

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

PLASMA AIR CUTTER
220 VOLT - 36 AMP
INVERTER TECHNOLOGY

Model 91814

ASSEMBLY AND OPERATING INSTRUCTIONS



3491 MISSION OAKS BLVD., CAMARILLO, CA 93011
VISIT OUR WEB SITE AT [HTTP://WWW.HARBORFREIGHT.COM](http://www.harborfreight.com)

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For technical questions and replacement parts, please call 1-800-444-
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SPECIFICATIONS

Cutting Depth	3/8 inch on steel
Cutting Current	5 to 36 Amps listed
Rated Load Voltage	100 VDC
No-load Voltage	200 VDC (maximum)
Power Consumption	220 VAC, 15 Amps, 50/60 Hz, single phase
Line Cord	6' - 9" long (without 220 VAC twist plug); 14 AWG x 3-C
Arc Torch Cable	16' - 3" long
Ground Cable	9' long, 1 AWG x 6 mm ²
Air Requirement	60-65 PSI, dry compressed air; 3.5 CFM @ 65 PSI
Arc Striking System	Pilot arc feature with two second delay
Power Switch	Rocker type, lighted
Overall Dimensions	16-3/4" (L) x 14-3/4" (H) x 8-1/8" (W)
Weight	26.5 lb.
Accessories	Inlet air regulator (1/4" - 18 NPT), Shoulder strap, Electrode, Tip, Ceramic Ring
Rated Duty Cycle	40% at 36 amps, 60% at 28 amps

DUTY CYCLE is a welding or cutting, equipment specification, which defines the number of minutes, within a 10-minute period, that a given piece of equipment can safely weld or cut at its rated load without overheating.

For example, if a welder or cutting type piece of equipment is rated at a 40% duty cycle at 36 amps, that particular piece of equipment must be "rested" for at least 6 minutes after 4 minutes of continuous welding or cutting.

Failure to carefully observe duty cycle limitations can easily over stress the power generation systems of a piece of equipment contributing to the premature failure of that piece of equipment and the voiding of 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.

GENERAL SAFETY RULES

 **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

- 4. 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.
- 5. Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
- 6. 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.
- 7. 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.
- 8. 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.
- 9. 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

- 10. 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.
- 11. Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from arc.** Loose clothes, jewelry, or long hair can catch fire.
- 12. 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.

13. **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.
14. **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.
15. **Use safety equipment. Always wear eye protection.** Dust mask, nonskid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.

TOOL USE AND CARE

16. **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.
17. **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.
18. **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.
19. **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.
20. **Store idle tools out of reach of children and other untrained persons.** Tools are dangerous in the hands of untrained users.
21. **Maintain tools with care. Keep tools in good repair.** Properly maintained tools will get the job done better. Do not use a damaged tool. Tag damaged tools "Do not use" until repaired.
22. **Check for 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.
23. **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

24. **Tool service must be performed only by qualified repair personnel.** Service or maintenance performed by unqualified personnel could result in a risk of injury.
25. **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.

SPECIFIC SAFETY RULES

1. **Maintain labels and nameplates on the Air Plasma Cutter.** These carry important information. If unreadable or missing, contact Harbor Freight Tools for a replacement.
2. **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.
3. **Avoid unintentional starting.** Make sure you are prepared to begin work before turning on the Air Plasma Cutter.
4. **Unplug before performing maintenance.** Always unplug the Plasma Cutter from its electrical outlet before performing and inspection, maintenance, or cleaning procedures.
5. **Never leave the Plasma Cutter unattended while energized.** Turn power off if you have to leave the Air Plasma Cutter.
6. **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 cutting overhead or in confined spaces, wear flame resistant ear plugs or ear muffs to keep sparks out of ears.
7. **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 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 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 Cutter. Never use other compressed gases.

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 an ANSI-approved respirator, are **ESSENTIAL** to reduce the risk of developing the above illnesses.

8. **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.
9. **Always keep hoses away from 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.
 10. **Read and understand all instructions and safety precautions as outlined in the manufacturer's manual for the material you will weld or cut.**
 11. **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."
 12. **Never use oil or grease on any inlet connector, outlet connector, or cylinder valves.**

 **WARNING!** This product, when used for welding 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.*)

 **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.

GROUNDING

This Air Plasma Cutter requires a 3-prong, 220 VAC, polarized, twistlock plug (not supplied). This plug must be installed by a qualified electrician.

 **WARNING!**

Improperly connecting the grounding wire can result in the risk of electric shock. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded. Do not modify the power cord provided with the tool or product. Never remove the grounding prong from the plug. Do not use the 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.






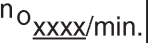
EXTENSION CORDS

If an extension cord is to be used with this product, it must be rated to handle 220 VAC, single phase at 20 amps (minimum), and have a twistlock plug.

1. Grounded, 220 VAC tools require a three wire extension cord.
2. As the distance from the supply outlet increases, you must use a heavier gauge extension cord. Using extension cords with inadequately sized wire causes a serious drop in voltage, resulting in loss of power and possible tool damage.
3. The smaller the gauge number of the wire, the greater the capacity of the cord. For example, a 14 gauge cord can carry a higher current than a 16 gauge cord.
4. When using more than one extension cord to make up the total length, make sure each cord contains at least the minimum wire size required.
5. If you are using one extension cord for more than one tool, add the nameplate amperes and use the sum to determine the required minimum cord size.
6. If you are using an extension cord outdoors, make sure it is marked with the suffix “W-A” (“W” in Canada) to indicate it is acceptable for outdoor use.
7. Make sure your extension cord is properly wired and in good electrical condition. Always replace a damaged extension cord or have it repaired by a qualified electrician before using it.
8. Protect your extension cords from sharp objects, excessive heat, and damp or wet areas.

SYMBOLGY

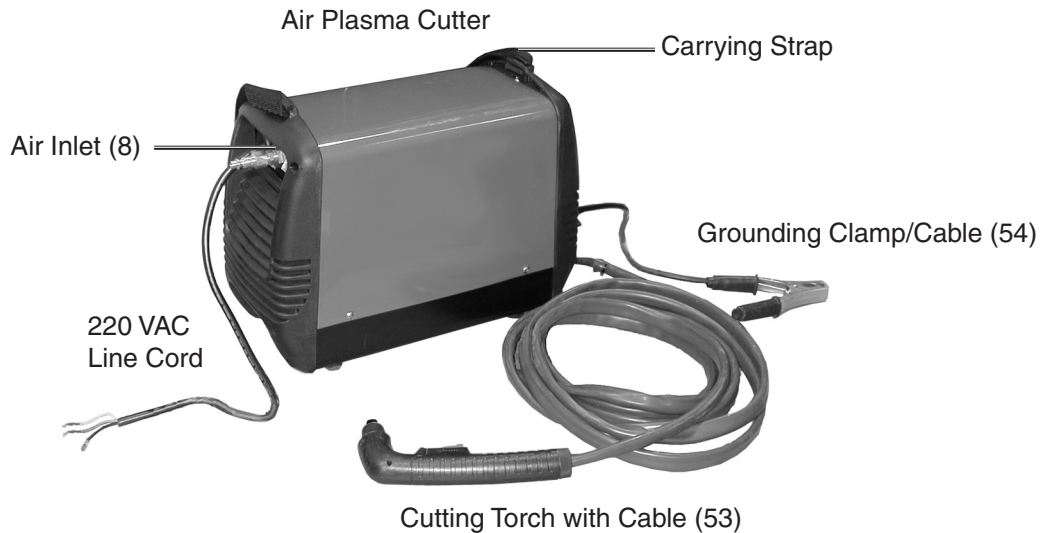
Table B

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

UNPACKING

When unpacking, check to make sure that all the parts are included. Refer to the Assembly section, and the Assembly Diagrams and Parts List on pages 15 & 16.

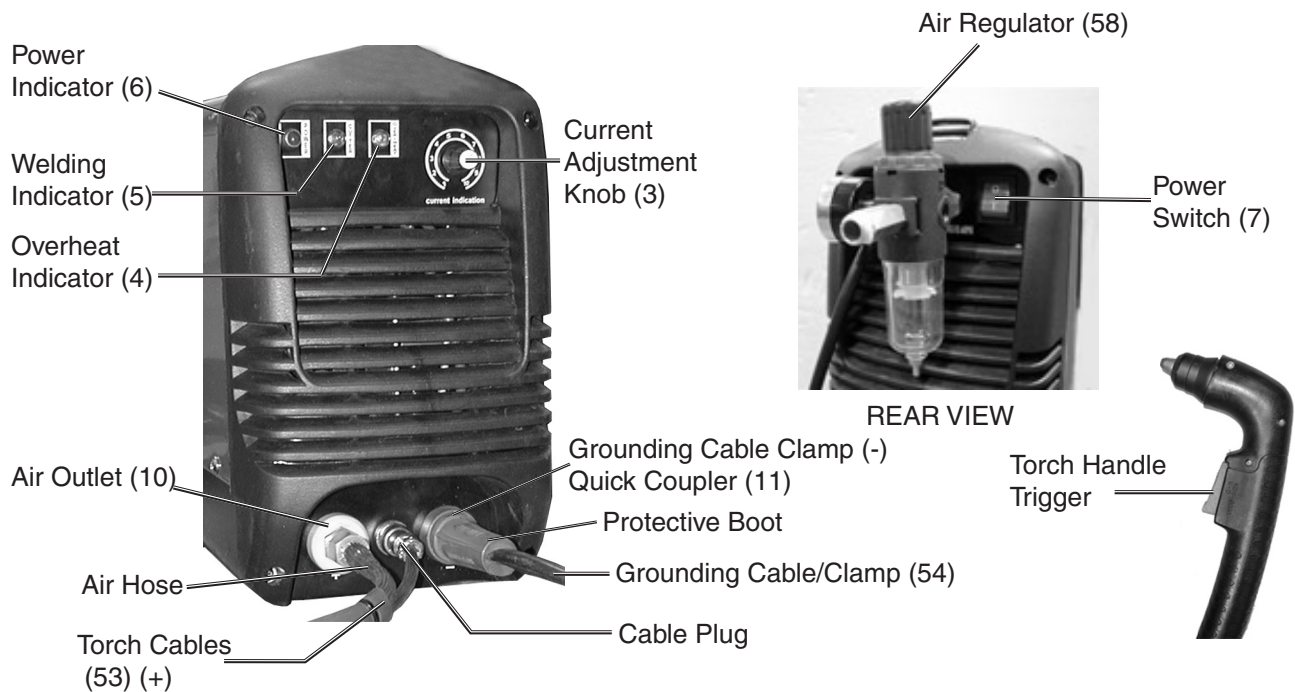
If any parts are missing or broken, please call Harbor Freight Tools at the number on the cover of this manual as soon as possible.



ASSEMBLY INSTRUCTIONS

1. Connect a 3-prong, 220 VAC, polarized, twistlock plug (not supplied) to the Line Cord. This plug must be installed by a qualified electrician.
2. Attach the Pressure Gauge to the Air Regulator (58). Then install the Air Regulator to the Air Inlet (8) on the rear of the Plasma Cutter, with the arrow pointing towards the Plasma Cutter. See photo below.

CONTROLS AND INDICATORS



OPERATING INSTRUCTIONS

SETUP

Before beginning, please read and understand the section “Specific Safety Rules” starting on page 6.

1. Mount the metal to be cut to a metal welding-cutting table (not supplied). It should be mounted so that the cutting debris falls to the cement floor.
2. Place the Plasma Cutter no closer than six feet from the workpiece to be cut, in a clean area that provides adequate fresh-air ventilation for the cutter.
3. Connect a hose and coupling (not supplied) from the air supply to the inlet (1/4”-18 NPT) of the Air Regulator (58) on the rear of the unit. See photo above.

The air compressor output must be set to at least 90 PSI. The Regulator (58) on the Plasma cutter must be set to 65 PSI. The air supply must be dry. It is recommended to install a moisture filter (not included) on the compressor.

4. Connect the Torch Cables (53) cable plug and air outlet hose as shown above. Twist to lock in place.



WARNING! Make certain that the connection point is completely covered by the rubber boot (refer to illustration on page 11).

This connection may become electrically live during use, creating an electric shock hazard if left exposed.

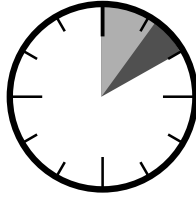
5. Plug in the Grounding Clamp/Cable (54) into the Ground Cable Quick Coupler (11). Twist to lock in place.
6. Securely place the clamping end of the Grounding Cable Clamp (54) to a part of the workpiece or metal table that is clean of paint, oil, dirt, or rust. Clamp as close as possible to the workpiece without damaging the cable during cutting.
7. Scour the surface to be cut and the surface that the ground clamp is attached to with a wire brush (not included). Clean all surfaces off *thoroughly*.

Important!

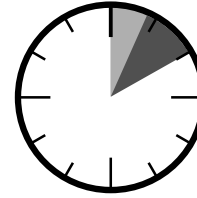
Any obstruction of any kind on the work surface or the area the ground clamp is connected to may cause incomplete cutting or cause the arc to go out. This tool requires a continuous electrical contact with the work surface to work properly.

8. Verify that the Power Switch (7) is in the Off (O) position, then plug the 220 VAC line cord plug into a 220 VAC, 20 amp (minimum) dedicated outlet/circuit.
9. Turn the Current Adjustment Knob (3) to the desired current (5 to 36 amps). Maximum current is required to cut 3/8 inch steel.

DURATION OF USE (DUTY CYCLE)



60% Duration of Use
(28 amp setting)
6 minutes ON
followed by
at least 4 minutes OFF



40% Duration of Use
(36 amp setting)
4 minutes on
followed by
at least 6 minutes off

Avoid damage to the Cutter by not leaving it on for more than the prescribed duration of use. The Duration of Use (or Duty Cycle) defines the number of minutes, within a 10 minute period, during which a given cutter can safely produce a particular welding current. For example, this Cutter with a 40% duration of use at 36 amps must be allowed to rest for at least 6 minutes after every 4 minutes of continuous cutting at 36 amps. Failure to carefully observe duration of use limitations can easily over stress a cutter's power generation system contributing to premature cutter failure. This cutter has an internal thermal protection system to assist with preventing this sort of over stress. When the unit overheats, it automatically shuts down, then automatically returns to service when it cools down. When it returns to service, follow a more conservative duration of use routine to help prevent excess wear to the cutter.

CUTTING

- 10. ONLY AFTER EVERYTHING IS IN PLACE FOR CUTTING, press the power switch to the on position.** The Red Power Indicator lights, but the torch is not energized yet. Every time the Plasma cutter is turned on air will flow out of the torch for about two seconds.
11. Orient yourself to one side of the area to be cut and hold the arc-shielded face shield over your eyes. Hold the tip away from all objects and people and squeeze the trigger until you hear air coming out of the end of the torch. Release the trigger.
12. Squeeze (and hold) the torch handle trigger to energize the torch handle tip. The pilot arc will start. The air output is delayed to allow a proper arc to begin.

Warning: The Torch handle is now energized. Be careful not to touch anything else with the Torch handle (53) tip except the workpiece to be cut.

13. Bring the tip close enough to the starting point of the cut to create an arc. The Green Cutter indicator lights.

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.

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.

PROPER CUTTING TECHNIQUE

14. To cut efficiently, the following steps must be carefully followed:

- √ **Lightly touch the Tip to the cutting surface.**
- √ **CONTACT WITH THE WORK SURFACE *MUST BE MAINTAINED* OR THE UNIT WILL SHUT OFF.** If contact is lost with the cutting surface, the arc will stop within two seconds. Squeeze the Trigger once and release before attempting to restart the arc.
- √ **Slowly move the Torch handle at a slight angle along the cutting line with the Torch tip trailing.**
- √ **Cut 4 minutes*, then shut the welder off for at least 6 minutes* to allow it to cool properly, or else the welder will overheat, possibly damaging itself.**

*Times based on highest amp setting. For other amp settings, see *Duration of Use*, previous page.

√ **If the unit stops and the Red Overheat Indicator (4) lights:**

- Turn the power switch to OFF.
- Allow the unit to cool completely (at least 15 minutes).
- Turn the cutter back ON and continue cutting.
- To prevent this, reduce the welding time between rest periods and ensure proper ventilation.**

√ **If proper cutting is not achieved, adjust the current and/or air flow.** The air causes the molten metal to fall away from the workpiece being cut. To adjust the current or air flow, press the Power Switch (7) to the Off (O) position, then adjust the current and/or air pressure. The air will continue to come out of the Torch handle for 30 seconds once the trigger is released. Repeat steps 9 through 12 again.

15. 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 plug from the electrical outlet.

INSPECTION, MAINTENANCE, AND CLEANING

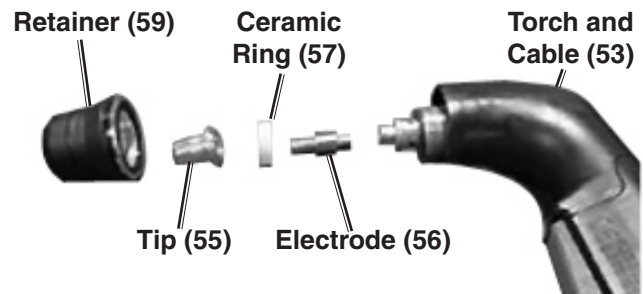
⚠ WARNING! Make sure the Power Switch of the Plasma Cutter is in its “OFF” position and that the tool is unplugged from the electrical outlet before performing any inspection, maintenance, or cleaning procedures.

1. **Before each use**, inspect the general condition of the 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: (1) recheck all nuts, bolts, and screws for tightness, (2) blow the dust from the cooling vents with compressed air, & (3) clean the torch as explained below.
4. Verify that the cooling fan is operational before cutting.
5. If an odd smell comes from the unit during operation, stop all use. Have the Plasma Cutter inspected and repaired by a qualified service technician.
6. Store the welder and accessories in a clean and dry location.

TORCH INSPECTION AND ASSEMBLY

Inspect before use and after every hour of use. Inadequate torch maintenance, including failing to replace a worn electrode or tip, will destroy the torch and void the warranty.

1. Remove the Retainer and clean with steel wool. Then check for cracks and replace the Retainer if necessary.
2. Remove the Tip (55) and compare the old Tip against a new Tip. Replace Tip if the hole is deformed or 50% oversized. If the inside of the Tip is not clean and bright, clean with steel wool. Be sure to remove any leftover pieces of steel wool from the Tip.

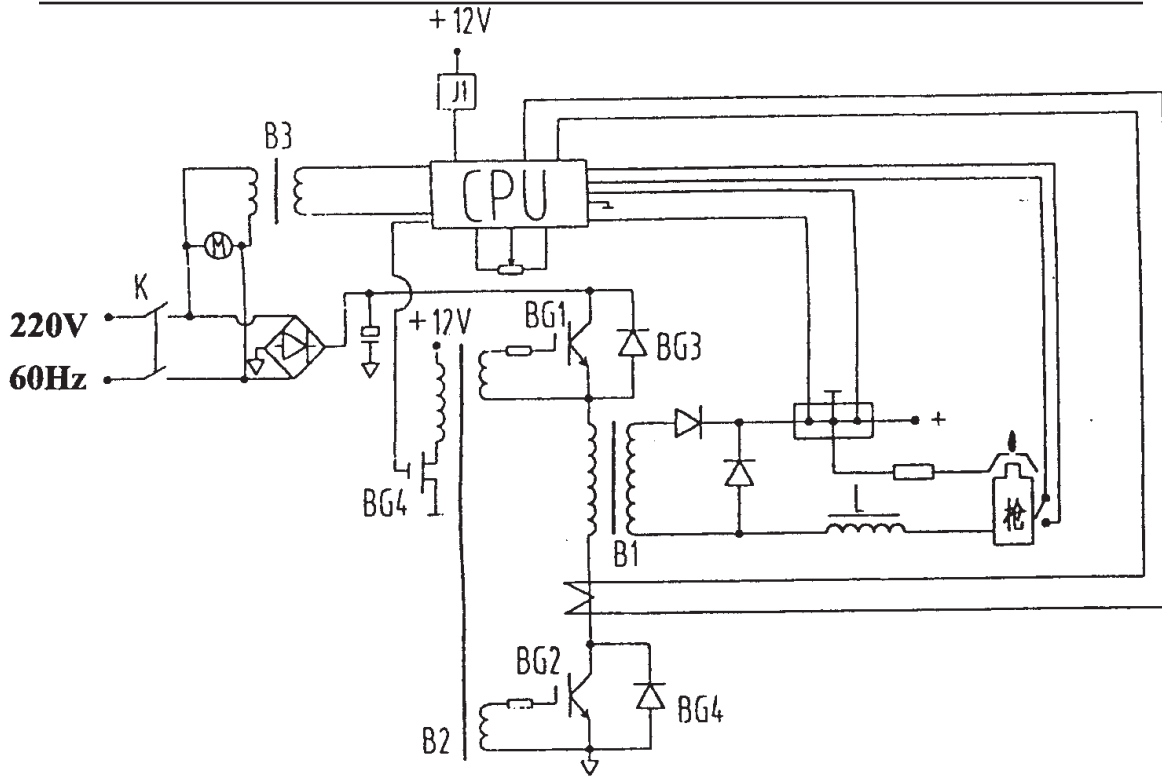


3. Check the Electrode's (56) center for a pit that is more than 1/16" (2mm) deep. If so, replace the Electrode.
4. Remove and check the Ceramic Ring (57) for cracks and plugged side holes. Replace it if it is damaged. **Note: The Ceramic Ring only goes on one way. The Ceramic Ring must seat squarely on the end of the Electrode.**
5. **Carefully** reassemble the parts in reverse order. Thread retainer on only far enough to hide its metal band inside the torch handle. The tip should be slightly spring loaded at this point and should be able to move slightly when pressed against the workpiece.

Note: Do not overtighten the Retainer or Electrode during reassembly. Be careful not to cross-thread or strip the threads of parts during reassembly.

6. After reassembly, check for proper operation of the Torch.

CIRCUIT DIAGRAM



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.

PARTS LIST

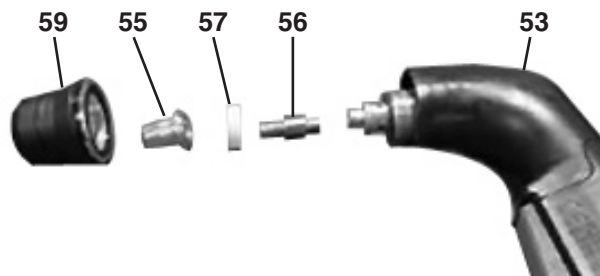
Part	Description	Qty	Part	Description	Qty	Part	Description	Qty
1	Housing	1	37	Screw, Cross, M4x14	5	67	Quick Coupler Sheath (-)	1
2	End Cover, Plastic	2	38	Control Board	1	68	Flat Washer	2
3	Current Adjusting Knob	1	39	Screw, Self-tapping, M4x10	10	69	Nut	1
4	Overheat Indicator	1	41	Housing Cover	1	70	Brass Coupler	1
5	Welding Indicator	1	42	Quick Coupler Sheath (+)	1	71	Flat Washer	1
6	Power Indicator	1	43	Washer, Zinc Coated, 14	1	72	Flat Washer	8
7	Switch, Power	1	44	Nut, M14	2	73	Resistor	1
8	Air Inlet	1	45	Washer, Flat, Brass, 8	2	74	Nut	1
9	Lock Nut	1	46	Bolt, Hex, M8x16	1	75	Flat Washer	2
10	Air Outlet	1	47	Bolt, Hex, M5x12	4	76	Cross Screw	1
11	Quick Coupler	1	48	Feet, Housing	4	77	Flat Washer	8
12	Brass Bolt	1	49	Screw, Cross, M4x14	4	78	Cross Screw	4
13	Middle Layer	1	50	Washer, Flexible, 4	4	79	Cross Screw	4
14	Air Valve	1	51	Screw, Self-tapping, M3x20	1	80	Capacitor	2
15	Fan	1	52	Screw, Self-tapping, M4x18	12	81	Reactor	1
16	Nut, M4	4	53*	Torch and Cable	1	82	Nut	8
23	Transformer, Main	1	54	Grounding Clamp/Cable	1	83	Flat Washer	16
24	Insulating Paper	1	55*	Tip	1	84	Flexible Washer	8
25	Transformer Fix Board	1	56*	Electrode	1	85	Capacitor Clip	1
26	Screw, Cross, M4x80	8	57*	Ceramic Ring	1	86	Reactor Board	1
27	Screw, Cross, M5x100	2	58	Air Regulator w/gauge	1	87	Cross Screw	1
29	Insulating Strip	4	59*	Retainer	1	88	Shoulder Harness	1
30	Heat Sink	1	60	Switch Plug	1	89	Hose Clamp	1
31	Diode	6	61	Quick Coupler Sheath (-)	1	90	Air Hose	1
32	Circuit Board	1	62	Flat Washer	1	91	Rubber Boot	1
33	Thermal Protector	1	63	Nut	1			
34	Washer, Flat, 3	1	64	Flexible Washer	4			
35	Screw, Cross, M3x9	1	65	Flat Washer	8			
36	IGBT	1	66	Nut	4			

*Part of the Torch and shown in the **Torch Diagram** below.

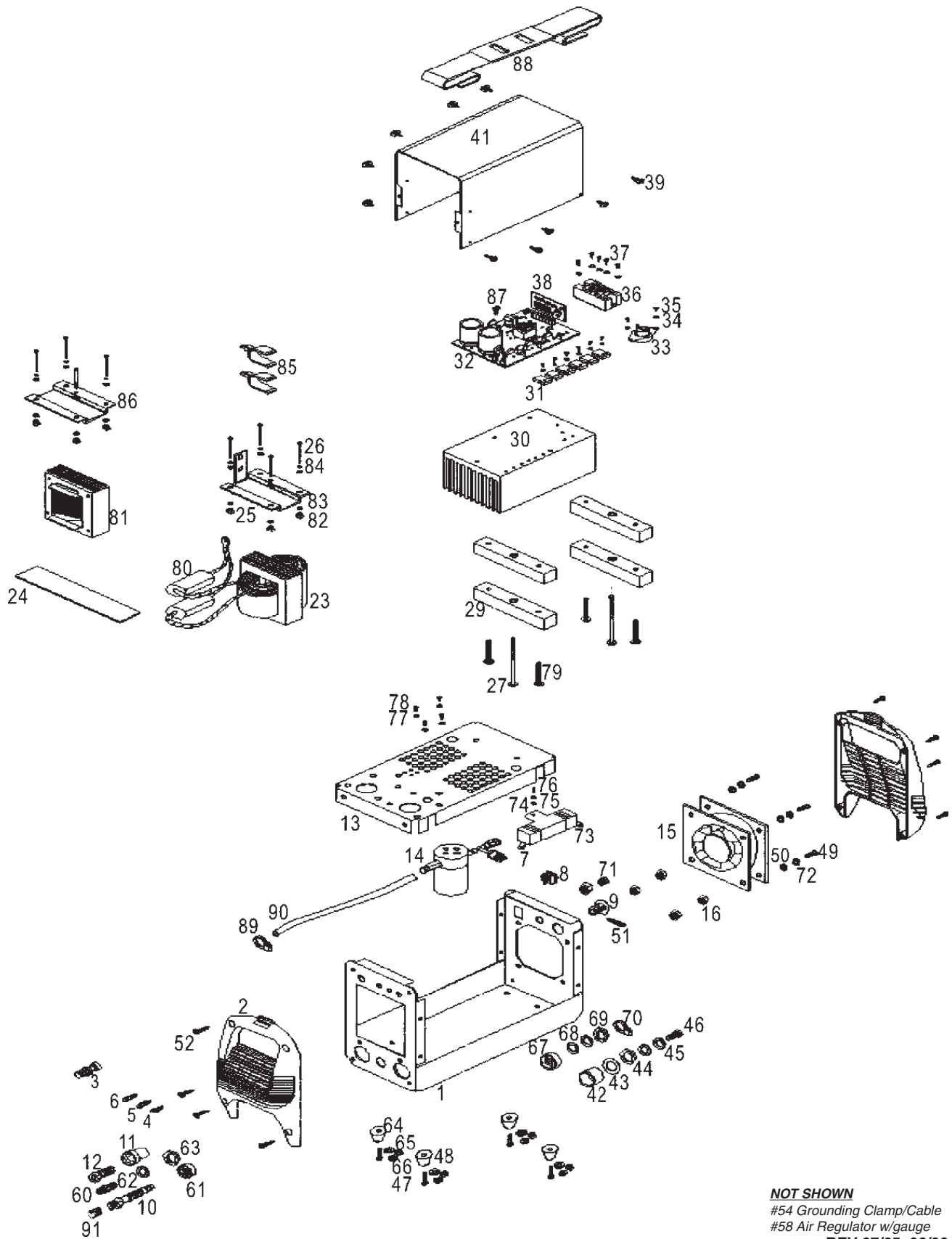
NOTE: Some parts are listed and shown for illustration purposes only and are not available individually as replacement parts.

TORCH DIAGRAM

Parts referenced with * above are on this diagram.



ASSEMBLY DIAGRAM



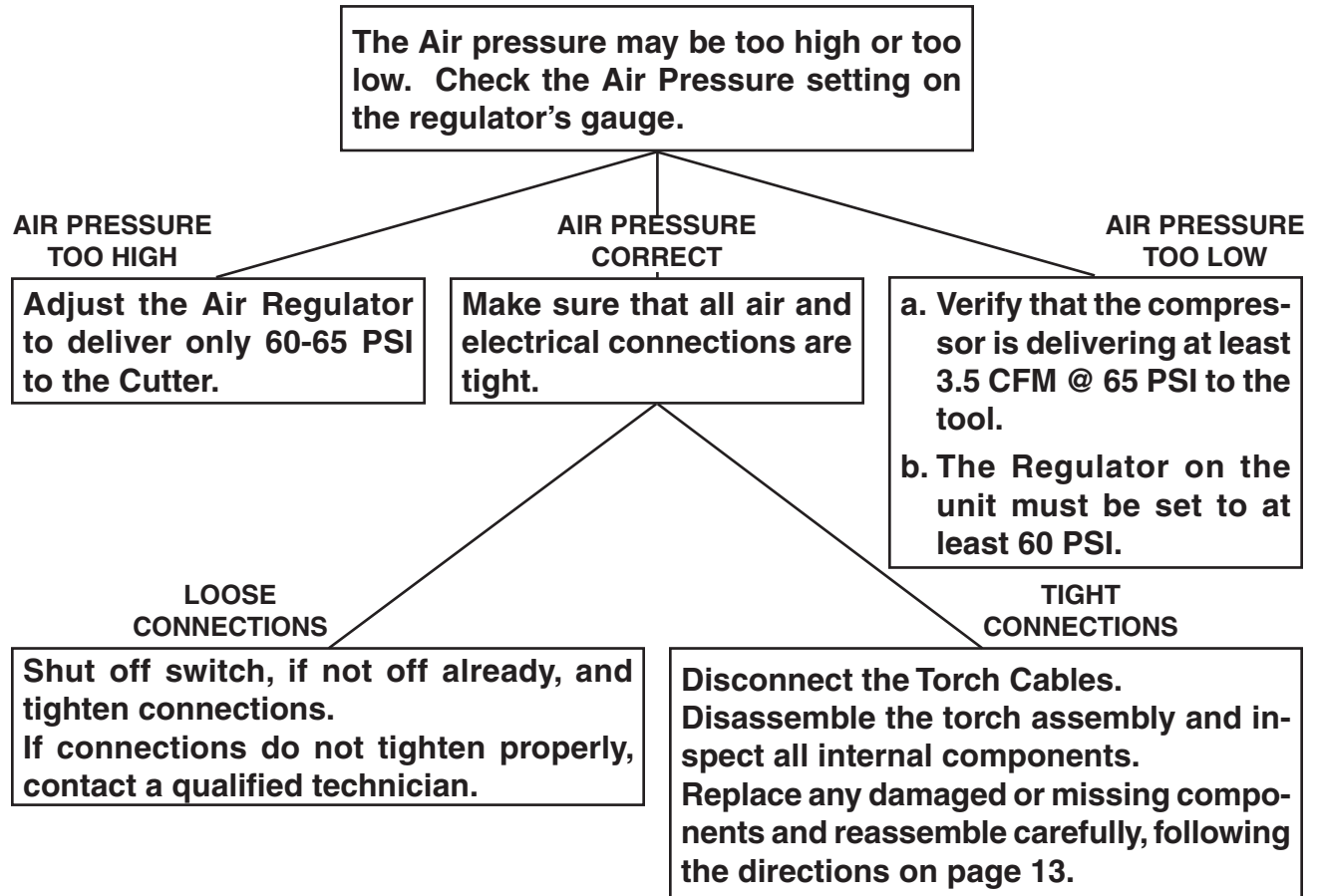
NOT SHOWN
 #54 Grounding Clamp/Cable
 #58 Air Regulator w/gauge
 REV 07/05; 06/06

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



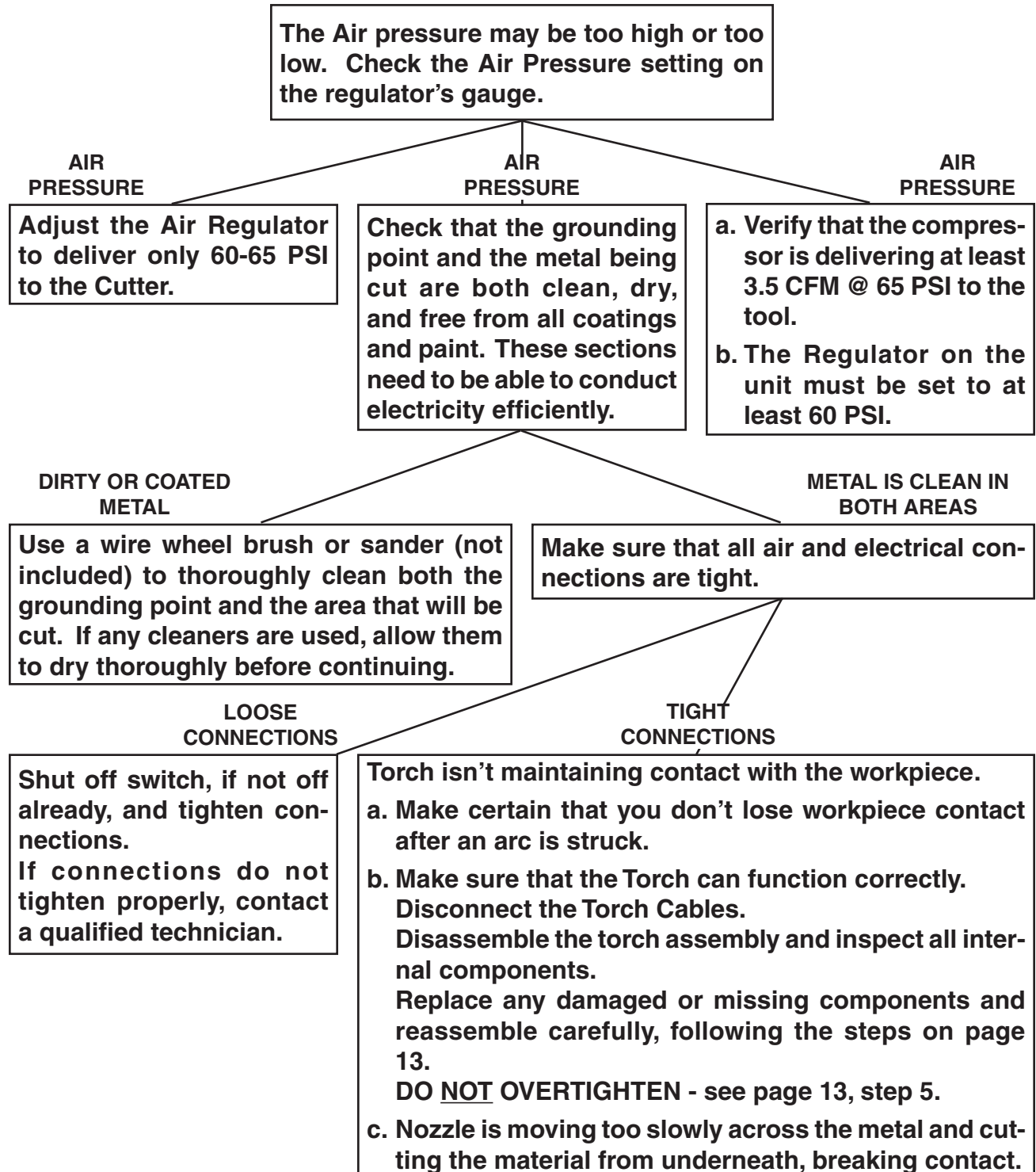
If the steps above do not solve the problem or if the repairs involved are too complex, contact a qualified technician.

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.

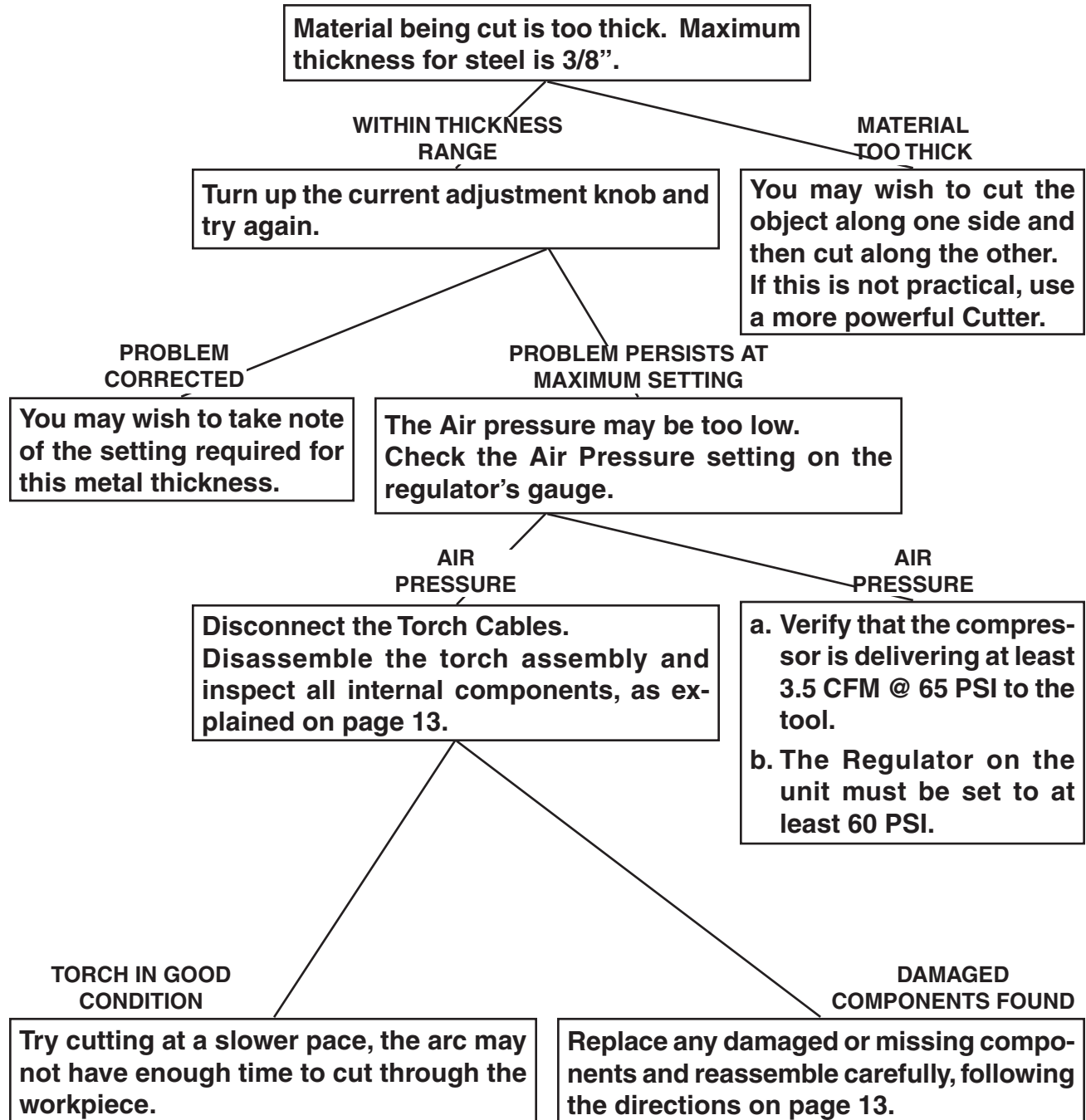
REV 07/05

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.

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. Thinner 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 explained on page 13.

TORCH IN GOOD
CONDITION

Air supply pressure may be inadequate:
a. Verify that the compressor is delivering at least 3.5 CFM @ 65 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 components and reassemble carefully, following the directions on page 13.

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