



OM-249 332G

2015-06

Processes



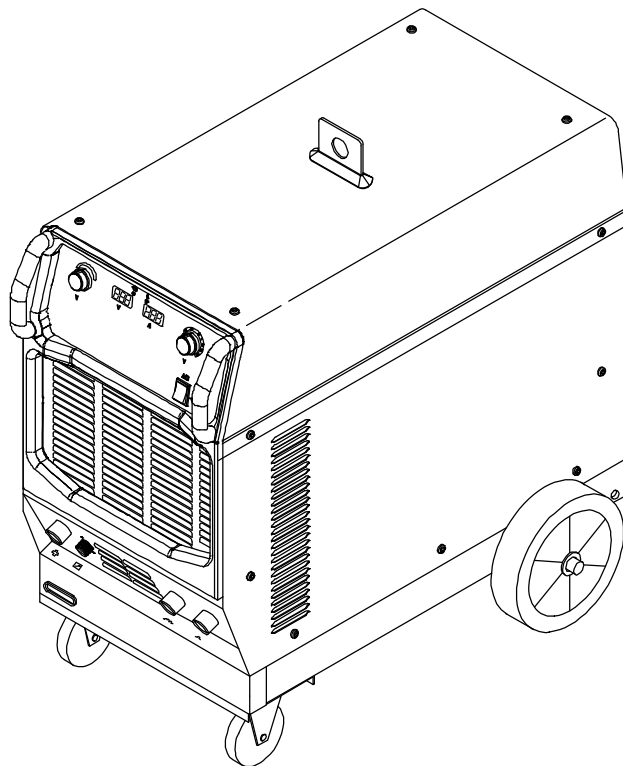
MIG (GMAW) Welding
Flux Cored (FCAW)

Description



Arc Welding Power Source

XPS 350 And 450 CE



www.MillerWelds.com

OWNER'S MANUAL

From Miller to You

Thank you and congratulations on choosing Miller. Now you can get the job done and get it done right. We know you don't have time to do it any other way.

That's why when Niels Miller first started building arc welders in 1929, he made sure his products offered long-lasting value and superior quality. Like you, his customers couldn't afford anything less. Miller products had to be more than the best they could be. They had to be the best you could buy.

Today, the people that build and sell Miller products continue the tradition. They're just as committed to providing equipment and service that meets the high standards of quality and value established in 1929.

This Owner's Manual is designed to help you get the most out of your Miller products. Please take time to read the Safety precautions. They will help you protect yourself against potential hazards on the worksite. We've made installation and operation quick and easy. With Miller you can count on years of reliable service with proper maintenance. And if for some reason the unit needs repair, there's a Troubleshooting section that will help you figure out what the problem is. The parts list will then help you to decide which exact part you may need to fix the problem. Warranty and service information for your particular model are also provided.



Miller Electric manufactures a full line of welders and welding related equipment. For information on other quality Miller products, contact your local Miller distributor to receive the latest full line catalog or individual catalog sheets.



Working as hard as you do – every power source from Miller is backed by the most hassle-free warranty in the business.



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DECLARATION OF CONFORMITY

for European Community (CE marked) products.

ITW Welding Italy S.r.l Via Privata Iseo 6/E, 20098 San Giuliano M.se, (MI) Italy declares that the product(s) identified in this declaration conform to the essential requirements and provisions of the stated Council Directive(s) and Standard(s).

Product/Apparatus Identification:

Product	Stock Number
XPS 350,400VAC	029015528
XPS 450,400VAC	029015529
XPS 350, BASIC 400VAC	029015531
XPS 450, BASIC 400VAC	029015532
XPS 350, 230/400VAC	029015534
XPS 450 ,230/400VAC	029015535
XPS 350, BASIC 230/400VAC	029015537
XPS 450, BASIC 230/400VAC	029015538

Council Directives:

- 2006/95/EC Low Voltage
- 2004/108/EC Electromagnetic Compatibility
- 2011/65/EU Restriction of the use of certain hazardous substances in electrical and electronic equipment

Standards:

- IEC 60974-1:2012 Arc Welding Equipment – Part 1: Welding Power Sources
- IEC 60974-10:2007 Arc Welding Equipment – Part 10: Electromagnetic Compatibility Requirements

EU Signatory:

June 30th, 2015

Massimiliano Lavarini

Date of Declaration

ITW WELDING ITALY PRODUCTION MANAGER

SECTION 1 – SAFETY PRECAUTIONS - READ BEFORE USING

som 2013-09

 **Protect yourself and others from injury — read, follow, and save these important safety precautions and operating instructions.**

1-1. Symbol Usage



DANGER! – Indicates a hazardous situation which, if not avoided, will result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.



Indicates a hazardous situation which, if not avoided, could result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.

NOTICE – Indicates statements not related to personal injury.

 Indicates special instructions.



This group of symbols means Warning! Watch Out! ELECTRIC SHOCK, MOVING PARTS, and HOT PARTS hazards. Consult symbols and related instructions below for necessary actions to avoid the hazards.

1-2. Arc Welding Hazards



The symbols shown below are used throughout this manual to call attention to and identify possible hazards. When you see the symbol, watch out, and follow the related instructions to avoid the hazard. The safety information given below is only a summary of the more complete safety information found in the Safety Standards listed in Section 1-5. Read and follow all Safety Standards.



Only qualified persons should install, operate, maintain, and repair this unit.



During operation, keep everybody, especially children, away.



ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

- Do not touch live electrical parts.

- Wear dry, hole-free insulating gloves and body protection.
- Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.
- Do not use AC output in damp areas, if movement is confined, or if there is a danger of falling.
- Use AC output ONLY if required for the welding process.
- If AC output is required, use remote output control if present on unit.
- Additional safety precautions are required when any of the following electrically hazardous conditions are present: in damp locations or while wearing wet clothing; on metal structures such as floors, gratings, or scaffolds; when in cramped positions such as sitting, kneeling, or lying; or when there is a high risk of unavoidable or accidental contact with the workpiece or ground. For these conditions, use the following equipment in order presented: 1) a semiautomatic DC constant voltage (wire) welder, 2) a DC manual (stick) welder, or 3) an AC welder with reduced open-circuit voltage. In most situations, use of a DC, constant voltage wire welder is recommended. And, do not work alone!
- Disconnect input power or stop engine before installing or servicing this equipment. Lockout/tagout input power according to OSHA 29 CFR 1910.147 (see Safety Standards).
- Properly install, ground, and operate this equipment according to its Owner's Manual and national, state, and local codes.
- Always verify the supply ground – check and be sure that input power cord ground wire is properly connected to ground terminal in

disconnect box or that cord plug is connected to a properly grounded receptacle outlet.

- When making input connections, attach proper grounding conductor first – double-check connections.
- Keep cords dry, free of oil and grease, and protected from hot metal and sparks.
- Frequently inspect input power cord and ground conductor for damage or bare wiring – replace immediately if damaged – bare wiring can kill.
- Turn off all equipment when not in use.
- Do not use worn, damaged, undersized, or repaired cables.
- Do not drape cables over your body.
- If earth grounding of the workpiece is required, ground it directly with a separate cable.
- Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.
- Do not touch electrode holders connected to two welding machines at the same time since double open-circuit voltage will be present.
- Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.
- Wear a safety harness if working above floor level.
- Keep all panels and covers securely in place.
- Clamp work cable with good metal-to-metal contact to workpiece or worktable as near the weld as practical.
- Insulate work clamp when not connected to workpiece to prevent contact with any metal object.
- Do not connect more than one electrode or work cable to any single weld output terminal. Disconnect cable for process not in use.
- Use GFCI protection when operating auxiliary equipment in damp or wet locations.

SIGNIFICANT DC VOLTAGE exists in inverter welding power sources AFTER removal of input power.

- Turn Off inverter, disconnect input power, and discharge input capacitors according to instructions in Maintenance Section before touching any parts.



HOT PARTS can burn.

- Do not touch hot parts bare handed.
- Allow cooling period before working on equipment.
- To handle hot parts, use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.



FUMES AND GASES can be hazardous.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- Keep your head out of the fumes. Do not breathe the fumes.
- If inside, ventilate the area and/or use local forced ventilation at the arc to remove welding fumes and gases. The recommended way to determine adequate ventilation is to sample for the composition and quantity of fumes and gases to which personnel are exposed.
- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watch-person nearby. Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
- Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
- Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.



ARC RAYS can burn eyes and skin.

Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

- Wear an approved welding helmet fitted with a proper shade of filter lenses to protect your face and eyes from arc rays and sparks when welding or watching (see ANSI Z49.1 and Z87.1 listed in Safety Standards).
- Wear approved safety glasses with side shields under your helmet.
- Use protective screens or barriers to protect others from flash, glare and sparks; warn others not to watch the arc.
- Wear body protection made from durable, flame-resistant material (leather, heavy cotton, wool). Body protection includes oil-free clothing such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.

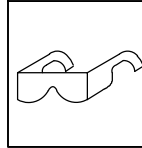


WELDING can cause fire or explosion.

Welding on closed containers, such as tanks, drums, or pipes, can cause them to blow up. Sparks can fly off from the welding arc. The flying sparks, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode to metal objects can cause sparks, explosion, overheating, or fire. Check and be sure the area is safe before doing any welding.

- Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
- Do not weld where flying sparks can strike flammable material.
- Protect yourself and others from flying sparks and hot metal.
- Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
- Watch for fire, and keep a fire extinguisher nearby.
- Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
- Do not weld on containers that have held combustibles, or on closed containers such as tanks, drums, or pipes unless they are properly prepared according to AWS F4.1 and AWS A6.0 (see Safety Standards).
- Do not weld where the atmosphere may contain flammable dust, gas, or liquid vapors (such as gasoline).
- Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock, sparks, and fire hazards.
- Do not use welder to thaw frozen pipes.

- Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
- Wear body protection made from durable, flame-resistant material (leather, heavy cotton, wool). Body protection includes oil-free clothing such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.
- Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding.
- After completion of work, inspect area to ensure it is free of sparks, glowing embers, and flames.
- Use only correct fuses or circuit breakers. Do not oversize or bypass them.
- Follow requirements in OSHA 1910.252 (a) (2) (iv) and NFPA 51B for hot work and have a fire watcher and extinguisher nearby.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.



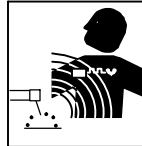
FLYING METAL or DIRT can injure eyes.

- Welding, chipping, wire brushing, and grinding cause sparks and flying metal. As welds cool, they can throw off slag.
- Wear approved safety glasses with side shields even under your welding helmet.



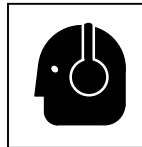
BUILDUP OF GAS can injure or kill.

- Shut off compressed gas supply when not in use.
- Always ventilate confined spaces or use approved air-supplied respirator.



ELECTRIC AND MAGNETIC FIELDS (EMF) can affect Implanted Medical Devices.

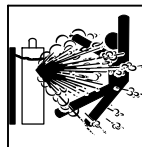
- Wearers of Pacemakers and other Implanted Medical Devices should keep away.
- Implanted Medical Device wearers should consult their doctor and the device manufacturer before going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating operations.



NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

- Wear approved ear protection if noise level is high.



CYLINDERS can explode if damaged.

Compressed gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

- Protect compressed gas cylinders from excessive heat, mechanical shocks, physical damage, slag, open flames, sparks, and arcs.
- Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping.
- Keep cylinders away from any welding or other electrical circuits.
- Never drape a welding torch over a gas cylinder.
- Never allow a welding electrode to touch any cylinder.
- Never weld on a pressurized cylinder – explosion will result.
- Use only correct compressed gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
- Turn face away from valve outlet when opening cylinder valve. Do not stand in front of or behind the regulator when opening the valve.
- Keep protective cap in place over valve except when cylinder is in use or connected for use.
- Use the right equipment, correct procedures, and sufficient number of persons to lift and move cylinders.
- Read and follow instructions on compressed gas cylinders, associated equipment, and Compressed Gas Association (CGA) publication P-1 listed in Safety Standards.

1-3. Additional Symbols For Installation, Operation, And Maintenance



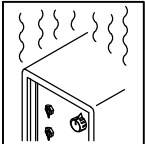
FIRE OR EXPLOSION hazard.

- Do not install or place unit on, over, or near combustible surfaces.
- Do not install unit near flammables.
- Do not overload building wiring – be sure power supply system is properly sized, rated, and protected to handle this unit.



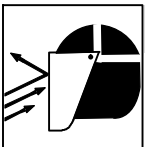
FALLING EQUIPMENT can injure.

- Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories.
- Use equipment of adequate capacity to lift and support unit.
- If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.
- Keep equipment (cables and cords) away from moving vehicles when working from an aerial location.
- Follow the guidelines in the Applications Manual for the Revised NIOSH Lifting Equation (Publication No. 94-110) when manually lifting heavy parts or equipment.



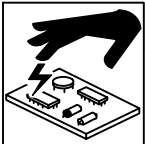
OVERUSE can cause OVERHEATING

- Allow cooling period; follow rated duty cycle.
- Reduce current or reduce duty cycle before starting to weld again.
- Do not block or filter airflow to unit.



FLYING SPARKS can injure.

- Wear a face shield to protect eyes and face.
- Shape tungsten electrode only on grinder with proper guards in a safe location wearing proper face, hand, and body protection.
- Sparks can cause fires — keep flammables away.



STATIC (ESD) can damage PC boards.

- Put on grounded wrist strap BEFORE handling boards or parts.
- Use proper static-proof bags and boxes to store, move, or ship PC boards.



MOVING PARTS can injure.

- Keep away from moving parts.
- Keep away from pinch points such as drive rolls.



WELDING WIRE can injure.

- Do not press gun trigger until instructed to do so.
- Do not point gun toward any part of the body, other people, or any metal when threading welding wire.



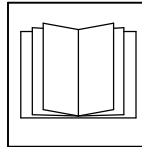
BATTERY EXPLOSION can injure.

- Do not use welder to charge batteries or jump start vehicles unless it has a battery charging feature designed for this purpose.



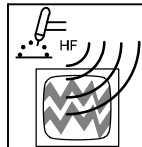
MOVING PARTS can injure.

- Keep away from moving parts such as fans.
- Keep all doors, panels, covers, and guards closed and securely in place.
- Have only qualified persons remove doors, panels, covers, or guards for maintenance and troubleshooting as necessary.
- Reinstall doors, panels, covers, or guards when maintenance is finished and before reconnecting input power.



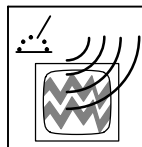
READ INSTRUCTIONS.

- Read and follow all labels and the Owner's Manual carefully before installing, operating, or servicing unit. Read the safety information at the beginning of the manual and in each section.
- Use only genuine replacement parts from the manufacturer.
- Perform maintenance and service according to the Owner's Manuals, industry standards, and national, state, and local codes.



H.F. RADIATION can cause interference.


- High-frequency (H.F.) can interfere with radio navigation, safety services, computers, and communications equipment.
- Have only qualified persons familiar with electronic equipment perform this installation.
- The user is responsible for having a qualified electrician promptly correct any interference problem resulting from the installation.
- If notified by the FCC about interference, stop using the equipment at once.
- Have the installation regularly checked and maintained.
- Keep high-frequency source doors and panels tightly shut, keep spark gaps at correct setting, and use grounding and shielding to minimize the possibility of interference.




ARC WELDING can cause interference.

- Electromagnetic energy can interfere with sensitive electronic equipment such as computers and computer-driven equipment such as robots.
- Be sure all equipment in the welding area is electromagnetically compatible.
- To reduce possible interference, keep weld cables as short as possible, close together, and down low, such as on the floor.
- Locate welding operation 100 meters from any sensitive electronic equipment.
- Be sure this welding machine is installed and grounded according to this manual.
- If interference still occurs, the user must take extra measures such as moving the welding machine, using shielded cables, using line filters, or shielding the work area.

1-4. California Proposition 65 Warnings

 **Welding or cutting equipment produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)**

 **This product contains chemicals, including lead, known to the state of California to cause cancer, birth defects, or other reproductive harm. Wash hands after use.**

1-5. Principal Safety Standards

Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, is available as a free download from the American Welding Society at <http://www.aws.org> or purchased from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ihs.com).

Safe Practices for the Preparation of Containers and Piping for Welding and Cutting, American Welding Society Standard AWS F4.1, from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ihs.com).

Safe Practices for Welding and Cutting Containers that have Held Combustibles, American Welding Society Standard AWS A6.0, from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ihs.com).

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Quincy, MA 02269 (phone: 1-800-344-3555, website: www.nfpa.org and www.sparky.org).

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 14501 George Carter Way, Suite 103, Chantilly, VA 20151 (phone: 703-788-2700, website: www.cganet.com).

Safety in Welding, Cutting, and Allied Processes, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 5060

Spectrum Way, Suite 100, Ontario, Canada L4W 5NS (phone: 800-463-6727, website: www.csa-international.org).

Safe Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 25 West 43rd Street, New York, NY 10036 (phone: 212-642-4900, website: www.ansi.org).

Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B, from National Fire Protection Association, Quincy, MA 02269 (phone: 1-800-344-3555, website: www.nfpa.org).

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910, Subpart Q, and Part 1926, Subpart J, from U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 (phone: 1-866-512-1800) (there are 10 OSHA Regional Offices—phone for Region 5, Chicago, is 312-353-2220, website: www.osha.gov).

Applications Manual for the Revised NIOSH Lifting Equation, The National Institute for Occupational Safety and Health (NIOSH), 1600 Clifton Rd, Atlanta, GA 30333 (phone: 1-800-232-4636, website: www.cdc.gov/NIOSH).

1-6. EMF Information

Electric current flowing through any conductor causes localized electric and magnetic fields (EMF). The current from arc welding (and allied processes including spot welding, gouging, plasma arc cutting, and induction heating operations) creates an EMF field around the welding circuit. EMF fields may interfere with some medical implants, e.g. pacemakers. Protective measures for persons wearing medical implants have to be taken. For example, restrict access for passers-by or conduct individual risk assessment for welders. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

1. Keep cables close together by twisting or taping them, or using a cable cover.
2. Do not place your body between welding cables. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.


4. Keep head and trunk as far away from the equipment in the welding circuit as possible.
5. Connect work clamp to workpiece as close to the weld as possible.
6. Do not work next to, sit or lean on the welding power source.
7. Do not weld whilst carrying the welding power source or wire feeder.

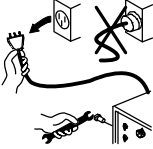

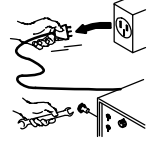
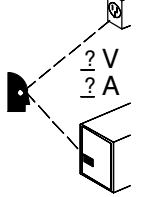

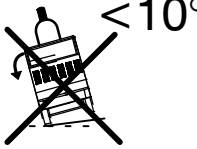

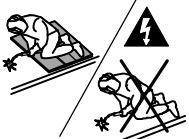

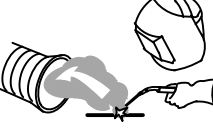
About Implanted Medical Devices:

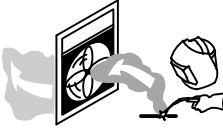
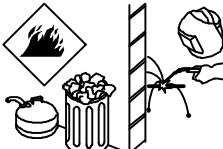


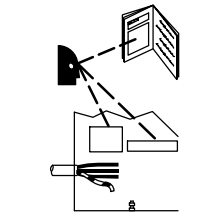
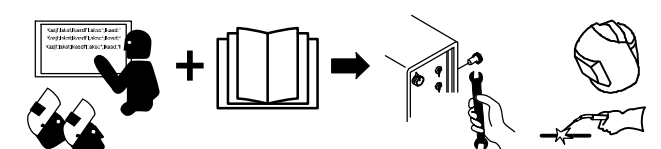
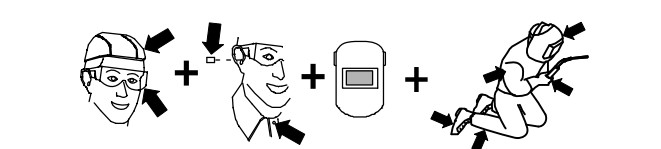
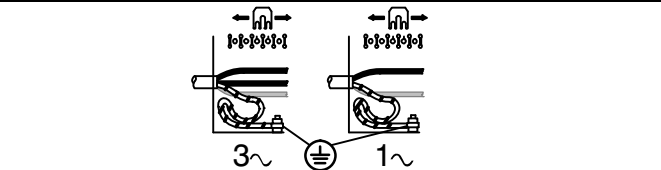
Implanted Medical Device wearers should consult their doctor and the device manufacturer before performing or going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating operations. If cleared by your doctor, then following the above procedures is recommended.

SECTION 2 – DEFINITIONS

2-1. Additional Safety Symbols And Definitions

 Some symbols are found only on CE products.

	<p>Disconnect input plug or power before working on machine.</p> <p style="text-align: right;">Safe5 2012-05</p>
	<p>Do not remove or paint over (cover) the label.</p> <p style="text-align: right;">Safe20 2012-05</p>
	<p>Disconnect input plug or power before working on machine.</p> <p style="text-align: right;">Safe30 2012-05</p>
	<p>Consult rating label for input power requirements.</p> <p style="text-align: right;">Safe34 2012-05</p>
	<p>Do not discard product (where applicable) with general waste. Reuse or recycle Waste Electrical and Electronic Equipment (WEEE) by disposing at a designated collection facility. Contact your local recycling office or your local distributor for further information.</p> <p style="text-align: right;">Safe37 2012-05</p>
	<p>Falling unit can cause injury. Do not move or operate unit where it could tip.</p> <p style="text-align: right;">Safe53 2012-05</p>
	<p>Wear dry insulating gloves. Do not touch electrode (wire) with bare hand. Do not wear wet or damaged gloves.</p> <p style="text-align: right;">Safe57 2012-05</p>
	<p>Protect yourself from electric shock by insulating yourself from work and ground.</p> <p style="text-align: right;">Safe58 2012-06</p>
	<p>Keep your head out of the fumes.</p> <p style="text-align: right;">Safe59 2012-05</p>
	<p>Use forced ventilation or local exhaust to remove the fumes.</p> <p style="text-align: right;">Safe60 2012-06</p>


	<p>Use ventilating fan to remove fumes.</p> <p style="text-align: right;">Safe61 2012-06</p>
	<p>Keep flammables away from welding. Do not weld near flammables.</p> <p style="text-align: right;">Safe62 2012-06</p>
	<p>Welding sparks can cause fires. Have a fire extinguisher nearby, and have a watchperson ready to use it.</p> <p style="text-align: right;">Safe63 2012-06</p>
	<p>Do not weld on drums or any closed containers.</p> <p style="text-align: right;">Safe64 2012-06</p>
	<p>Read Owner's Manual and inside labels for connection points and procedures.</p> <p style="text-align: right;">Safe67 2012-06</p>
	<p>Become trained and read the instructions before working on the machine or welding.</p> <p style="text-align: right;">Safe65 2012-06</p>
	<p>Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection.</p> <p style="text-align: right;">Safe66 2012-06</p>
	<p>Move jumper links as shown on inside label to match input voltage at job site. Include extra length in grounding conductor and connect grounding conductor first. Connect line input conductors as shown on inside label. Double-check all connections, jumper link positions, and input voltage before applying power.</p> <p style="text-align: right;">Safe49 2012-05</p>

SECTION 3 – SPECIFICATIONS

3-1. Serial Number And Rating Label Location

The serial number and rating information for this product is located on the back of the unit . Use rating label to determine input power requirements and/or rated output. For future reference, write serial number in space provided on back cover of this manual.

3-2. Specifications

 Do not use information in unit specifications table to determine electrical service requirements. See Sections 4-9, 4-10 and 4-11 for information on connecting input power.


Model	Rated Welding Output	Amperage Range DC	Max. Open-Circuit Voltage DC	Amperes Input At Rated Load Output, 50/60 Hz, Three-Phase		KVA/KW	Dimensions	Weight
				230 V	400 V			
350	350 A @ 31.5 Volts DC, 45% Duty Cycle	30 -350 A	43V	40 A	23 A	16 KVA 15.2 KW	Length: 860 mm Height: 570 mm Width: 930 mm	125 kg
450	450 A @ 36.5 Volts DC, 50% Duty Cycle	30 -450 A	47V	56 A	32 A	22.2 KVA 21.2 KW	Length: 860 mm Height: 570 mm Width: 930 mm	153 kg

3-3. Environmental Specifications

A. IP Rating

IP Rating	Operating Temperature Range	Storage Temperature Range
IP22S This equipment is designed for indoor use and is not intended to be used or stored outside.	-10 to 40°C (14 to 104 °F)	20 to 25°C (68 to 77 °F) <small>IP22S 2014-06</small>

B. Information On Electromagnetic Fields (EMF)

 **This equipment shall not be used by the general public as the EMF limits for the general public might be exceeded during welding.**


This equipment is built in accordance with EN 60974-1 and is intended to be used only in an occupational environment (where the general public access is prohibited or regulated in such a way as to be similar to occupational use) by an expert or an instructed person.

Wire feeders and ancillary equipment (such as torches, liquid cooling systems and arc striking and stabilizing devices) as part of the welding circuit may not be a major contributor to the EMF. See the Owner's Manuals for all components of the welding circuit for additional EMF exposure information.

- The EMF assessment on this equipment was conducted at 0.5 meter.
- At a distance of 1 meter the EMF exposure values were less than 20% of the permissible values.

ce-emf 1 2010-10

C. Information On Electromagnetic Compatibility (EMC)

 **This Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There can be potential difficulties in ensuring electromagnetic compatibility in those locations, due to conducted as well as radiated disturbances.**

This equipment complies with IEC61000-3-11 and IEC 61000-3-12 and can be connected to public low-voltage systems provided that the public low-voltage system impedance Z_{max} at the point of common coupling is less than 62.4mΩ (or the short-circuit power S_{sc} is greater than 2,562,107.1 VA). It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the system impedance complies with the impedance restrictions.

ce-emc 1 2014-07

3-4. Duty Cycle Chart

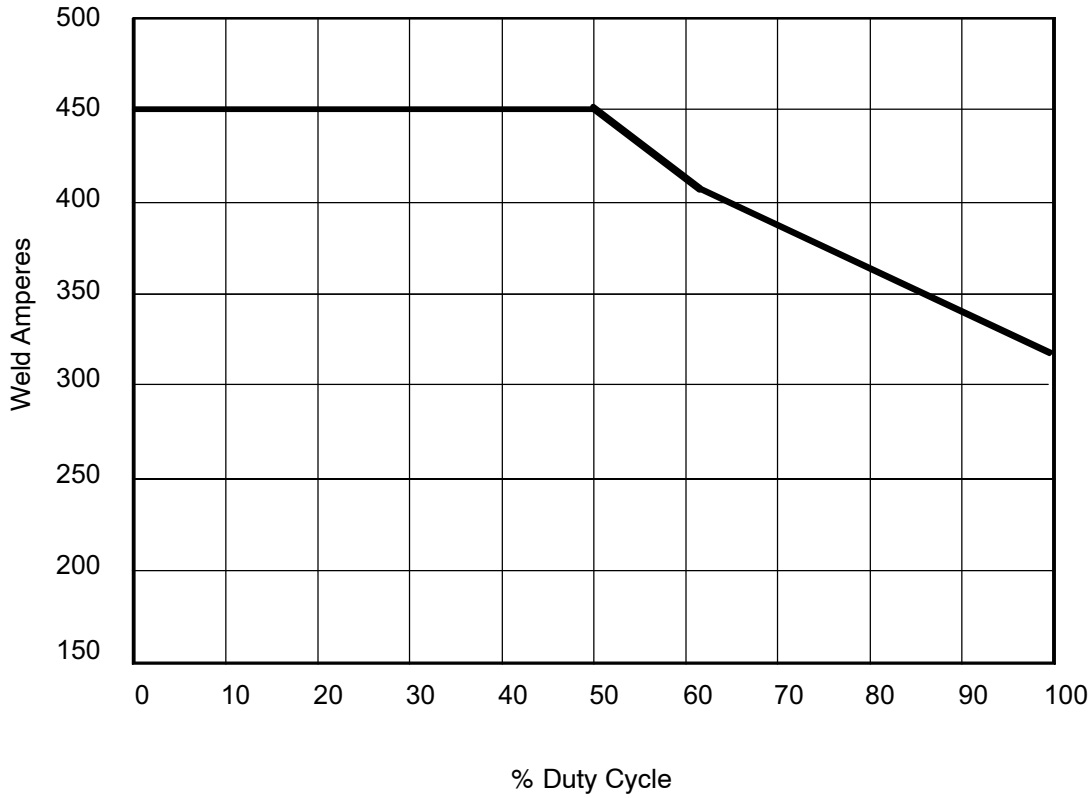


Duty Cycle is percentage of 10 minutes that unit can weld at rated load without overheating.

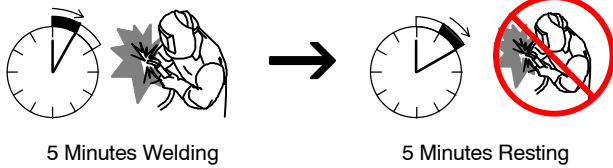
If unit overheats, thermostat(s) opens, output stops, and cooling fan runs. Wait fifteen minutes for unit to cool. Reduce amperage or duty cycle before welding.

NOTICE - Exceeding duty cycle can damage unit or gun and void warranty.

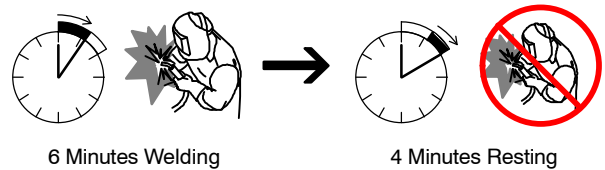
450 Amp Model



50% Duty Cycle at 450A



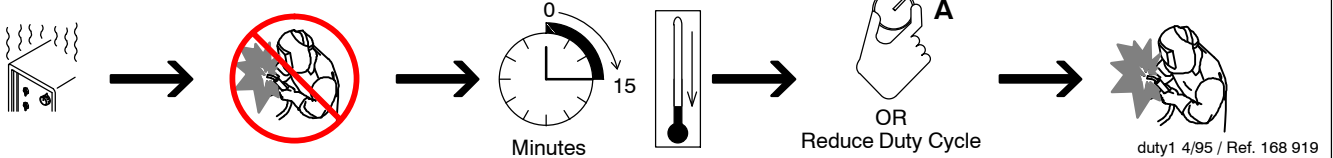
60% Duty Cycle at 410A



100% Duty Cycle at 320V

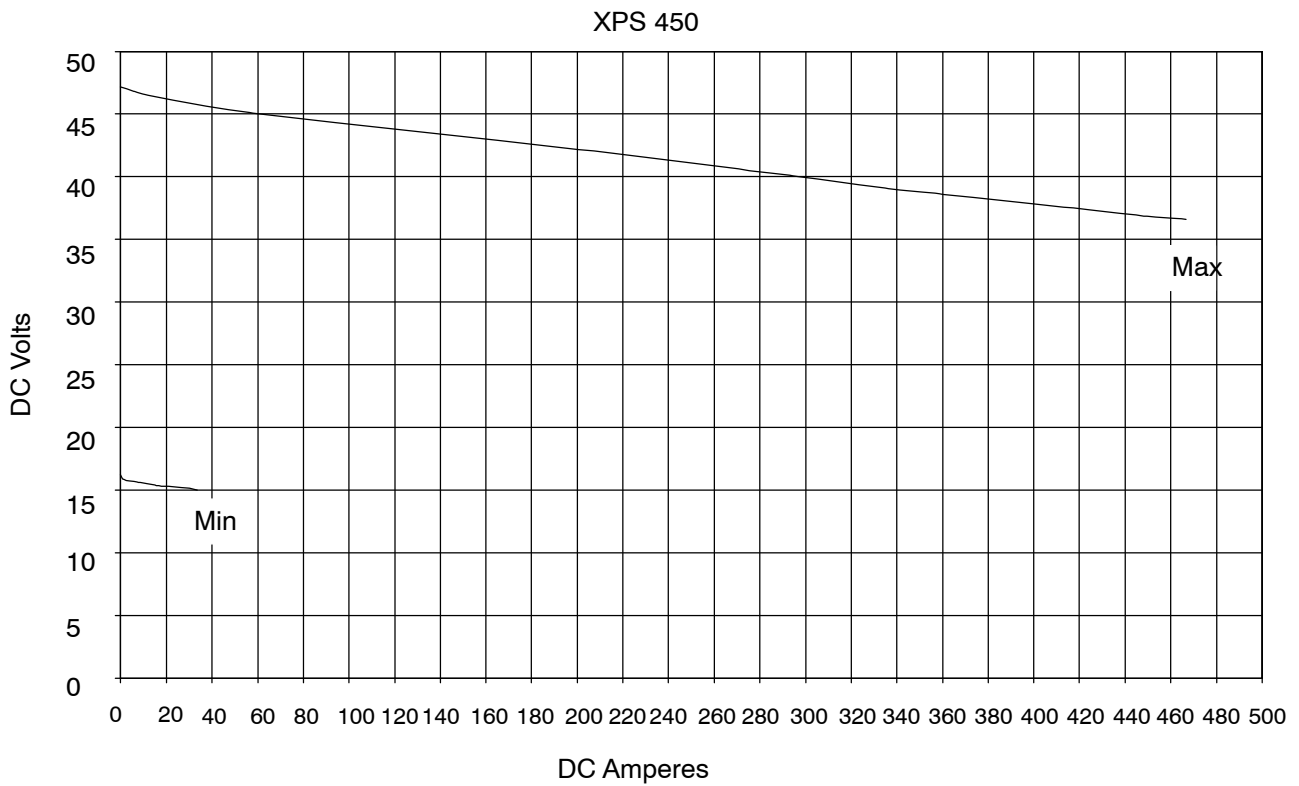
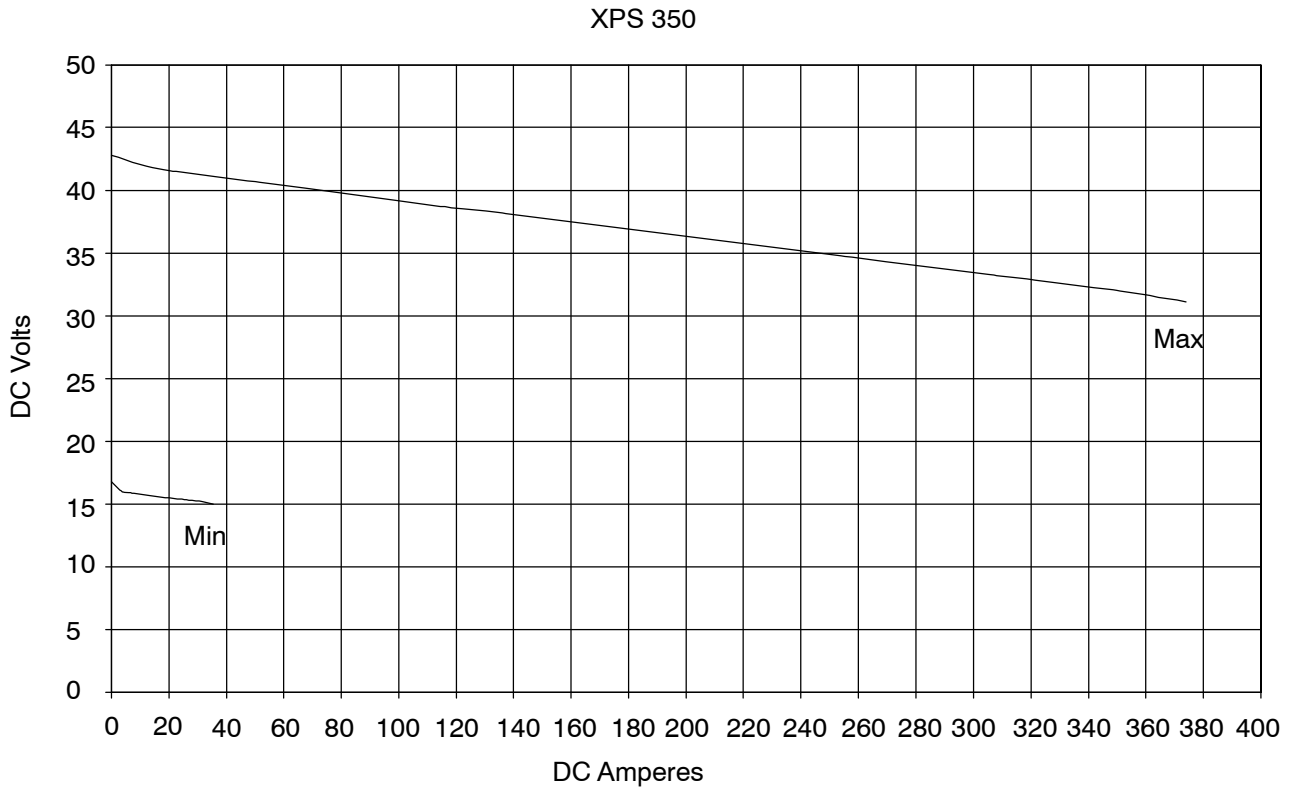


Overheating









duty1 4/95 / Ref. 168 919

3-5. Volt-Ampere Curves

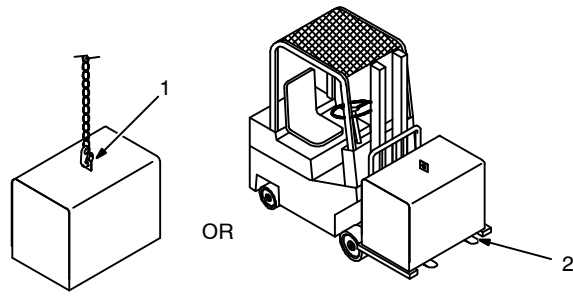


SECTION 4 – INSTALLATION

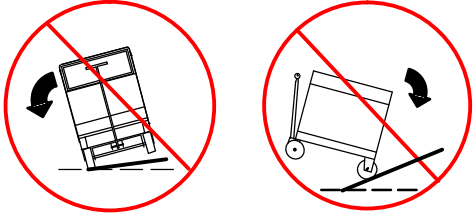
4-1. Selecting A Location

					
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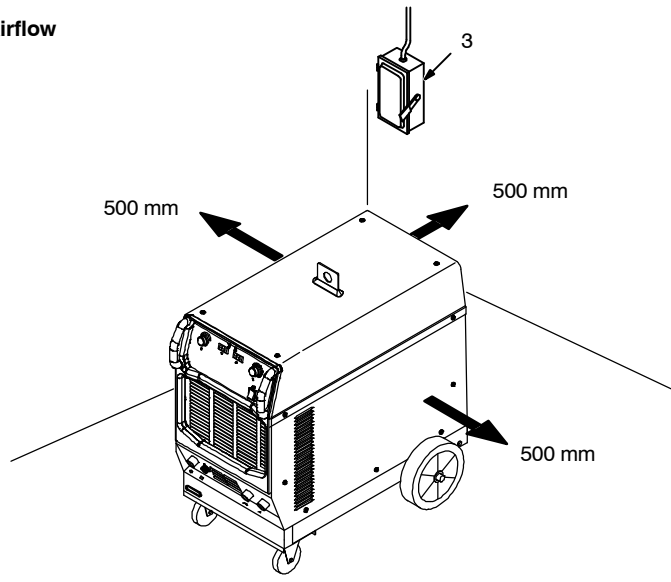
Movement



Do not move or operate unit where it could tip.



Location And Airflow



Special installation may be required where gasoline or volatile liquids are present – see NEC Article 511 or CEC Section 20.

- 1 Lifting Eye
- 2 Lifting Forks

Use lifting eye or lifting forks to move unit.

If using lifting forks, extend forks beyond opposite side of unit.

- 3 Line Disconnect Device

Locate unit near correct input power supply.

956142796_1-10_D loc_large 2015-04

4-2. Typical MIG Connections



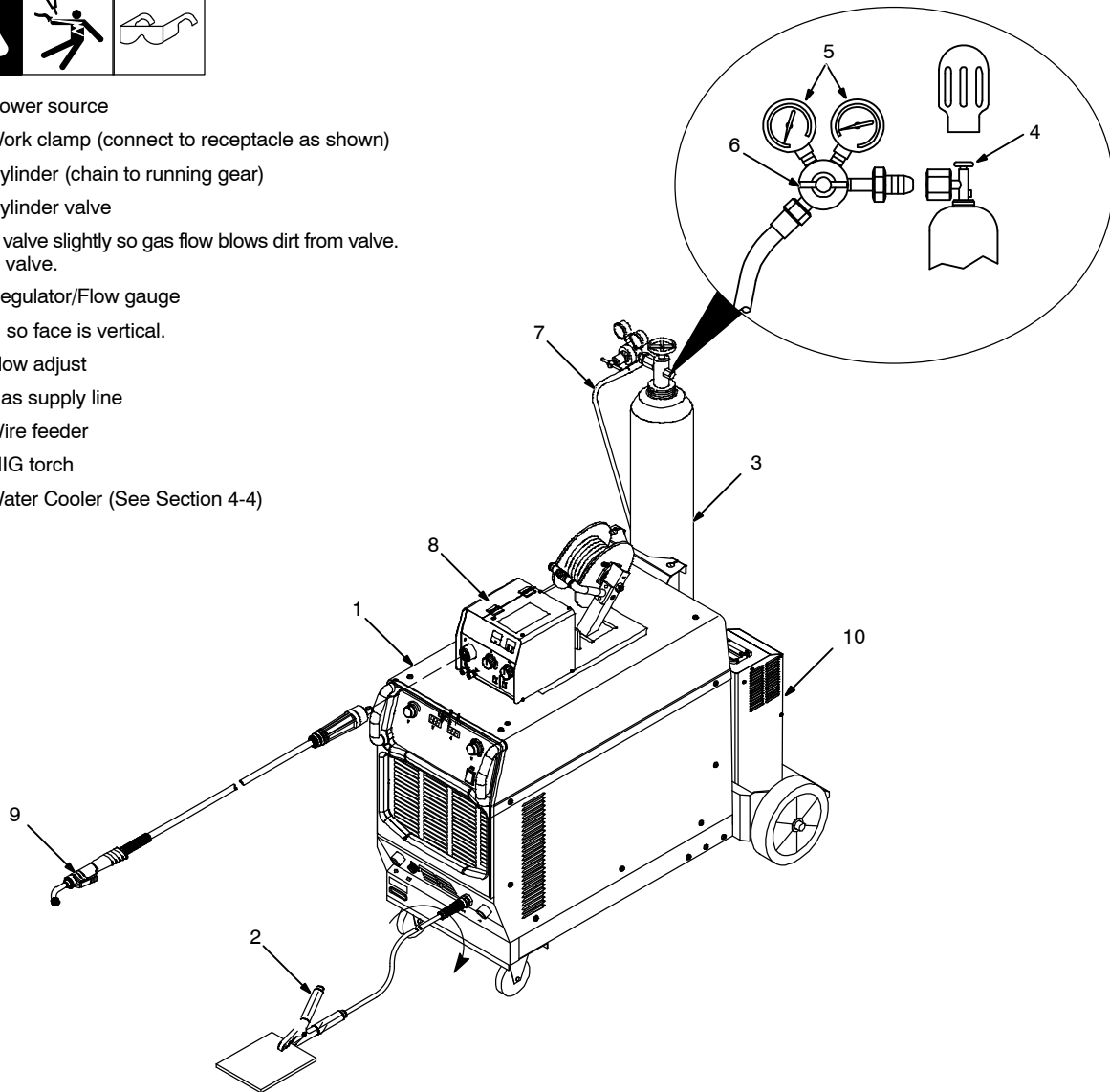
- 1 Power source
- 2 Work clamp (connect to receptacle as shown)
- 3 Cylinder (chain to running gear)
- 4 Cylinder valve

Open valve slightly so gas flow blows dirt from valve.
Close valve.

- 5 Regulator/Flow gauge

Install so face is vertical.

- 6 Flow adjust
- 7 Gas supply line
- 8 Wire feeder
- 9 MIG torch
- 10 Water Cooler (See Section 4-4)

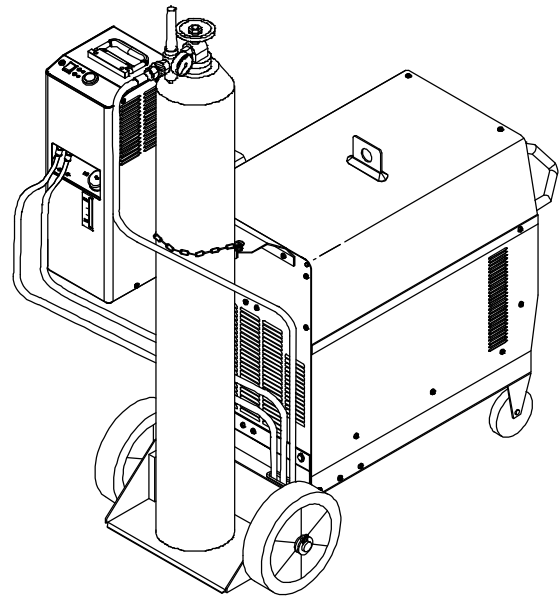
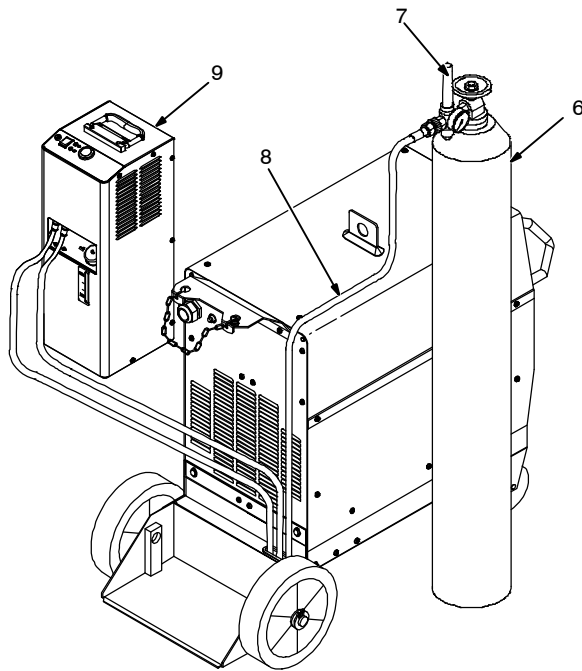
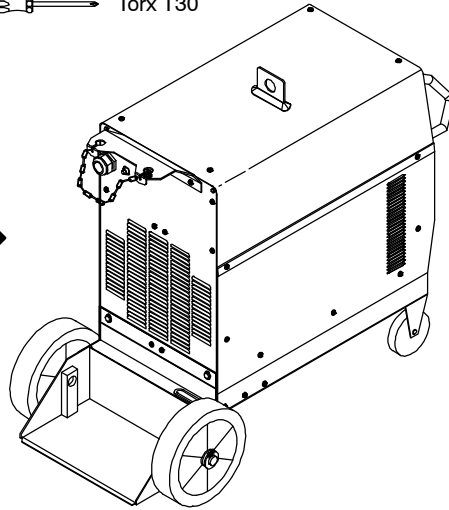
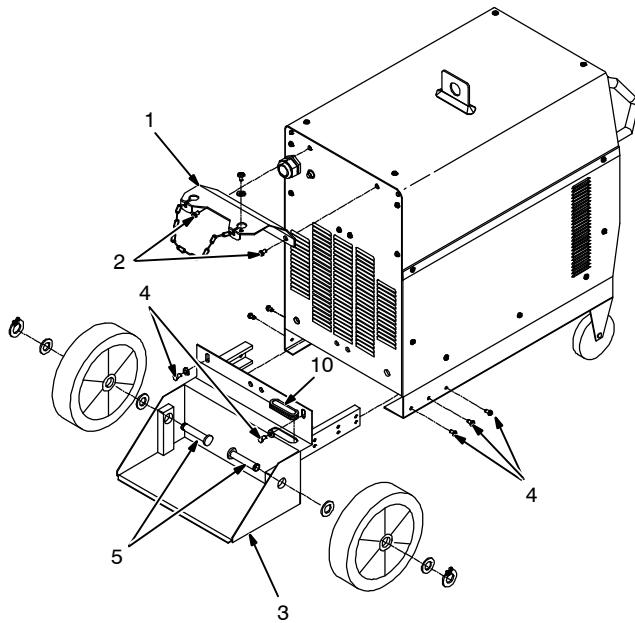
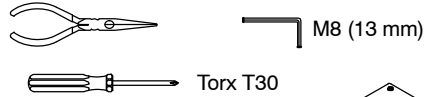



956142796_9-10_A

4-3. Installing Single Bottle And Upper Bracket Support (All Models: Optional)



Tools Needed:



 Chain cylinder to the support so cylinder cannot fall and break off valve.

- 1 Upper Cylinder Support Bracket
- 2 Upper Support Bracket Screw

Use screws to secure support bracket to welding power source.

- 3 Bottle Support
 - 4 Bottle Support Screw
 - 5 Running Gear Shaft
 - 6 Cylinder
- Use screws to secure bottle support to base.
Secure wheels to running gear.

- 7 Regulator/Flowmeter
- Install so face is vertical.

- 8 Input Gas Hose
- 9 Water Cooler
- 10 Plastic Grommet

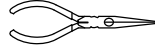
Route hoses through grommet and along track in base (see Section 4-5).

956142796_6-10_B / 956142796_7-10_B

4-4. Installing Double Bottle And Upper Bracket Support (All Models: Optional)



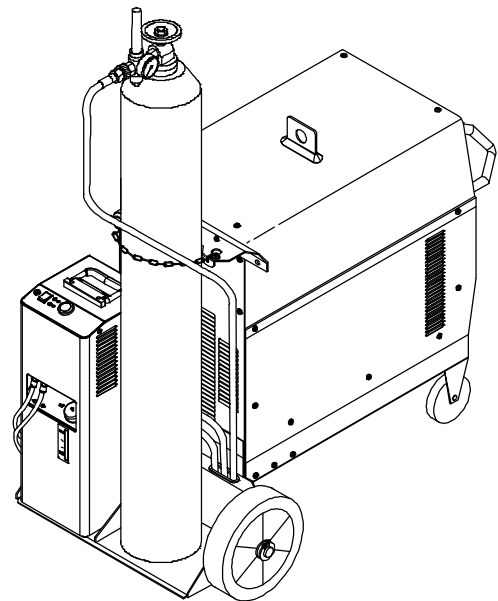
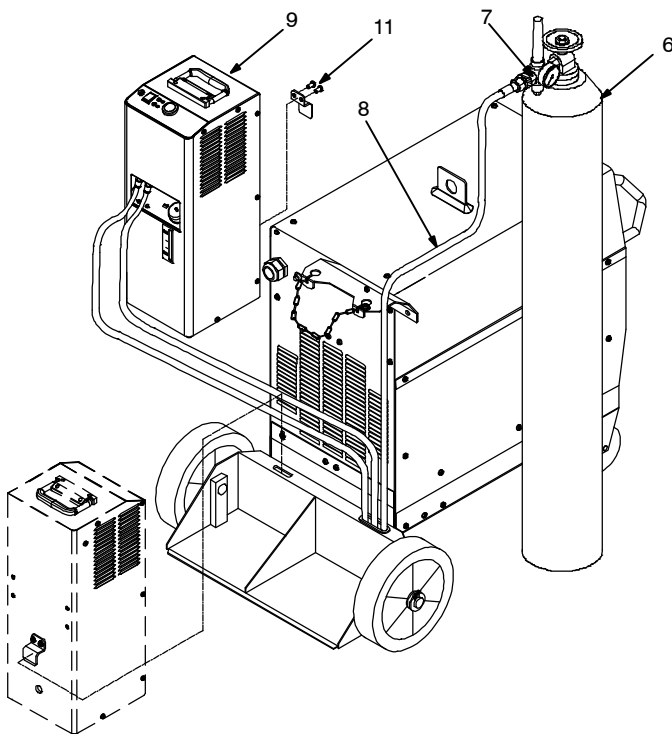
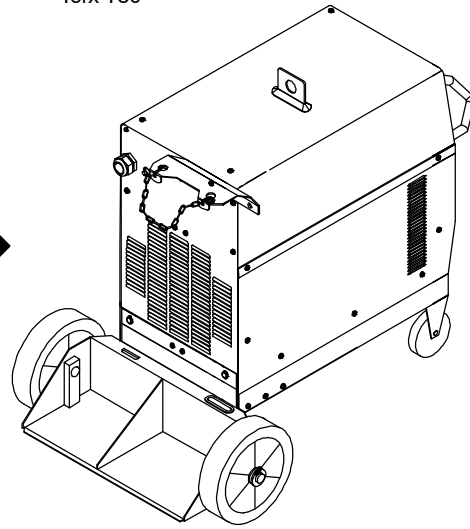
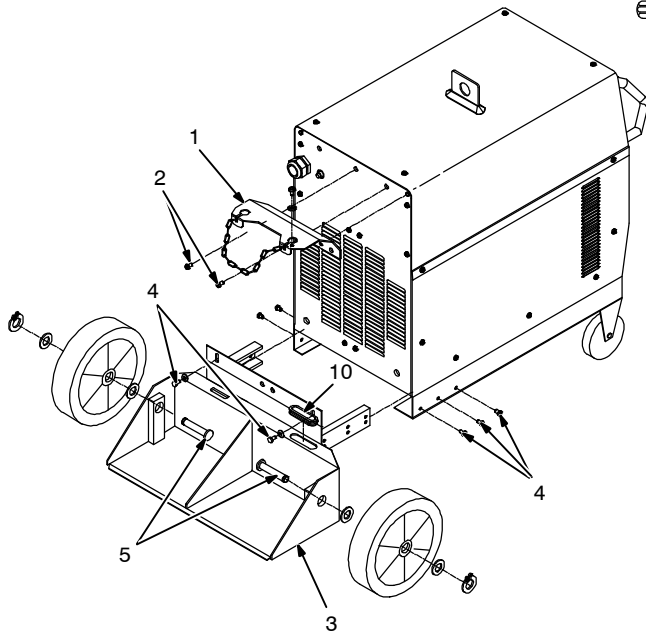
Tools Needed:



M8 (13 mm)



Torx T30



956142796_4-10_B / 956142796_5-10_B

Chain cylinder to the support so cylinder cannot fall and break off valve.

- 1 Upper Cylinder Support Bracket
- 2 Upper Support Bracket Screw

Use screws to secure support bracket to welding power source.

- 3 Bottle Support

- 4 Bottle Support Screw

Use screws to secure bottle support to base.

- 5 Running Gear Shaft

Secure wheels to running gear.

- 6 Cylinder

- 7 Regulator/Flowmeter

Install so face is vertical.

- 8 Input Gas Hose

- 9 Water Cooler

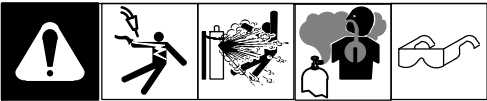
- 10 Plastic Grommet

Route hoses through grommet and along track in base (see Section 4-5).

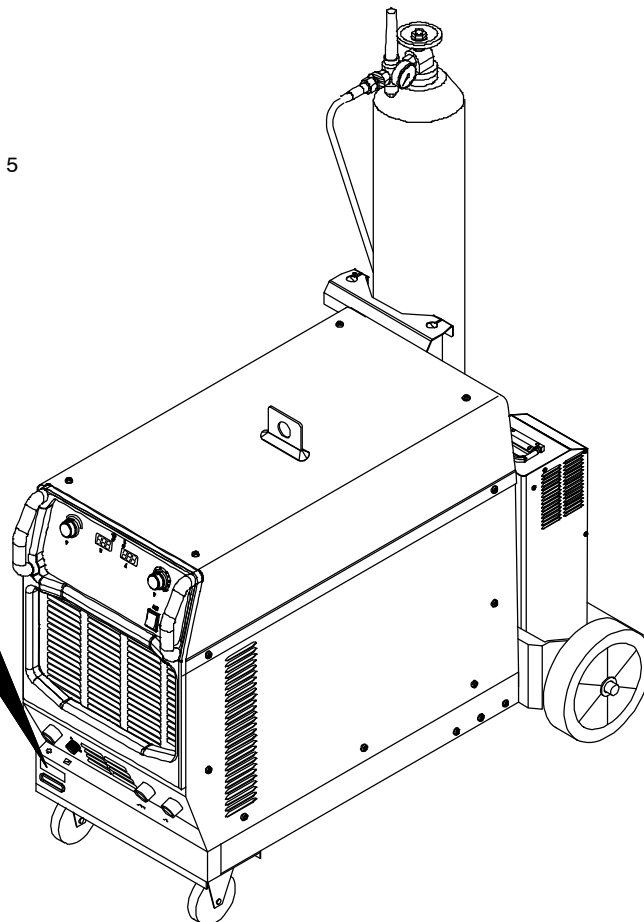
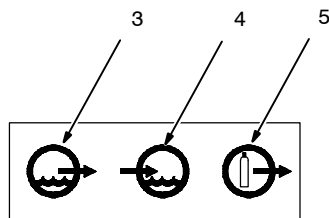
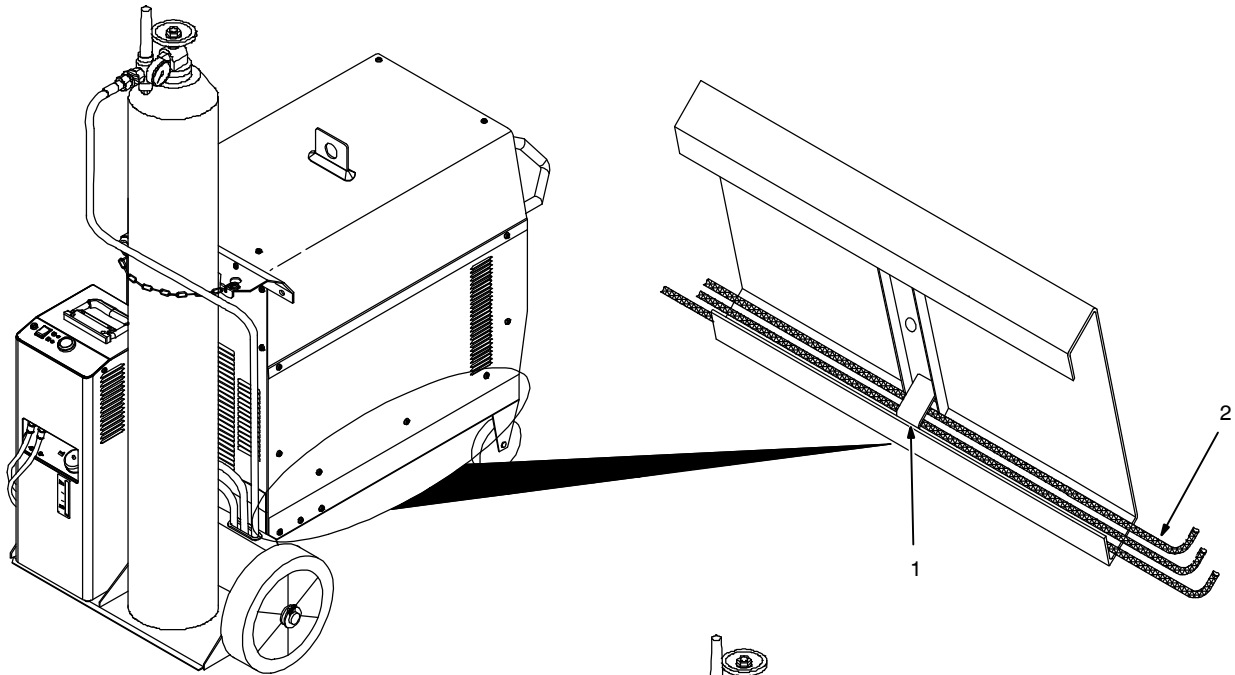
- 11 Water Cooler Mounting Bracket

Use bracket to secure cooler to bottle support.

4-5. Installing Input Gas And Water Cooler Hoses (All Models: Optional)



- 1 Hose Retaining Bracket
 - 2 Hoses
- Route hoses through track in base, and use bracket to secure hoses.
- 3 Water Out Fitting (Cool)
 - 4 Water In Fitting (Hot)
 - 5 Gas Out Fitting



Tools Needed:



Torx T30

956142796_8-10_C

4-6. Weld Output Terminals And Selecting Cable Sizes*

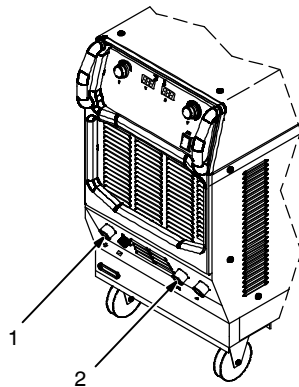
NOTICE – The Total Cable Length in Weld Circuit (see table below) is the combined length of both weld cables. For example, if the power source is 30 m (100 ft) from the workpiece, the total cable length in the weld circuit is 60 m (2 cables x 30 m). Use the 60 m (200 ft) column to determine cable size.

Welding Amperes	Weld Cable Size** and Total Cable (Copper) Length in Weld Circuit Not Exceeding***							
	30 m (100 ft) or Less		45 m (150 ft)	60 m (200 ft)	70 m (250 ft)	90 m (300 ft)	105 m (350 ft)	120 m (400 ft)
	10 – 60% Duty Cycle mm ² (AWG)	60 – 100% Duty Cycle mm ² (AWG)	10 – 100% Duty Cycle mm ² (AWG)					
100	20 (4)	20 (4)	20 (4)	30 (3)	35 (2)	50 (1)	60 (1/0)	60 (1/0)
150	30 (3)	30 (3)	35 (2)	50 (1)	60 (1/0)	70 (2/0)	95 (3/0)	95 (3/0)
200	30 (3)	35 (2)	50 (1)	60 (1/0)	70 (2/0)	95 (3/0)	120 (4/0)	120 (4/0)
250	35 (2)	50 (1)	60 (1/0)	70 (2/0)	95 (3/0)	120 (4/0)	2x70 (2x2/0)	2x70 (2x2/0)
300	50 (1)	60 (1/0)	70 (2/0)	95 (3/0)	120 (4/0)	2x70 (2x2/0)	2x95 (2x3/0)	2x95 (2x3/0)
350	60 (1/0)	70 (2/0)	95 (3/0)	120 (4/0)	2x70 (2x2/0)	2x95 (2x3/0)	2x95 (2x3/0)	2x120 (2x4/0)
400	60 (1/0)	70 (2/0)	95 (3/0)	120 (4/0)	2x70 (2x2/0)	2x95 (2x3/0)	2x120 (2x4/0)	2x120 (2x4/0)
500	70 (2/0)	95 (3/0)	120 (4/0)	2x70 (2x2/0)	2x95 (2x3/0)	2x120 (2x4/0)	3x95 (3x3/0)	3x95 (3x3/0)

* This chart is a general guideline and may not suit all applications. If cable overheats, use next size larger cable.
 **Weld cable size is based on either a 4 volts or less drop or a current density of at least 300 circular mils per ampere.
 ***For distances longer than those shown in this guide, call a factory applications representative.

Milan Ref. S-0007-L 2015-02

4-7. Weld Output Terminals



⚠ Turn off power before connecting to weld output terminals.


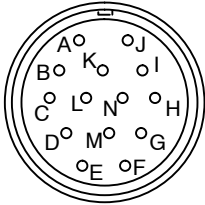
⚠ Do not use worn, damaged, undersized, or repaired cables.

- 1 Electrode
- 2 Work

☞ See Sections 4-2 t for standard connection diagrams.

956142796_1-10_D output term1 2015-02

4-8. Remote 14 Receptacle RC1

 REMOTE 14	Socket*	Socket Information
	A	24 volts AC.
	B	Contact closure to A completes 24 volts AC contactor control circuit.
	D	Circuit Common.
	F	Current feedback.
	G	Circuit Common for 24 volts AC.
	H	Voltage feedback.
	Pins D, F, and H are used in XPS digital models only.	

4-9. Electrical Service Guide

Elec Serv 2011-08



Failure to follow these electrical service guide recommendations could create an electric shock or fire hazard. These recommendations are for a dedicated circuit sized for the rated output and duty cycle of the welding power source.

In dedicated circuit installations, the National Electrical Code (NEC) allows the receptacle or conductor rating to be less than the rating of the circuit protection device. All components of the circuit must be physically compatible. See NEC articles 210.21, 630.11, and 630.12.

* Power cord supplied with 230 volt units.

** Larger power cord may be required for cable length greater than 3 meters. Consult national or local regulations.

	XPS 350-50/60 Hz Three Phase		XPS 450-50/60 Hz Three Phase	
Input Voltage (V)	230	400	230	400
Input Amperes (A) At Rated Output	40	23	56	32
Max Recommended Standard Fuse Rating In Amperes¹				
Time-Delay Fuses²	50	25	60	40
Normal Operating Fuses³	60	35	80	50
Min Input Conductor Size In mm² (AWG)^{4 * **}	6 (10)	4 (12)	10 (8)	6 (10)
Max Recommended Input Conductor Length In Meters (Feet)	26 (86)	48 (156)	29 (94)	57 (186)
Min Grounding Conductor Size In mm² (AWG)^{4 * **}	6 (10)	4 (12)	10 (8)	6 (10)

Reference: 2014 National Electrical Code (NEC) (including article 630)

1 If a circuit breaker is used in place of a fuse, choose a circuit breaker with time-current curves comparable to the recommended fuse.

2 "Time-Delay" fuses are UL class "RK5" . See UL 248.

3 "Normal Operating" (general purpose - no intentional delay) fuses are UL class "K5" (up to and including 60 amps), and UL class "H" (65 amps and above).

4 Conductor data in this section specifies conductor size (excluding flexible cord or cable) between the panelboard and the equipment per NEC Table 310.15(B)(16). If a flexible cord or cable is used, minimum conductor size may increase. See NEC Table 400.5(A) for flexible cord and cable requirements.

4-10. Positioning Jumper Links (230/400 VAC 3-Phase)



⚠ Disconnect and lockout/tagout input power before installing or moving jumper links. Follow established procedures regarding the installation and removal of lockout/tagout devices.

☞ All units have jumper links preset to 400V.

Check input voltage available at site.

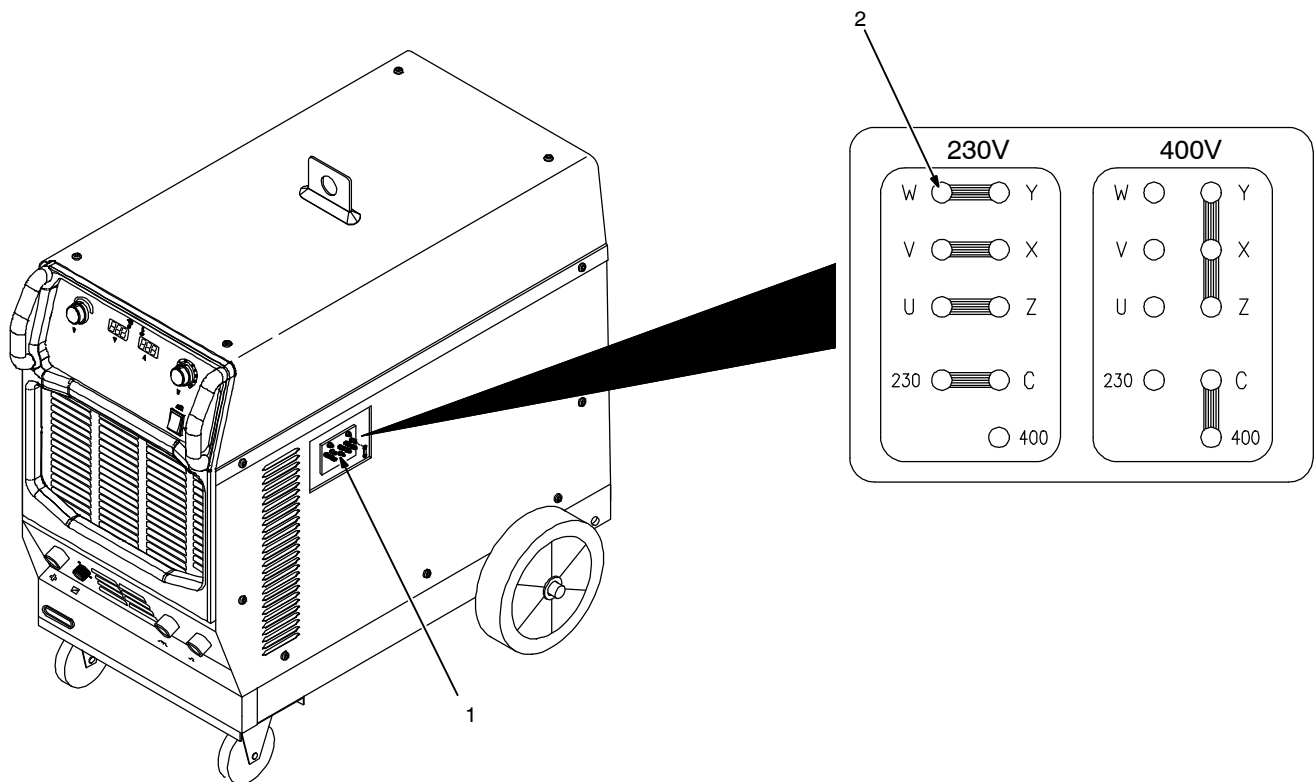
1 Jumper Link Label

Check label – only one is on unit.

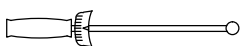
2 Jumper Links

Move jumper links to match input voltage.

Close and secure access door. Follow established lockout/tagout procedures to put unit in service.



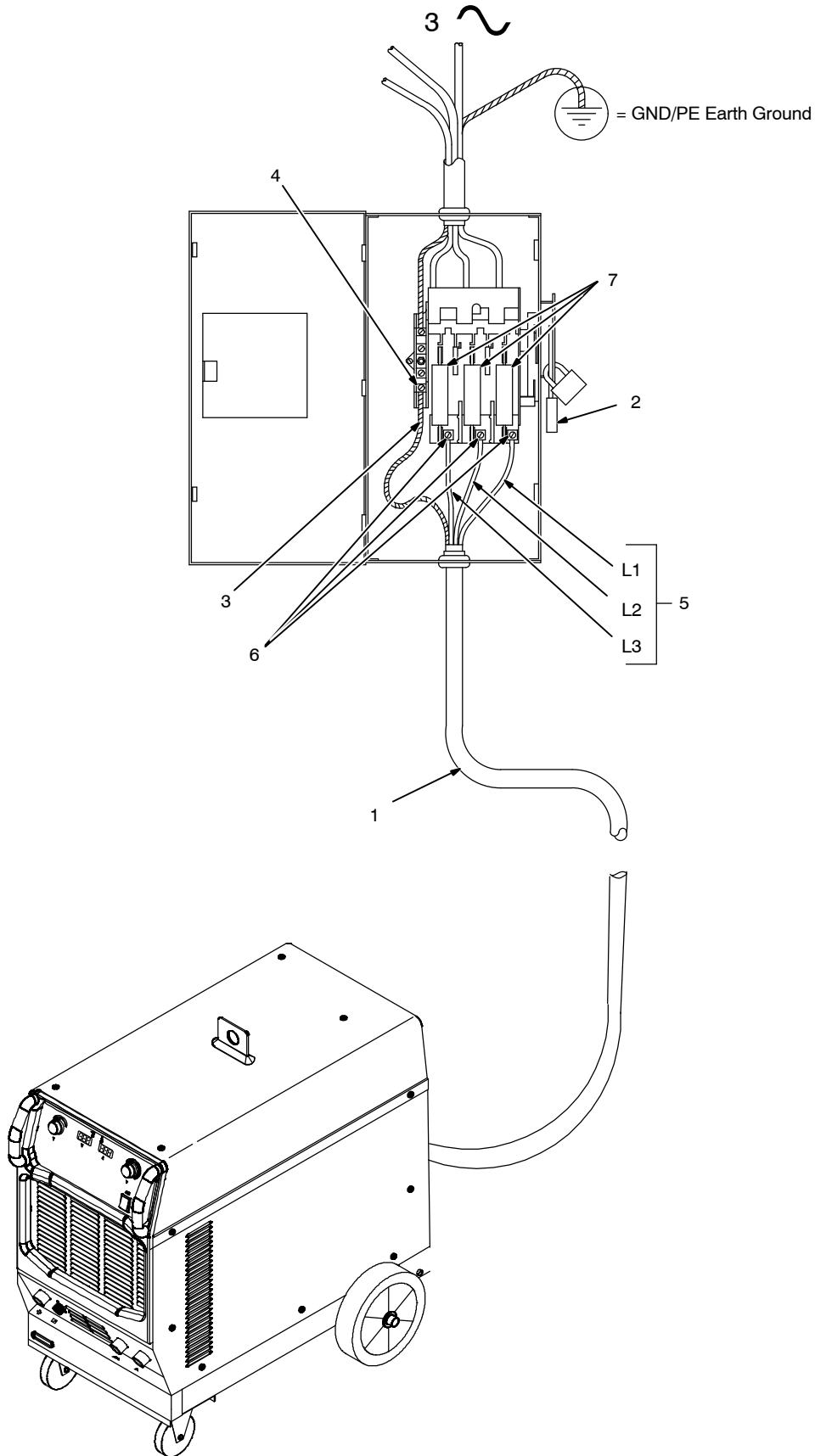
Tools Needed:



8mm / .315 in

956142796_3-10_D

4-11. Connecting 3-Phase Input Power



Tools Needed:



input2 2012-05 – Ref. 803 766-C

4-11. Connecting 3-Phase Input Power (Continued)



⚠ Installation must meet all National and Local Codes – have only qualified persons make this installation.

⚠ Disconnect and lockout/tagout input power before connecting input conductors from unit. Follow established procedures regarding the installation and removal of lockout/tagout devices.

⚠ Always connect green or green/yellow conductor to supply grounding terminal first, and never to a line terminal.

See rating label on unit and check input volt-

age available at site.

For Three-Phase Operation

- 1 Input Power Cord.
- 2 Disconnect Device (switch shown in the OFF position)
- 3 Green Or Green/Yellow Grounding Conductor
- 4 Disconnect Device Grounding Terminal
- 5 Input Conductors (L1, L2 And L3)
- 6 Disconnect Device Line Terminals

Connect green or green/yellow grounding conductor to disconnect device grounding terminal first.

Connect input conductors L1, L2, and L3 to disconnect device line terminals.

7 Over-Current Protection

Select type and size of over-current protection using Section 4-9 (fused disconnect switch shown).

Close and secure door on disconnect device. Follow established lockout/tagout procedures to put unit in service.

input2 2012-05

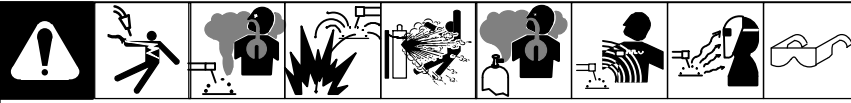
Notes



Work like a Pro!
Pros weld and cut safely. Read the safety rules at the beginning of this manual.

SECTION 5 – OPERATION

5-1. Controls For The XPS 350



1 Voltage Range Control S2

Allows selection of voltage in three coarse ranges, A, B, or C.

2 Digital Voltmeter

3 Power On Light PL1

PL1 is lit when power is On.

4 High Temperature Light PL2

PL2 lights up when unit overheats and shuts down.

5 Digital Ammeter.

6 Voltage Adjustment Control S3

This control allows for 10 voltage settings in each of the three coarse voltage ranges (A, B, or C) of S2.

7 Power Switch S1

Use switch to turn unit On and Off.

8 Positive (+) Weld Output Terminal

9 Wire Feeder Power Cable Receptacle

Use receptacle to supply power to a wire feeder.

10 High Inductance Negative (-) Weld Output Terminal

Connect work lead here for stainless steel and spray arc applications.

11 Low Inductance Negative (-) Weld Output Terminal

Connect work lead here for most short arc applications.

12 Supplementary Protector CB1

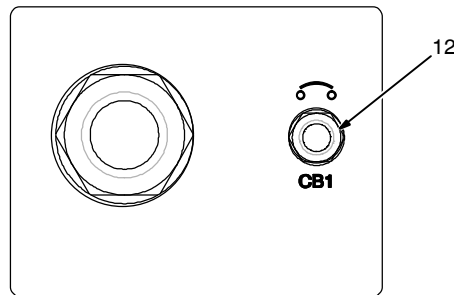
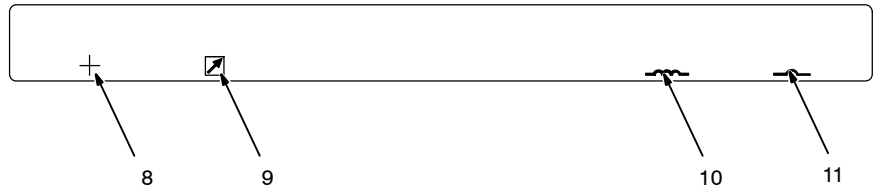
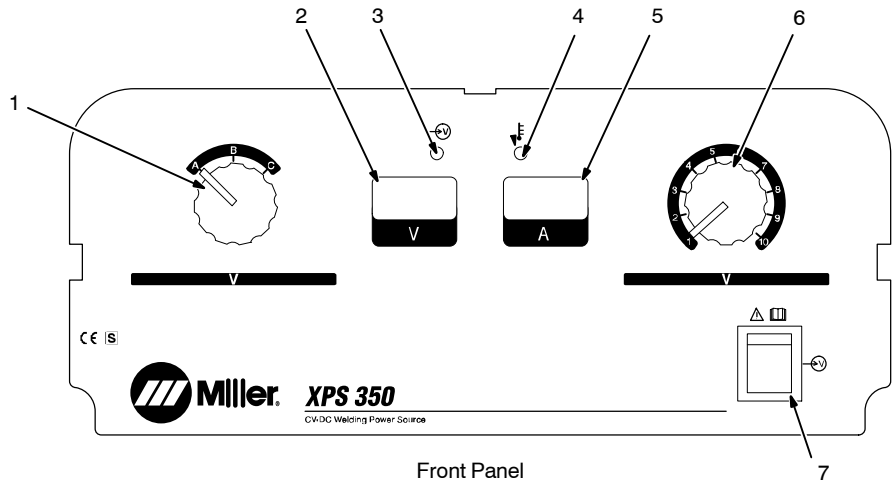
CB1 protect the 24 volts AC portion of the circuit from overload.

13 Supplementary Protector CB2

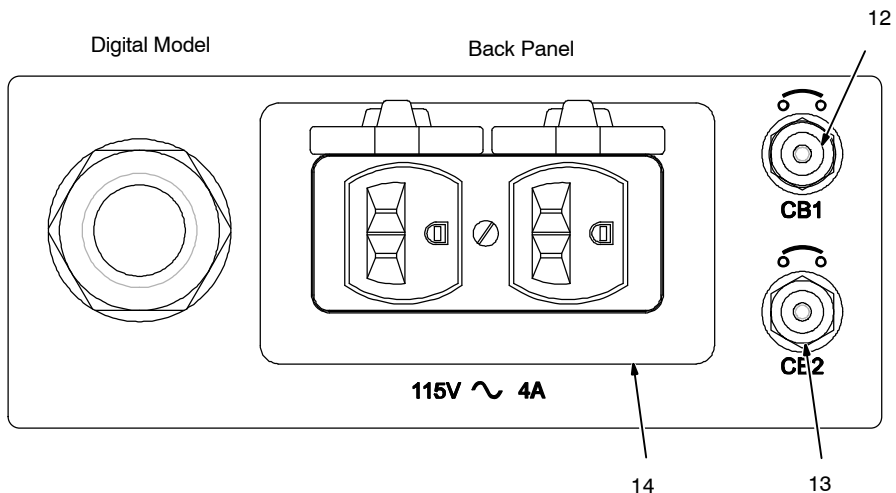
CB2 protect the 115 volts AC portion of the circuit from overload.

14 115 AC Receptacle RCPT

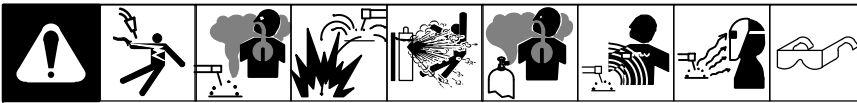
Receptacle is located on the back panel, and provides power for the gas heater when welding with CO₂ shielding gas, and for the cooling system.



Basic Model



5-2. Controls For The XPS 450



1 Voltage Range Control S2

Allows selection of voltage in four coarse ranges, A, B, C, or D.

2 Digital Voltmeter

3 Power On Light PL1

PL1 is lit when power is On.

4 High Temperature Light PL2

PL2 lights up when unit overheats and shuts down.

5 Digital Ammeter.

6 Voltage Adjustment Control S3

This control allows for 10 voltage settings in each of the four coarse voltage ranges (A, B, C, or D) of S2.

7 Power Switch S1

Use switch to turn unit On and Off.

8 Positive (+) Weld Output Terminal

9 Wire Feeder Power Cable Receptacle

Use receptacle to supply power to a wire feeder.

10 High Inductance Negative (-) Weld Output Terminal

Connect work lead here for stainless steel and spray arc applications.

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Connect work lead here for most short arc applications.

12 Supplementary Protector CB1

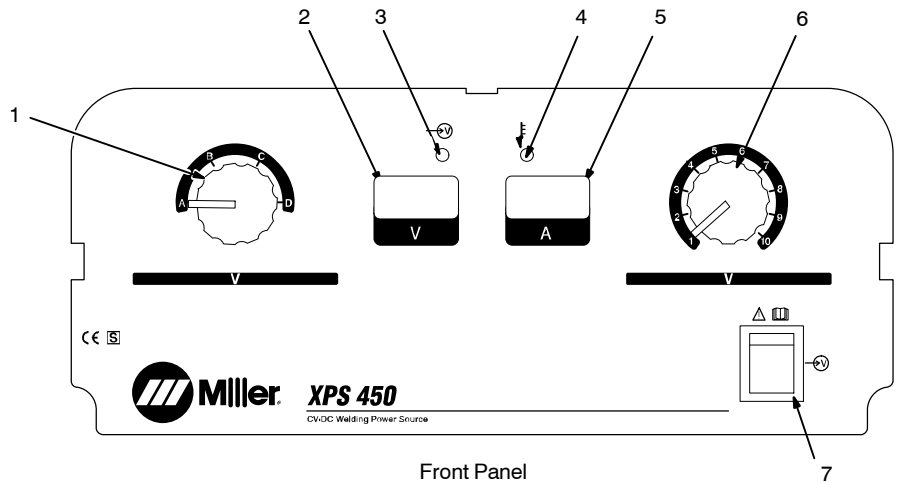
CB1 protect the 24 volts AC portion of the circuit from overload.

13 Supplementary Protector CB2

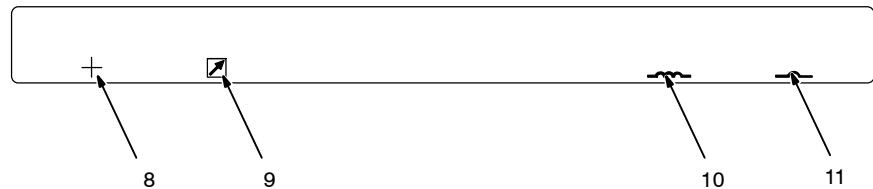
CB2 protect the 115 volts AC portion of the circuit from overload.

14 115 AC Receptacle RCPT

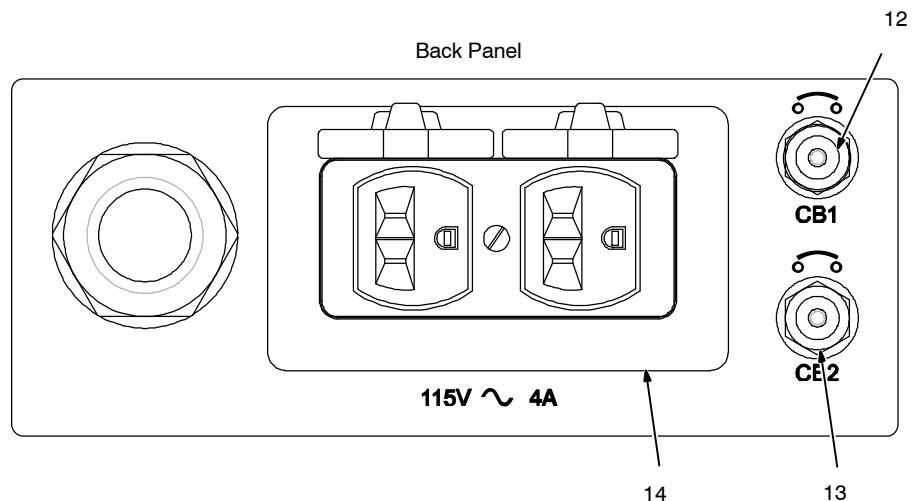
Receptacle is located on the back panel, and provides power for the gas heater when welding with CO₂ shielding gas, and for the cooling system.



Front Panel



Back Panel



SECTION 6 – MAINTENANCE AND TROUBLESHOOTING

6-1. Routine Maintenance

				<p>⚠ Disconnect power before maintaining.</p> <p>🔧 Maintain more often during severe conditions.</p>
--	--	--	--	--

	3 Months	<p>Replace unreadable labels.</p>	<p>Clean and tighten weld terminals.</p>
		<p>Repair or replace cracked weld cable.</p>	<p>Repair or replace cracked gas hose.</p>
		<p>Replace o-ring in electrode/gas output receptacle if cracked.</p>	
	6 Months	<p>Blow out or vacuum inside.</p>	

6-2. Unit Overload

Thermal switches TP2 in SR1 and TP3-TP4 in XFMR protect the unit from damage due to overheating. If thermal indicator PL2 illuminates, wait for unit to cool (see Section 3-4) allowing fan motor to run before trying to weld. If unit is cool and no weld output continues, contact a Factory Authorized Service Agent.

6-3. Troubleshooting

--	--	--	--	--	--

Trouble	Remedy
No weld output; unit completely inoperative.	Place line disconnect switch in On position (see Section 4-11).
	Check and replace line fuse(s), if necessary, or reset circuit breaker (see Section 4-11).
	Check for proper input power connections (see Section 4-11).
	Check for proper jumper links position (see Section 4-10).
	Have factory Authorized Service Agent check continuity of power switch S1, and replace if necessary.
No weld output; pilot light PL2 on.	Unit overheated. Allow unit to cool (see Section 3-4).
Limited weld output, and low open circuit voltage.	Check for proper input power connections (see Section 4-11).
	Check for proper jumper links position (see Section 4-10).
	Clean and tighten all weld output connections.
Unit provides only maximum or minimum weld output.	Have factory Authorized Service Agent check control board PC1 and Hall device HD1, and replace if necessary.

Trouble	Remedy
No 115 volts AC output at duplex receptacle.	Reset supplementary protector CB2 (See Section 5).
No 24 volts AC output at Remote 14 receptacle.	Reset supplementary protector CB1 (See Section 5).
Fan not operating; fan only runs when cooling is necessary.	Check for and remove anything blocking fan movement.
	Have factory Authorized Service Agent check fan motor.
	Have factory Authorized Service Agent check thermostat TP1 if available, and replace if necessary.
Wandering arc; poor control of arc direction.	Reduce gas flow rate.
Digital meter not working properly.	Have factory Authorized Service Agent check control board PC1 and connections, and replace if necessary.
	Have factory Authorized Service Agent check meter display board PC2 settings and connections, and replace if necessary.

Notes

SECTION 7 - ELECTRICAL DIAGRAM

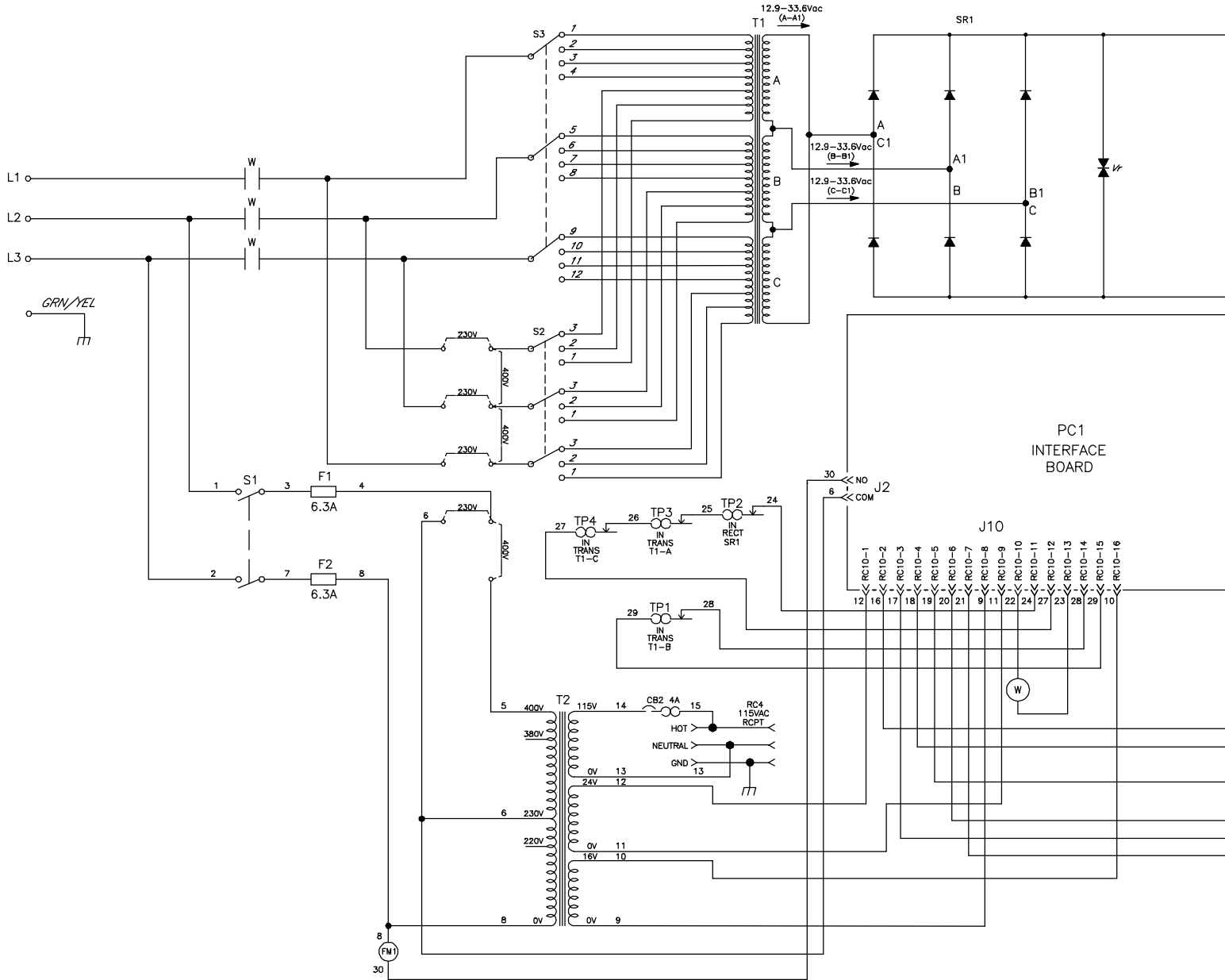

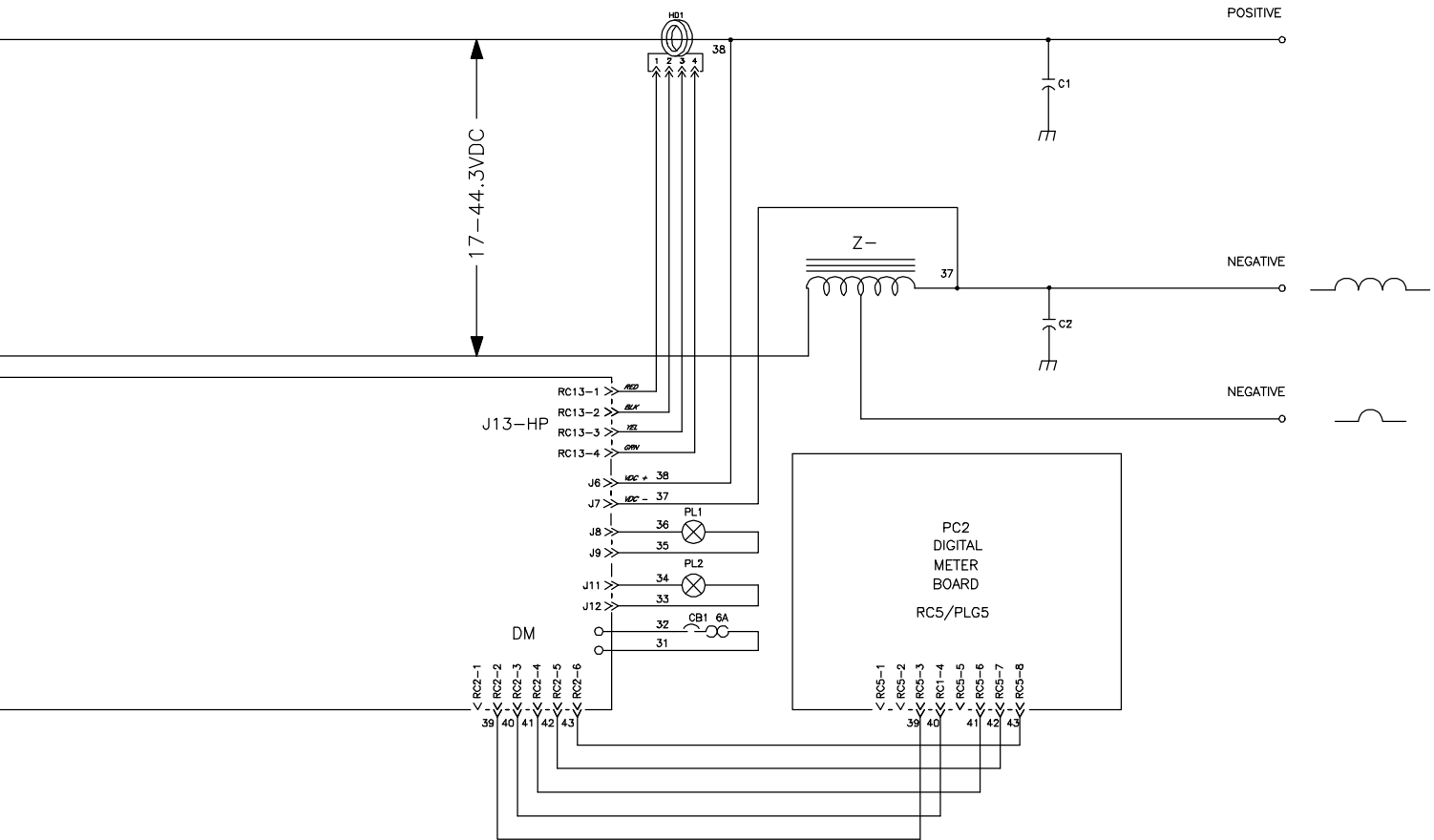


Figure 7-1. Circuit Diagram for XPS 350 Digital (230/400 VAC)

 ⚠ WARNING ELECTRIC SHOCK HAZARD	<ul style="list-style-type: none"> Do not touch live electrical parts. Disconnect input power or stop engine before servicing. Do not operate with covers removed. Have only qualified persons install, use, or service this unit.



24VAC-2	16	A
TRIG.	18	B
		C
GND	19	D
		E
I MEAS	20	F
24VAC-1	17	G
V MEAS	21	H
		I
		J
		K
		L
		M
		N

S3

		L1			L2			L3					
		1	2	3	4	5	6	7	8	9	10	11	12
POSITION	1	X				X				X			
	2		X			X				X			
	3		X			X				X			
	4		X			X				X			
	5			X		X				X			
	6			X		X				X			
	7			X				X		X			
	8				X		X			X			
	9				X		X			X			X
	10				X			X					X

S2

		L1			L2			L3		
		1	2	3	1	2	3	1	2	3
POS.	1	X			X			X		
	2		X		X			X		
	3			X		X			X	

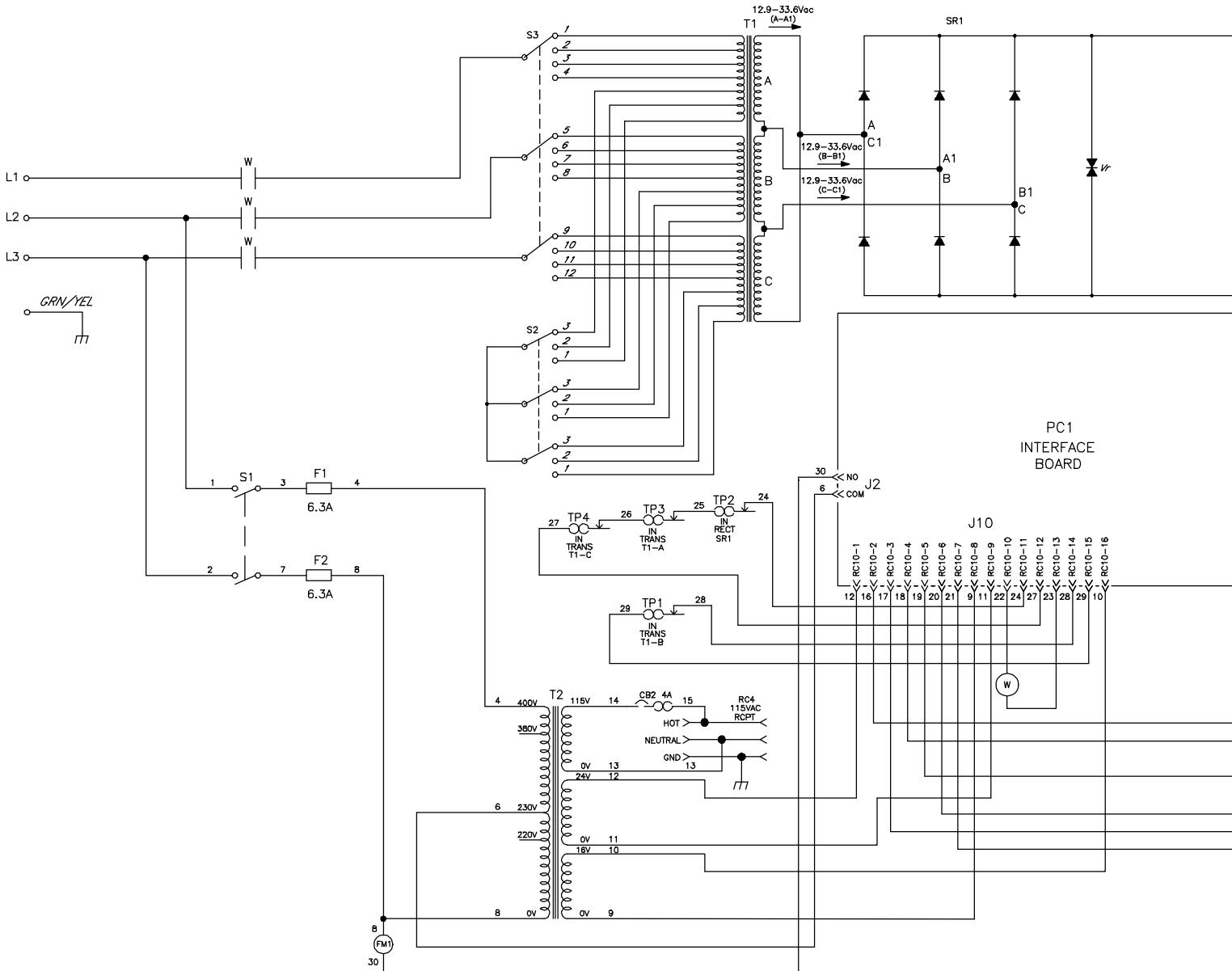
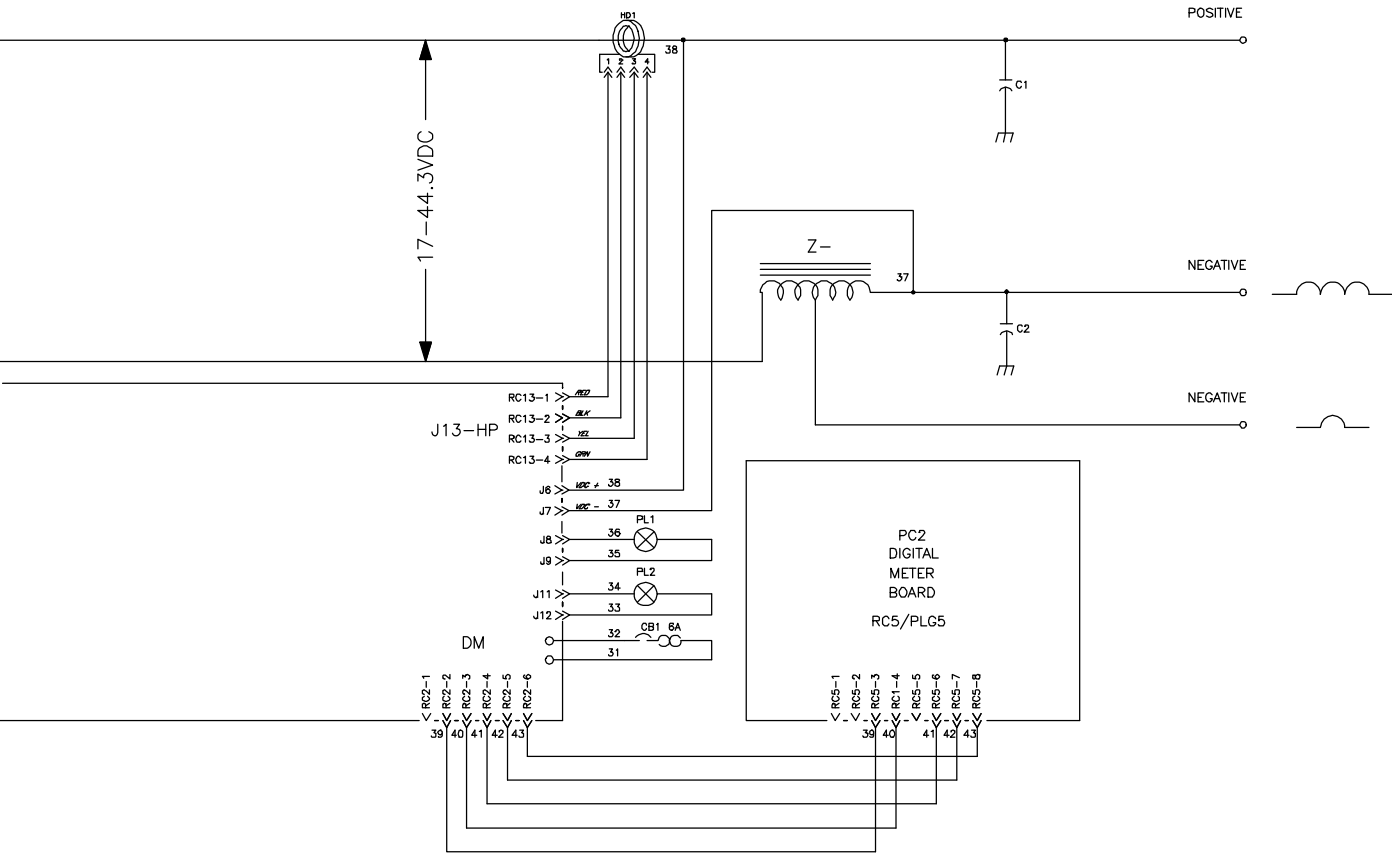


Figure 7-2. Circuit Diagram for XPS 350 Digital (400 VAC)



24VAC-2	16	A
TRIG.	18	B
		C
GND	19	D
		E
I MEAS	20	F
24VAC-1	17	G
V MEAS	21	H
		I
		J
		K
		L
		M
		N

S3

POSITION	L1				L2				L3			
	1	2	3	4	5	6	7	8	9	10	11	12
1	X				X				X			
2		X			X				X			
3		X			X				X			
4		X				X			X			
5			X			X			X			
6			X			X			X			
7			X			X			X			
8			X			X			X			
9			X			X			X			
10			X			X			X			

S2

POS.	L1			L2			L3		
	1	2	3	1	2	3	1	2	3
1	X			X			X		
2		X		X			X		
3		X		X			X		

⚠ WARNING

ELECTRIC SHOCK HAZARD

- Do not touch live electrical parts.
- Disconnect input power or stop engine before servicing.
- Do not operate with covers removed.
- Have only qualified persons install, use, or service this unit.

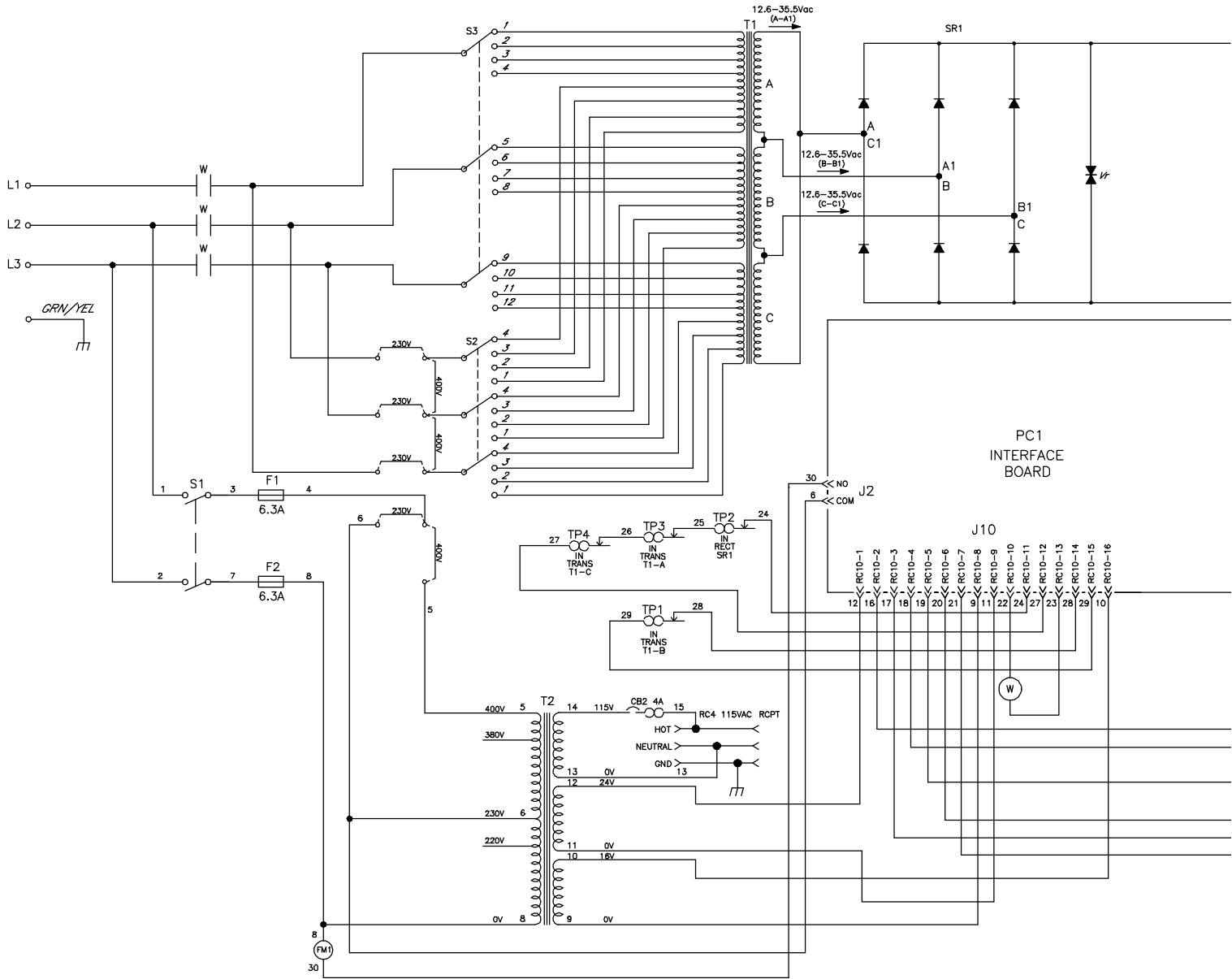
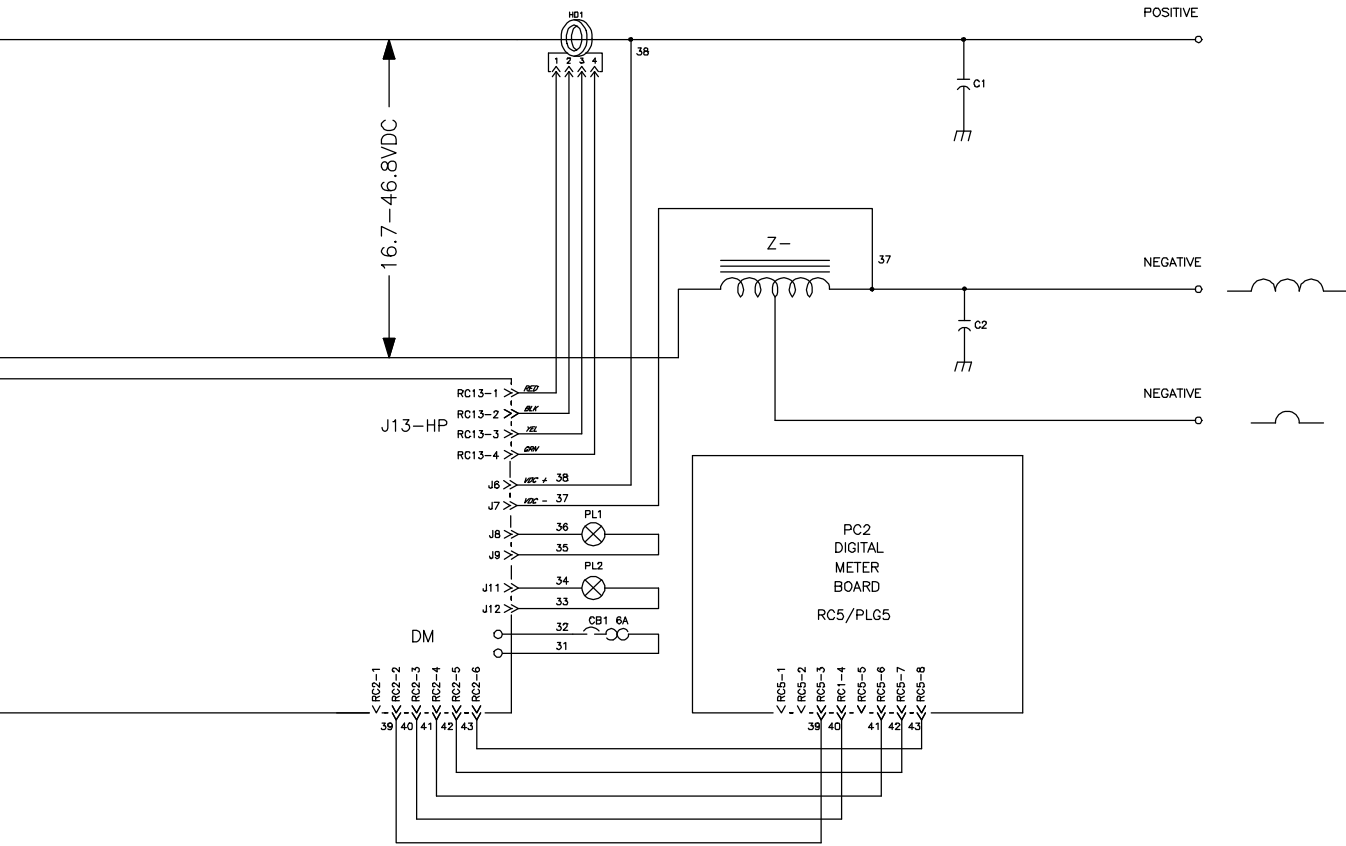


Figure 7-3. Circuit Diagram for XPS 450 Digital (230/400 VAC)



24VAC-2	16	<< A
TRIG.	18	<< B
		<< C
GND	19	<< D
		<< E
I MEAS	20	<< F
24VAC-1	17	<< G
V MEAS	21	<< H
		<< I
		<< J
		<< K
		<< L
		<< M
		<< N

S3

POSITION	L1				L2				L3			
	1	2	3	4	5	6	7	8	9	10	11	12
1	X				X				X			
2	X				X				X			
3	X				X					X		
4	X				X				X			
5		X			X				X			
6		X			X						X	
7		X			X				X			
8			X		X				X			
9			X		X				X			
10			X		X				X			

S2

POSITION	L1				L2				L3			
	1	2	3	4	1	2	3	4	1	2	3	4
1	X				X				X			
2		X			X				X			
3			X		X				X			
4				X	X				X			

⚠ WARNING

ELECTRIC SHOCK HAZARD

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- Do not operate with covers removed.
- Have only qualified persons install, use, or service this unit.

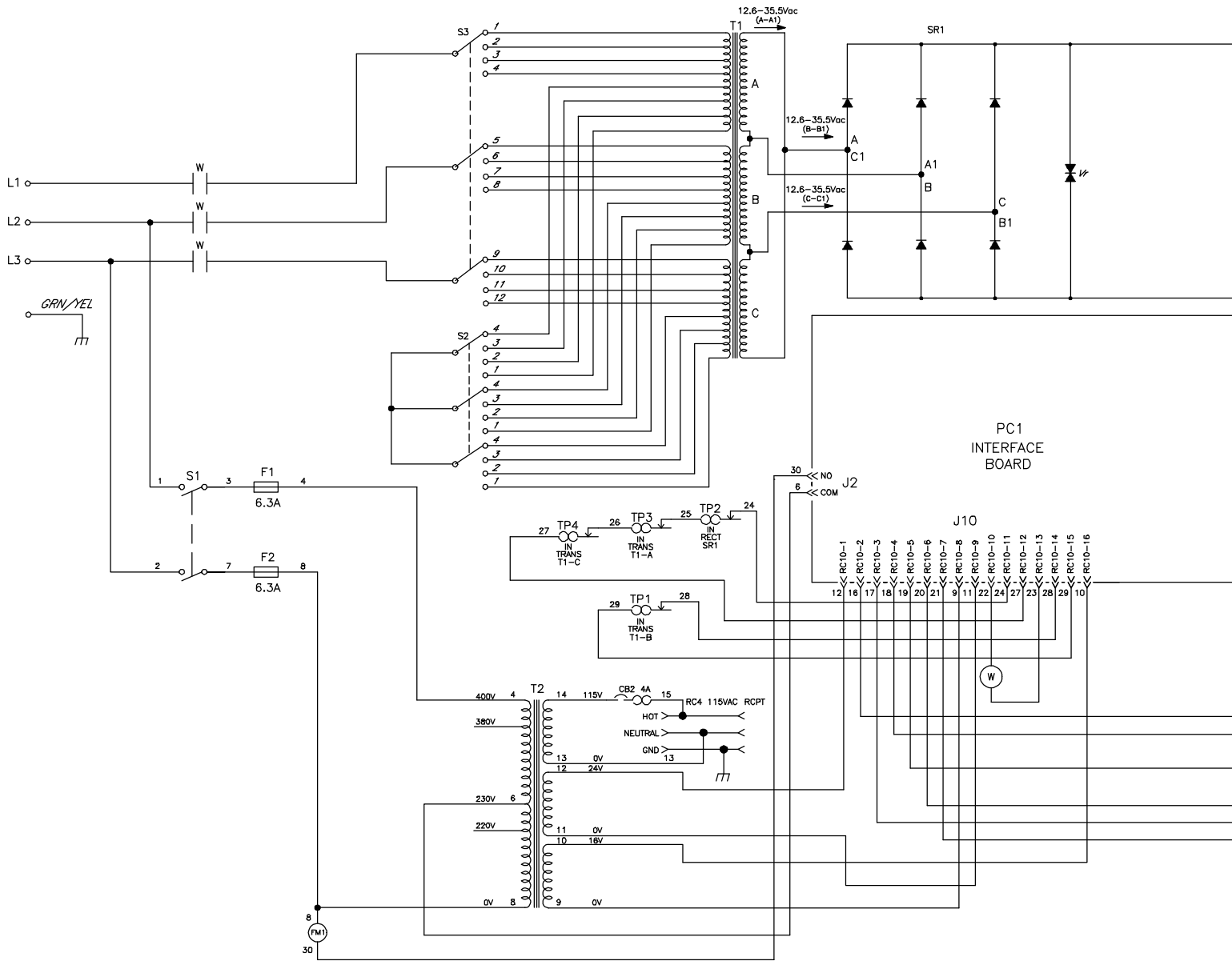
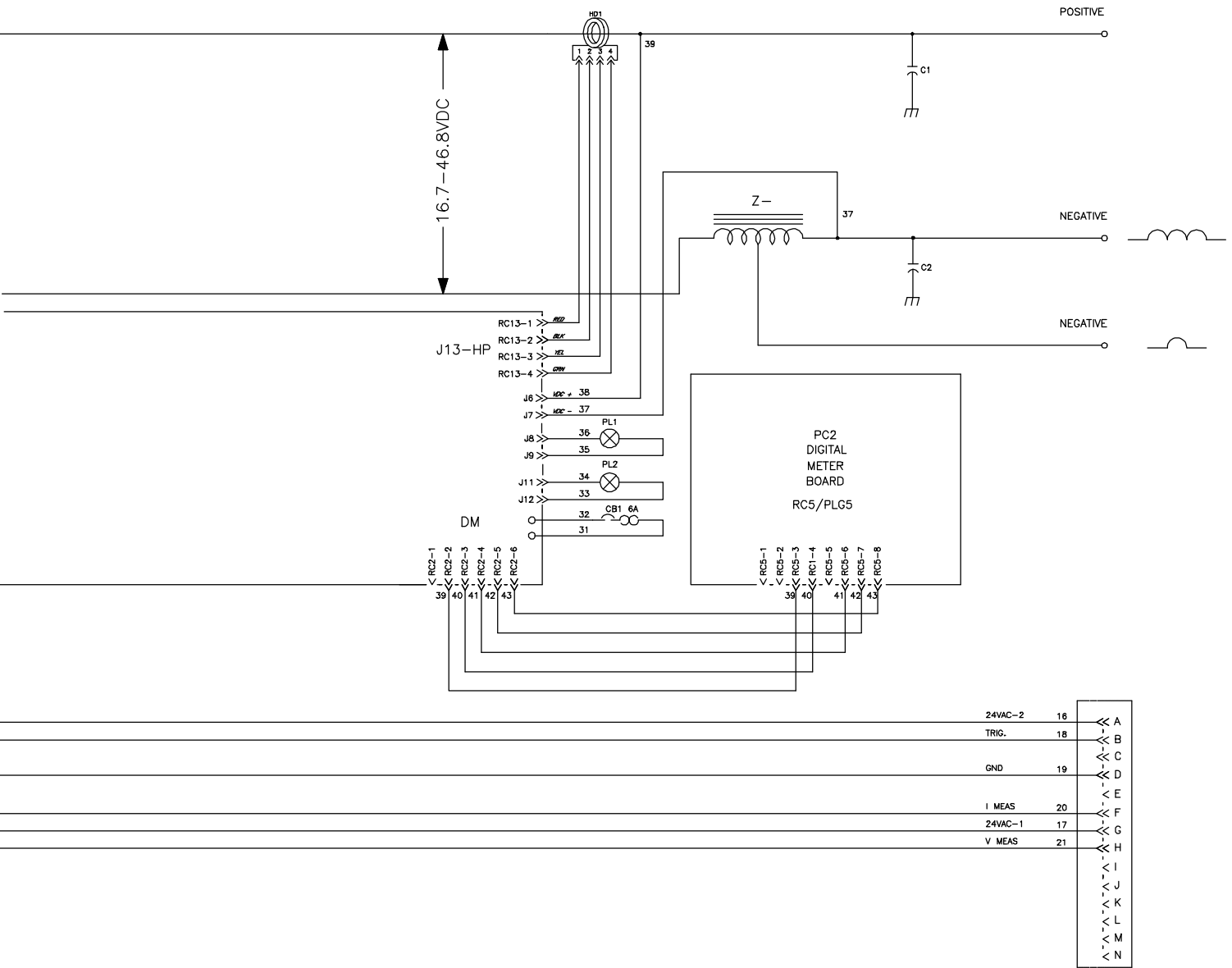


Figure 7-4. Circuit Diagram for XPS 450 Digital (400 VAC)




S3

POSITION	L1			L2			L3					
	1	2	3	4	5	6	7	8	9	10	11	12
1	X				X				X			
2		X				X				X		
3			X								X	
4				X								X
5			X			X						X
6		X					X					X
7			X					X				X
8				X			X					X
9					X			X				X
10				X				X				X

S2

POSITION	L1				L2				L3			
	1	2	3	4	1	2	3	4	1	2	3	4
1	X					X				X		
2		X					X				X	
3			X					X				X
4				X					X			X

⚠ WARNING



- Do not touch live electrical parts.
- Disconnect input power or stop engine before servicing.
- Do not operate with covers removed.
- Have only qualified persons install, use, or service this unit.

ELECTRIC SHOCK HAZARD

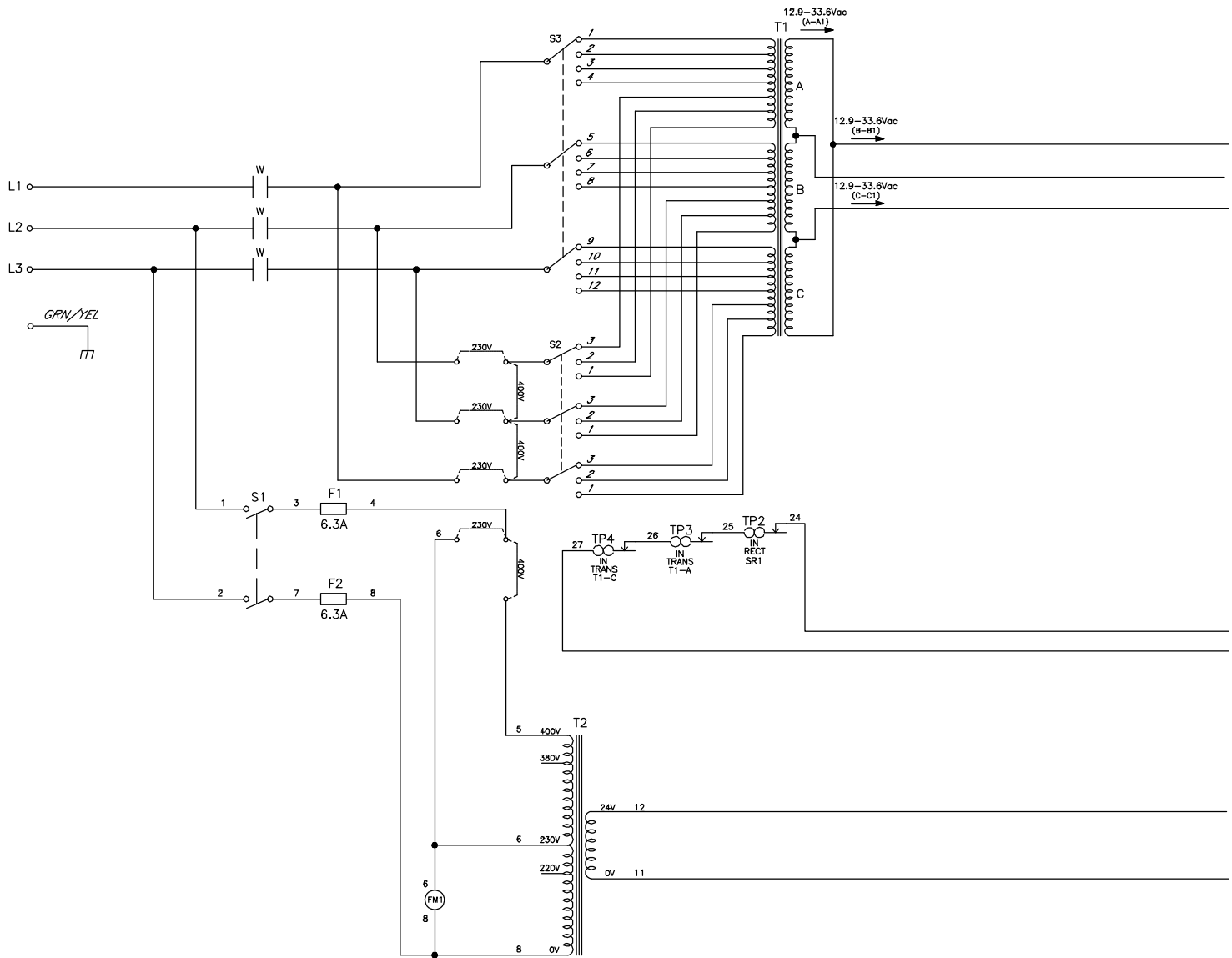
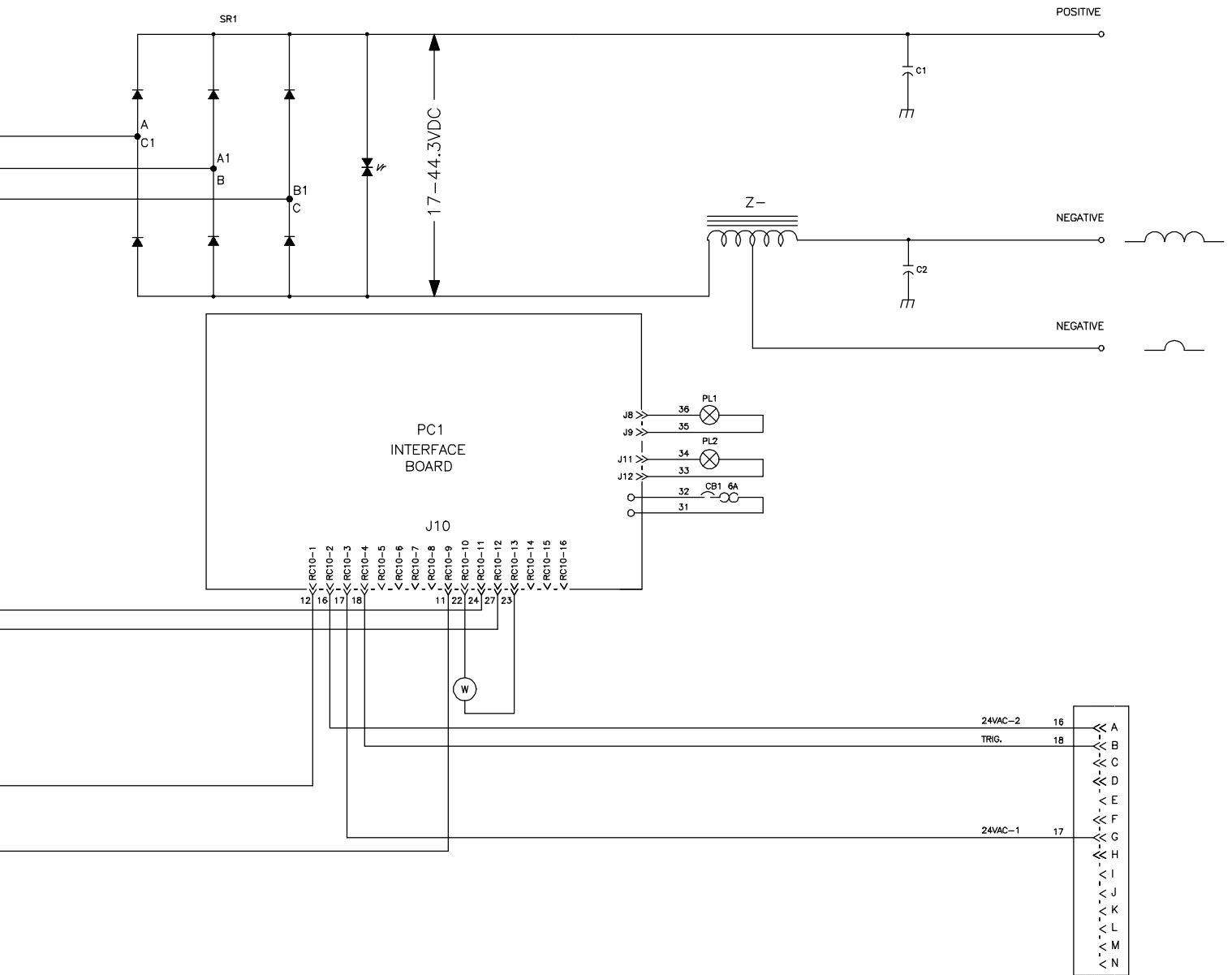


Figure 7-5. Circuit Diagram for XPS 350 Basic (230/400 VAC)



S3

		L1				L2				L3			
		1	2	3	4	5	6	7	8	9	10	11	12
POSITION	1	X				X				X			
	2		X				X				X		
	3		X			X					X		
	4		X				X				X		
	5			X			X				X		
	6			X			X					X	
	7			X				X				X	
	8				X			X				X	
	9				X			X					X
	10				X			X					X

S2

		L1			L2			L3		
		1	2	3	1	2	3	1	2	3
POS.	1	X			X			X		
	2		X			X			X	
	3			X			X			X

⚠ WARNING

- Do not touch live electrical parts.
- Disconnect input power or stop engine before servicing.
- Do not operate with covers removed.
- Have only qualified persons install, use, or service this unit.

ELECTRIC SHOCK HAZARD

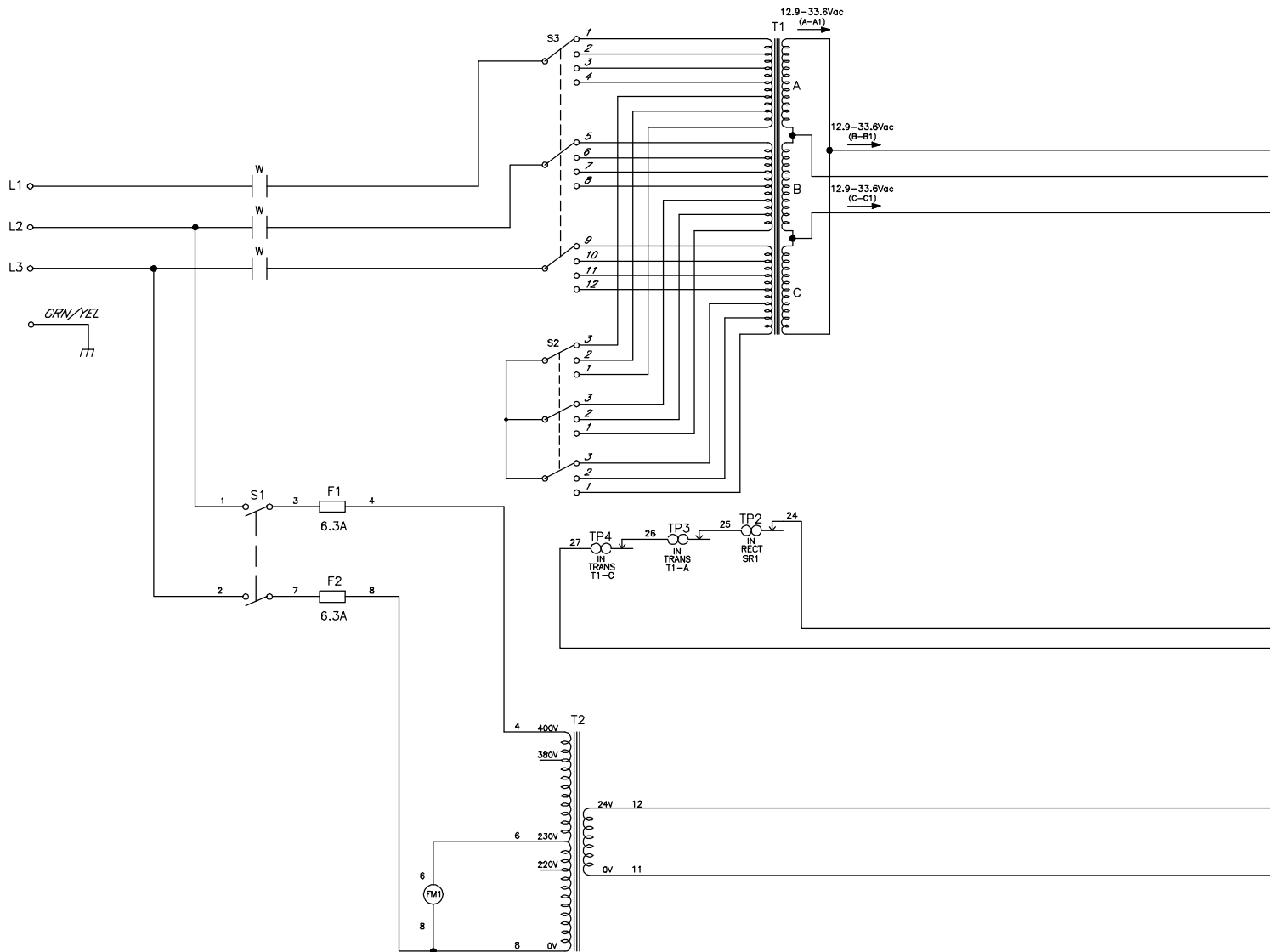
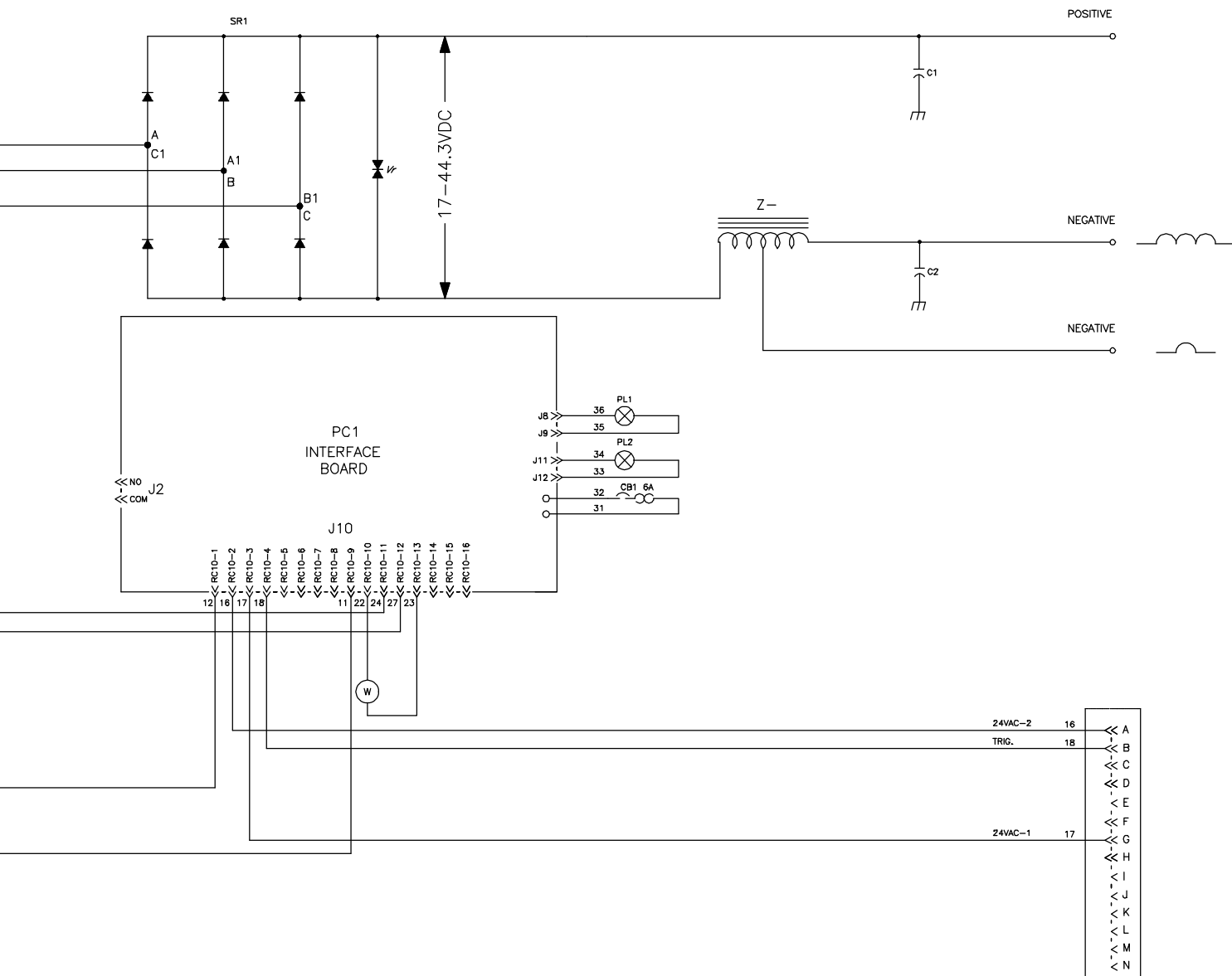


Figure 7-6. Circuit Diagram for XPS 350 Basic (400 VAC)



S3

POSITION	L1			L2			L3					
	1	2	3	4	5	6	7	8	9	10	11	12
1	X				X				X			
2		X			X				X			
3		X			X				X			
4		X				X			X			
5			X			X				X		
6			X			X					X	
7			X				X				X	
8				X			X				X	
9				X			X					X
10				X				X				X

S2

POS.	L1			L2			L3		
	1	2	3	1	2	3	1	2	3
1	X			X			X		
2		X			X			X	
3			X			X			X

⚠ WARNING

- Do not touch live electrical parts.
- Disconnect input power or stop engine before servicing.
- Do not operate with covers removed.
- Have only qualified persons install, use, or service this unit.

ELECTRIC SHOCK HAZARD

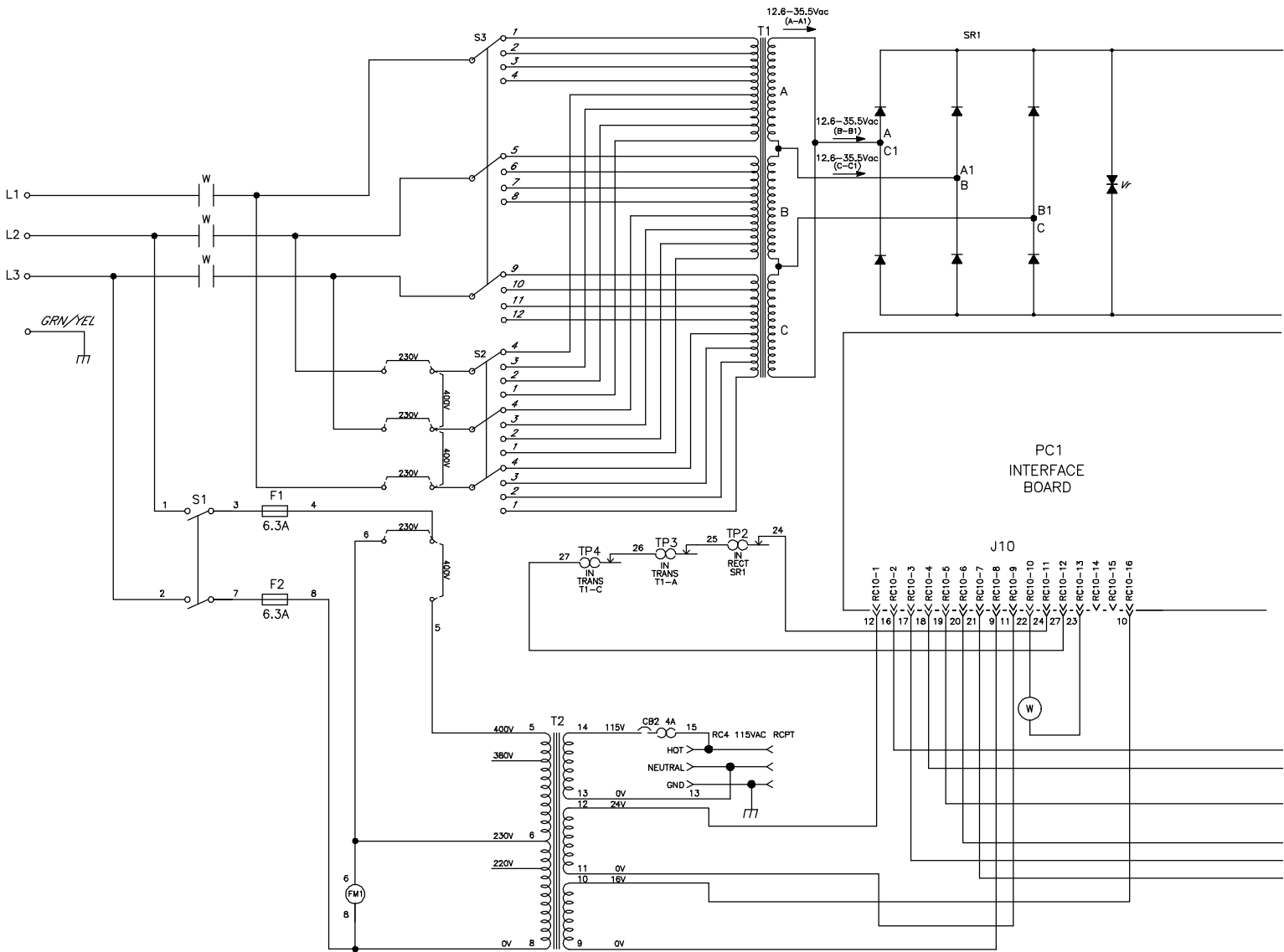
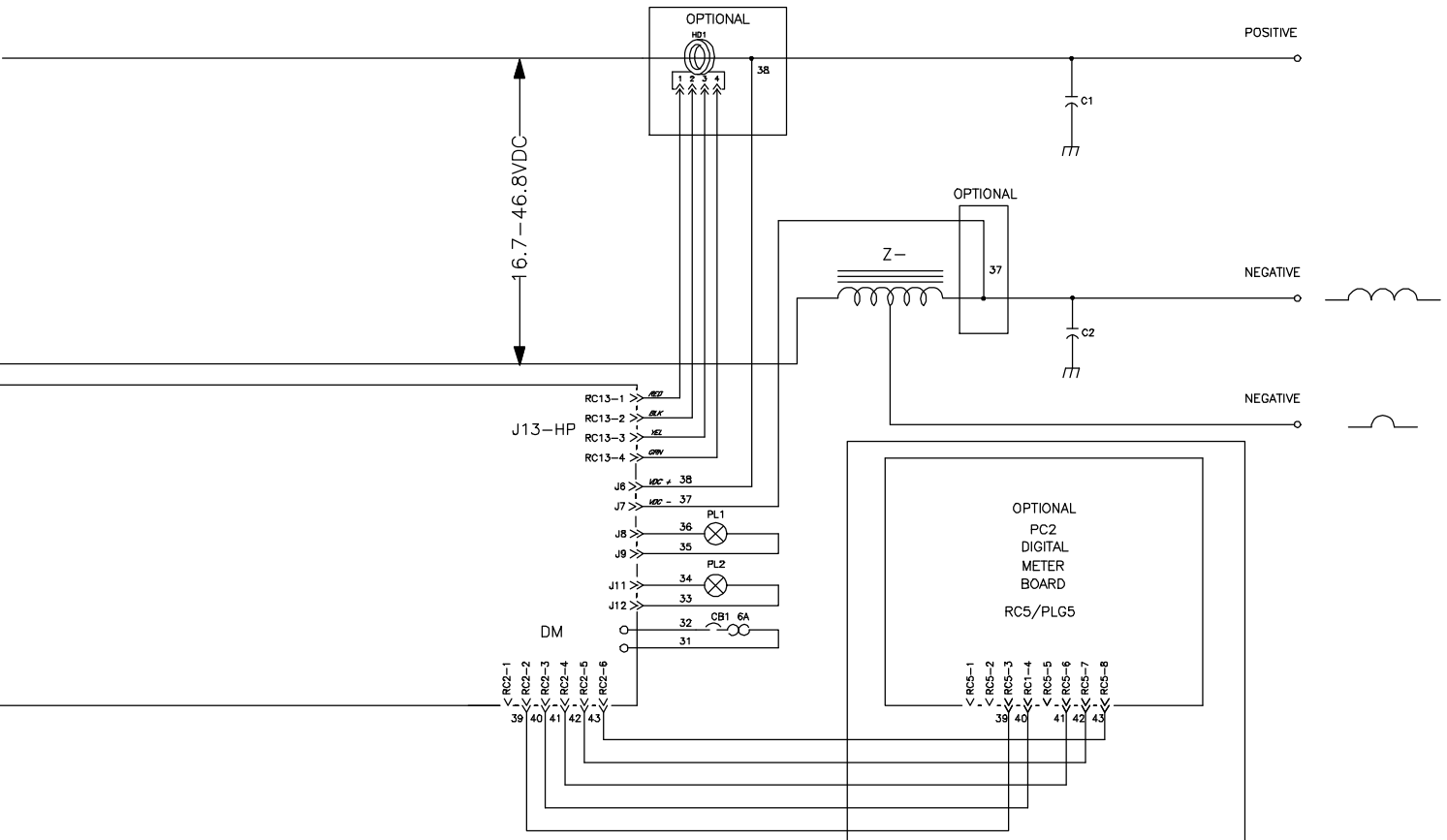


Figure 7-7. Circuit Diagram for XPS 450 Basic (230/400 VAC)



24VAC-2	18	A
TRIG.	18	B
		C
GND	19	D
		E
I MEAS	20	F
24VAC-1	17	G
V MEAS	21	H
		I
		J
		K
		L
		M
		N


S3

POSITION	L1				L2				L3			
	1	2	3	4	5	6	7	8	9	10	11	12
1	X				X				X			
2		X			X				X			
3		X			X				X			
4		X				X			X			
5			X			X			X			
6			X			X			X			
7			X				X		X			
8				X		X			X			
9				X		X						X
10				X			X					X

S2

POSITION	L1				L2				L3			
	1	2	3	4	1	2	3	4	1	2	3	4
1	X				X				X			
2		X				X				X		
3			X				X				X	
4				X				X				X

⚠ WARNING



ELECTRIC SHOCK HAZARD

- Do not touch live electrical parts.
- Disconnect input power or stop engine before servicing.
- Do not operate with covers removed.
- Have only qualified persons install, use, or service this unit.

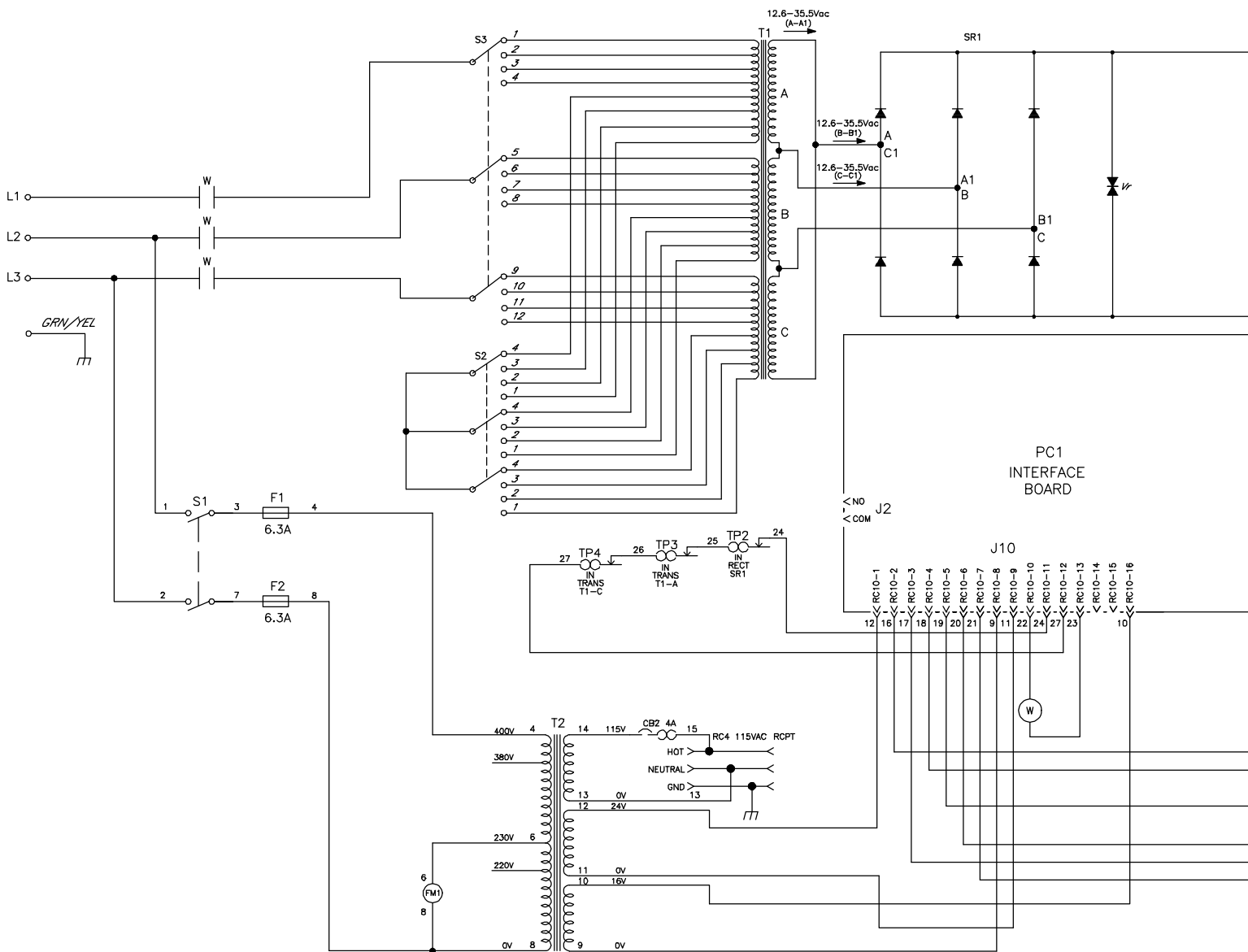
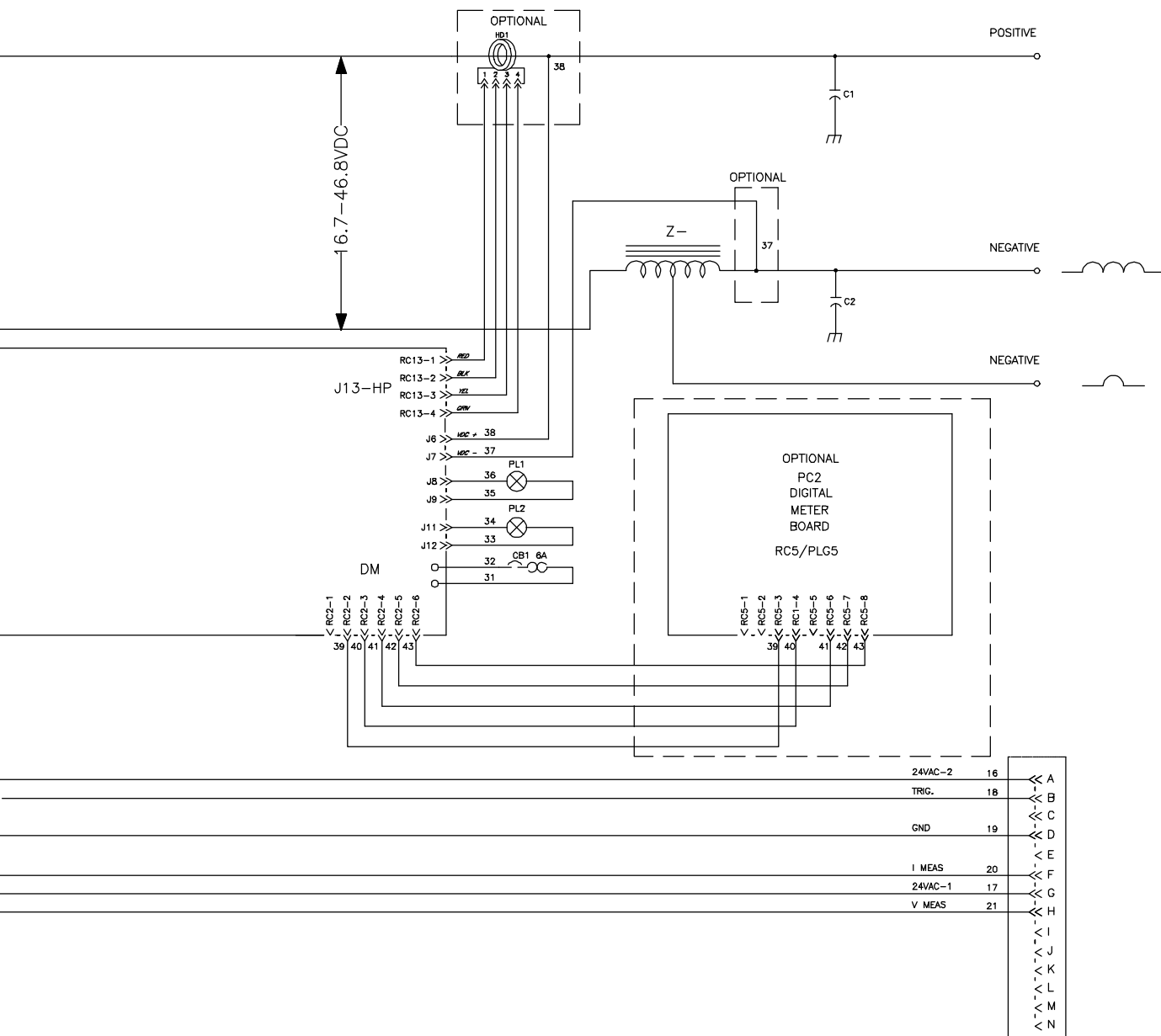


Figure 7-8. Circuit Diagram for XPS 450 Basic (400 VAC)



S3

POSITION	L1				L2				L3			
	1	2	3	4	5	6	7	8	9	10	11	12
1	X				X				X			
2		X			X				X			
3	X				X				X			
4	X				X				X			
5		X			X				X			
6		X			X				X			
7		X			X				X			
8			X		X				X			
9			X		X				X			X
10			X		X				X			X

S2

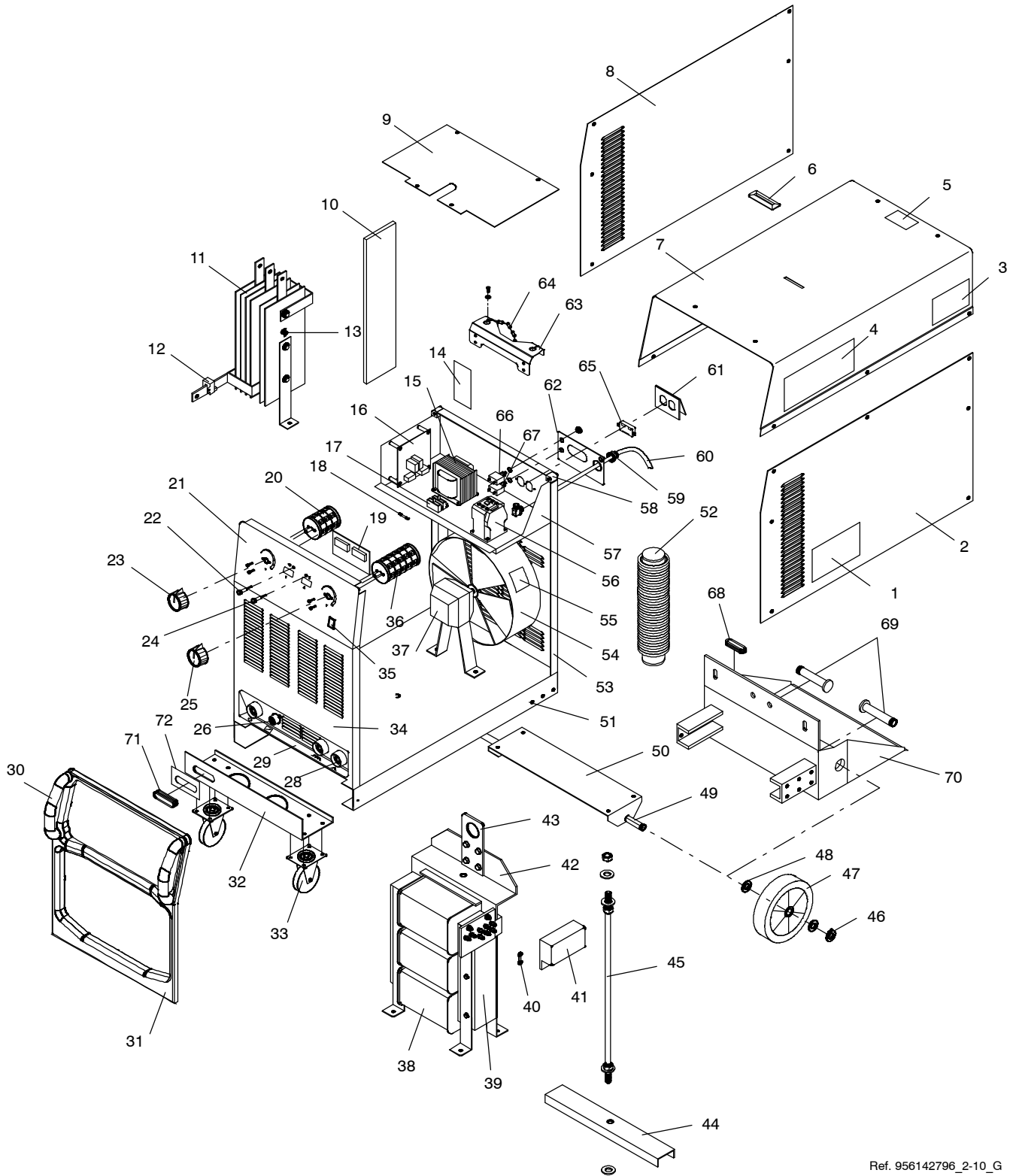
POSITION	L1				L2				L3			
	1	2	3	4	1	2	3	4	1	2	3	4
1	X				X				X			
2		X			X				X			
3			X		X				X			
4			X		X				X			X

⚠ WARNING

- Do not touch live electrical parts.
- Disconnect input power or stop engine before servicing.
- Do not operate with covers removed.
- Have only qualified persons install, use, or service this unit.

ELECTRIC SHOCK HAZARD

SECTION 8 - PARTS LIST



Ref. 956142796_2-10_G

Figure 8-1. Main Assembly for XPS 350

Item No.	Dia. Mkgs.	Part No.	Description	Quantity	
				Model	
				Basic	Digital
Figure 8-1. Main Assembly for XPS 350					
1		000207233	Label, general precautionary	2	2
2		+156122083	Panel, side RH	1	1
3		000207291	Label, primary power connections	1	1
4		000119503	Label, Miller logo	2	2
5		000207235	Label Warning, tilt	1	1
6		656089043	Seal, lift eye	1	1
7		+156121041	Cover, top	1	1
8		+156122084	Panel, side LH	1	1
9		156005149	Plate, upper	1	1
10		156005150	Bracket, side LH	1	1
11	SR1	056050160	Rectifier, PTS 100x300	1	1
12	HD1	056167008	Transducer, Current 400A, kit		1
13	TP2	056159028	Thermostat, 100° 10A	1	1
14		956142789	Rating Plate (230/400 VAC)		1
14		956142791	Rating Plate (230/400 VAC)	1	
14		956142785	Rating Plate (400 VAC)		1
14		956142787	Rating Plate (400 VAC)	1	
15	T2	058021151	Transformer, Aux, 220–230V 400V 40x80		1
15	T2	058021154	Transformer, Aux, 220–230V 400V 40x50	1	
16	PC1	057084155	Circuit Board, control	1	
16	PC1	057084149	Circuit Board, control		1
17		056092099	Fuse Holder	2	2
18		056092100	Fuse, 6x30 6.3A 250V	2	2
19	PC2	057084147	PC2 Circuit Card, Digital Display		1
20	S2	056067272	Switch, 20A 3 pos.	1	1
21		356029217	Nameplate, front, upper		1
21		356029216	Nameplate, front, upper	1	
22	PL1	056072079	Pilot, 24V Lamp, white	1	1
23		056020069	Knob, D.40	1	1
24	PL2	056072080	Pilot, 24V Lamp, orange	1	1
25		056020069	Knob, D.40	1	1
26		056076265	Receptacle, 14 pin	1	1
27			No Item 27		
28		056076152	Dinse Socket, Female, 50Mmq	3	3
29		356029211	Nameplate, front, lower	1	1
30		000230124	Handle	2	2
31		000222779	Front, bezel	1	1
32		156005151	Bracket, front, lower, casters	1	1
33		056054084	Caster, D.125, rubber	2	2
34		156118068	Panel, front	1	1
35	S1	056067267	Switch, c/w protection	1	1
36	S3	056067269	Switch, 20A 10 pos.	1	1
37	FM1	057035009	Fan, P. 30 230V	1	1
38		057015107	Coil, 400V, 60x80x180 Al	3	3
39	T1	058021152	Transformer, 400V, 60x80x180 Al.	1	1
40		556070015	Link, Primary Power Terminal Board, D5, brass	7	7
41		116014052	Box, Primary Power Terminal Board	1	1
42		156005152	Bracket, upper, lift eye support	1	1
43		156011023	Lift Eye	1	1
44		156005153	Bracket, lower, lift eye support	1	1
45		156012149	Shaft, D.16 L.590, lift eye support	1	1
46		156023157	Clip, Wheel retaining	2	2
47		056054085	Wheel, D.250, rubber	2	2
48		156009132	Washer, D.21x37	4	4
49		156012150	Axle, Running Gear D.20 L.567 ZN	1	1
50		156005154	Bracket, rear, lower, wheels	1	1
51		156006068	Base	1	1
52	Z	057098021	Impedance, D.8.5 L.320, Al.	1	1
53		156118069	Panel, rear		1
53		156118071	Panel, rear	1	

Item No.	Dia. Mkgs.	Part No.	Description	Quantity	
				Model	
				Basic	Digital

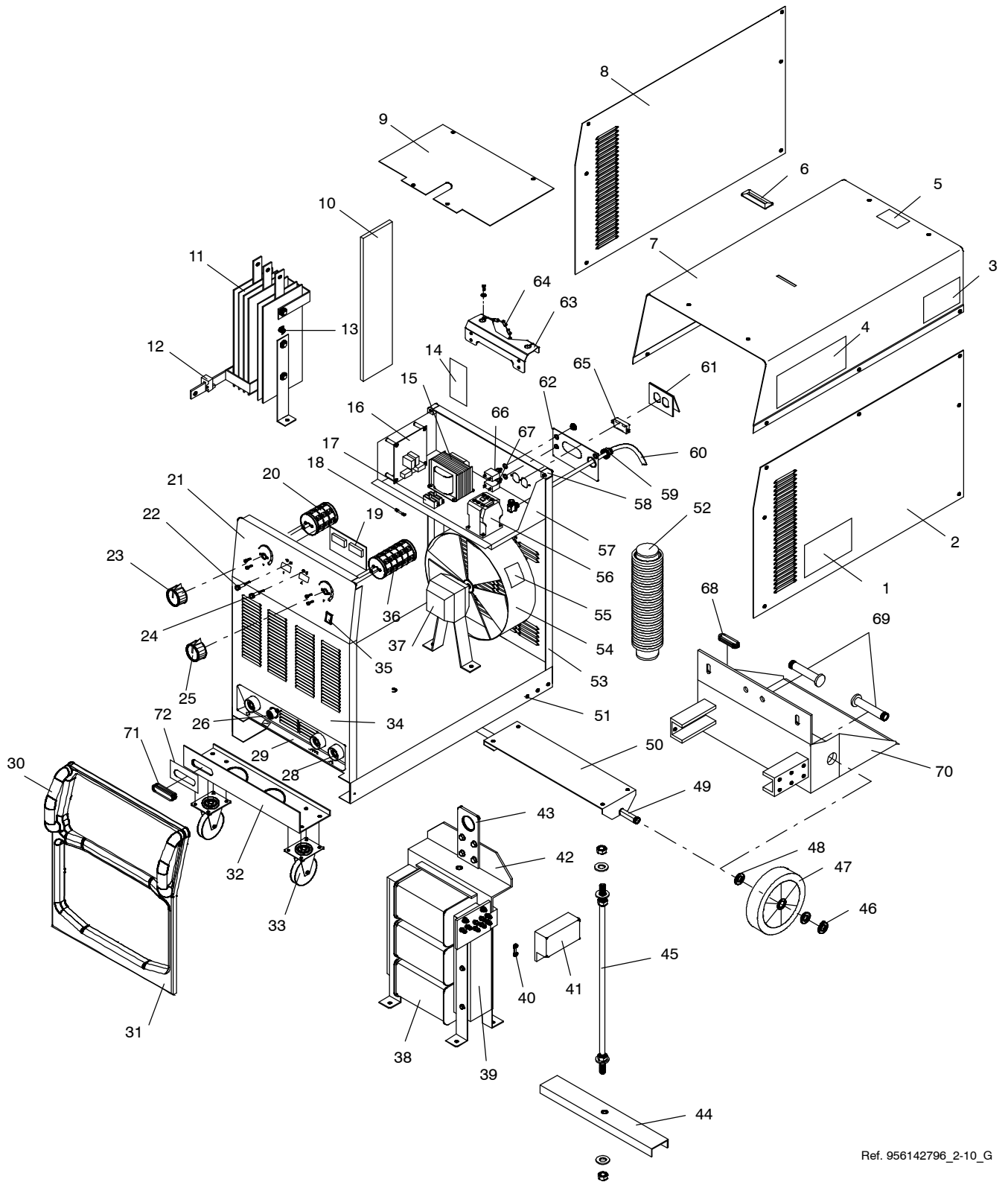
Figure 8-1. Main Assembly for XPS 350 (continued)

... 54	...	+156120005	.. Conveyor, Fan	1	1	..
... 55	...	000176106	.. Label, Fan	1	1	..
... 56	W	057079043	.. Contactor, 24V 40A (230/400VAC)	1	1	..
... 56	W	057079041	.. Contactor, 24V 25A (400 VAC)	1	1	..
... 57	...	156005155	.. Plate, rear, upper	1	1	..
... 58	...	156005146	.. Corner, R.15, plastic	2	2	..
... 59	...	656089026	.. Strain Relief, D.30	1	1	..
... 60	...	057014229	.. Line Cable, 4x3 Mt 3, Neoprene (230/400 VAC)	1	1	..
... 60	...	057014228	.. Line Cable, 4x4 Mt 3, Neoprene (400 VAC)	1	1	..
... 61	...	217297	.. Cover, Receptacle Weatherproof Duplex RCPT	1	1	..
... 62	...	356029220	.. Nameplate, rear, w Aux	1	1	..
... 62	...	356029226	.. Nameplate, rear	1	1	..
... 63	...	◆156005156	.. Bracket, upper bottle support	1	1	..
... 64	...	◆156123004	.. Chain, D.4 L.750, zincd, bottle	1	1	..
... 65	RC2	000604176	.. RCPT, Str Dx Grd 2P3W 15A 125V * 5-15R	1	1	..
... 66	CB1	056067273	.. Circuit Breaker, 6A w/rubber boot	1	1	..
... 67	CB2	056067274	.. Circuit Breaker, 4A w/rubber boot	1	1	..
... 68	...	◆656089044	.. Grommet, 59x22, rubber	1	1	..
... 69	...	◆156012151	.. Shaft, Running Gear, D.20 L.120	2	2	..
... 70	...	◆058056003	.. Bottle Support, lower, 1 bottle.	1	1	..
... 70	...	◆058056004	.. Bottle Support, lower, 2 bottle.	1	1	..
... 71	...	656089044	.. Grommet, 59x22, rubber	1	1	..
... 72	...	956142807	.. Label, front, lower, water stroke shielding gas connection	1	1	..

+When ordering a component originally displaying a precautionary label, the label should also be ordered.

◆Optional

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.



Ref. 956142796_2-10_G

Figure 8-2. Main Assembly for XPS 450

Item No.	Dia. Mkgs.	Part No.	Description	Quantity	
				Model	
				Basic	Digital
Figure 8-2. Main Assembly for XPS 450					
...	1	000207233	Label, general precautionary	2	2
...	2	+156122083	Panel, side RH	1	1
...	3	000207291	Label, primary power connections	1	1
...	4	000119503	Label, Miller logo	2	2
...	5	000207235	Label Warning, tilt	1	1
...	6	656089043	Seal, lift eye	1	1
...	7	+156121041	Cover, top	1	1
...	8	+156122084	Panel, side LH	1	1
...	9	156005149	Plate, upper	1	1
...	10	156005150	Bracket, side LH	1	1
...	11	SR1 056050161	Rectifier, PTS 450	1	1
...	12	HD1 058066075	Transducer, Current 600A, kit	1	1
...	13	TP2 056159028	Thermostat, 100° 10A	1	1
...	14	956142790	Rating Plate (230/400 VAC)	1	1
...	14	956142792	Rating Plate (230/400 VAC)	1	1
...	14	956142786	Rating Plate (400 VAC)	1	1
...	14	956142788	Rating Plate (400 VAC)	1	1
...	15	T2 058021151	Transformer, Aux, 220-230V 400V 40x80	1	1
...	16	PC1 057084150	Circuit Board, control	1	1
...	17	056092099	Fuse Holder	2	2
...	18	056092100	Fuse, 6x30 6.3A 250V	2	2
...	19	PC2 057084147	PC2 Circuit Card, Digital Display	1	1
...	20	S2 056067275	Switch, 25A 4 pos.	1	1
...	21	356029218	Nameplate, front, upper	1	1
...	22	PL1 056072079	Pilot, 24V Lamp, white	1	1
...	23	056020069	Knob, D.40	1	1
...	24	PL2 056072080	Pilot, 24V Lamp, orange	1	1
...	25	056020069	Knob, D.40	1	1
...	26	056076265	Receptacle, 14 pin	1	1
...	27		No Item 27		
...	28	056076266	Dinse Socket, Female, 95Mmq	3	3
...	29	356029211	Nameplate, front, lower	1	1
...	30	000230124	Handle	2	2
...	31	000222779	Front, bezel	1	1
...	32	156005151	Bracket, front, lower, casters	1	1
...	33	056054084	Caster, D.125, rubber	2	2
...	34	156118068	Panel, front	1	1
...	35	S1 056067267	Switch, c/w protection	1	1
...	36	S3 056067276	Switch, 25A 10 pos.	1	1
...	37	FM1 057035020	Fan, P. 50 230V	1	1
...	38	057015108	Coil, 400V, 60x110x180 Al	3	3
...	39	T1 058021153	Transformer, 400V, 60x110x180 Al.	1	1
...	40	556070017	Link, Primary Power Terminal Board, D5, brass	10	10
...	41	116014052	Box, Primary Power Terminal Board	1	1
...	42	156005152	Bracket, upper, lift eye support	1	1
...	43	156011023	Lift Eye	1	1
...	44	156005153	Bracket, lower, lift eye support	1	1
...	45	156012149	Shaft, D.16 L.590, lift eye support	1	1
...	46	156023157	Clip, Wheel retaining	2	2
...	47	056054085	Wheel, D.250, rubber	2	2
...	48	156009132	Washer, D.21x37	4	4
...	49	156012150	Axle, Running Gear D.20 L.567 ZN	1	1
...	50	156005154	Bracket, rear, lower, wheels	1	1
...	51	156006068	Base	1	1
...	52	Z 057098022	Impedance, D.10,8 L.360, Al.	1	1
...	53	156118070	Panel, rear	1	1
...	54	+156120006	Conveyor, Fan	1	1
...	55	000176106	Label, Fan	1	1

Item No.	Dia. Mkgs.	Part No.	Description	Quantity	
				Basic	Digital

Figure 8-2. Main Assembly for XPS 450 (continued)

... 56	W	057079039	Contact, CN-65 24V (230/400 VAC)	1	1
... 56	W	057079043	Contact, 24V 40A (400 VAC)	1	1
... 57		156005155	Plate, rear, upper	1	1
... 58		156005146	Corner, R.15, plastic	2	2
... 59		656089026	Strain Relief, D.30	1	1
... 60		057014230	Line Cable, 4x10 Mt 3, Neoprene (230/400 VAC)	1	1
... 60		057014229	Line Cable, 4x6 Mt 3, Neoprene (400 VAC)	1	1
... 61		217297	Cover, Receptacle Weatherproof Duplex RCPT	1	1
... 62		356029220	Nameplate, rear, w Aux	1	1
... 63		◆156005156	Bracket, upper bottle support	1	1
... 64		◆156123004	Chain, D.4 L.750, zincd, bottle	1	1
... 65	RC2	000604176	RCPT, Str Dx Grd 2P3W 15A 125V * 5-15R	1	1
... 66	CB1	056067273	Circuit Breaker, 6A w/rubber boot	1	1
... 67	CB2	056067274	Circuit Breaker, 4A w/rubber boot	1	1
... 68		◆656089044	Grommet, 59x22, rubber	1	1
... 69		◆156012151	Shaft, Running Gear, D.20 L.120	2	2
... 70		◆058056003	Bottle Support, lower, 1 bottle	1	1
... 70		◆058056004	Bottle Support, lower, 2 bottle	1	1
... 71		656089044	Grommet, 59x22, rubber	1	1
... 72		956142807	Label, front, lower, water stroke shielding gas connection	1	1

+When ordering a component originally displaying a precautionary label, the label should also be ordered.

◆Optional

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

TRUE BLUE[®]

WARRANTY

Effective January 1, 2015
(Equipment with a serial number preface of MF or newer)

This limited warranty supersedes all previous Miller warranties and is exclusive with no other guarantees or warranties expressed or implied.

LIMITED WARRANTY – Subject to the terms and conditions below, ITW Welding Products Italy warrants to its original retail purchaser that new Miller equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped by Miller. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

Within the warranty periods listed below, Miller will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. Miller must be notified in writing within thirty (30) days of such defect or failure, at which time Miller will provide instructions on the warranty claim procedures to be followed. If notification is submitted as an online warranty claim, the claim must include a detailed description of the fault and the troubleshooting steps taken to identify failed components and the cause of their failure.

Miller shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on the date the equipment was delivered to the original retail purchaser or one year after the equipment is shipped to a European distributor or twelve months after the equipment is shipped to an International distributor.

1. 5 Years Parts — 3 Years Labor
 - * Original main power rectifiers only to include SCRs, diodes, and discrete rectifier modules with exclusion of STR, Si, STI, STH and MPi series.
2. 3 Years — Parts and Labor
 - * Engine Driven Welding Generators
(NOTE: Engines are warranted separately by the engine manufacturer.)
 - * Inverter Power Sources (Unless Otherwise Stated)
 - * Process Controllers
 - * Semi-Automatic and Automatic Wire Feeders
 - * Transformer/Rectifier Power Sources
3. 2 Years — Parts
 - * Auto-Darkening Helmet Lenses (No Labor)
 - * Migmatic 175
 - * HF Units
4. 1 Year — Parts and Labor Unless Specified
 - * Automatic Motion Devices
 - * Field Options
(NOTE: Field options are covered under True Blue[®] for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)
 - * Induction Heating Power Sources, Coolers, and Electronic Controls/Recorders
 - * Motor-Driven Guns (w/exception of Spoolmate Spoolguns)
 - * Positioners and Controllers
 - * Powered Air Purifying Respirator (PAPR) Blower Unit (No Labor)
 - * Racks
 - * Running Gear and Trailers
 - * Subarc Wire Drive Assemblies
 - * Water Coolant Systems
 - * Work Stations/Weld Tables (No Labor)
5. 6 Months — Parts
 - * Batteries

6. 90 Days — Parts
 - * Accessory (Kits)
 - * Canvas Covers
 - * Induction Heating Coils and Blankets
 - * MIG Guns
 - * Remote Controls
 - * Replacement Parts (No Labor)
 - * Spoolmate Spoolguns
 - * Cables and Non-Electronic Controls

Miller's True Blue[®] Limited Warranty shall not apply to:

1. **Consumable components; such as contact tips, cutting nozzles, contactors, brushes, switches, slip rings, relays or parts that fail due to normal wear.**
2. Items furnished by Miller, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer's warranty, if any.
3. Equipment that has been modified by any party other than Miller, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

MILLER PRODUCTS ARE INTENDED FOR PURCHASE AND USE BY COMMERCIAL/INDUSTRIAL USERS AND PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT.

In the event of a warranty claim covered by this warranty, the exclusive remedies shall be, at Miller's option: (1) repair; or (2) replacement; or, where authorized in writing by Miller in appropriate cases, (3) the reasonable cost of repair or replacement at an authorized Miller service station; or (4) payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the goods at customer's risk and expense. Miller's option of repair or replacement will be F.O.B., Factory at ITW Welding Products Group Europe or F.O.B. at a Miller authorized service facility as determined by Miller. Therefore no compensation or reimbursement for transportation costs of any kind will be allowed.

TO THE EXTENT PERMITTED BY LAW, THE REMEDIES PROVIDED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL MILLER BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFIT), WHETHER BASED ON CONTRACT, TORT OR ANY OTHER LEGAL THEORY.

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Owner's Record

Please complete and retain with your personal records.

Model Name

Serial/Style Number

Purchase Date

(Date which equipment was delivered to original customer.)

Distributor

Address

Country

Zip/Postal Code



For Service

Contact a *DISTRIBUTOR* or *SERVICE AGENCY* near you.

Always provide Model Name and Serial/Style Number.

Contact your Distributor for:

Welding Supplies and Consumables

Options and Accessories

Service and Repair

Replacement Parts

Owner's Manuals

Contact the Delivering Carrier to:

File a claim for loss or damage during shipment.

For assistance in filing or settling claims, contact your distributor and/or equipment manufacturer's Transportation Department.

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