OM-274462C 2017-02

Processes

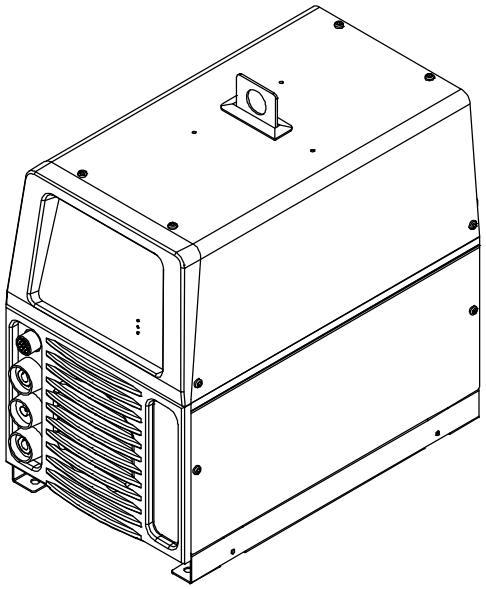
Multiprocess Welding

Description

Arc Welding Power Source

XMS 425 MPa

CE



OWNER'S MANUAL

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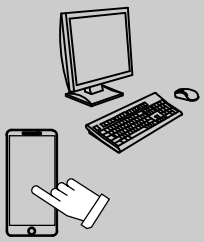

For product information, Owner's Manual translations, and more, visit

www.MillerWelds.com

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.

TRUE BLUE® WARRANTY

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

Miller®

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WARRANTY

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
XMS 425 MPa, CE	029015507

Council Directives:

- 2014/35/EU Low Voltage
- 2014/30/EU 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 60974-10:2014+A1:2015 Arc Welding Equipment - Part 10: Electromagnetic Compatibility Requirements

EU Signatory:

November 8th, 2016

Massimigliano Lavarini — Date of Declaration

ITW WELDING ITALY PRODUCTION MANAGER

956 172 249

EMF DATA SHEET FOR ARC WELDING POWER SOURCE

Product/Apparatus Identification

Product	Stock Number
XMS 425 MPa	029015507

Compliance Information Summary

Applicable regulation Directive 2014/35/EU

Reference limits Directive 2013/35/EU, Recommendation 1999/51 9/EC

Applicable standards IEC 62822−1:2016, IEC 62822−2:2016

Intended use ☒ for occupational use ☐ for use by laymen

Non−thermal effects need to be considered for workplace assessment ☒ YES ☐ NO

Thermal effects need to be considered for workplace assessment ☐ YES ☒ NO

☒ Data is based on maximum power source capability (valid unless firmware/hardware is changed)

☐ Data is based on worst case setting/program (only valid until setting options/welding programs are changed)

☐ Data is based on multiple settings/programs (only valid until setting options/welding programs are changed)

Occupational exposure is below the Exposure Limit Values (ELVs) for health effects at the standardized configurations ☒ YES ☐ NO (if NO, specific required minimum distances apply)

Occupational exposure is below the Exposure Limit Values (ELVs) for sensory effects at the standardized configurations ☐ n.a ☒ YES ☐ NO (if applicable and NO, specific measures are needed)

Occupational exposure is below the Action Levels (ALs) at the standardized configurations ☐ n.a ☐ YES ☒ NO (if applicable and NO, specific signage is needed)

EMF Data for Non-thermal Effects

Exposure Indices (EIs) and distances to welding circuit (for each operation mode, as applicable)

	Head		Trunk	Limb (hand)	Limb (thigh)
	Sensory Effects	Health Effects			
Standardized distance	10 cm	10 cm	10 cm	3 cm	3 cm
ELV EI @ standardized distance	0.16	0.12	0.19	0.11	0.24
Required minimum distance	1 cm	1 cm	1 cm	1 cm	1 cm

Distance where all occupational ELV Exposure Indices fall below 0.20 (20%) 9 cm

Distance where all general public ELV Exposure Indices fall below 1.00 (100%) 185 cm

Tested by: Miller Milan Date tested: 2016−03−03

SECTION 1 − SAFETY PRECAUTIONS - READ BEFORE USING

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 watchperson 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.

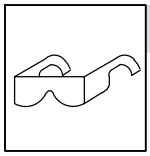
Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

- 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 can 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.

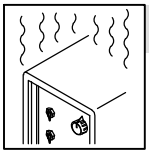
1-3. Additional Symbols For Installation, Operation, And Maintenance

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.

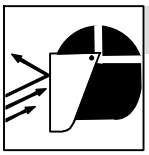
FALLING EQUIPMENT can injure.

- 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.



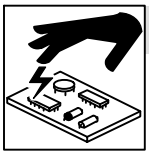
OVERUSE can cause OVERHEATING

- 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.

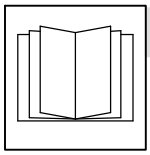
- Do not press gun trigger until instructed to do so.
- Do not point gun toward any part of the body, other people, or any metal when threading welding wire.

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.

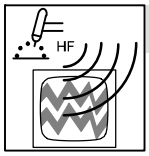
MOVING PARTS can injure.

- 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 installation, 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, Mississauga, Ontario, Canada L4W 5NS (phone: 800-463-6727, website: www.csagroup.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 30329-4027 (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 can 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:

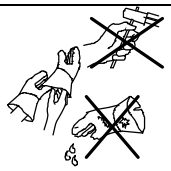
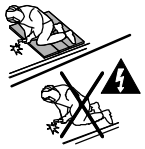
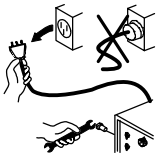
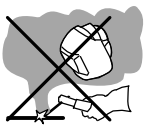
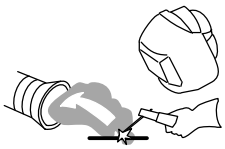
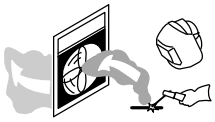
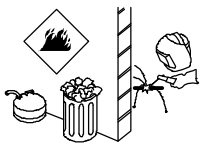
1. Keep cables close together by twisting or taping them, or using a cable cover.
2. Do not place your body between welding cables. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep head and trunk as far away from the equipment in the welding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

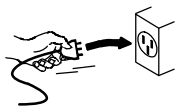
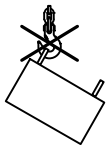
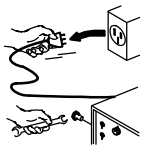
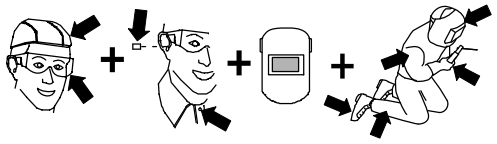
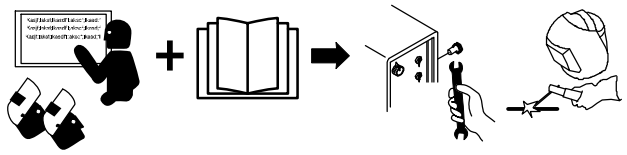
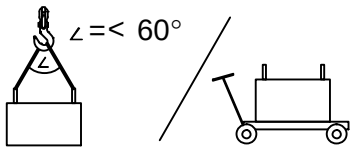
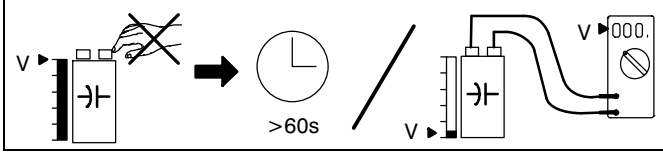
About Implanted Medical Devices:

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

	Warning! Watch Out! There are possible hazards as shown by the symbols. Safe1 2012−05
	Wear dry insulating gloves. Do not touch electrode with bare hand. Do not wear wet or damaged gloves. Safe2 2012−05
	Protect yourself from electric shock by insulating yourself from work and ground. Safe3 2012−05
	Disconnect input plug or power before working on machine. Safe5 2012−05
	Keep your head out of the fumes. Safe6 2012−05
	Use forced ventilation or local exhaust to remove the fumes. Safe8 2012−05
	Use ventilating fan to remove fumes. Safe10 2012−05
	Keep flammables away from welding. Do not weld near flammables. Safe12 2012−05
	Welding sparks can cause fires. Have a fire extinguisher nearby, and have a watchperson ready to use it. Safe14 2012−05
	Do not remove or paint over (cover) the label. Safe20 2012−05

	When power is applied failed parts can explode or cause other parts to explode. Safe26 2012−05
	Always wear long sleeves and button your collar when servicing unit. Safe28 2012−05
	After taking proper precautions as shown, connect power to unit. Safe29 2012−05
	Do not use one handle to lift or support unit. Safe31 2012−05
	Do not weld on drums or any closed containers. Safe16 2012−05
	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. Safe37 2012−05
	Disconnect input plug or power before working on machine. Safe30 2012−05
	Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection. Safe38 2012−05
	Become trained and read the instructions before working on the machine or welding. Safe40 2012−05
	Always lift and support unit using both handles. Keep angle of lifting device less than 60 degrees. Use a proper cart to move unit. Safe44 2012−05
	Hazardous voltage remains on input capacitors after power is turned off. Do not touch fully charged capacitors. Always wait 60 seconds after power is turned off before working on unit, OR check input capacitor voltage, and be sure it is near 0 before touching any parts. Safe42 2012−05

2-2. Miscellaneous Symbols And Definitions

A	Amperage
∿	Alternating Current (AC)
V	Voltage
I	On
V	Voltage Input
	Protective Earth (Ground)
	Line Connection
	Three Phase Static Frequency Converter-Transformer-Rectifier
X	Duty Cycle
%	Percent

3∿	Three Phase
	Gas Metal Arc Welding (GMAW)
	Remote
	Negative
	Temperature
	MMA Welding
	Tungsten Inert Gas (TIG) Welding
U_2	Conventional Load Voltage
I_2	Rated Welding Current
1∿	Single Phase

	Circuit Breaker
+	Positive
	Constant Voltage
U_1	Primary Voltage
IP	Degree Of Protection
I_{1eff}	Maximum Effective Supply Current
	Output
	Off
⎓	Direct Current (DC)
I_{1max}	Rated Maximum Supply Current

SECTION 3 − SPECIFICATIONS

3-1. Serial Number And Rating Label Location

The serial number and rating information for this product is located on the rear panel. 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. Unit Specifications

☞ *Do not use information in unit specifications table to determine electrical service requirements. See Sections 4-14 and 4-15 for information on connecting input power.*

☞ *This equipment will deliver rated output at an ambient air temperature up to 104°F (40°C).*

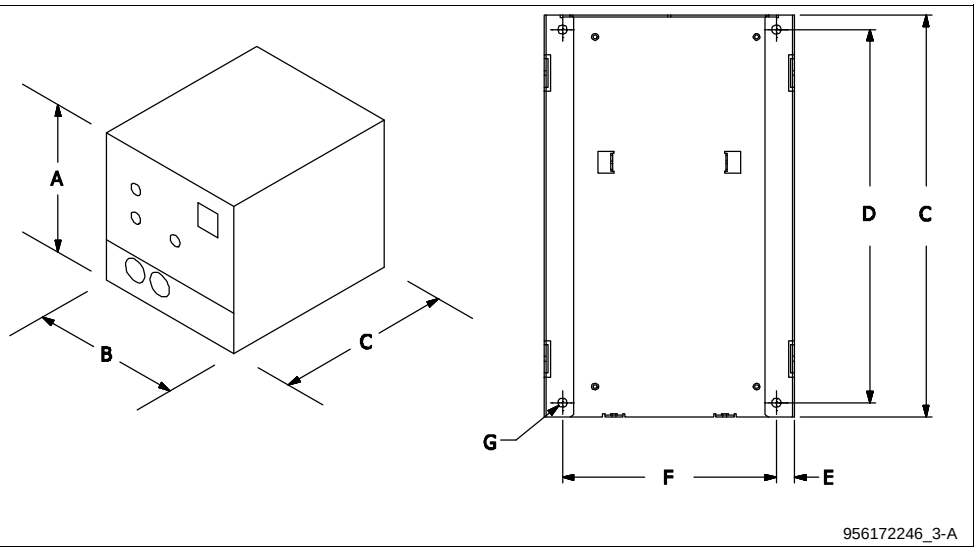
Input Power	Rated Output	Voltage Range in CV Mode	Amperage Range in CC Mode	Max. Open-Circuit Voltage	RMS Amps Input at Rated Load Output, 50/60 Hz 3-Phase at NEMA Load Voltages and Class I Rating				KVA	KW
					230 V	380 V	400 V	460 V		
3-Phase	350 A at 34 VDC, 60% Duty Cycle	10−38 V	5−425 A	75 VDC	36.1	22.3	20.6	17.8	14.2	13.6
*See Section 3-5 for Duty Cycle Rating.										

3-3. Dimensions And Weight

☞ *Overall dimensions (A, B, and C) include lifting eye, handles, hardware, etc.*

A. Welding Power Source

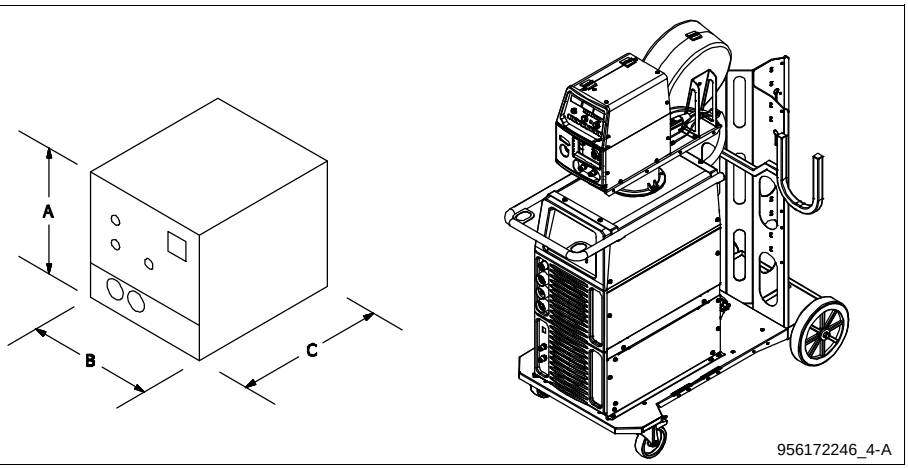
Dimensions	
A	597 mm (23.5 in.)
B	349 mm (13−3/4 in.)
C	560 mm (22 in.)
D	521 mm (20.5 in.)
E	25.3 mm (1 in.)
F	298.5 mm (11−3/4 in.)
G	12.7 mm (0.5 in.)
Weight	
52.5 kg (115.7 lb)	



956172246_3-A

B. Welding Power Source With Cart And Cooler

Dimensions	
A	1510 mm (59.5 in.)
B	810 mm (31.9 in.)
C	1110 mm (43.7 in.)
Weight	
130 kg (287 lb)	



956172246_4-A

3-4. Environmental Specifications

A. IP Rating

IP Rating
IP23S This equipment is designed for outdoor use. It may be stored, but is not intended to be used for welding outside during precipitation unless sheltered. IP23S 2014−06

B. Temperature Specifications

Operating Temperature Range	Storage Temperature Range
14 to 104°F (−10 to 40°C)	−4 to 131°F (−20 to 55°C) Temp_2016-07

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 183 mΩ (or the short−circuit power S_{sc} is greater than 873,042.200 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

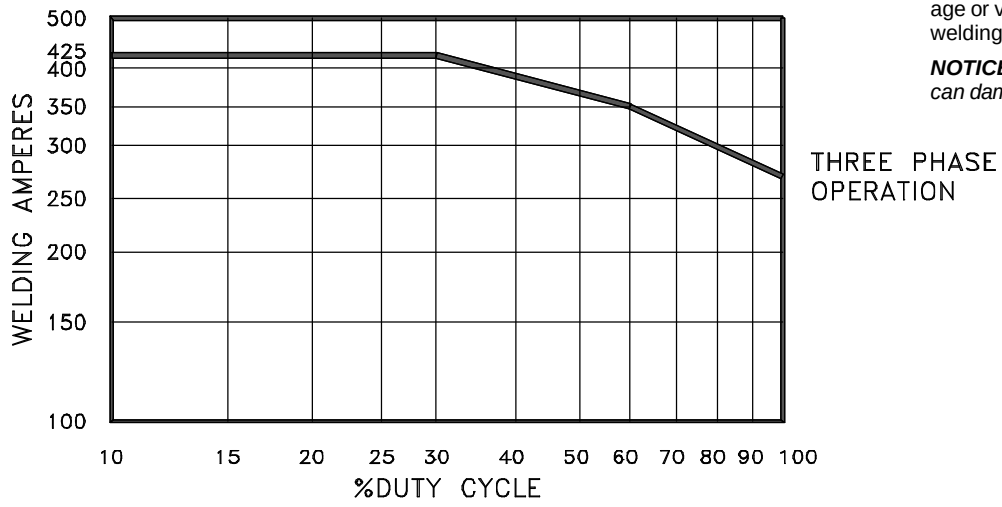
Notes

3-5. Duty Cycle And Overheating

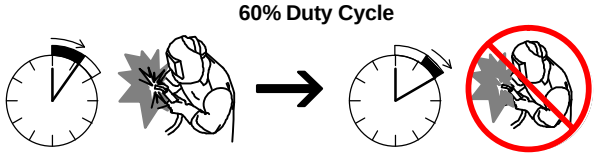
Duty Cycle is percentage of 10 minutes that unit can weld at rated load without overheating.

If unit overheats, output stops, a Help message is displayed and cooling fan runs. Wait fifteen minutes for unit to cool. Reduce amperage or voltage, or duty cycle before welding.

NOTICE − *Exceeding duty cycle can damage unit and void warranty.*

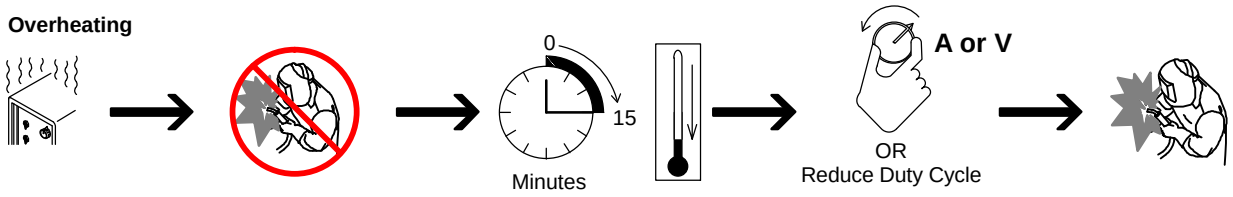


60% Duty Cycle



6 Minutes Welding — 4 Minutes Resting

Overheating

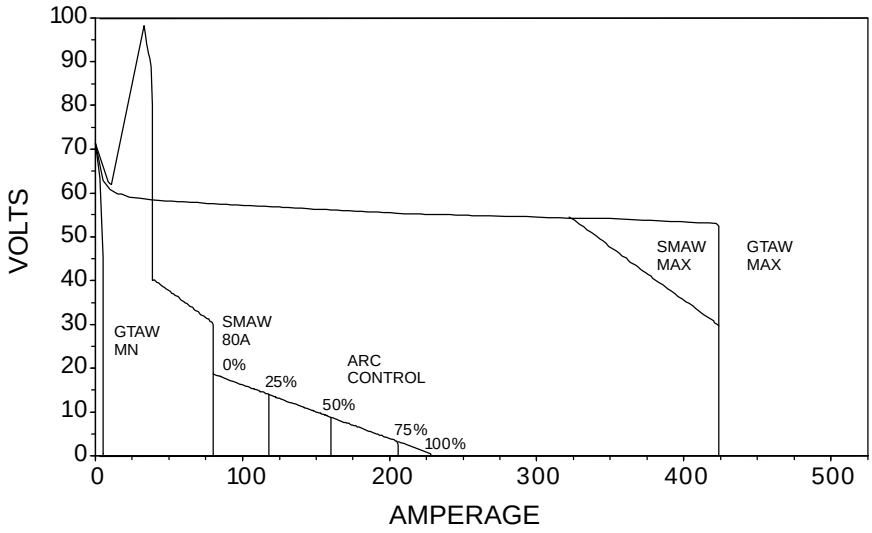


Ref. 219 523-A

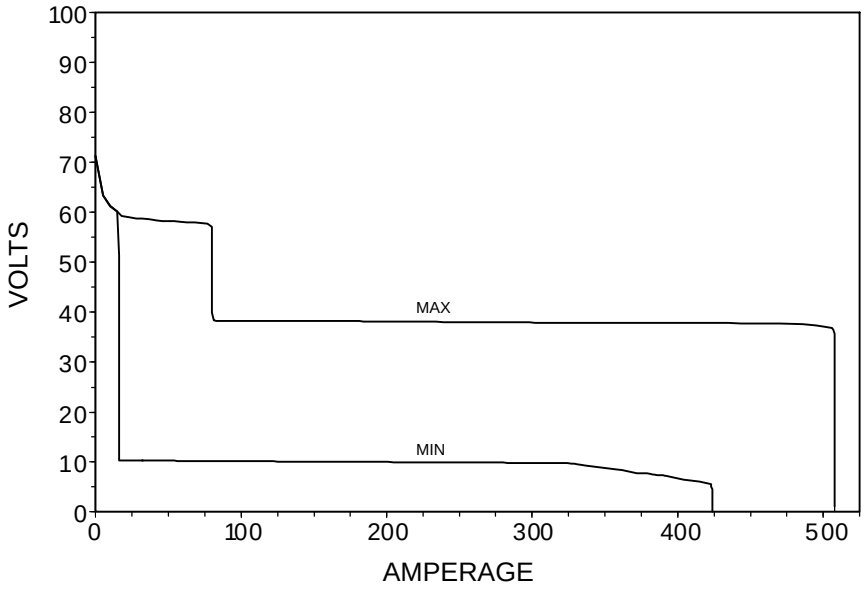
Notes

3-6. Volt-Ampere Curves

A. CC Mode



B. CV Mode

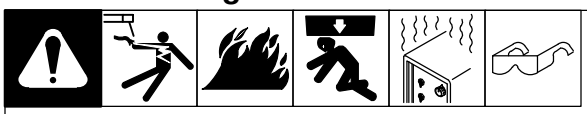


Volt-ampere curves show minimum and maximum voltage and amperage output capabilities of welding power source. Curves of other settings fall between curves shown.

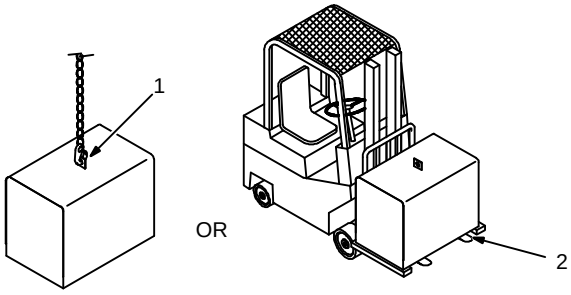
217 836-A / 217 837-B

Notes

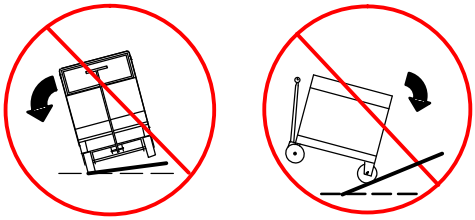
4-1. Selecting A Location



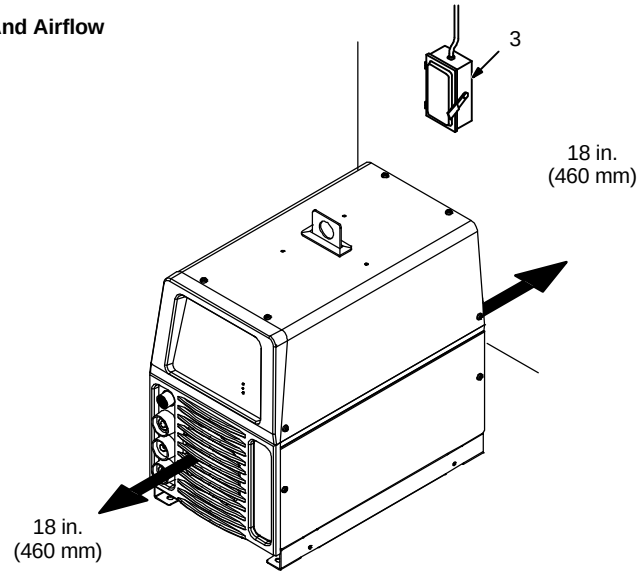
Movement



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.

loc_large 2015-04

Notes

4-2. 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 mm² (AWG)	60 − 100% Duty Cycle mm² (AWG)	10 − 100% Duty Cycle mm² (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)
600	95 (3/0)	120 (4/0)	2x70 (2x2/0)	2x95 (2x3/0)	2x120 (2x4/0)	3x95 (3x3/0)	3x120 (3x4/0)	3x120 (3x4/0)

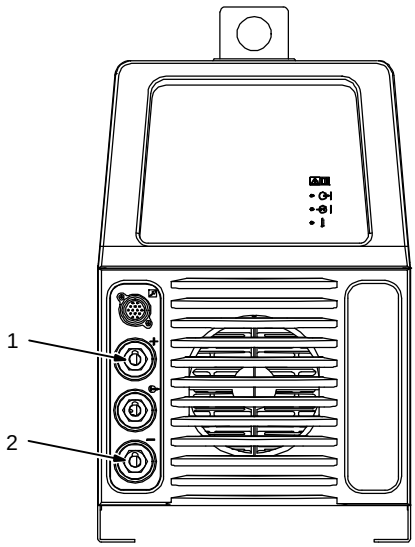
* This chart is a general guideline and may not suit all applications. If cable overheats, use next size larger cable.

**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

4-3. Weld Output Terminals



Turn off power before connecting to weld output terminals.

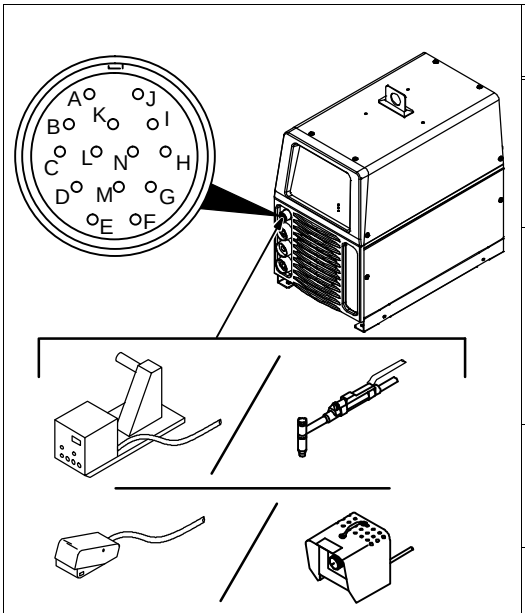
Do not use worn, damaged, undersized, or repaired cables.

1 Positive (+) Weld Output Terminal

2 Negative (−) Weld Output Terminal

Ref. 956172246_14-A

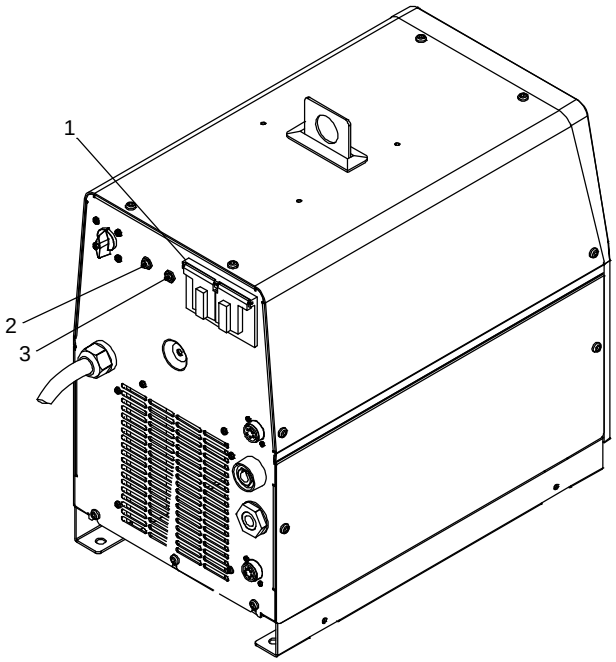
4-4. Remote 14 Receptacle Information



REMOTE 14	Socket*	Socket Information
24 VOLTS AC OUTPUT (CONTACTOR)	A	24 volts AC. Protected by supplementary protector CB2.
	B	Contact closure to A completes 24 volts AC contactor control circuit.
REMOTE OUTPUT CONTROL	C	Output to remote control; 0 to +10 volts DC, +10 volts DC in MIG mode.
	D	Remote control circuit common.
	E	0 to +10 volts DC input command signal from remote control.
A/V AMPERAGE VOLTAGE	F	Current feedback; +1 volt DC per 100 weld amperes.
	H	Voltage feedback; +1 volt DC per 10 weld volts.
GND	G	Circuit common for 24 and 115 volts AC circuits.
	K	Chassis common.

*The remaining sockets are not used.

4-5. 115 Volts AC Duplex Receptacle And Supplementary Protectors



1 115 V AC Duplex Receptacle 10 Amp.

2 Supplementary Protector CB1

3 Supplementary Protector CB2

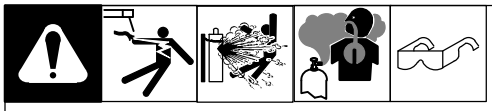
CB1 protects the duplex receptacle from overload.

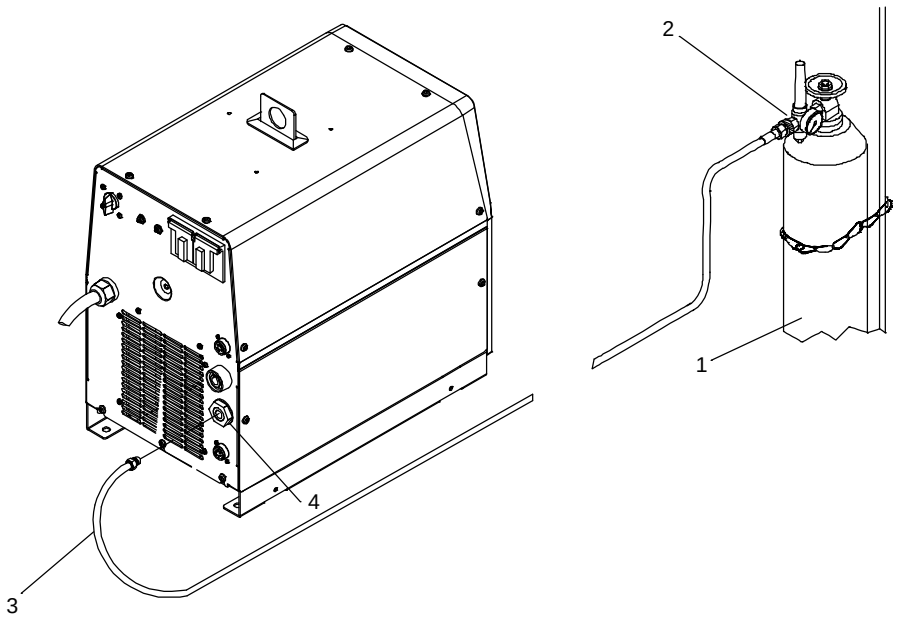
CB2 protects 24 volts AC portion of Remote 14 receptacle and XMS MPa cooler from overload.

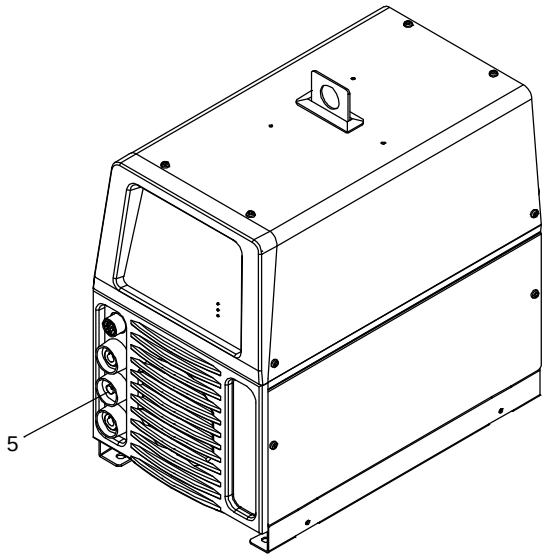
Press button to reset protector.

956172246_5-A

4-6. Optional Gas Valve Operation And Shielding Gas Connection







Obtain gas cylinder and chain to running gear, wall, or other stationary support so cylinder cannot fall and break off valve.

1 Cylinder

2 Regulator/Flowmeter

Install so face is vertical.

3 Gas Hose Connection

Fitting has 5/8-18 right-hand threads. Obtain and install gas hose.

4 Gas In Fitting

5 Gas Out Fitting

The Gas In and Gas Out fittings have 5/8-18 right-hand threads. Obtain proper size, type, and length hose and make connections as follows:

Connect hose from shielding gas supply regulator/flowmeter to Gas In fitting.

Connect hose coupler to torch. Connect one end of gas hose to hose coupler. Connect remaining end of gas hose to Gas Out fitting.

Operation

The gas solenoid controls gas flow during the TIG process as follows:

Remote TIG

Gas flow starts with remote contactor on.

Gas flow stops at end of post−flow if current was detected, or with remote contactor off if no current was detected.

Lift−Arc Trigger Hold TIG

Gas flow starts when output switch is depressed.

Gas flow stops at end of post−flow.

Scratch Start TIG

Gas flow starts when current is detected.

Gas flow stops at end of post−flow.

Post−flow time is factory set to 5 seconds per 100 amps of weld current. The minimum post−flow time is 5 seconds. The maximum post−flow is 20 seconds (post flow settings are not adjustable by the end user).

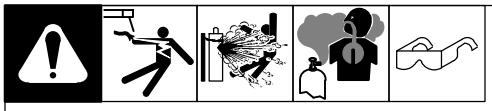
☞ *When using a wire feeder, connect gas supply directly to Gas In Fitting on wire feeder.*

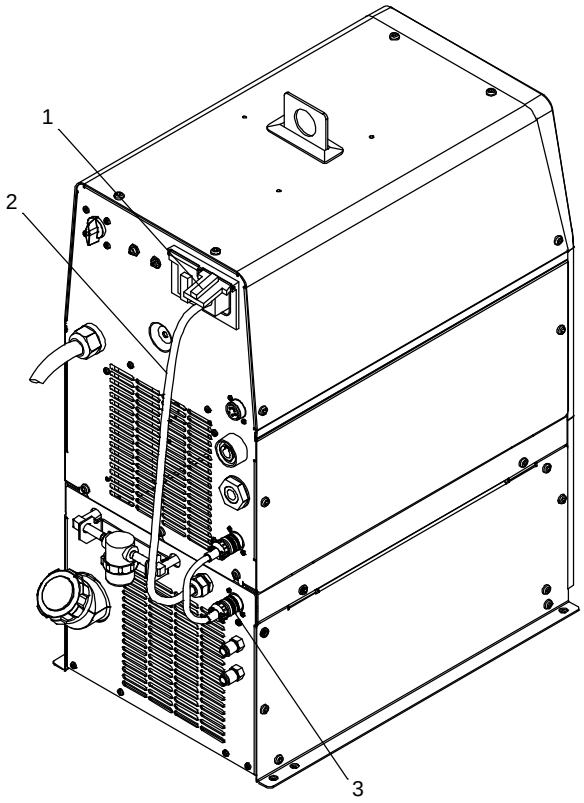
Tools Needed:

17 mm

956172246_6-A

4-7. Cooler Connections





1 115 V, 10 Amp AC Receptacle

2 115 VAC Cord

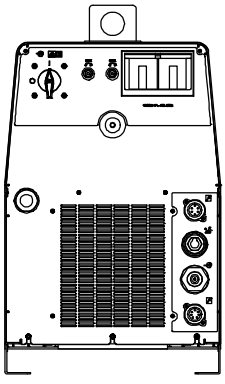
Provides 115 VAC to power cooler.

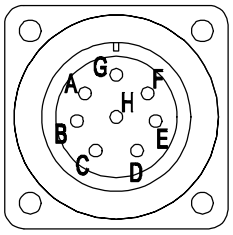
3 7-Pin Cord (See Section 4-8)

Provides 23 VAC to activate the cooler, checks the presence of the liquid flow, and checks the presence of the cooler.

956172246_7-A

4-8. 8-Pin Receptacle Information



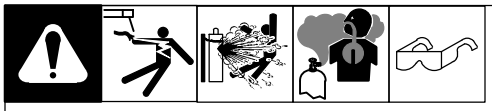


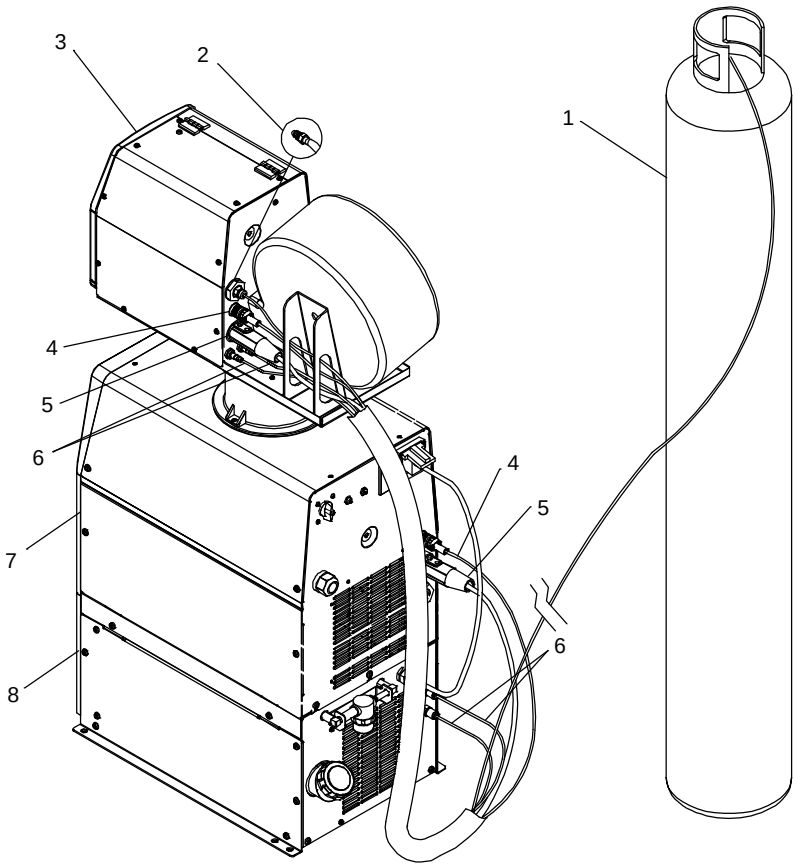
956172246_8-B

REMOTE 7–PIN	Socket*	Socket Information
23 VAC (COOLER ACTIVATION)	B	23 VAC
	C	23 VAC com
FLOW SWITCH (LIQUID FLOW PRESENCE)	A	Flowmeter 1
	D	Flowmeter 2
COOLER PRESENCE (YES/NO)	E	Cooler presence 1
	F	Cooler presence 2

*The remaining sockets are not used.

4-9. Wire Feeder Connections





1 Gas Cylinder (See Section 4-6)

2 Gas Fitting (See Section 4-6)

3 Wire Feeder

☞ *Welding power source can only be used with XMS 425 wire feeder.*

4 6-Pin Cord (See Section 4-10)

Provides 23 VAC to power wire feeder and CAN bus signal communication to feeder.

5 Cable, Positive

Connect to weld output terminal for MIG welding located on the rear panel of the welding power source.

6 Water In/Out Connections

Connect to water in/out quick connectors located on the rear panel of the cooler.

7 Welding Power Source

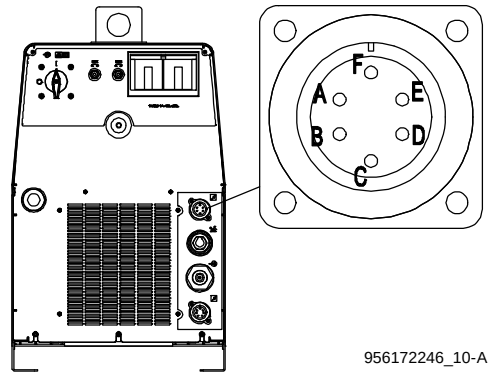
8 Cooler

Tools Needed:

17 mm

956172246_9-A

4-10. 6-Pin Receptacle Information

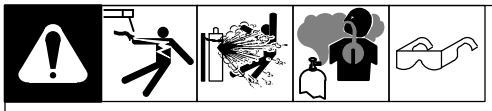


956172246_10-A

REMOTE 6–PIN	Socket*	Socket Information
23 VAC (FEEDER POWER)	A	23 VAC
	B	23 VAC com
CAN BUS SIGNALS (FEEDER COMMUNICATIONS)	D	CH-L
	E	CH-H
	F	CH-GND

*The remaining sockets are not used.

4-11. TIG Connections



Tools Needed:

17 mm

1 Positive Weld Output Terminal

Connect work lead to positive weld output terminal.

2 Negative Weld Output Terminal

Connect TIG torch to negative weld output terminal.

3 Gas Out Connection

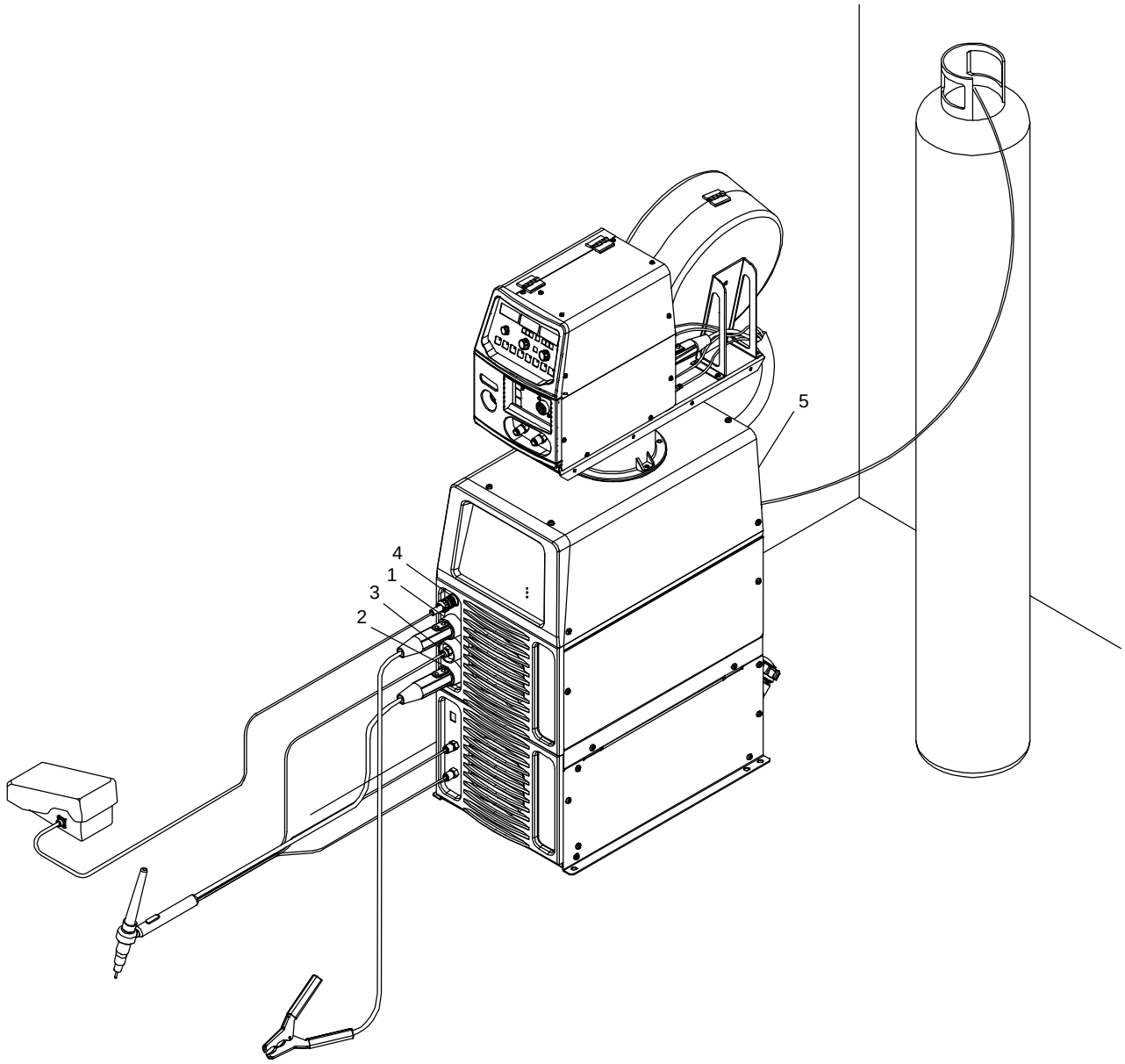
Connect torch gas hose to gas out fitting.

4 Remote 14 Receptacle

If desired, connect remote control to Remote 14 receptacle (see Section 4-4).

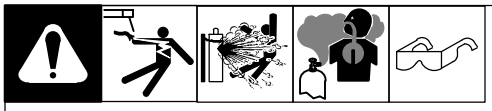
5 Gas In Connection

Connect gas hose from gas supply to gas in fitting (see Section 4-6).



956172246_11-A

4-12. Stick Connections



1 Positive Weld Output Terminal

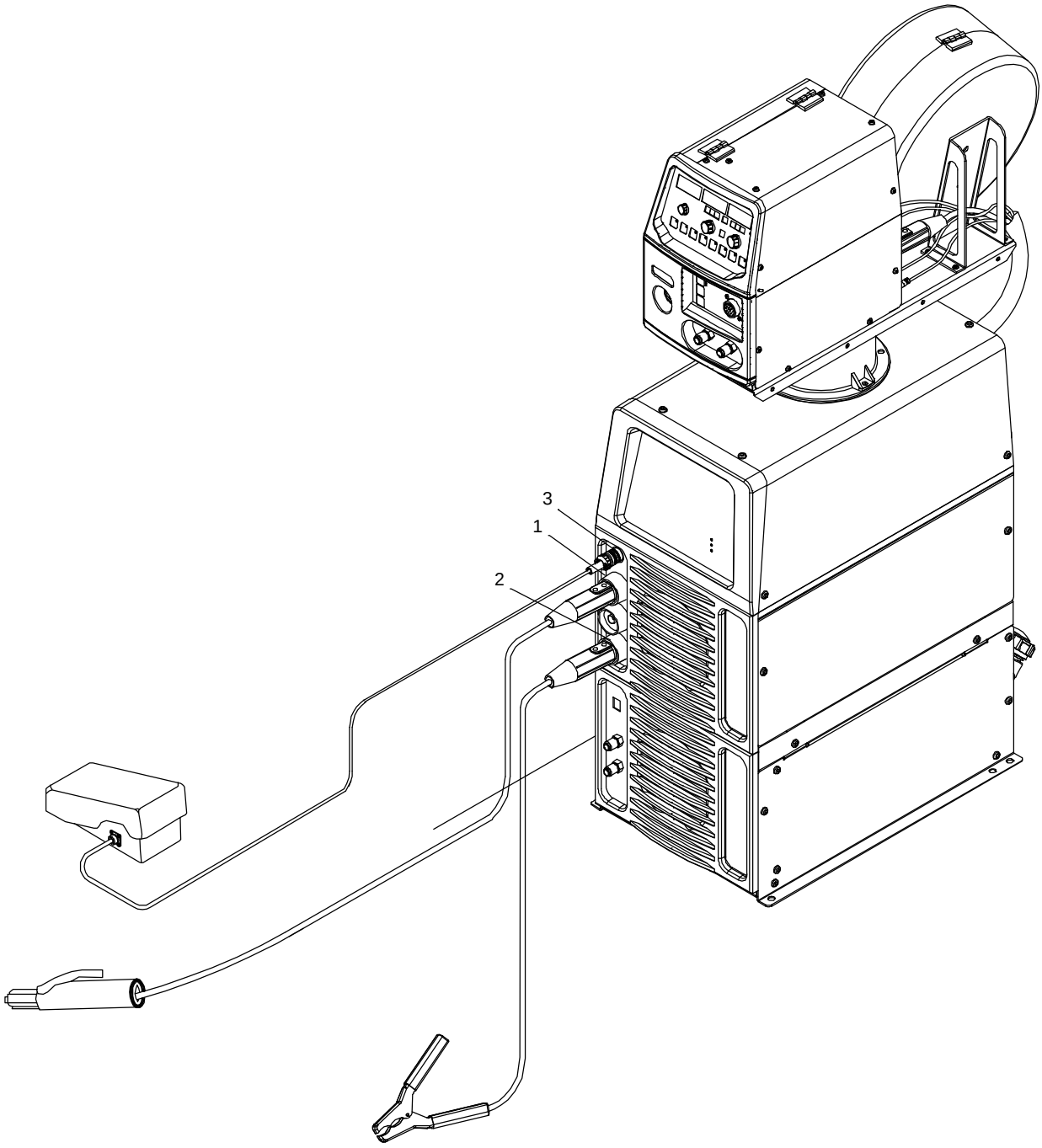
Connect electrode holder to positive weld output terminal.

2 Negative Weld Output Terminal

Connect work lead to negative weld output terminal.

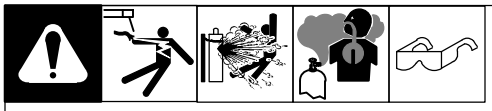
3 Remote 14 Receptacle

If desired, connect remote control to Remote 14 receptacle (see Section 4-4).



956172246_12-A

4-13. MIG Connections



1 Cooler

2 Welding Power Source

3 Wire Feeder

4 Gas Cylinder

5 Gas Hose

Connect to gas fitting on back of wire feeder.

6 Wire Feeder Cable

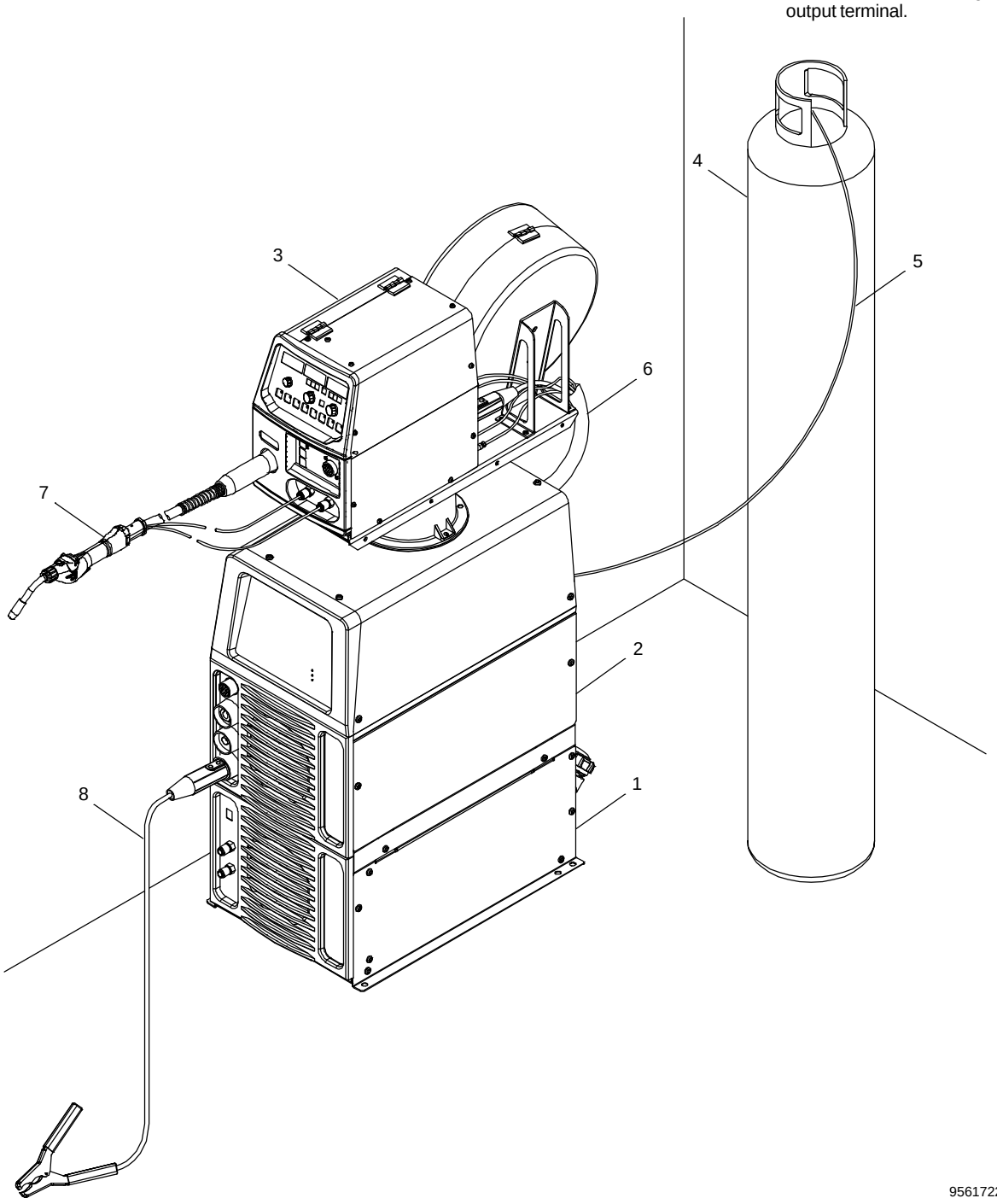
See Section 4-9.

7 Welding Gun

Connect to welding torch connector on wire feeder.

8 Work Lead

Connect work lead to negative weld output terminal.



956172246_13-A

4-14. Electrical Service Guide

NOTICE *− INCORRECT INPUT POWER can damage this welding power source. Phase to ground voltage shall not exceed +10% of rated input voltage.*

NOTICE *− Actual input voltage should not be 10% less than minimum and/or 10% more than maximum input voltages listed in table. If actual input voltage is outside this range, output may not be be available.*

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.

	60 Hz 3 Phase			
Input Voltage (V)	230	380	400	460
Rated Maximum Supply Current I_{1max} (A)	47.0	27.6	26.8	22.8
Maximum Effective Supply Current I_{1eff} (A)	28.8	17.3	16.3	14.0
Max Recommended Standard Fuse Rating In Amperes[1]				
Time-Delay Fuses[2]	40	25	25	20
Normal Operating Fuses [3]	50	30	30	25
Min Input Conductor Size In AWG (mm^2) [4]	10 (6)	12 (4)	12 (4)	14 (2.5)
Max Recommended Input Conductor Length In Feet (Meters)	96 (29)	158 (48)	175 (53)	150 (46)
Min Grounding Conductor Size In AWG (mm^2) [4]	10 (6)	12 (4)	12 (4)	14 (2.5)

Reference: 2017 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.

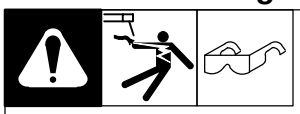
2 “Time-Delay” fuses are UL class “RK5” . See UL 248.

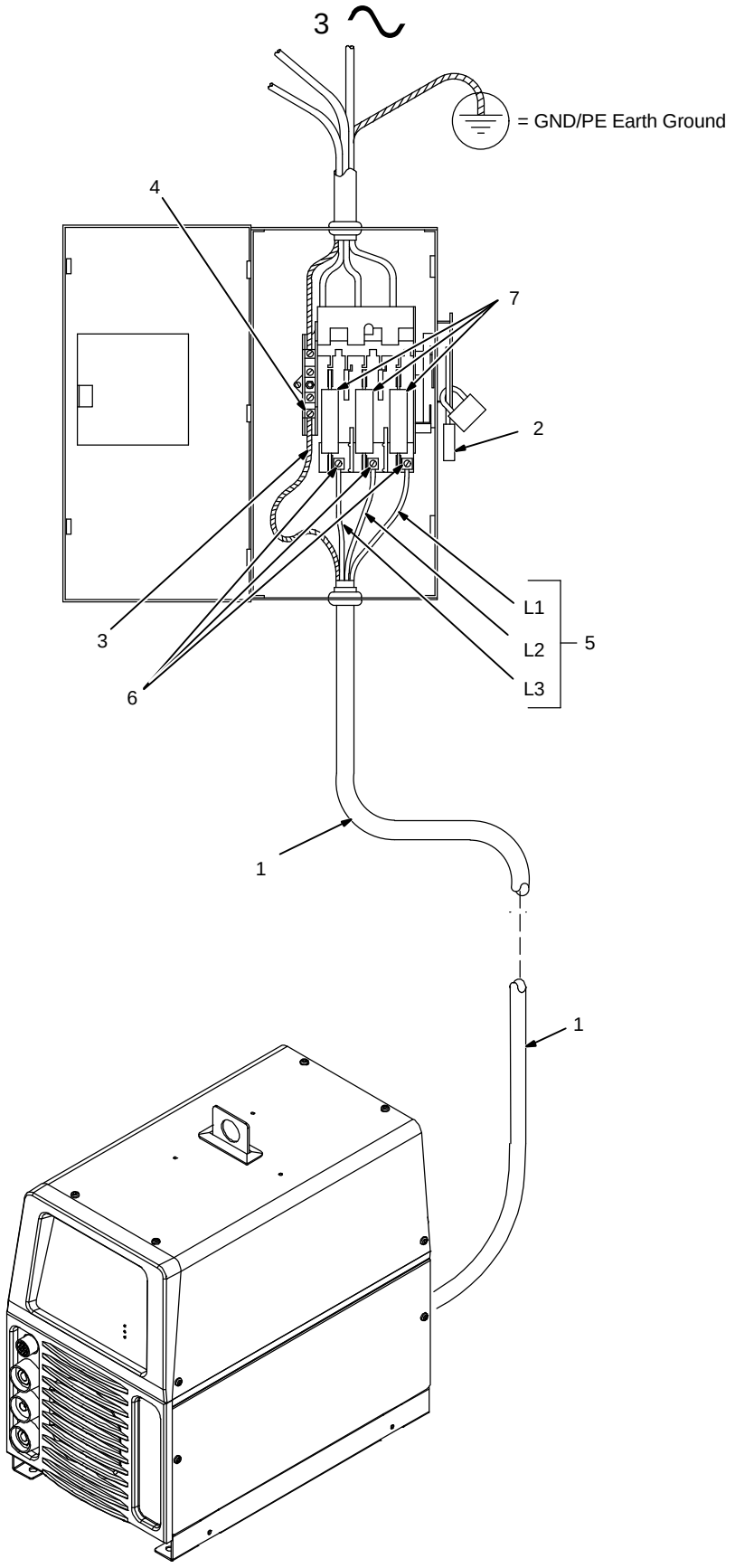
3 “Normal Operating” (general purpose - no intentional delay) fuses are UL class “K5” (up to and including 60 amps), and UL class “H” (65 amps and above).

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) and is based on allowable ampacities of insulated copper conductors having a temperature rating of 167°F (75°C) with not more than three single current−carrying conductors in a raceway. 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.

Notes

4-15. Connecting 3-Phase Input Power

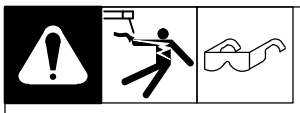




Tools Needed:

Input2 2012−05 − Ref. 956172246_1-A

4-15. 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.**

NOTICE *− The Auto-Line circuitry in this unit automatically adapts the power source to the primary voltage being applied. Check input voltage available at site. This unit can be connected to any input power between 208 and 575 VAC without removing cover to relink the power source.*

See rating label on unit and check input voltage 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 4-14 (fused disconnect switch shown).

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

Input2 2012−05

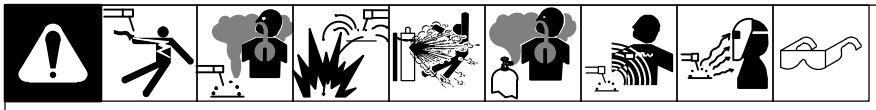
Notes

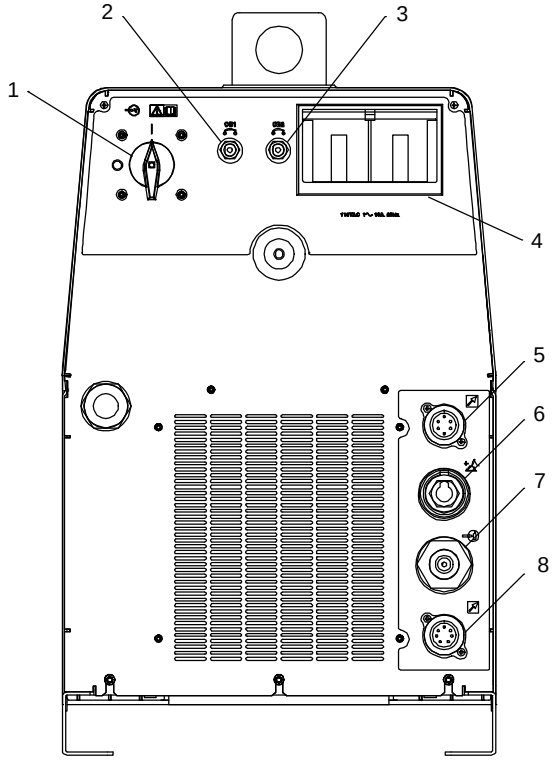
Work like a Pro!

Pros weld and cut safely. Read the safety rules at the beginning of this manual.

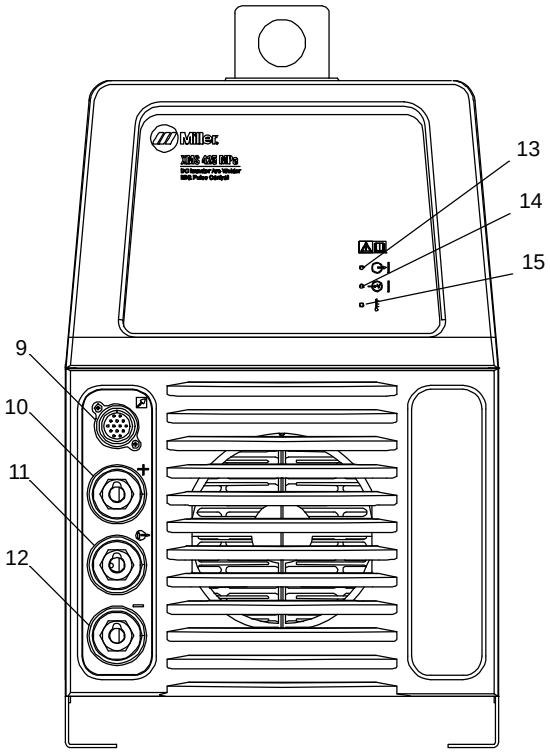
SECTION 5 – OPERATION

5-1. Front Panel Controls





Back Of Machine



Front Of Machine

956172246_14-A

1 Power Switch

Use switch to turn unit On/Off.

2 Circuit Breaker CB1

See Section 4-5.

3 Circuit Breaker CB2

See Section 4-5.

4 115V 10A AC Receptacle

See Section 4-5.

5 6-Pin Panel Receptacle

See Section 4-10.

6 MIG Positive Weld Output Terminal

7 Gas In Fitting

8 7-Pin Panel Receptacle

See Section 4-8.

9 14-Pin Panel Receptacle

See Section 4-4.

10 TIG/Stick Positive Weld Output Terminal

11 Gas Out Fitting

12 Negative Weld Output Terminal

13 Weld Output Indicator Light (Blue LED)

Is lit when output power is On.

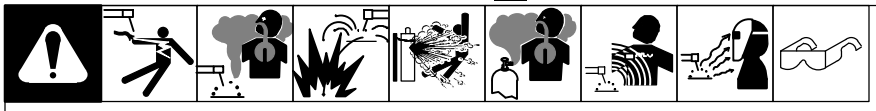
14 Power Indicator Light (White LED)

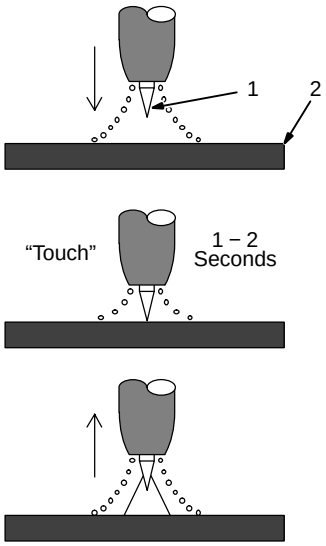
Is lit when input power is On.

15 High Temperature Light (Yellow LED)

Light comes on if unit overheats. Welding can resume when unit has cooled (see Section 3-5).

5-2. Lift-Arc Trigger Hold TIG





Do NOT Strike Like A Match!

1 TIG Electrode

2 Workpiece

☞ *Procedure requires:*

control

Start sequence:

- Touch tungsten electrode to workpiece at weld start point.
- Momentarily depress output switch.
- Slowly lift electrode. An arc will form when electrode is lifted.
- To stop welding, momentarily depress output switch and output will shut off.

Note: If output switch is momentarily depressed and tungsten is not touching workpiece:

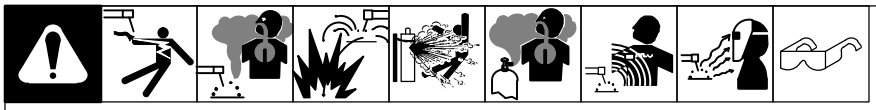
Do not touch tungsten to work.

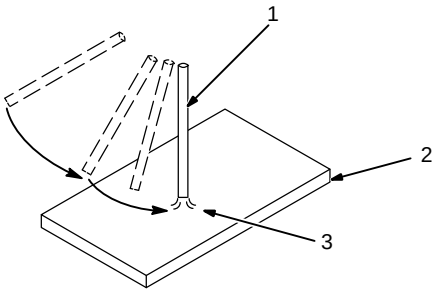
Output will shut off in 3 seconds.

Start sequence over.

Ref. S-156 279

5-3. Stick Start Procedure





With Stick selected, start arc as follows:

1 Electrode

2 Workpiece

3 Arc

Drag electrode across workpiece like striking a match; lift electrode slightly after touching work. If arc goes out electrode was lifted to high. If electrode sticks to workpiece, use a quick twist to free it.

Low OCV Stick

The unit can be optionally configured for low open circuit voltage (OCV) operation. When the unit is configured for low OCV operation only a low sensing voltage (approximately 15 VDC) is present between the electrode and the workpiece prior to the electrode touching the workpiece. Consult a Factory Authorized Service Agent for information regarding how to configure the unit for low OCV stick welding operation.

SECTION 6 − MAINTENANCE & TROUBLESHOOTING

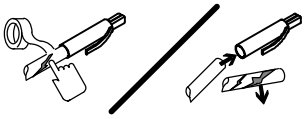
6-1. Routine Maintenance

Disconnect power before maintaining.

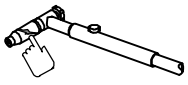
☞ *Maintain more often during severe conditions.*

3 Months

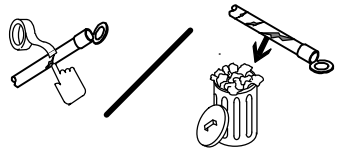
Replace Damaged Or Unreadable Labels

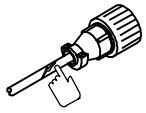


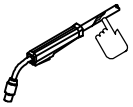
Repair Or Replace Cracked Cables



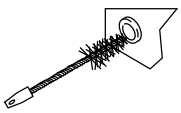
Replace Cracked Torch Body

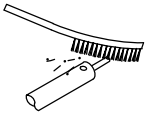


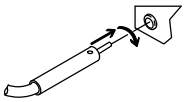




Repair Or Replace Cracked Cables And Cords

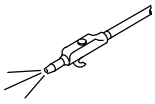






Clean And Tighten Weld Connections

6 Months

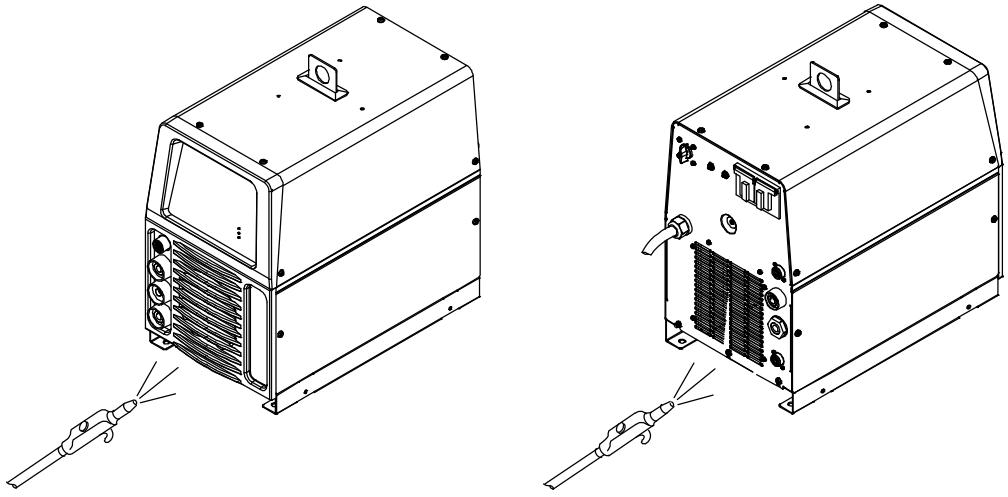


Blow Out Inside

6-2. Blowing Out Inside Of Unit

Do not remove case when blowing out inside of unit.

To blow out unit, direct airflow through front and back louvers as shown.



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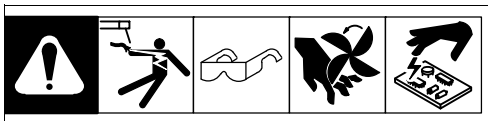
6-3. Troubleshooting



Trouble	Remedy
No weld output; unit completely inoperative.	Place line disconnect switch in On position (see Section 4-15).
	Check and replace line fuse(s), if necessary, or reset circuit breaker (see Section 4-15).
	Check for proper input power connections (see Section 4-15).
No weld output; meter display On.	Input voltage outside acceptable range of variation (see Sections 4-15, 4-14).
	Check, repair, or replace remote control.
	Unit overheated. Allow unit to cool with fan On (see Section 3-5).
Erratic or improper weld output.	Use proper size and type of weld cable (see Section 4-2).
	Clean and tighten all weld connections.
	Check for correct polarity.
No 115 volts AC output at duplex receptacle or Remote 14 receptacle.	Reset supplementary protector CB1 (see Section 4-5).
No 24 volts AC output at Remote 14 receptacle.	Reset supplementary protector CB2 (see Section 4-5).

Notes

SECTION 7 − ELECTRICAL DIAGRAM

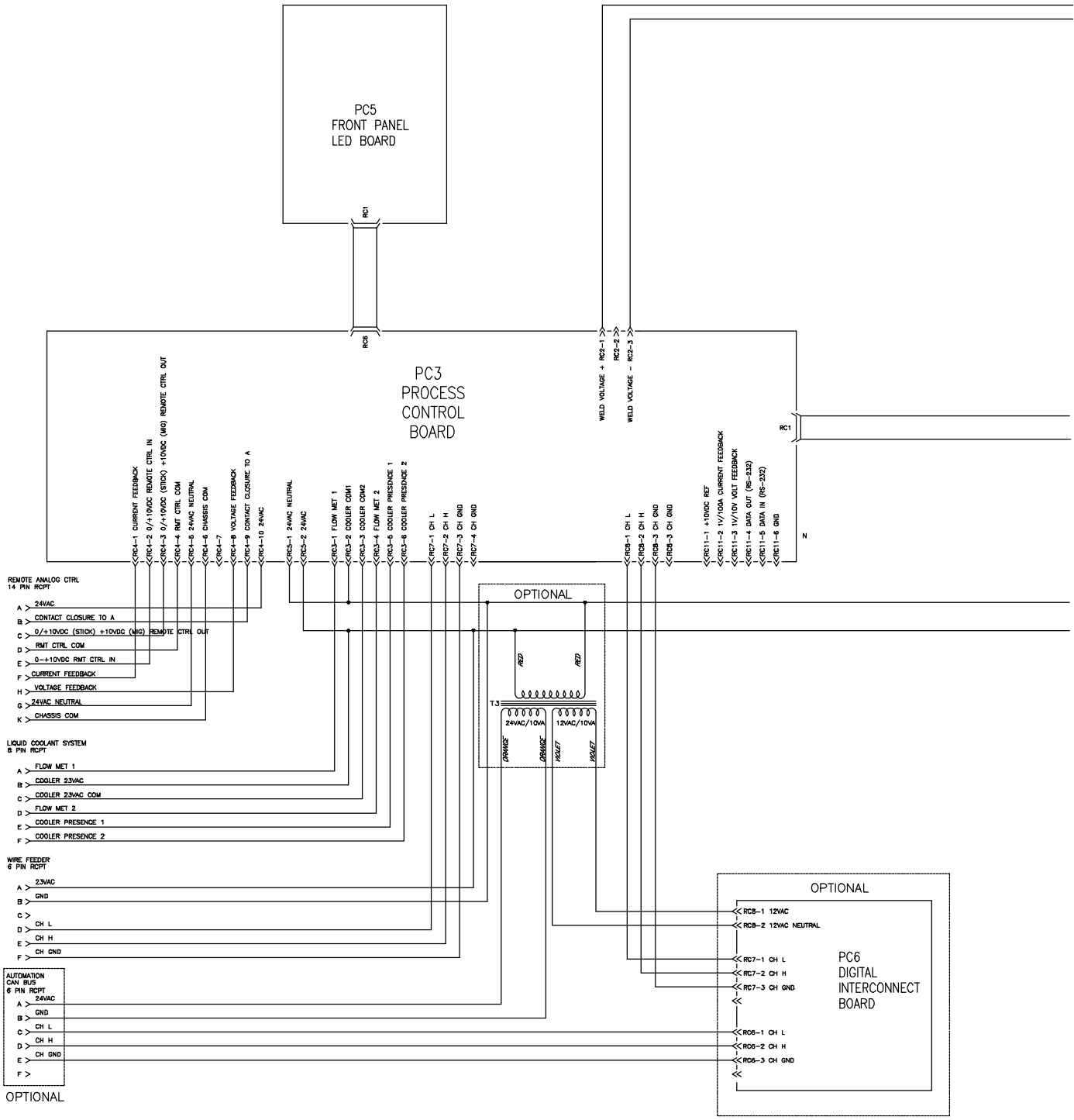
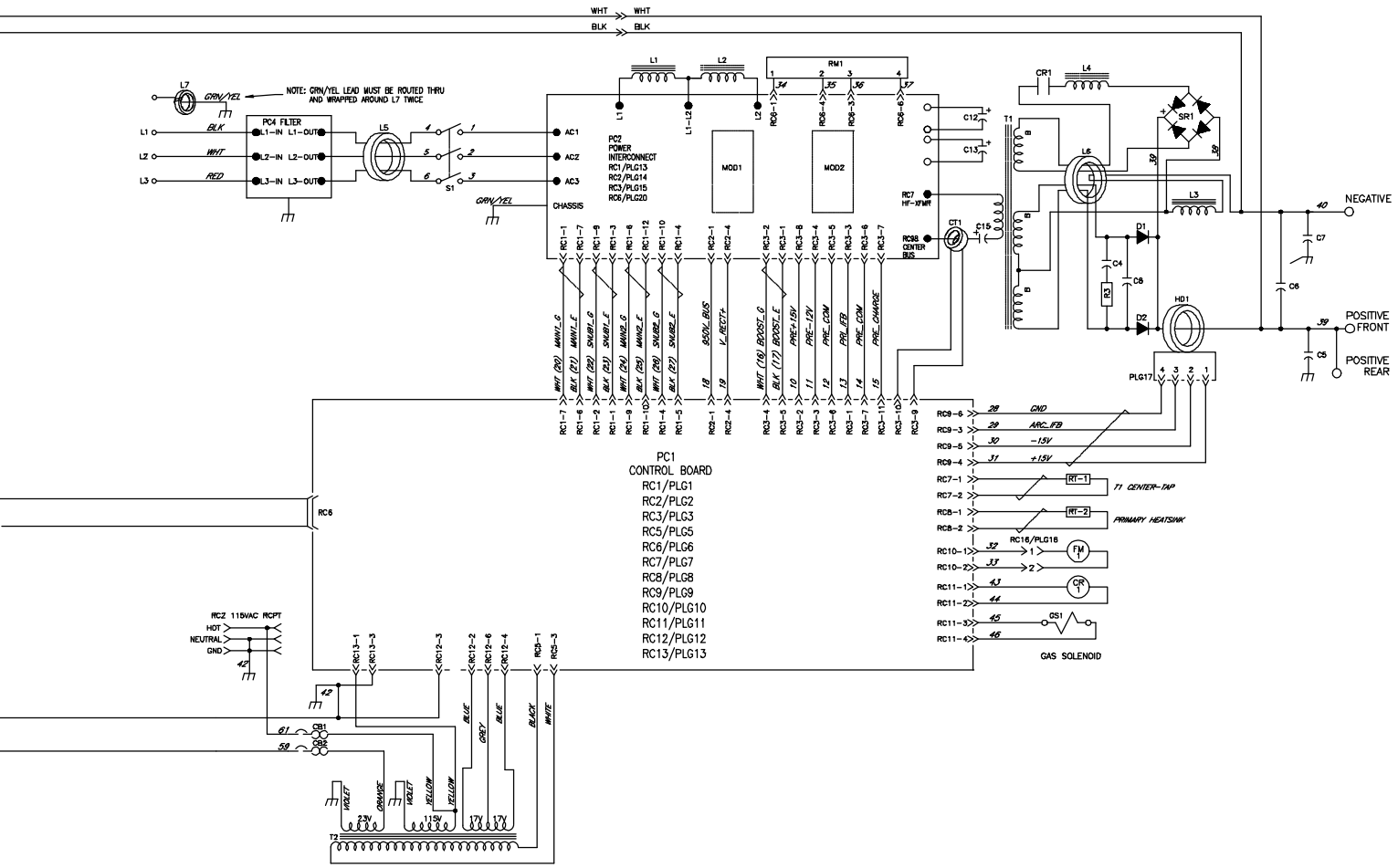


Figure 7-1. Circuit Diagram



⚠ 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

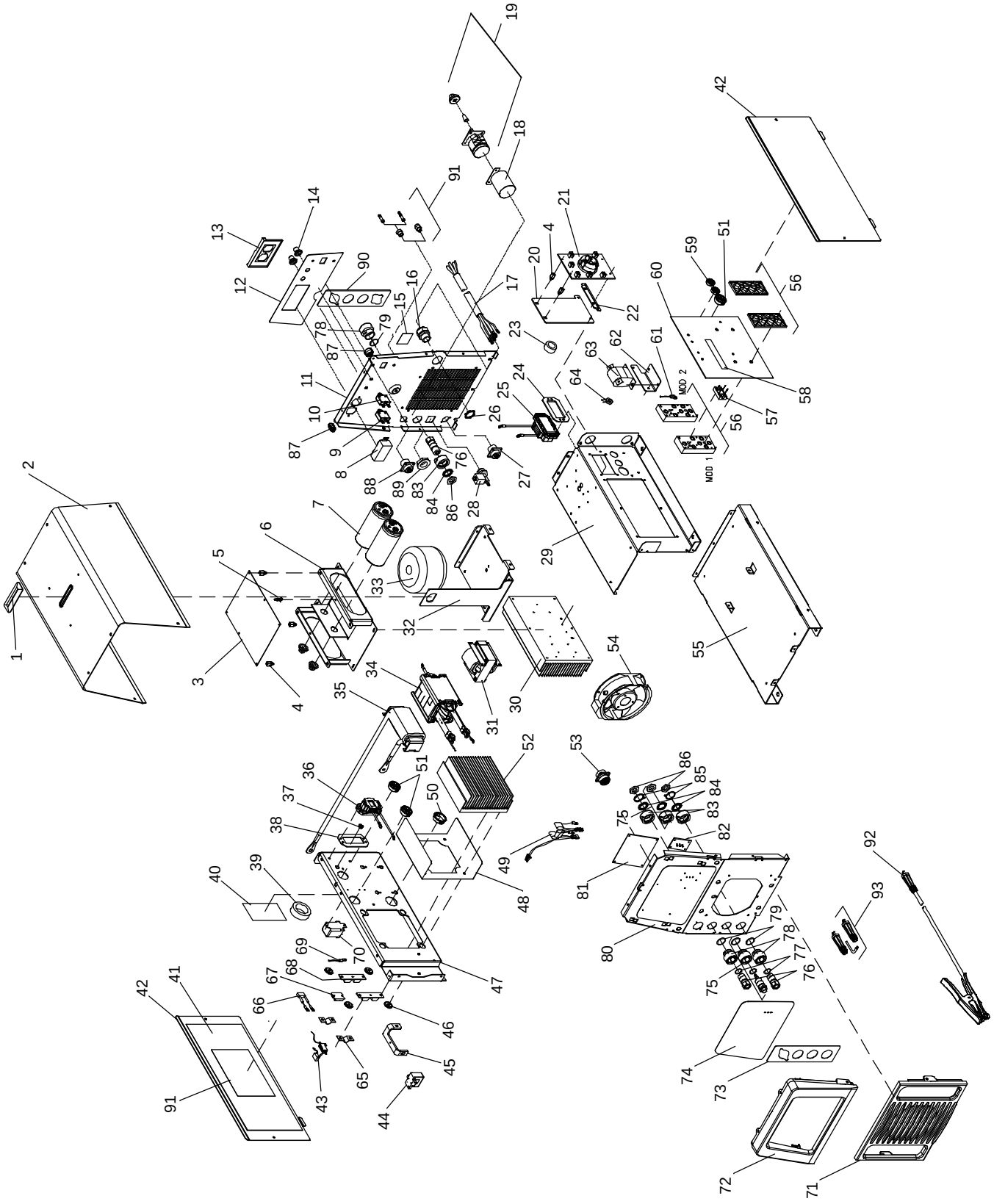


Figure 8.1. Parts Assembly

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
1		213073	Seal, Lift Eye	1
2		117031033	Wrapper	1
3	PC1	274574	Circuit Card Assy, Control W/Prgm	1
4		083147	Grommet, Scr No 8/10 Panel Hol	6
5		216113	Stand−Off Support, PC Card .187	2
6		212072	Bracket, Mtg Capacitor/PC Board	1
7	C12, 13	245614	Capacitor, Elctlt 1800uF 500VDC	2
8	RC2	604176	Receptacle, 115V Duplex	1
9	CB2	083432	Supplementary Pro, Man Reset 1P 10A 250VAC Frict	2
10	CB1	083432	Supplementary Pro, Man Reset 1P	2
11		+116118185	Panel, Rear	1
12		316029735	Nameplate, Rear	1
13		217297	Cover, Receptacle Weatherproof	1
14		156033034	Boot, Rubber	2
15		219842	Label, Warning Input Connections	1
16		215980	Bushing, Strain Relief .709/.98	1
17		244628	Cable, Power 12ft 8ga 4c (Non-stripped End)	1
18		207895	Insulator, Switch Power	1
19	S1	056067291	Switch, Rotary 2 Posn 32A 690VAC 90 Deg	1
20		156005197	Bracket, Mtg CE Filter Ground P	1
21	PC4	229989	Circuit Card Assy, Filter	1
22		056052013	Bracket, Mtg Filter Board	1
23	L5, L7	199122	Core,Toroidal .750 ID X 1.45	2
24		218566	Gasket, Inductor Mounting E70 F	1
25	L2	218018	Inductor, Pre−Regulator	1
26		234126	Nut, Conduit 1.000 Npt Pld 1.6	1
27		057028129	Cable Kit, 7 Pin Rcpt Rear Gen	1
28	GSV	228036	Valve, 24VAC 1 Way	1
29		156120007	Windtunnel, RH	1
30		196330	Heat Sink, Power Module	1
31	L1	212091	Inductor, Input	1
32		156011024	Plate, Mtg Toroid Xfmr & Golfare	1
33	T2	270095	Xfmr, Control Toroidal 665 VAC	1
34	T1	212132	Xfmr, HF Litz/Litz W/Boost	1
35	L3	212150	Inductor, Output	1
36	L4	218020	Inductor, Boost	1
37		010546	Bushing, Snap−In Nyl .375 ID X	1
38		227746	Gasket, Inductor Mounting E55 F	1
39	L6	131447	Core, Toroidal 1.332 ID X 1.	1
40		227927	Label, Warning Electric Shock/Exploding Parts−Wdl	1
41		224516	Insulator, Side	2
42		216878	Panel, Side	2
43	R3/C4	233052	Resistor/Capacitor	1
44	HD1	182918	Transducer, Current 400A Module	1
45		056050166	Bus Bar, Output	1
46		196355	Insulator, Screw	4
47		156120008	Windtunnel, LH	1
48		211503	Insulator, Heat Sink	1
49	C5, 6, 7	233668	Capacitor Assy, W/Plug & Leads	1
50		170647	Bushing, Snap−In Nyl 1.312 ID X	1
51		179276	Bushing, Snap−In Nyl 1.000 ID X	3
52		225097	Heat Sink, LH Rect	1
53		057028128	Cable Kit, 14 Pin Rcpt Front Gen	1
54	FM1	196313	Fan, Muffin 115V 50/60Hz 3000 R	1
55		116006136	Base	1

Figure 8.1. Parts Assembly

+When ordering a component originally displaying a precautionary label, the label should also be ordered.
BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

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

Figure 8.1. Parts Assembly (Continued)

56		261556	Kit, Input/Pre−Regulator And Inverter Module (Includes)	1
			Mod 1, Skiip 83 Hec	1
			Mod 2, Skiip 83 Ec	1
57	RM1	205751	Module, Power Resistor W/Plug	1
58		219335	Label, Warning Electric Shock C	2
59		153403	Bushing, Snap−In Nyl .750 ID X	2
60	PC2	+224661	Circuit Card Assy, Power Interconnect	1
61	RT2	199798	Thermistor, Ntc 30k Ohm @ 2	1
62		219472	Bracket, Mtg Capacitor Series	1
63	C15	196143	Capacitor, Polyp Met Film 16.	1
64	CT1	196231	Xmfr, Current Sensing 200/1	1
65		199840	Bus Bar, Diode	2
66	C8	219191	Capacitor, Polyp Film .001	1
67	SR1	201530	Kit, Diode Fast Recovery Bridge	1
68	D1, D2	201531	Kit, Diode Power Module	2
69	RT1	219343	Thermistor, Ntc 30k Ohm @ 2	1
70	CR1	198549	Relay, Encl 24VDC Spst 35A/300	1
71		213053	Panel, Louver Cover	1
72		213051	Plastic, Upper	1
73		316029734	Nameplate, Front, Connection	1
74		316029733	Nameplate, Front	1
75		188192	Receptacle, Panel Mount Male Ga	1
76		208968	Rcpt, Tw Lk Insul W/O −Ring	3
77		186228	O−Ring, 0.739 ID X 0.070 H	2
78		185712	Insulator, Bulkhead Front	3
79		185718	O−Ring, 0.989 ID X 0.070 H	3
80		116118184	Panel, Front	1
81	PC3	057084206	Process Control Board	1
82	PC5	057084205	Front Panel LED Board	1
83		185713	Insulator, Bulkhead Rear	3
84		185714	Washer, Tooth 22mm ID X 31.5mm OD	3
85		178548	Terminal, Connector Friction	2
86		185717	Nut, M20−1,5 1.00hex .19h Brs L	3
87		156005146	Corner Seal, Plastic	2
88		057028130	Cable Kit, 6 Pin Rcpt Rear Gen	1
89		220805	Nut, 750-14 Nps 1.48 Hex .41 H Nyl	1
90		316029736	Nameplate, Rear Connection	1
91		058066057	Gas Connection, Kit	1
92		057014150	Cable, Ground Clamp, 400A, L. 3mt	1
93		028066298	Connector Kit, 2 Plug, 70 Mm	1

+When ordering a component originally displaying a precautionary label, the label should also be ordered.
BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

TRUE BLUE® WARRANTY

Effective January 1, 2017
(Equipment with a serial number preface of MH 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 Cooling 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.

ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY OR REPRESENTATION AS TO PERFORMANCE, AND ANY REMEDY FOR BREACH OF CONTRACT TORT OR ANY OTHER LEGAL THEORY WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE OR COURSE OF DEALING, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, WITH RESPECT TO ANY AND ALL EQUIPMENT FURNISHED BY MILLER IS EXCLUDED AND DISCLAIMED BY MILLER.

Miller

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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