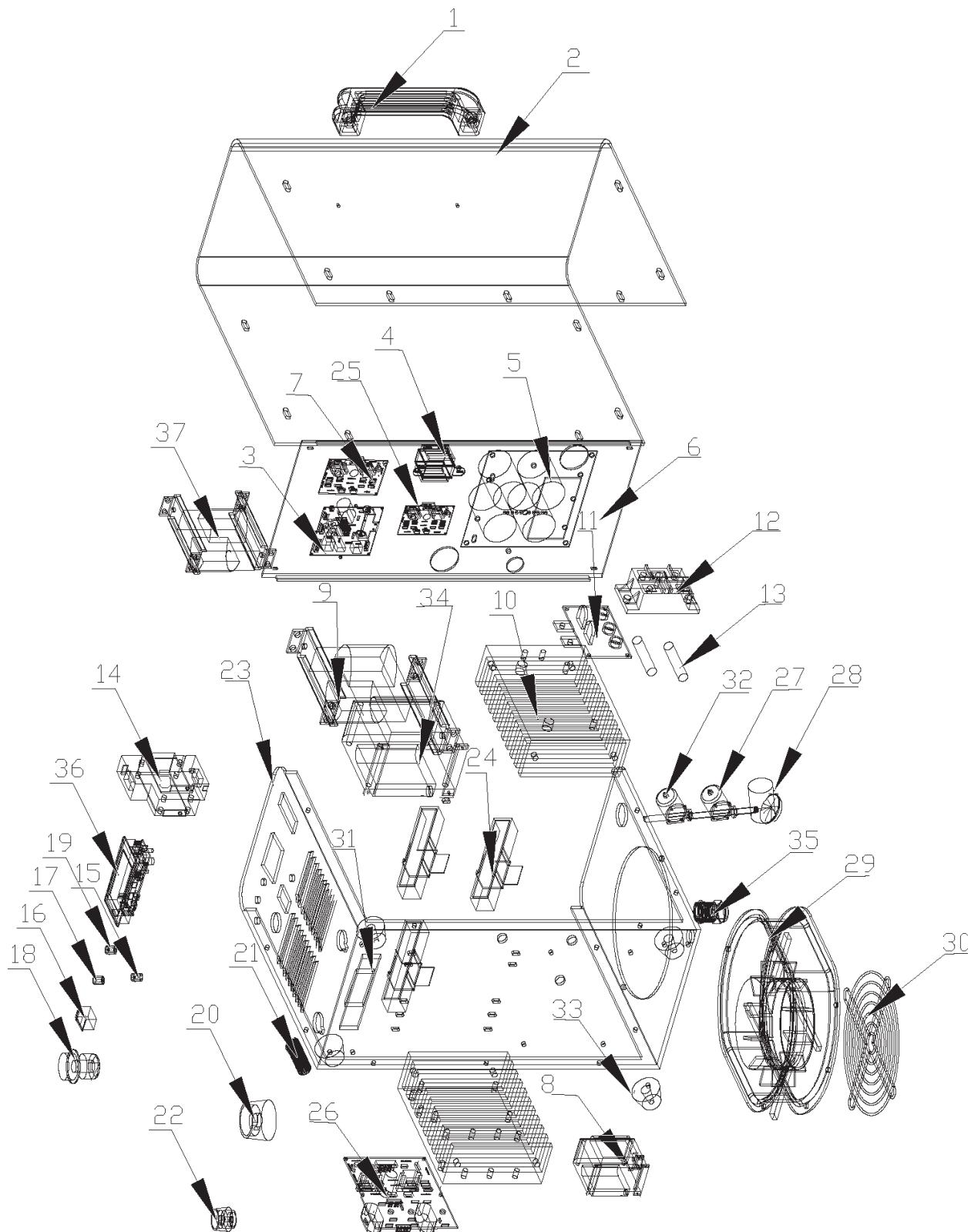
### **PLEASE READ THE FOLLOWING CAREFULLY**

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.

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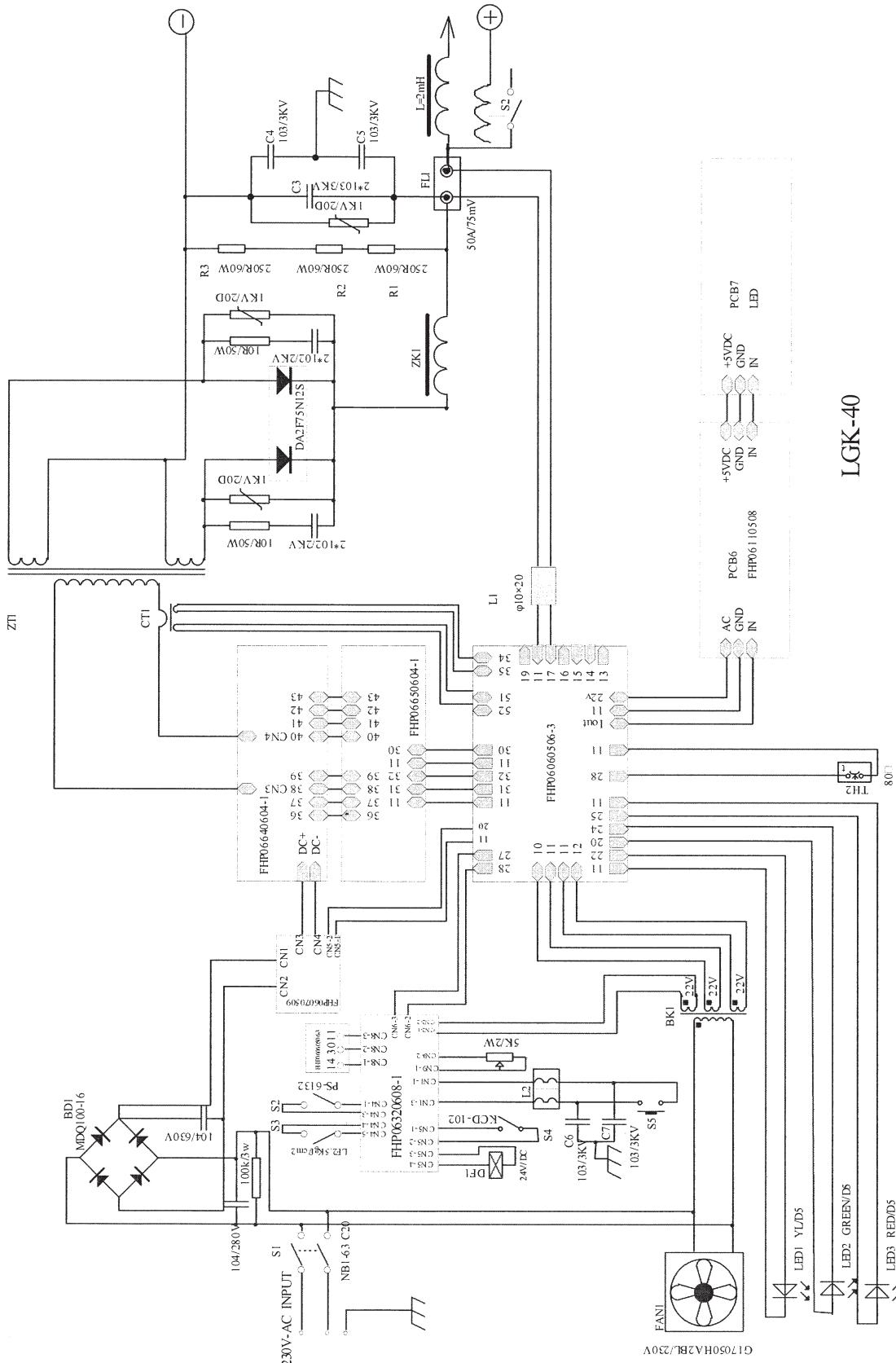
## ASSEMBLY DIAGRAM

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

# WIRING DIAGRAM



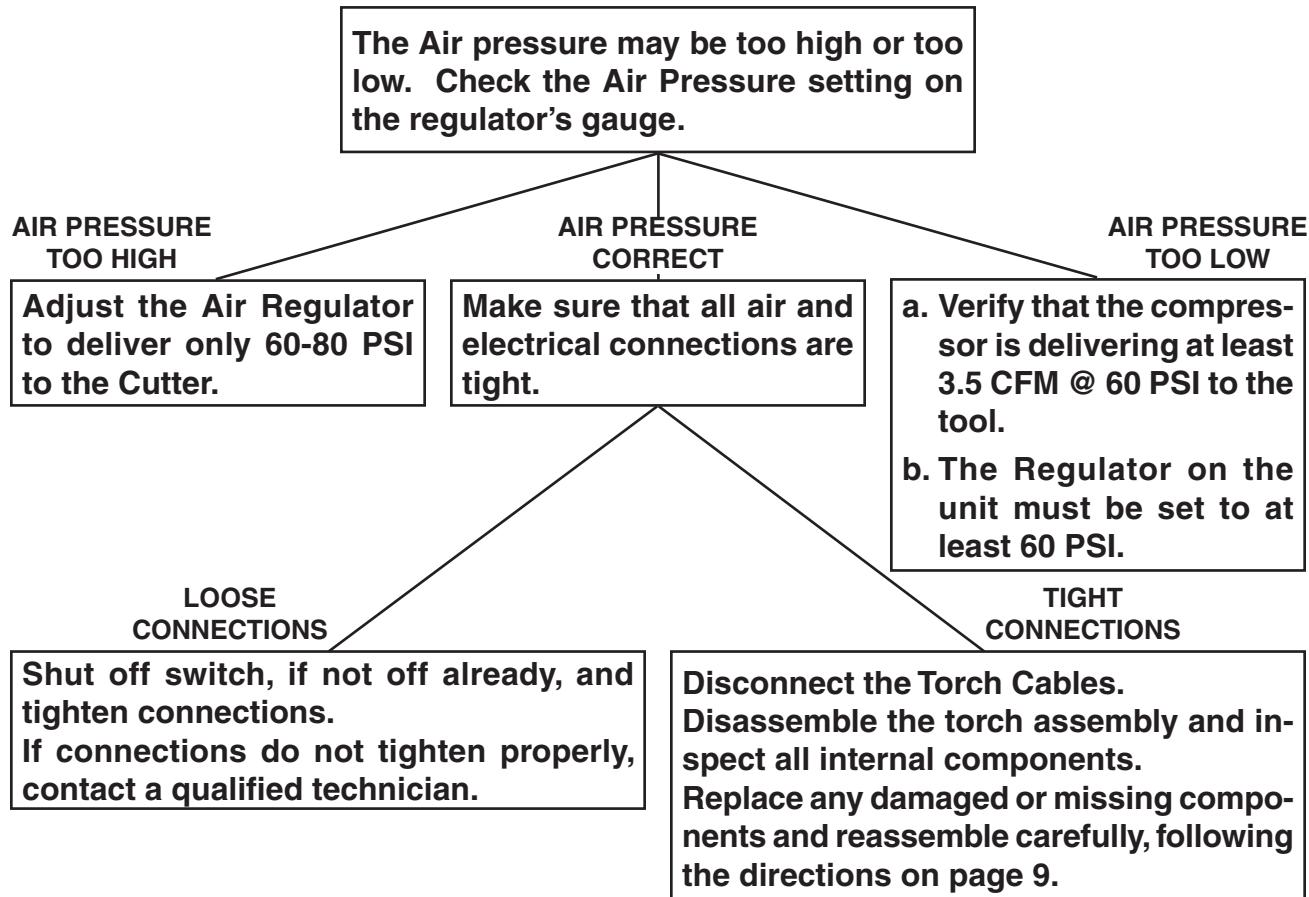
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# TROUBLESHOOTING

## IMPORTANT!

Be CERTAIN to shut off the Plasma Cutter, and disconnect it from power and air before adjusting, cleaning, or repairing the unit. A technician should discharge all capacitors before performing any internal procedures.

### FAN RUNS WHEN SWITCHED ON BUT ARC WILL NOT IGNITE



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

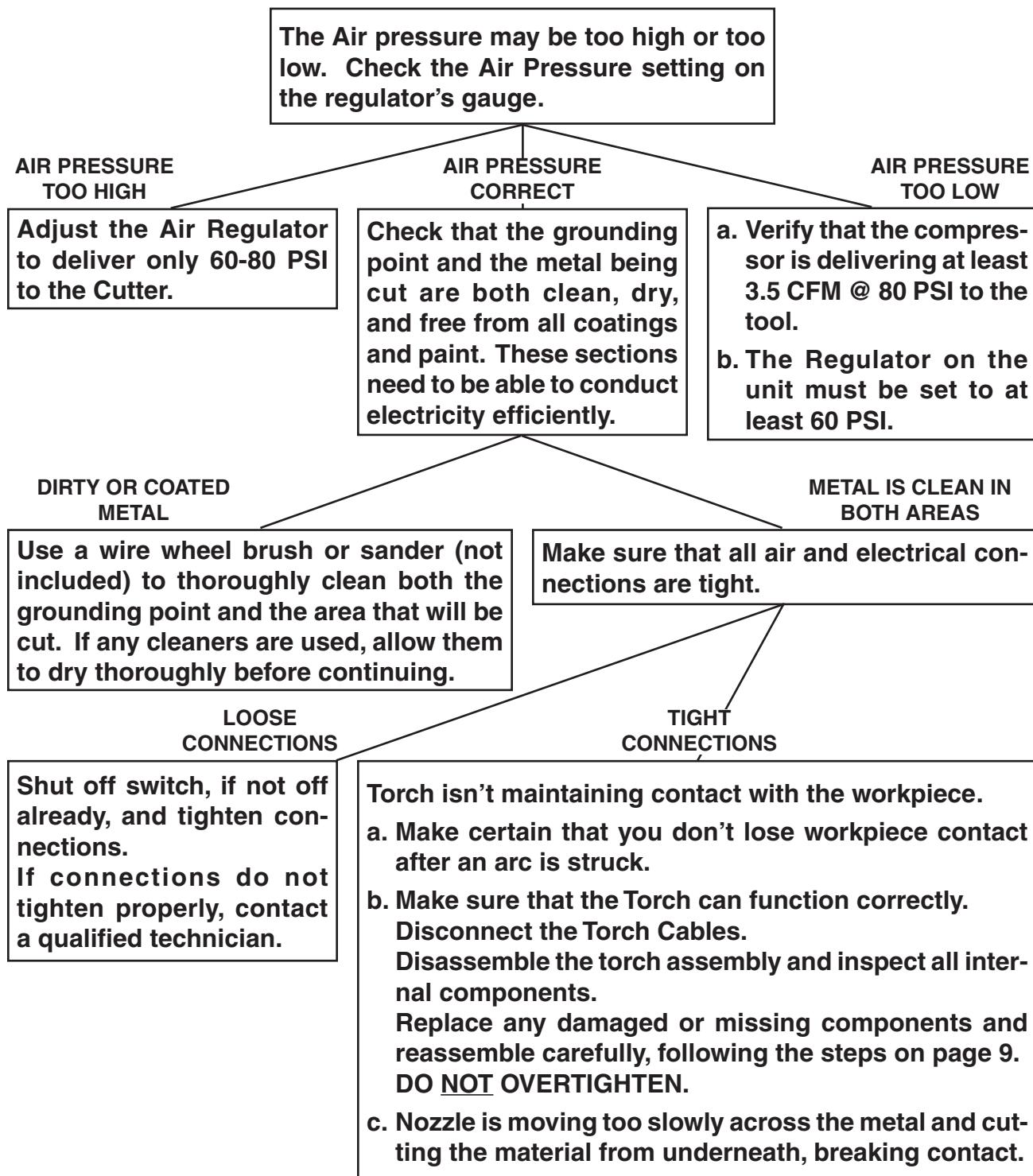
REV 07h

## **TROUBLESHOOTING (CONTINUED)**

### **IMPORTANT!**

Be CERTAIN to shut off the Plasma Cutter, and disconnect it from power and air before adjusting, cleaning, or repairing the unit. A technician should discharge all capacitors before performing any internal procedures.

### **ARC IGNITES FOR SEVERAL SECONDS BUT THEN GOES OUT**



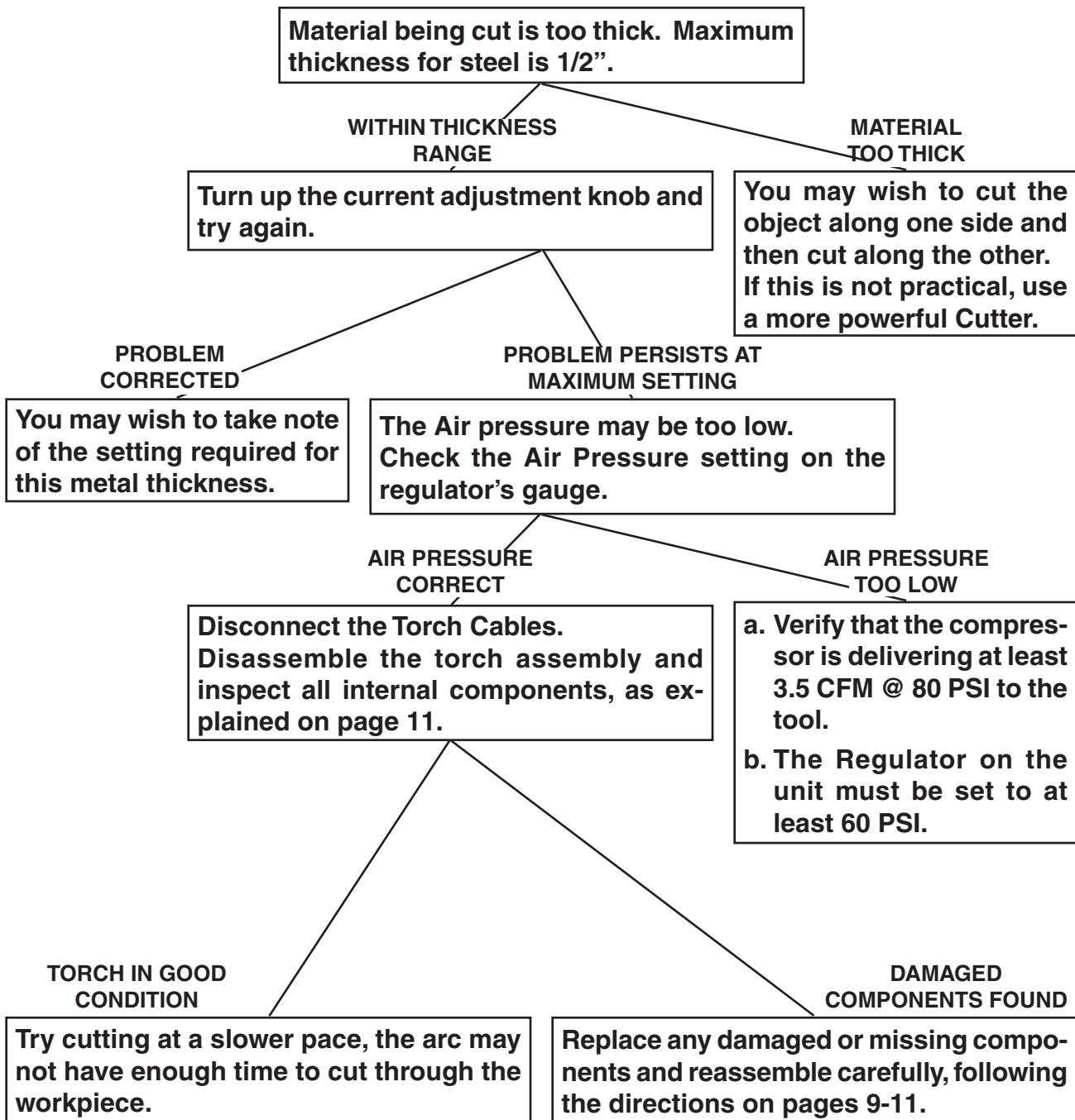
If the steps above do not solve the problem or if the repairs involved are too complex, contact a qualified technician. REV 07h

## **TROUBLESHOOTING (CONTINUED)**

### **IMPORTANT!**

Be CERTAIN to shut off the Plasma Cutter, and disconnect it from power and air before adjusting, cleaning, or repairing the unit. A technician should discharge all capacitors before performing any internal procedures.

### **CUT GOES ONLY PARTIALLY THROUGH THE WORKPIECE**



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

REV 07h

## **TROUBLESHOOTING (CONTINUED)**

### **IMPORTANT!**

Be CERTAIN to shut off the Plasma Cutter, and disconnect it from power and air before adjusting, cleaning, or repairing the unit. A technician should discharge all capacitors before performing any internal procedures.

### **FAST NOZZLE WEAR**

**OR**

### **EXCESSIVE SLAG FORMATION**

**These two problems have similar causes  
and will often appear simultaneously.  
The same diagnostic procedures and  
remedies apply to both.**

**The Amperage setting may be too high;  
try cutting at a lowest setting possible for  
the metal being cut.**

**PROBLEMS  
REDUCED**

**Take into account the thickness and type  
of metal to be cut before you start. Thin-  
ner materials will typically require lower  
amp settings.**

**PROBLEMS PERSIST AT  
LOWEST PRACTICAL SETTING**

**Disconnect the Torch Cables.  
Disassemble the torch assembly and  
inspect all internal components, as ex-  
plained on page 11.**

**TORCH IN GOOD  
CONDITION**

**Air supply pressure may be inadequate:  
a. Verify that the compressor is delivering  
at least 3.5 CFM @ 80 PSI to the tool.  
b. The Regulator on the unit must be set  
to at least 60 PSI.**

**DAMAGED  
COMPONENTS FOUND**

**Replace any damaged or missing compo-  
nents and reassemble carefully, following  
the directions on pages 9-11.**

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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.

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## **LIMITED 1 YEAR / 90 DAY WARRANTY**

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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 (90 days if used by a professional contractor or if used as rental equipment). This warranty does not apply to damage due directly or indirectly to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, 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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