

Owner's Manual & Safety Instructions

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

CHICAGO ELECTRIC **WELDING**

240 VOLT INVERTER PLASMA CUTTER WITH DIGITAL DISPLAY



Visit our website at: <http://www.harborfreight.com>
Email our technical support at: tech@harborfreight.com

ITEM 95136

REV 12f

When unpacking, make sure that the product is intact and undamaged. If any parts are missing or broken, please call 1-800-444-3353 as soon as possible.

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No portion of this manual or any artwork contained herein may be reproduced in any shape or form without the express written consent of Harbor Freight Tools. Diagrams within this manual may not be drawn proportionally. Due to continuing improvements, actual product may differ slightly from the product described herein.

Tools required for assembly and service may not be included.

⚠ WARNING

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

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SAFETY






SETUP

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WARNING SYMBOLS AND DEFINITIONS

	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	Addresses practices not related to personal injury.

IMPORTANT SAFETY INSTRUCTIONS

General Tool Safety Warnings

WARNING



Read all safety warnings and instructions.

Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

Save all warnings and instructions for future reference.

1. **Maintain labels and nameplates on the tool.**
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. Keep the work area free of obstructions, grease, oil, trash, and other debris. Do not use in areas near flammable chemicals, dusts, and vapors. Do not use in a damp or wet location.
3. **Avoid unintentional starting.** Make sure switch is in off position before plugging in. Make sure you are prepared to begin work before turning on the tool.
4. **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. **Unplug the tool from its electrical outlet before performing any inspection, maintenance, or cleaning procedures, including changing accessories.**
5. **Prevent eye injury and burns.** Wearing personal protective equipment reduces the risk for injury.
 - Wear an ANSI-approved 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.

General Tool Safety Warnings (cont.)

- 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.
9.  **INHALATION HAZARD: Welding and Cutting Produce TOXIC FUMES.**
- Exposure to welding or cutting exhaust fumes can increase the risk of developing certain cancers, such as cancer of the larynx and lung cancer. Also, some diseases that may be linked to exposure to welding or cutting exhaust fumes are:
- Early onset of Parkinson's Disease
 - Heart disease
 - Ulcers
 - Damage to the reproductive organs
 - Inflammation of the small intestine or stomach
 - Kidney damage
 - Respiratory diseases such as emphysema, bronchitis, or pneumonia
-  Use natural or forced air ventilation and wear a respirator approved by NIOSH to protect against the fumes produced to reduce the risk of developing the above illnesses.
10. **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.
11. **Keep hoses away from welding/cutting area.** 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.

General Tool Safety Warnings (cont.)

SAFETY

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. 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. 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.

17. **USE PROPER EXTENSION CORD.** Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. A 50 foot extension cord must be at least 12 gauge in diameter, and an 100 foot extension cord must be at least 10 gauge in diameter. If in doubt, use the next heavier gauge. The smaller the gauge number, the heavier the cord.

18. This product requires a 3-prong, 240 V~, twist-lock plug (not included). This plug must be installed by a qualified electrician.

19. **KEEP CHILDREN AWAY.** All visitors should be kept safe distance from work area.

20. **MAKE WORKSHOP KID PROOF** with padlocks, master switches, or by removing starter keys.

21. **USE RIGHT TOOL.** Don't force tool or attachment to do a job for which it was not designed.

22. **SECURE WORK.** Use clamps or a vise to hold work. It's safer than using your hand and it frees both hands to operate tool.







23. **MAINTAIN TOOLS WITH CARE.** Keep tools clean for best and safest performance. Follow instructions for changing accessories.

24. Inspect before every use; do not use if parts loose or damaged.

SETUP

OPERATION

Symbology

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

TECHNIQUES

SERVICE



Specifications

Rated Input	240V~, 50/60Hz, 19.2A
Rated Duty Cycle	60% @ 40 A 80% @ 34.6 A 100% @ 31 A
Air Requirements	3.5 CFM @ 60-80 PSI
Power Switch	Rocker Type
Weight	49.6 lb.
Cutting Current	15-40 A
Cutting Thickness	1/2" Mild Steel Maximum
Arc Striking System	Pilot Arc
Unit Size	20" L x 8-1/8" W x 14-3/8" H
Air Inlet	1/4" - 18 NPT

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.



Setup



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

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

Note: This air tool may be shipped with a protective plug covering the air inlet. Remove this plug before set up.

Grounding



1. 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.
2. Connect the other end of the wire to an appropriate ground, such as a steel workbench, steel building member or grounding stake.

CHICAGO ELECTRIC  **WELDING**

Air Supply

⚠ WARNING



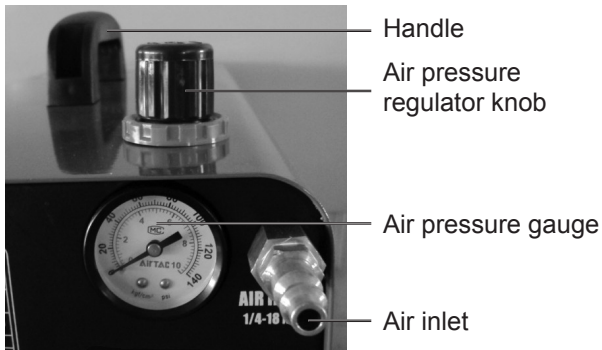
TO PREVENT SERIOUS INJURY FROM EXPLOSION:

Use only clean, dry, regulated, compressed air with this tool.
Do not use oxygen, acetylene, carbon dioxide, combustible gases,
or any other bottled gas as a power source for this tool.

1. Incorporate a filter, regulator with pressure gauge, dryer, in-line shutoff valve, and quick coupler for best service, as shown on Figure A on page 8 and Figure B on page 9. **An in-line shutoff ball valve is an important safety device because it controls the air supply even if the air hose is ruptured. The shutoff valve should be a ball valve because it can be closed quickly.**

Note: An oiler system should not be used with this tool. The oil will mix with the material being propelled, causing poor results.

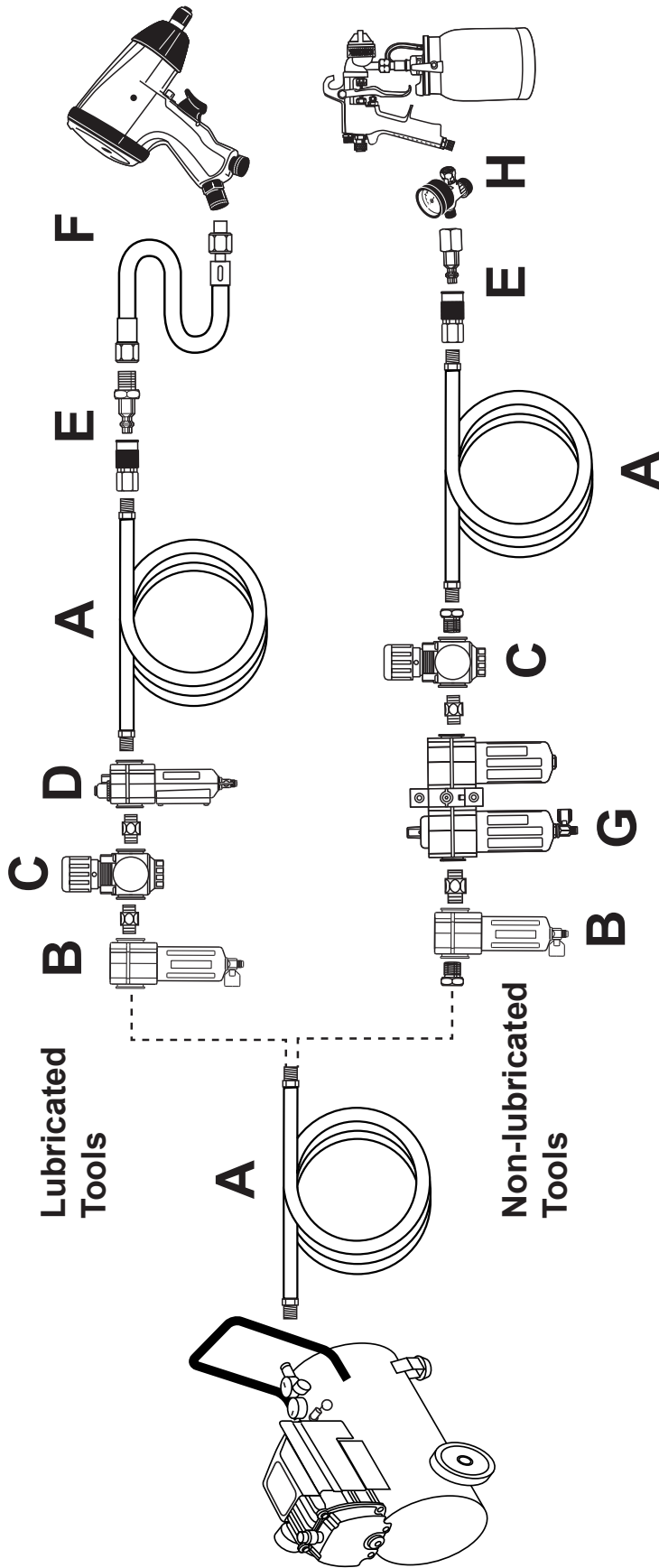
2. Attach an air hose to the compressor's air outlet. Connect the air hose to the air inlet on the back of the Plasma Cutter. Other components, such as a coupler plug and quick coupler, will make operation more efficient, but are not required.



- Note:** Air flow, and therefore tool performance, can be hindered by undersized air supply components. The air hose must be long enough to reach the work area with enough extra length to allow free movement while working.
3. Turn the tool's switch to the off position; refer to Operation section for description of controls.
 4. Close the in-line shutoff valve between the compressor and the tool.
 5. Turn on the air compressor according to the manufacturer's directions and allow it to build up pressure until it cycles off.
 6. Adjust the air compressor's output regulator so that the air output is enough to properly power the tool, but the output will not exceed the tool's maximum air pressure at any time (60-80 PSI). Adjust the pressure gradually, while checking the air output gauge to set the right pressure range.
 7. Inspect the air connections for leaks. Repair any leaks found.
 8. If the tool will not be used at this time, turn off and detach the air supply, safely discharge any residual air pressure, and release the throttle and/or turn the switch to its off position to prevent accidental operation.

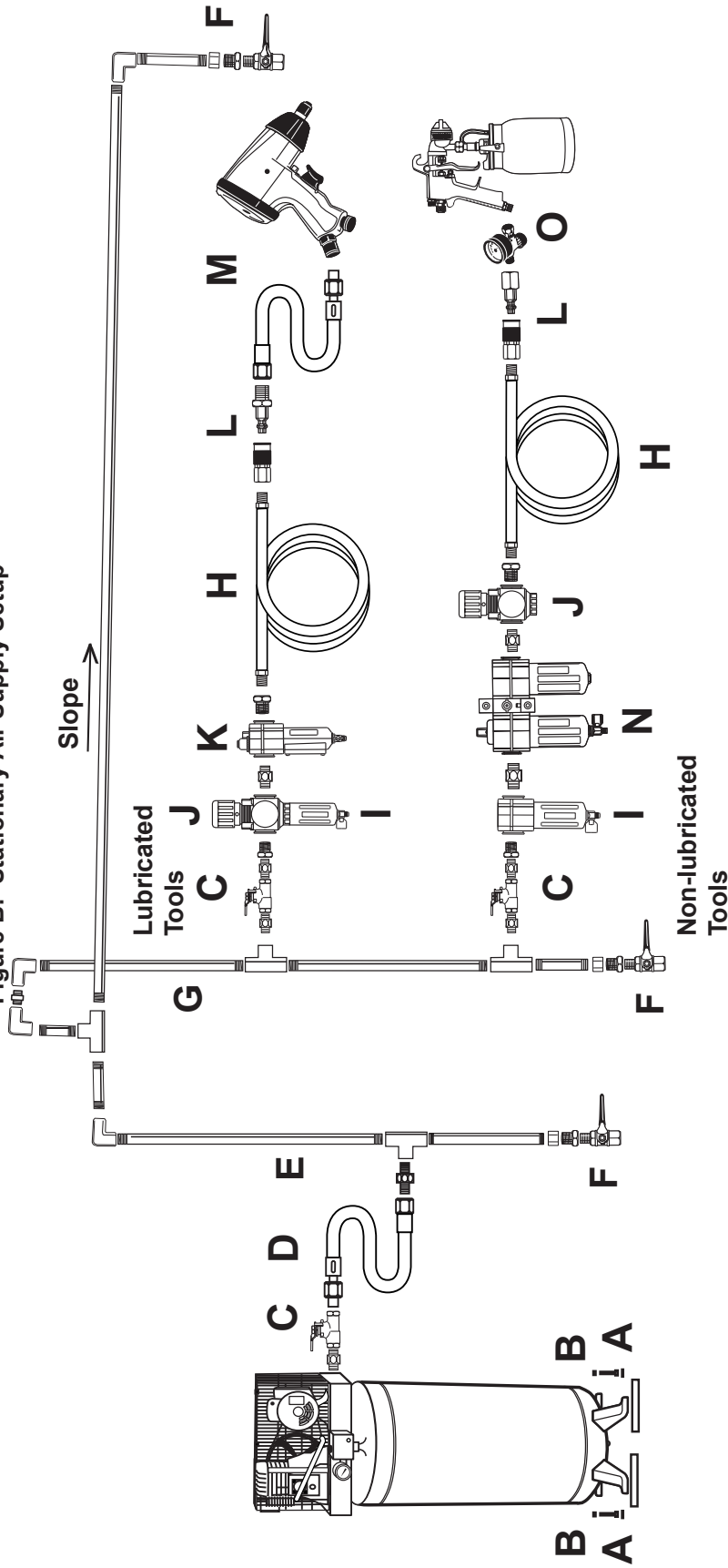
CHICAGO ELECTRIC WELDING

Figure A: Portable Air Supply Setup



Description	Function
A Air Hose	Connects air to tool
B Filter	Prevents dirt and condensation from damaging tool or work piece
C Regulator	Adjusts air pressure to tool
D Lubricator (optional)	For air tool lubrication
E Coupler and Plug	Provides quick connection and release
F Leader Hose (optional)	Increases coupler life
G Air Cleaner / Dryer (optional)	Prevents water vapor from damaging work piece
H Air Adjusting Valve (optional)	For fine tuning airflow at tool

Figure B: Stationary Air Supply Setup



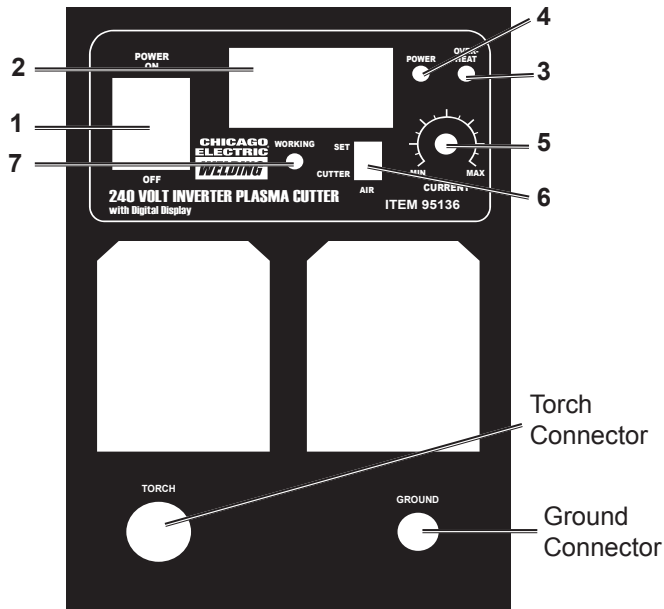
	Description	Function
A	Vibration Pads	For noise and vibration reduction
B	Anchor Bolts	Secures air compressor in place
C	Ball Valve	Isolates sections of system for maintenance
D	Isolation Hose	For vibration reduction
E	Main Air Line - 3/4" minimum recommended	Distributes air to branch lines
F	Ball Valve	To drain moisture from system
G	Branch Air Line - 1/2" minimum recommended	Brings air to point of use
H	Air Hose	Connects air to tool
I	Filter	Prevents dirt and condensation from damaging tool or work piece
J	Regulator	Adjusts air pressure to tool
K	Lubricator (optional)	For air tool lubrication
L	Coupler and Plug	Provides quick connection and release
M	Leader Hose (optional)	Increases coupler life
N	Air Cleaner / Dryer (optional)	Prevents water vapor from damaging work piece
O	Air Adjusting Valve (optional)	For fine tuning airflow at tool

Operating Instructions



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

Controls and Indicators



1. **Power Switch.**
Up is ON, down is OFF.
2. **Digital Amp 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.
Pay attention to Duty Cycle discussed on page 6.
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.

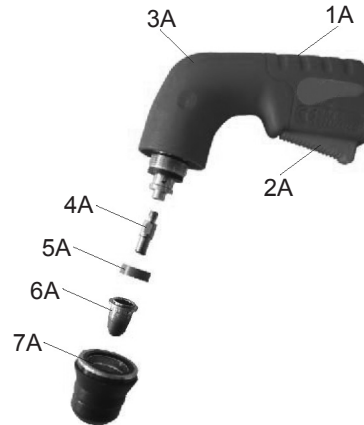
Preparing Your Work Area

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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Basic Operation

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 6, 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 240 V~ line cord plug into an appropriate 240 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 6). 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 4 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.**



Part	Description
1A	Handle
2A	Trigger
3A	Body
4A	Electrode
5A	Insulating Diffuser
6A	Nozzle
7A	Nozzle Holder

13. **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.

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 ½" 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 6.)
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 florescent 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.

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

WARNING

TO PREVENT SERIOUS INJURY FROM ACCIDENTAL OPERATION OR ELECTRIC SHOCK:
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..

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

1. Before each use, inspect the general condition of the 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 19.
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. Do not open the housing.
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.

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

Air pressure too high or too low.
Check the Air Pressure setting
on the regulator's gauge.

AIR PRESSURE TOO HIGH

Adjust the Air Regulator
to deliver only 60-80 PSI
to the Cutter.

AIR PRESSURE CORRECT

Check that all air and electrical
connections are tight.

AIR PRESSURE TOO LOW

- a. Verify that the compressor
is delivering at least
3.5 CFM @ 60 PSI.
- b. Set Regulator on the
unit to at least 60 PSI.

LOOSE CONNECTIONS

Shut off switch, if not off already,
and tighten connections.
If connections do not tighten properly,
contact a qualified technician.

TIGHT CONNECTIONS

Disconnect the
Torch Cables.
Disassemble the torch
assembly and inspect all
internal components.
Replace any damaged
or missing components
and reassemble
carefully, following the
directions on page 11.

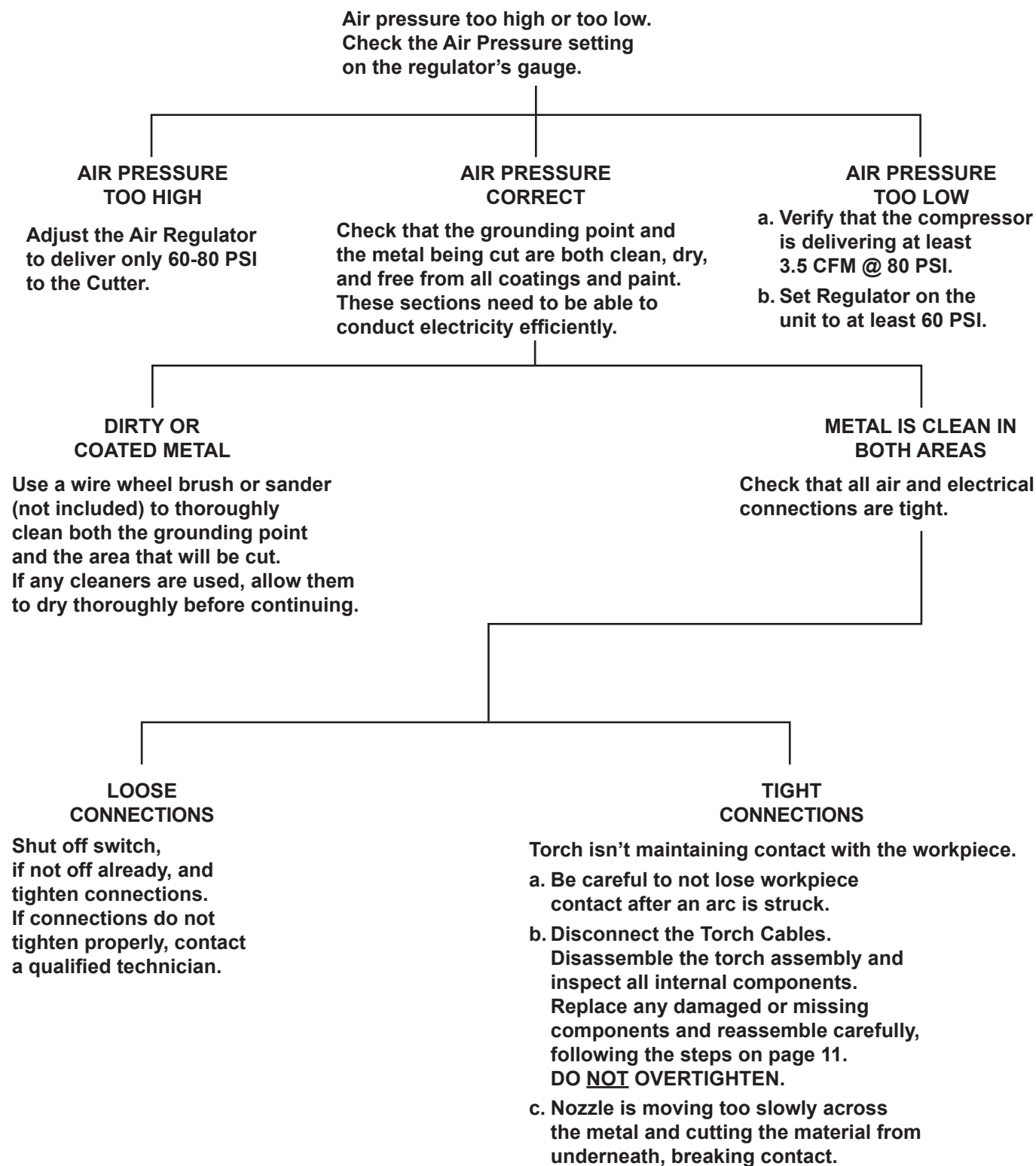
If the steps above do not solve the problem or if the repairs involved are too complex,
contact a qualified technician.

Troubleshooting (cont.)

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.

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Troubleshooting (cont.)

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

Material being cut is too thick.
Maximum thickness for steel is 1/2".

WITHIN THICKNESS RANGE

Turn up the current adjustment knob and try again.

MATERIAL TOO THICK

Cut the object along one side and then cut along the other. If this is not practical, use a more powerful Cutter.

PROBLEM CORRECTED

Take note of the setting required for this metal thickness.

PROBLEM PERSISTS AT MAXIMUM SETTING

Air pressure too low.
Check the Air Pressure setting on the regulator's gauge.

AIR PRESSURE CORRECT

Disconnect the Torch Cables. Disassemble the torch assembly and inspect all internal components, as explained on page 11.

AIR PRESSURE TOO LOW

- Verify that the compressor is delivering at least 3.5 CFM @ 80 PSI.
- Set Regulator on the unit to at least 60 PSI.

TORCH IN GOOD CONDITION

Cut at a slower pace, the arc may not have enough time to cut through the workpiece.

DAMAGED COMPONENTS FOUND

Replace any damaged or missing components and reassemble carefully, following the directions on pages 6-11.

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

Troubleshooting (cont.)

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.

Amperage setting too high; cut at lowest setting possible for the metal being cut.

PROBLEMS REDUCED

Take into account the thickness and type of metal to be cut before starting. Thinner materials 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 11.

TORCH IN GOOD CONDITION

Air supply pressure may be inadequate:

- Verify that the compressor is delivering at least 3.5 CFM @ 80 PSI.
- Set Regulator on the unit to at least 60 PSI.

DAMAGED COMPONENTS FOUND

Replace any damaged or missing components and reassemble carefully, following the directions on pages 6-11.

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

PLEASE READ THE FOLLOWING CAREFULLY

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Parts List

Part	Description	Qty
1	Handle	1
2	Main body cover	1
3	Air supply solenoid	1
4	Control transformer	1
5	Transfer arc circuit board	1
6	Control circuit board	1
7	Chassis	1
8	Splitter	1
9	Current check coil	1
10	Reactor	1
11	Main transformer	1
12	Digital amp meter	1
13	Indicator	3
14	Air switch	1
15	Power supply controller	1
16	Lower cover	1
17	Torch cable connector	1
18	Ground cable connector	1
19	Air pressure relief valve	1
20	Internal & external tooth bent joints	1
21	Solenoid holder	1
22	Timing control PCB	1
23	Drive circuit board	1

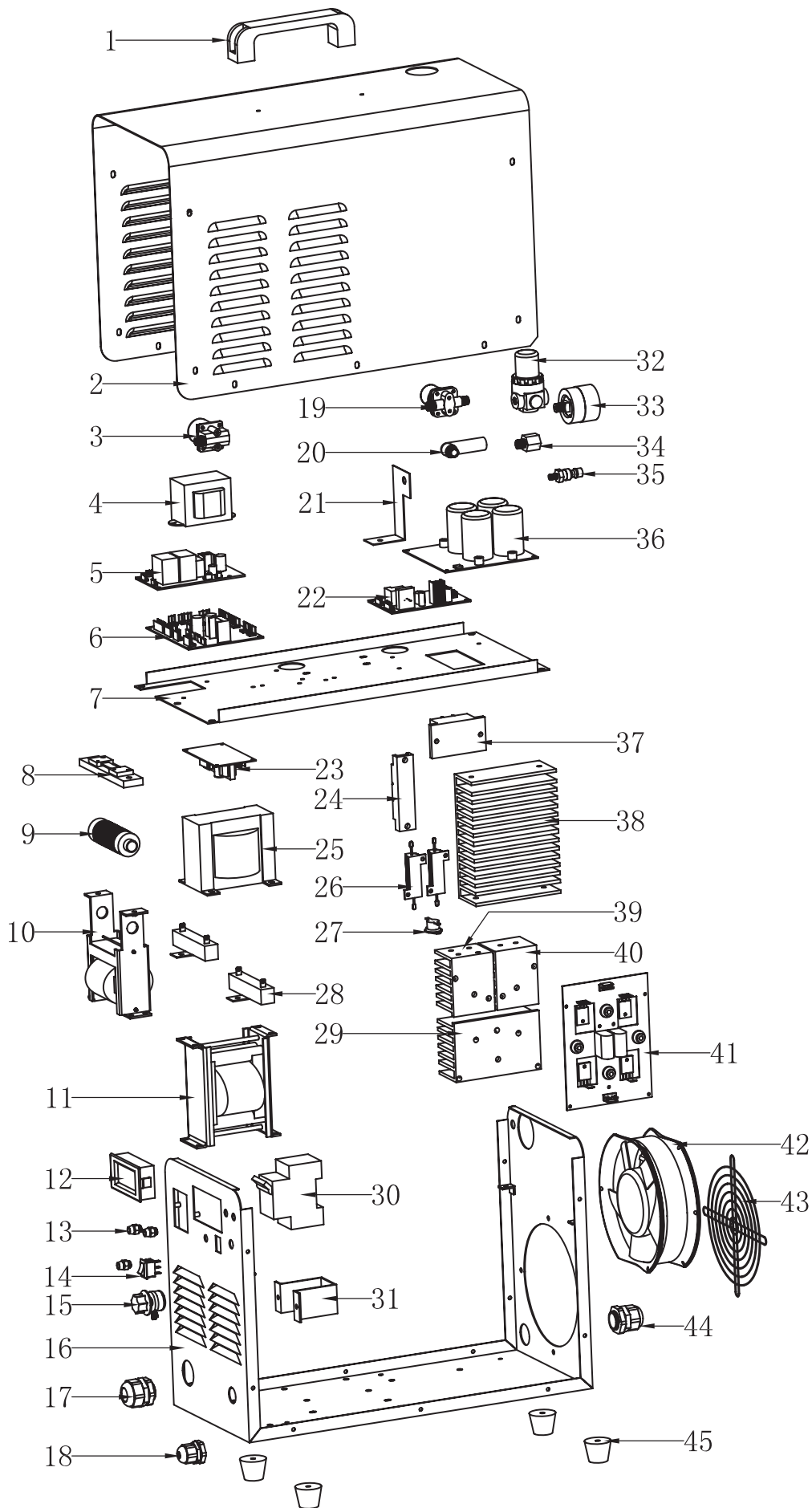
Part	Description	Qty
24	Fast recover diode	1
25	Reactor	1
26	Metal resistor	2
27	Thermostat	1
28	Cement resistor	2
29	Radiator	1
30	Power switch	1
31	Breaker holder	1
32	Regulator	1
33	Pressure gauge	1
34	Fitting	1
35	Gas inlet connector	1
36	Power supply circuit board	1
37	Rectifier bridge	1
38	Radiator	1
39	Radiator	1
40	Radiator	1
41	Inverter circuit board	1
42	Fan	1
43	Fan grill	3
44	Power cable connector	1
45	Insulated foot	4

Record Product's Serial Number Here: _____

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

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

Assembly Diagram



SAFETY

SETUP

OPERATION

TECHNIQUES

SERVICE

Wiring Diagram

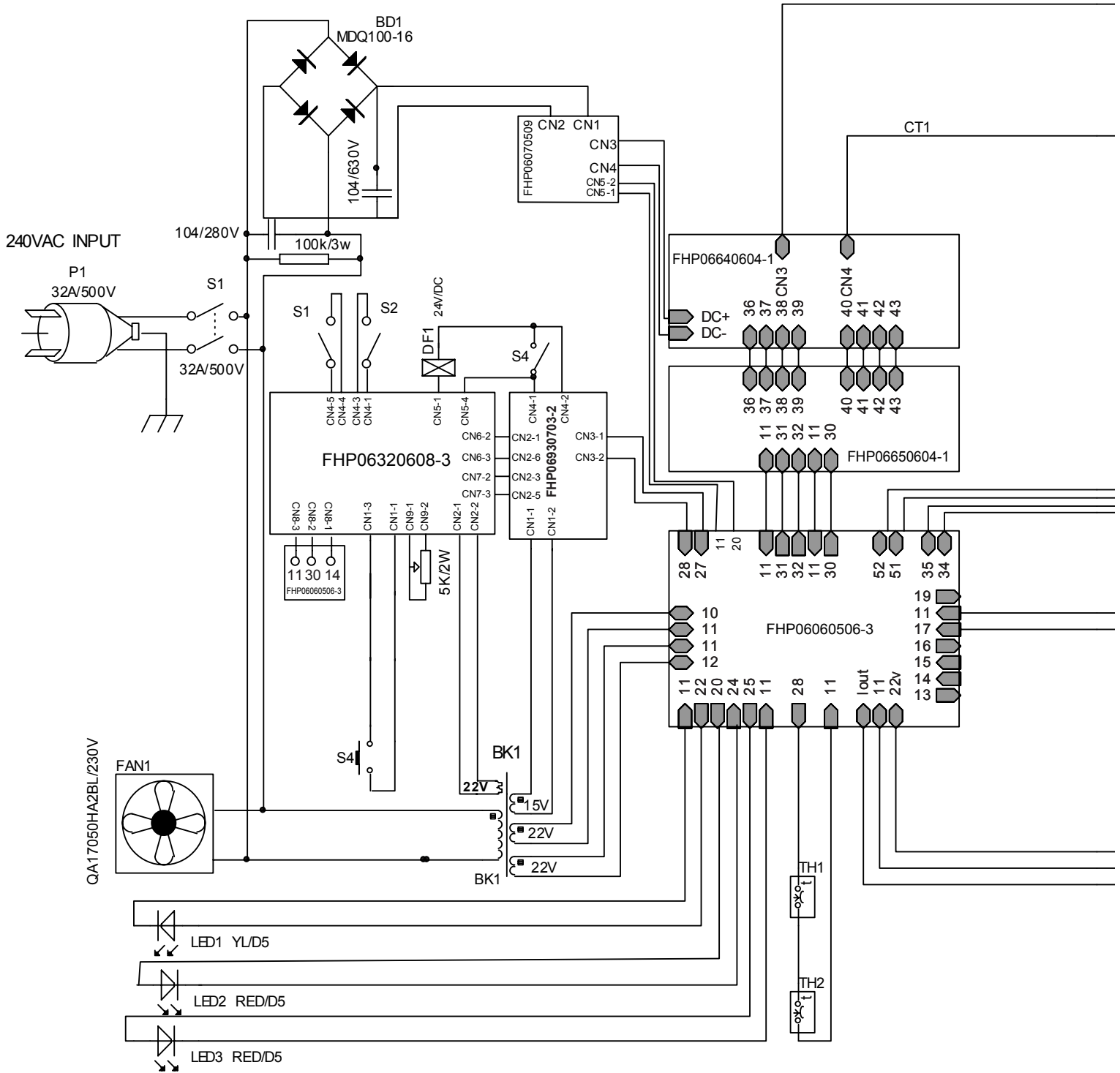
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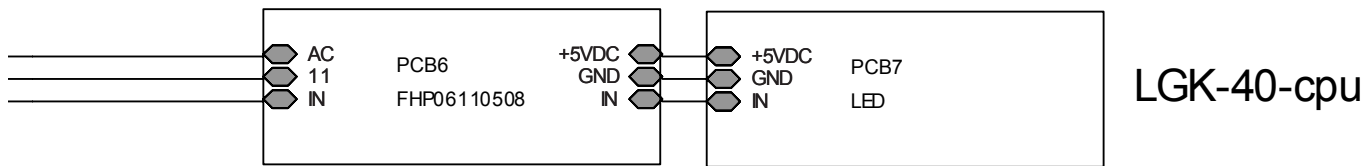
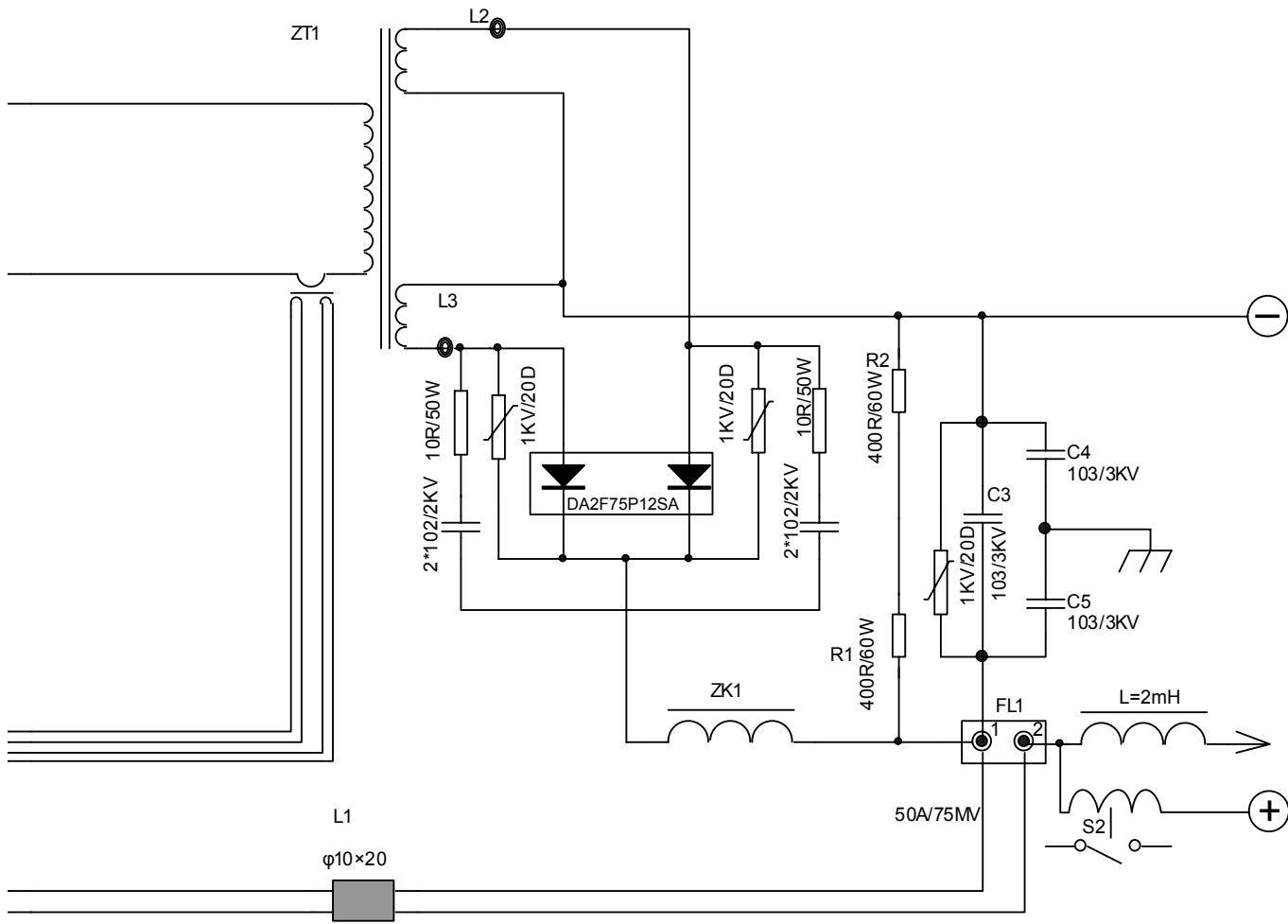
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Wiring Diagram (cont.)



SAFETY

SETUP

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TECHNIQUES

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90 Day Warranty

SAFETY

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

SETUP

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.

OPERATION

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