

CHICAGO **welding**
ELECTRIC[®] **systems**

PLASMA AIR CUTTER
230 VOLT, INVERTER
TECHNOLOGY

Model 92652

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 1-800-444-3353

SPECIFICATIONS

| | |
|---------------------|---|
| Power Consumption | 230 VAC, 50/60 Hz, single phase, 40 amp dedicated circuit required for maximum output |
| Cutting Capacity | Plate Steel 5/64" to 1/2" |
| Cutting Current | 15 to 40 Amps |
| Rated Duty Cycle | 35% at 40 Amps |
| Line Cord | 7' 5" (L) (without 220 VAC twist plug); 12 AWG x 3-C |
| Arc Torch Cable | 16' (L) |
| Ground Cable | 9' 7-3/4" (L) with clamp |
| Air Requirement | 60 to 100 PSI, (maximum), dry compressed air, 3.5 CFM |
| Arc Striking System | Pilot arc |
| Power Switch | Rocker type, lighted |
| Fuse | Internal: 0.5A |
| Overall Dimensions | 16-3/4" (L) x 14-3/4" (H) x 8-1/8" (W) |
| Weight | 36.6 lb. |
| Accessories | - Inlet air regulator - Shoulder strap |

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. **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.
8. **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

9. **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.
10. **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.
11. **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.

12. **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.
13. **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.
14. **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

15. **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.
16. **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.
17. **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.
18. **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.
19. **Store idle tools out of reach of children and other untrained persons.** Tools are dangerous in the hands of untrained users.
20. **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.
21. **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.
22. **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

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

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 Welder/Cutter.
4. **Unplug before performing maintenance.** Always unplug the Plasma Welder/Cutter from its electrical outlet before performing and inspection, maintenance, or cleaning procedures.
5. **Never leave the Plasma Welder/Cutter unattended while energized.** Turn power off if you have to leave the Air Plasma Cutter.
6. **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.
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

Cutting 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.

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 Air Plasma Welder/Cutter.** Using components from other systems may cause personal injury and damage components within.

⚠ 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, 230 VAC, polarized, twist-lock 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 230 VAC, single phase at 40 amps (minimum), and have a twist-lock plug.

1. Grounded, 230 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 10 gauge cord can carry a higher current than a 12 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.

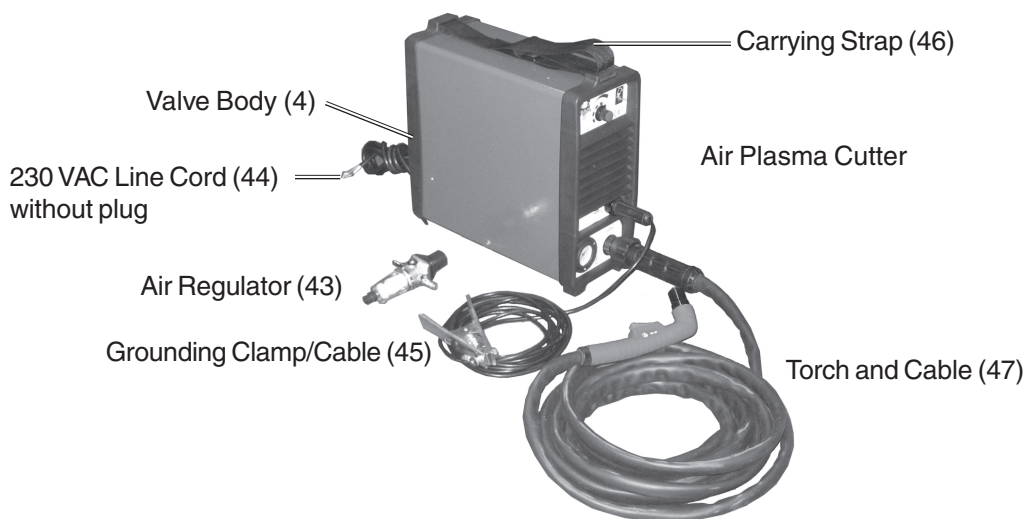
SYMBOLOLOGY

Table B

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

UNPACKING

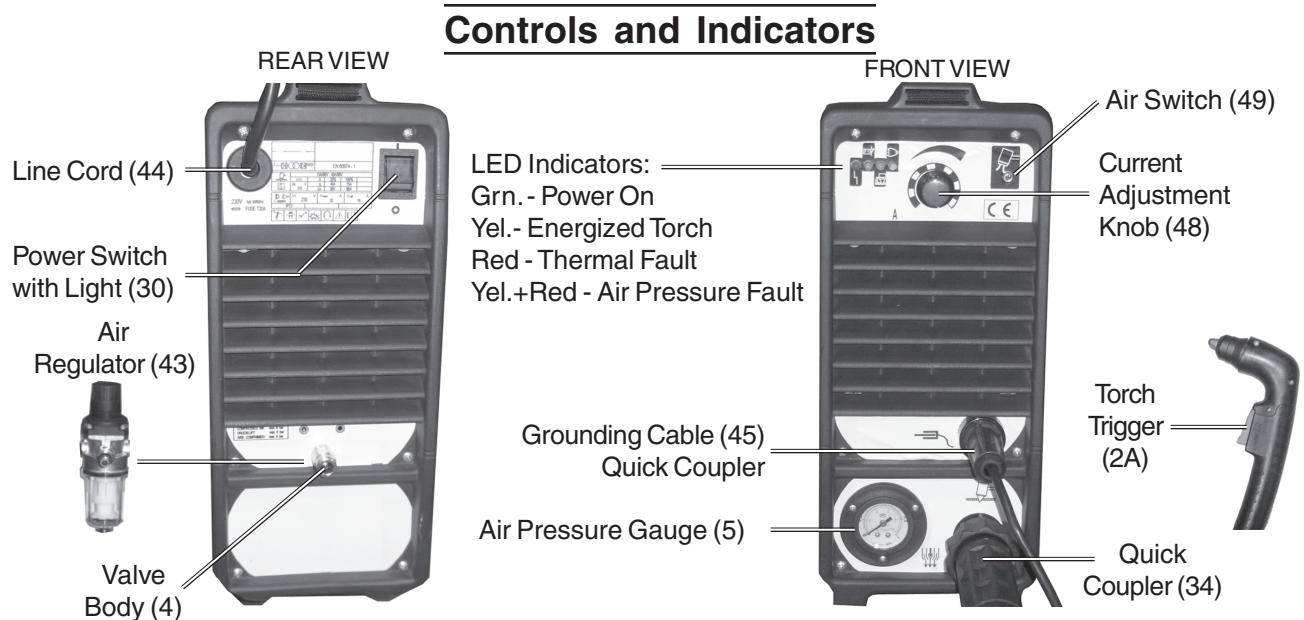
When unpacking, check to make sure that all the parts are included. Refer to the Assembly section, and the Assembly Drawing and Parts List at the end of this manual. If any parts are missing or broken, please call Harbor Freight Tools at the number on the cover of this manual as soon as possible.



ASSEMBLY INSTRUCTIONS

1. Connect a 3-prong, 230 VAC, polarized, twist-lock plug (not supplied) to the Line Cord. This plug must be installed by a qualified electrician.
2. Insert the Air Regulator (43) into the Valve Body (4) (unit rear) using the snap-lock.

OPERATING INSTRUCTIONS



Air Plasma Cutting

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 Regulator (43) at the rear of the unit. See photo on page 9, bottom.

The Air Regulator (43) output must be regulated to between 60 and 100 PSI as read on the Air Pressure Gauge (5). 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 (47) plug into the twist-lock connector on the unit front. Twist to lock. See photo on page 9, bottom.
5. Plug in the Grounding Cable (45) into the Ground Cable Quick Coupler. Twist to lock.
6. Securely place the clamping end of the Grounding Cable Clamp (45) 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 (30) is in the Off (O) position, then plug the 220 VAC line cord plug into a 230 VAC, 40 amp outlet.
8. Turn the Current Adjustment Knob (48) to the desired current (15 to 40 amps).

Maximum current is required to cut 1/2 inch steel.

9. Press up on the Air Switch (49) to turn on air without activating the Torch Handle. Adjust air pressure by turning the knob on the rear Air Regulator (43). Read pressure on Pressure Gauge (5).
10. When everything is in place for cutting, press the Power Switch to the On (I) position. The green Power Indicator lights, but the Torch (47) is not energized yet.
11. Orient yourself to one side of the area to be cut, and hold the Arc Shaded Face Shield (not included) over your eyes.
12. 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.

Warning: The Torch handle is now energized. Be careful not to touch anything else with the Torch Body (3A) 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 breath arc fumes.

13. Bring the Electrode (4A) of the Torch Body (3A) close enough to the starting point of the cut to create an arc. The yellow Cutter Indicator lights.
14. Lightly tap the Torch Electrode (4A) into the cutting surface to ignite the arc, then pull back slightly. If the arc is not started within two seconds, the unit goes into standby mode. Release the Trigger once and squeeze to reset to arc mode.
15. Slowly move the Torch Handle (1A) 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 Current Adjustment Knob (48) to a higher level, and/or increase air flow. To increase air flow, press the Power Switch (30) to the Off (O) position, then adjust the air pressure at the Air Regulator (43). The air will continue to come out of the Torch Handle (1A) for 30 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 Overheat indicator will light. The Plasma Cutter will turn off until it cools down. It will automatically reset. Press Trigger (2A) 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 (30) 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.

INSPECTION, MAINTENANCE, AND CLEANING

⚠ WARNING! Make sure the Power Switch (30) 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 an odd smell comes from the unit during operation, 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 14.
8. To gain access to the internal components of the unit, remove six screws from each Panel (35), and two side screws from the Cover (27). Any repairs should be completed by a qualified technician.

PLEASE READ THE FOLLOWING CAREFULLY

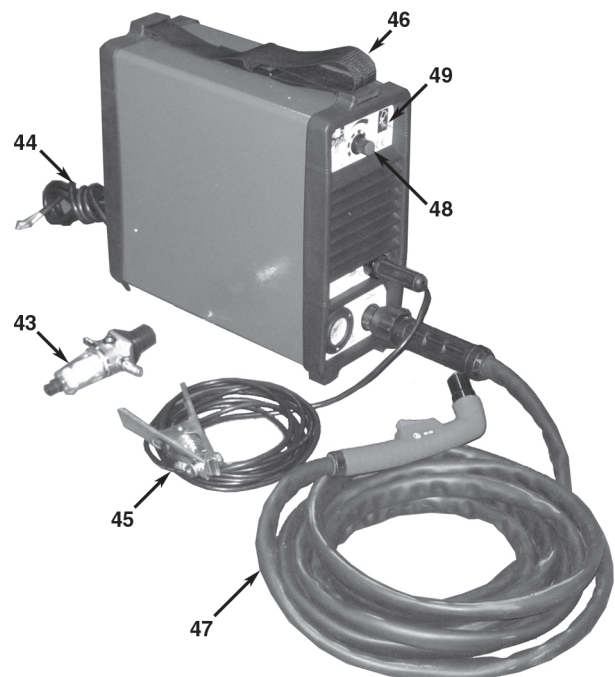
THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER NOR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT OR THAT HE OR SHE IS QUALIFIED 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.

MAIN UNIT PARTS LIST

| Item | Description | Q'ty |
|------|------------------------|------|
| 1 | base frame | 1 |
| 2 | PCB | 1 |
| 3 | PCB | 1 |
| 4 | valve body | 1 |
| 5 | air pressure gauge | 1 |
| 6 | welding torch terminal | 1 |
| 7 | mid plate | 1 |
| 8 | screw ST4.8*13 | 4 |
| 9 | mid deflector 1 | 1 |
| 10 | screw ST4.8*9.5 | 8 |
| 11 | filter wiring | 1 |
| 12 | support | 2 |
| 13 | diverter | 2 |
| 14 | secondary PCB | 1 |
| 15 | radiator (power) | 1 |
| 16 | inverter transformer | 1 |
| 17 | radiator (inverter) | 1 |
| 18 | connecting piece | 2 |
| 19 | deflector 2 | 1 |
| 20 | copper stud | 4 |
| 21 | primary PCB | 1 |
| 22 | nut M4 | 8 |
| 23 | program PCB | 1 |
| 24 | screw ST2.9*9.5 | 3 |
| 25 | bolt M4*75 | 4 |
| 26 | lining board | 2 |
| 27 | cover | 1 |
| 28 | rear panel | 1 |
| 29 | power cord grommet | 1 |
| 30 | power switch | 1 |
| 31 | blower fan | 1 |

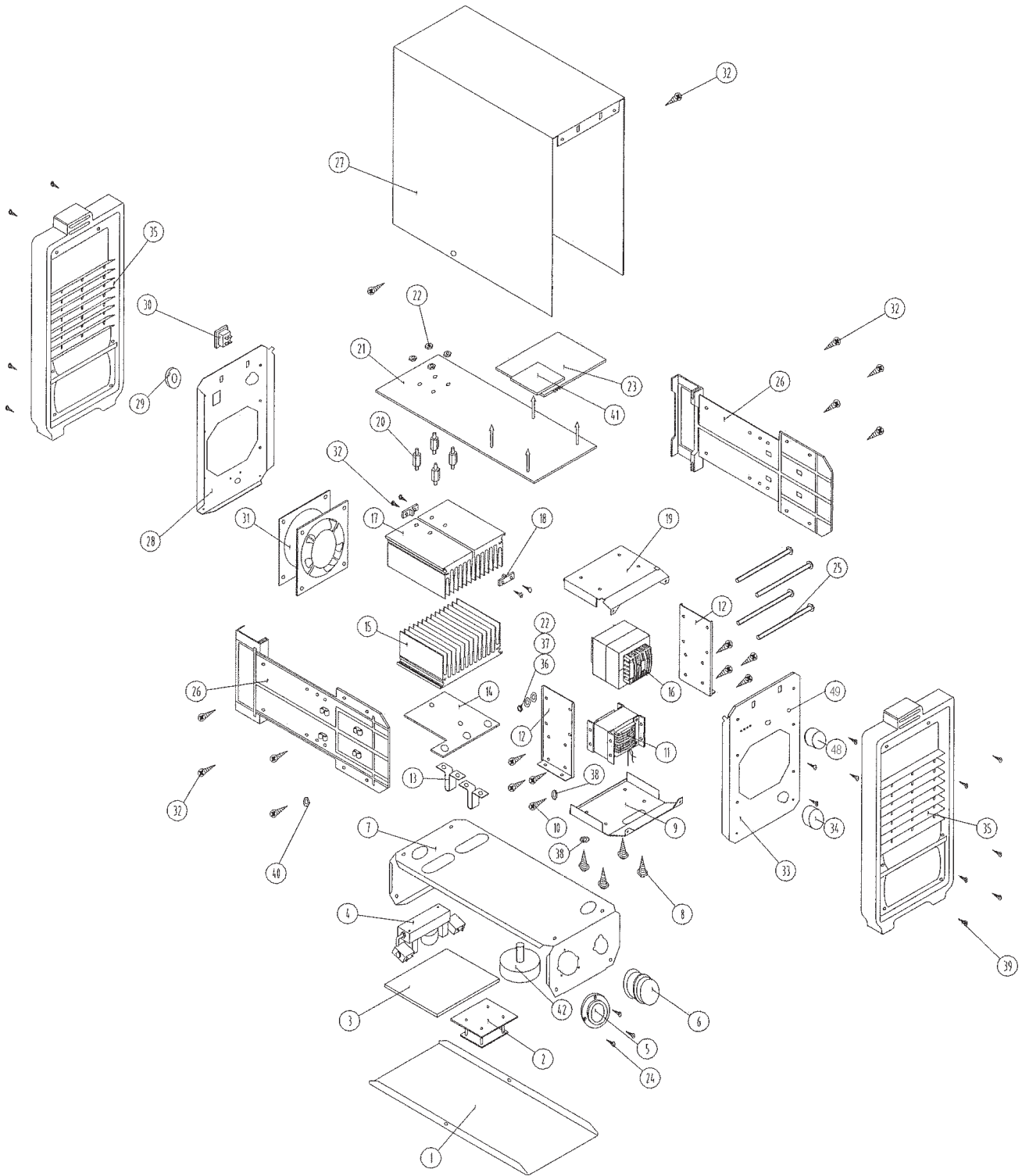
| Item | Description | Q'ty |
|------|--------------------------------|------|
| 32 | screw ST3.9*9.5 | 40 |
| 33 | front panel | 1 |
| 34 | quick coupler | 1 |
| 35 | panel | 2 |
| 36 | washer 4 | 4 |
| 37 | spring washer 4 | 4 |
| 38 | lock washer 5 | 12 |
| 39 | screw ST3.9*13 | 12 |
| 40 | lock washer 4 | 36 |
| 41 | program control PCB | 1 |
| 42 | high frequency coupling wiring | 1 |
| 43 | air regulator | 1 |
| 44 | power cord | 1 |
| 45 | grounding clamp and cable | 1 |
| 46 | carrying strap | 1 |
| 47 | torch and cable | 1 |
| 48 | current adjusting knob | 1 |
| 49 | air switch | 1 |

MAIN UNIT EXTERNAL PARTS DRAWING



REV 03/05; 11/06

MAIN UNIT INTERNAL ASSEMBLY DRAWING

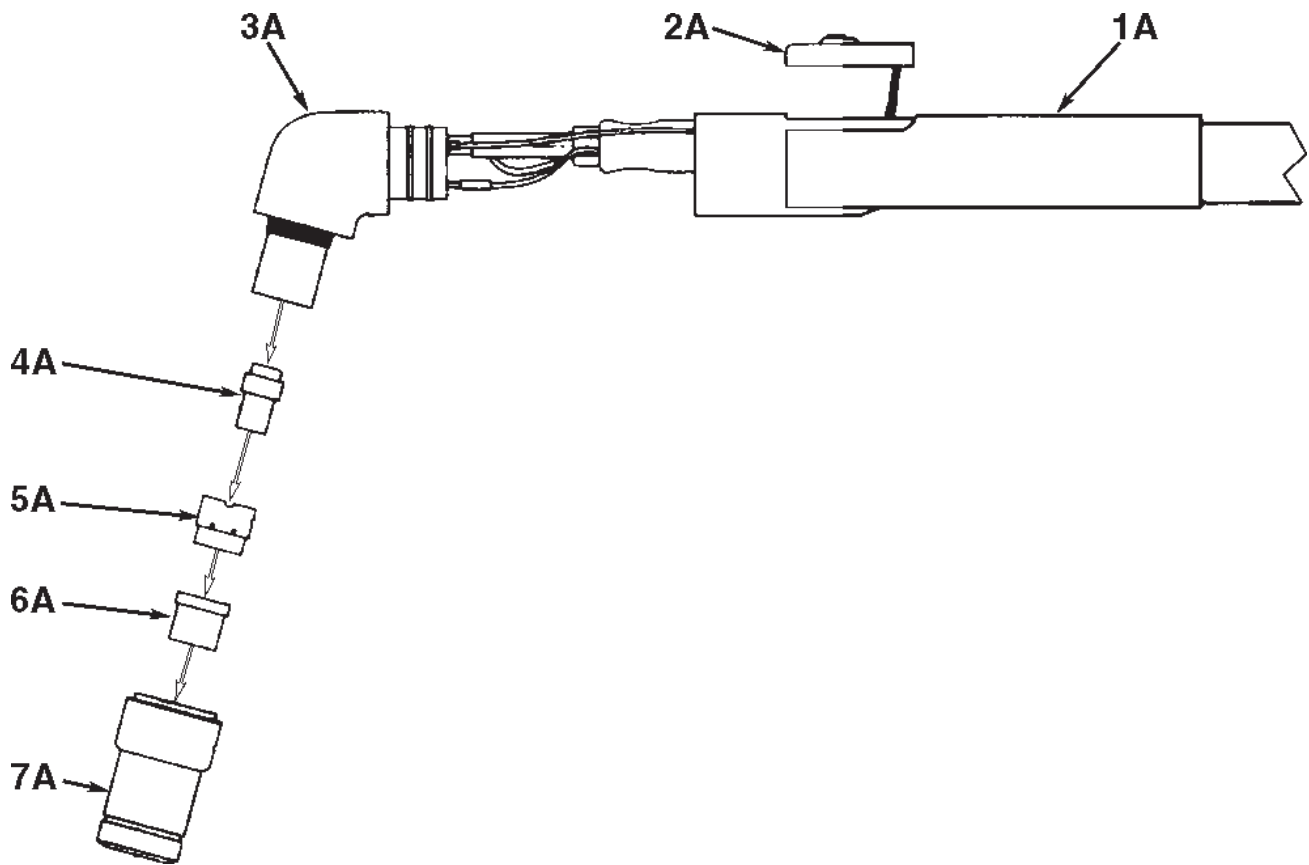


NOTE: Some parts are listed and shown for illustration purposes only and are not available individually as replacement parts.

TORCH HANDLE PARTS LIST

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

TORCH HANDLE ASSEMBLY DRAWING



CIRCUIT DIAGRAM

