





OM-2242 208 580Y  
2010-10

**Processes**

 Stick (SMAW) Welding

 TIG (GTAW) Welding

**Description**

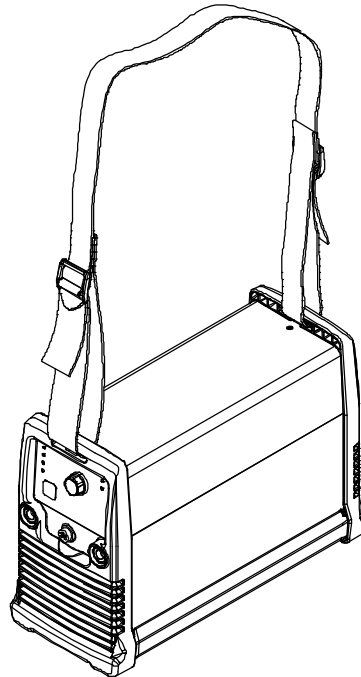
  

Arc Welding Power Source

# Maxstar<sup>®</sup> 150 S, STL, And STH

With Auto-Line<sup>™</sup>

CE And Non-CE Models



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## OWNER'S MANUAL

File: TIG (GTAW)



ENGLISH

FRANÇAIS

ESPAÑOL

# From Miller to You

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*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 the exact part you may need to fix the problem. Warranty and service information for your particular model are also provided.



Miller is the first welding equipment manufacturer in the U.S.A. to be registered to the ISO 9001 Quality System Standard.

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 specification sheets. **To locate your nearest distributor or service agency call 1-800-4-A-Miller, or visit us at [www.MillerWelds.com](http://www.MillerWelds.com) on the web.**



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.

**MILLER Electric Mfg. Co., 1635 Spencer Street, Appleton, WI 54914 U.S.A. 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
Maxstar 150 S	907351

Council Directives:

- 2006/95/EC Low Voltage
- 2004/108/EC Electromagnetic Compatibility

Standards:

- IEC 60974-1: 2005 Arc Welding Equipment – Welding Power Sources
- IEC 60974-10: 2007 Arc Welding Equipment Electromagnetic Compatibility Requirements
- EN 50445 Product family standard to demonstrate compliance of equipment for resistance welding, arc welding and allied processes with the basic restrictions related to human exposure to electromagnetic fields (0 Hz – 300Hz) BS EN 50445:2008.

US Signatory:

October 29, 2010

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**David A. Werba**

MANAGER, PRODUCT DESIGN COMPLIANCE

---

Date of Declaration



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Maxstar 150 STH	907352

Council Directives:

- 2006/95/EC Low Voltage
- 2004/108/EC Electromagnetic Compatibility

Standards:

- IEC 60974-1: 2005 Arc Welding Equipment – Welding Power Sources
- IEC 60974-3: 2007 Arc Welding Equipment – Arc Striking and Stabilizing Devices
- IEC 60974-10: 2007 Arc Welding Equipment – Electromagnetic Compatibility Requirements
- EN 50445 Product family standard to demonstrate compliance of equipment for resistance welding, arc welding and allied processes with the basic restrictions related to human exposure to electromagnetic fields (0 Hz – 300Hz) BS EN 50445:2008.

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October 29, 2010

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**David A. Werba**

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Date of Declaration

MANAGER, PRODUCT DESIGN COMPLIANCE



# SECTION 1 – SAFETY PRECAUTIONS - READ BEFORE USING

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 Protect yourself and others from injury — read and follow these precautions.

## 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.

## 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 and ground 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

 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.

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 for damage or bare wiring – replace cord immediately if damaged – bare wiring can kill.
- Turn off all equipment when not in use.
- Do not use worn, damaged, undersized, or poorly spliced 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.

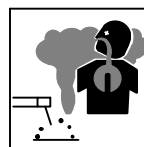
### SIGNIFICANT DC VOLTAGE exists in inverter welding power sources AFTER removal of input power.

- 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.
- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Material Safety Data Sheets (MSDSs) and the manufacturer's instructions for metals, consumables, coatings, cleaners, and degreasers.
- 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 protective clothing made from durable, flame-resistant material (leather, heavy cotton, or wool) and foot protection.

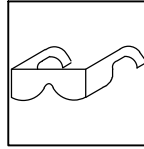


### WELDING can cause fire or explosion.

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 closed containers such as tanks, drums, or pipes, unless they are properly prepared according to AWS F4.1 (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 oil-free protective garments 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.



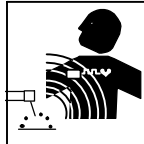
### FLYING METAL or DIRT can injure eyes.

- 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.



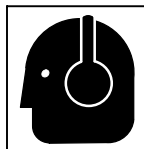
### BUILDUP OF GAS can injure or kill.

- Shut off shielding 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.

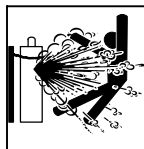
- Wearers of Pacemakers and other Implanted Medical Devices should keep away.
- Implanted Medical Device wearers should consult their doctor and the device manufacturer before going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating operations.



### 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.

Shielding 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 shielding 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.
- 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



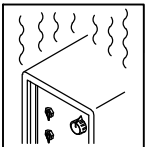
### FIRE OR EXPLOSION hazard.

- 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.



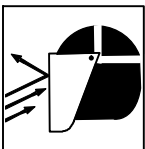
### FALLING EQUIPMENT can injure.

- 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.



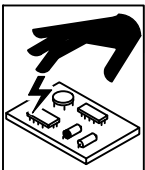
### OVERUSE can cause OVERHEATING

- 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.



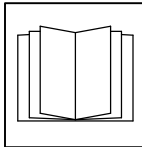
### WELDING WIRE can injure.

- 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.



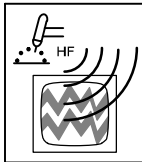
### MOVING PARTS can injure.

- 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.



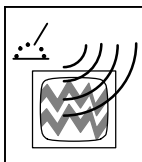
### READ INSTRUCTIONS.

- 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.)**
-  **Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. *Wash hands after handling.***
-  **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.***

### For Gasoline Engines:

-  **Engine exhaust contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.**

### For Diesel Engines:

-  **Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.**

## 1-5. Principal Safety Standards

*Safety in Welding, Cutting, and Allied Processes*, ANSI Standard Z49.1, from Global Engineering Documents (phone: 1-877-413-5184, website: [www.global.ihs.com](http://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](http://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](http://www.nfpa.org) and [www.sparky.org](http://www.sparky.org)).

*Safe Handling of Compressed Gases in Cylinders*, CGA Pamphlet P-1, from Compressed Gas Association, 4221 Walney Road, 5th Floor, Chantilly, VA 20151 (phone: 703-788-2700, website: [www.cganet.com](http://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](http://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](http://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](http://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](http://www.osha.gov)).

U.S. Consumer Product Safety Commission (CPSC), 4330 East West Highway, Bethesda, MD 20814 (phone: 301-504-7923, website: [www.cpsc.gov](http://www.cpsc.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](http://www.cdc.gov/NIOSH)).

## 1-6. EMF Information

Electric current flowing through any conductor causes localized electric and magnetic fields (EMF). Welding current creates an EMF field around the welding circuit and welding equipment. EMF fields may interfere with some medical implants, e.g. pacemakers. Protective measures for persons wearing medical implants have to be taken. For example, access restrictions for passers-by or 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. Warning Label Definitions

A. Warning! Watch Out! There are possible hazards as shown by the symbols.










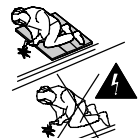
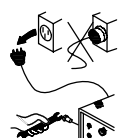





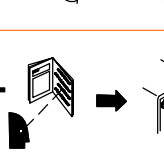




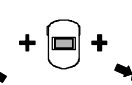


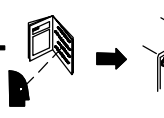


- 1 Electric shock from welding electrode or wiring can kill.
- 1.1 Wear dry insulating gloves. Do not touch electrode with bare hand. Do not wear wet or damaged gloves.
- 1.2 Protect yourself from electric shock by insulating yourself from work and ground.
- 1.3 Disconnect input plug or power before working on machine.



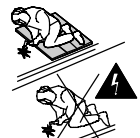
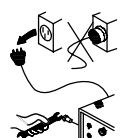





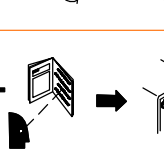




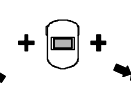


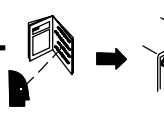


2 Breathing welding fumes can be hazardous to your health.

- 2.1 Keep your head out of the fumes.
- 2.2 Use forced ventilation or local exhaust to remove the fumes.
- 2.3 Use ventilating fan to remove fumes.
- 3 Welding sparks can cause explosion or fire.
- 3.1 Keep flammables away from welding. Do not weld near flammables.
- 3.2 Welding sparks can cause fires. Have a





















fire extinguisher nearby, and have a watchperson ready to use it.

- 3.3 Do not weld on drums or any closed containers.
- 4 Arc rays can burn eyes and injure skin.
- 4.1 Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection.
- 5 Become trained and read the instructions before working on the machine or welding.
- 6 Do not remove or paint over (cover) the label.

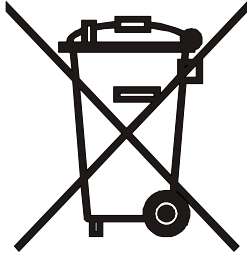
<b>⚠ WARNING</b>				<b>⚠</b>																																			
<b>Do Not Remove, Destroy, Or Cover This Label</b>																																							
<b>ELECTRIC SHOCK can kill.</b> <ul style="list-style-type: none"> <li>Always wear dry insulating gloves.</li> <li>Insulate yourself from work and ground.</li> <li>Do not touch live electrical parts.</li> <li>Disconnect input power before servicing.</li> <li>Keep all panels and covers securely in place.</li> </ul>		 <b>WELDING can cause fire or explosion.</b> <ul style="list-style-type: none"> <li>Do not weld near flammable material.</li> <li>Watch for fire: keep extinguisher nearby.</li> <li>Do not locate unit over combustible surfaces.</li> <li>Do not weld on closed containers.</li> </ul>		 <b>ARC WELDING can be hazardous.</b> <ul style="list-style-type: none"> <li>Read and follow all labels and the Owner's Manual carefully.</li> <li>Only qualified persons are to install, operate, or service this unit according to all applicable codes and safety practices.</li> <li>Welding wire and drive parts may be at welding voltage.</li> <li>Keep children away. • Pacemaker wearers keep away.</li> </ul>		 <b>ARC RAYS can burn eyes and skin; NOISE can damage hearing.</b> <ul style="list-style-type: none"> <li>Wear welding helmet with correct filter.</li> <li>Wear correct eye, ear, and body protection.</li> </ul>																																	
 <b>FUMES AND GASES can be hazardous.</b> <ul style="list-style-type: none"> <li>Keep your head out of the fumes.</li> <li>Ventilate area, or use breathing device.</li> <li>Read Material Safety Data Sheets (MSDSs) and manufacturer's instructions for materials used.</li> </ul>																																							
<small>Read American National Standard Z49.1, "Safety in Welding, Cutting, and Allied Processes," From American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126; OSHA Safety and Health Standards, 29 CFR 1910, from U.S. Gov. Printing Office, P. O. Box 371984, Pittsburgh, PA 15280-7984.</small>																																							
<b>⚠ AVERTISSEMENT</b>																																							
<b>UN CHOC ELECTRIQUE peut être mortel.</b> <ul style="list-style-type: none"> <li>Installation et raccordement de cette machine doivent être conformes à tous les pertinents.</li> </ul>				<b>SOUDEAGE A L'ARC peut être hasardeux.</b> <ul style="list-style-type: none"> <li>Lire le manuel d'instructions avant utilisation.</li> <li>Ne pas installer sur une surface combustible.</li> <li>Les fils de soudage et pièces conductrices peuvent être à la tension de soudage.</li> </ul>																																			
1		1.1		1.2		1.3		2		2.1		2.2		2.3		3		3.1		3.2		3.3		4		4.1		5		6									
																																							

<b>⚠</b>																																							
1		1.1		1.2		1.3		2		2.1		2.2		2.3		3		3.1		3.2		3.3		4		4.1		5		6									
																																							

## 2-2. Symbols And Definitions

<b>A</b>	Amperes		Voltage Input		Suitable For Areas Of Increased Shock Hazard		Shielded Metal Arc Welding (SMAW)	
<b>V</b>	Volts		Increase/Decrease Of Quantity					Single Phase Static Frequency Converter-Transformer-Rectifier
	Output		Negative		Positive	<b>Hz</b>	Hertz	
	Gas Input		High Temperature		Direct Current		Line Connection	
<b>%</b>	Percent	<b>X</b>	Duty Cycle	<b>U<sub>1</sub></b>	Primary Voltage	<b>U<sub>2</sub></b>	Conventional Load Voltage	
	Alternating Current	<b>U<sub>0</sub></b>	Rated No Load Voltage (Average)	<b>I<sub>1max</sub></b>	Rated Maximum Supply Current	<b>I<sub>2</sub></b>	Rated Welding Current	
<b>I<sub>1eff</sub></b>	Maximum Effective Supply Current		Remote		Lift-Arc Start (GTAW)		Gas Tungsten Arc Welding (GTAW)	
	Process		TIG (GTAW) Pulse		HF Impulse Starting (GTAW)	<b>I</b>	On	
<b>O</b>	Off		Look under unit for label					

## 2-3. WEEE Label (For Products Sold Within The EU)

	<p>Do not discard product (where applicable) with general waste.</p> <p>Reuse or recycle Waste Electrical and Electronic Equipment (WEEE) by disposing at a designated collection facility.</p> <p>Contact your local recycling office or your local distributor for further information.</p>
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# SECTION 3 – SPECIFICATIONS AND INSTALLATION

## 3-1. Important Information Regarding CE Products (Sold Within The EU)

### A. 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.

### B. 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 may be potential difficulties in ensuring electromagnetic compatibility in those locations, due to conducted as well as radiated disturbances.**

This equipment complies with IEC 61000-3-12.

ce-emc 4

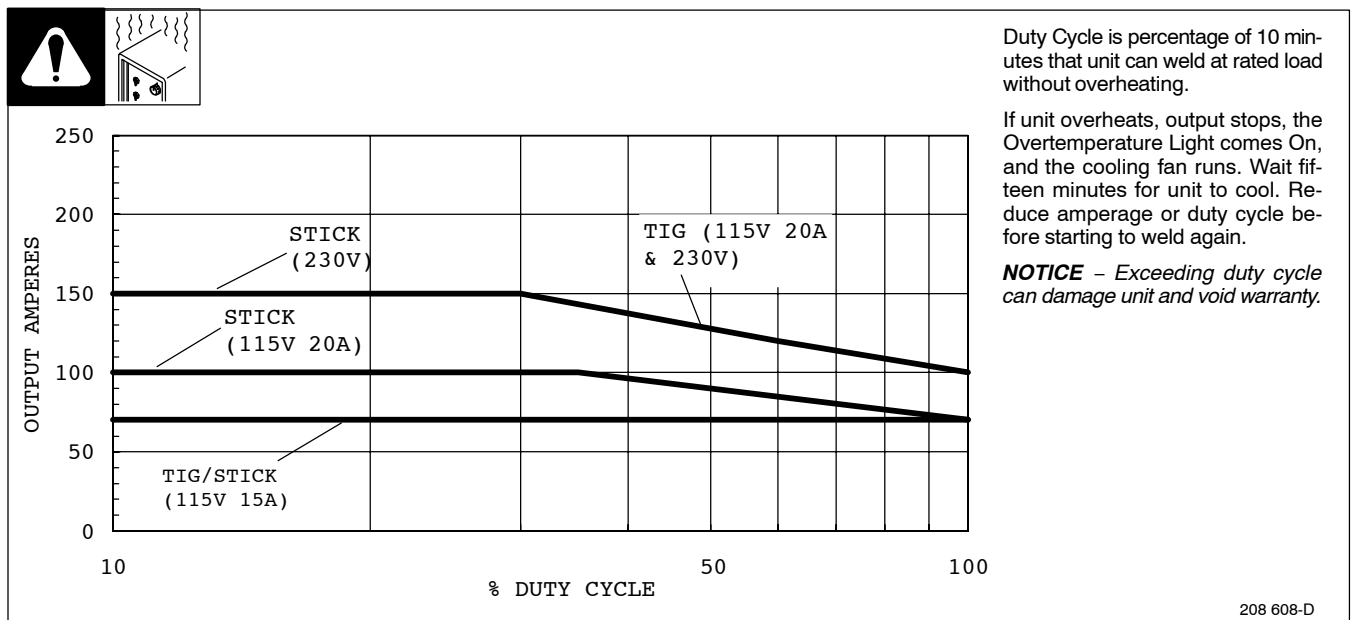
## 3-2. Serial Number And Rating Label Location

The serial number and rating information is located on the bottom of the machine. Use the rating labels to determine input power requirements and/or rated output. CE model rating labels will also display the following symbols: CE, CCC, WEEE, and IEC 60974-1. For future reference, write serial number in space provided on back cover of this manual.

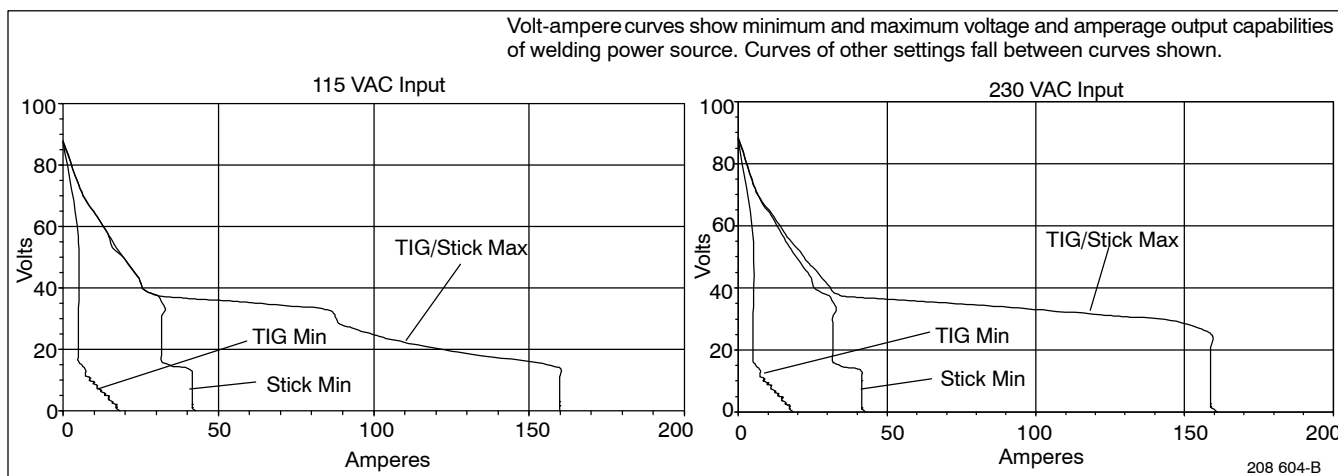
### 3-3. Specifications

Input Power Single-Phase AC	Rated Welding Output	IP Rating	Welding Amperage Range	Max OCV DC (Uo)	Rated Peak Starting Voltage (Up)	Amperes Input At Rated Load Output, 50/60Hz, Single-Phase	KVA @ Duty Cycle	KW
115 Volts Stick 15A	70A @ 22.8 Volts DC, 100% Duty Cycle	23	20 – 70A	90V *12-16	**15 KV	17.4	2.0	1.9
115 Volts TIG 15A	100A @ 14 Volts DC, 100% Duty Cycle	23	5 – 100A		**15 KV	18.4	2.1	2.1
115 Volts Stick 20A	70A @ 22.8 Volts DC, 100% Duty Cycle	23	20 – 100A	90V *12-16	**15 KV	17.4	2.0	1.9
	100A @ 24.0 Volts DC, 35% Duty Cycle	23			**15 KV	26.4	3.0	3.0
115 Volts TIG 20A	100A @ 14.0 Volts DC, 100% Duty Cycle	23	5 – 150A	90V *12-16	**15 KV	18.4	2.1	2.1
	150A @ 16.0 Volts DC, 30% Duty Cycle	23			**15 KV	28.0	3.4	3.1
230 Volts Stick	100A @ 24 Volts DC, 100% Duty Cycle	23	20 – 150A	90V *12-16	**15 KV	13.1	3.0	2.8
	150A @ 26.0 Volts DC, 30% Duty Cycle	23			**15 KV	21.6	4.9	4.7
230 Volts TIG	100A @ 14.0 Volts DC, 100% Duty Cycle	23	5 – 150A	90V *12-16	**15 KV	8.3	2.0	1.9
	150A @ 16.0 Volts DC, 30% Duty Cycle	23			**15 KV	14.2	3.2	3.1
Weight		13.7 lb (6.2 Kg)						
Dimensions		H: 9 in. (229 mm), W: 5.5 in. (140 mm), L: 13.25 in. (337 mm)						
*Sense Voltage For Stick And TIG Lift Arc™								
** Arc Striking Device Is Designed For Manual Guided Operations								

### 3-4. Duty Cycle And Overheating




### 3-5. Volt-Ampere Curves





### 3-6. Remote 6 Receptacle Information (STL And STH Models Only)

<p>The diagram shows a side view of a welding power source with a circular 'REMOTE 6' receptacle on its front panel. A callout shows a close-up of the six pins, numbered 1 through 6. Below the power source, a 6-pin connector is shown with a cable and a terminal strip.</p>	<b>REMOTE 6</b>	<b>Socket</b>	<b>Socket Information</b>
	<b>15 VOLTS DC</b> <b>OUTPUT CONTACTOR</b>	1	Contact control +13.8 volts DC.
	<b>REMOTE OUTPUT CONTROL</b>	2	Contact closure to 1 completes contactor control circuit and enables output when Lift-Arc TIG remote is selected.
		3	Output to remote control; +10 volts DC output to remote control.
		4	0 to +10 volts DC input command signal from remote control.
	5	Remote control circuit common.	
<b>CHASSIS</b>	6	Chassis common.	

### 3-7. Electrical Service Guide For 230 VAC

 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 120–230 VAC without removing the cover to relink the power source.

 Actual input voltage should not exceed ± 10% of indicated required input voltage. If actual input voltage is outside of this range, output may not be available.

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

	50/60 Hz Single Phase
<b>Input Voltage (V)</b>	230
<b>Input Amperes (A) At Rated Output</b>	13.1
<b>Max Recommended Standard Fuse Rating In Amperes</b> <sup>1</sup>	
<b>Time-Delay Fuses</b> <sup>2</sup>	15
<b>Normal Operating Fuses</b> <sup>3</sup>	20
<b>Min Input Conductor Size In AWG</b> <sup>4</sup>	14
<b>Max Recommended Input Conductor Length In Feet (Meters)</b>	91 (28)
<b>Min Grounding Conductor Size In AWG</b> <sup>4</sup>	14

Reference: 2008 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 310.16. 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.

### 3-8. Selecting Extension Cord (Use Shortest Cord Possible)



Single Phase AC Input Voltage	Conductor Size – AWG (mm <sup>2</sup> )*				
	4 (21.2)	6 (13.3)	8 (8.4)	10 (5.3)	12 (3.3)
Maximum Allowable Cord Length in ft (m)					
115	160 (49)	107 (33)	71 (22)	47 (14)	29 (9)
230	471 (144)	321 (98)	215 (66)	146 (45)	90 (27)

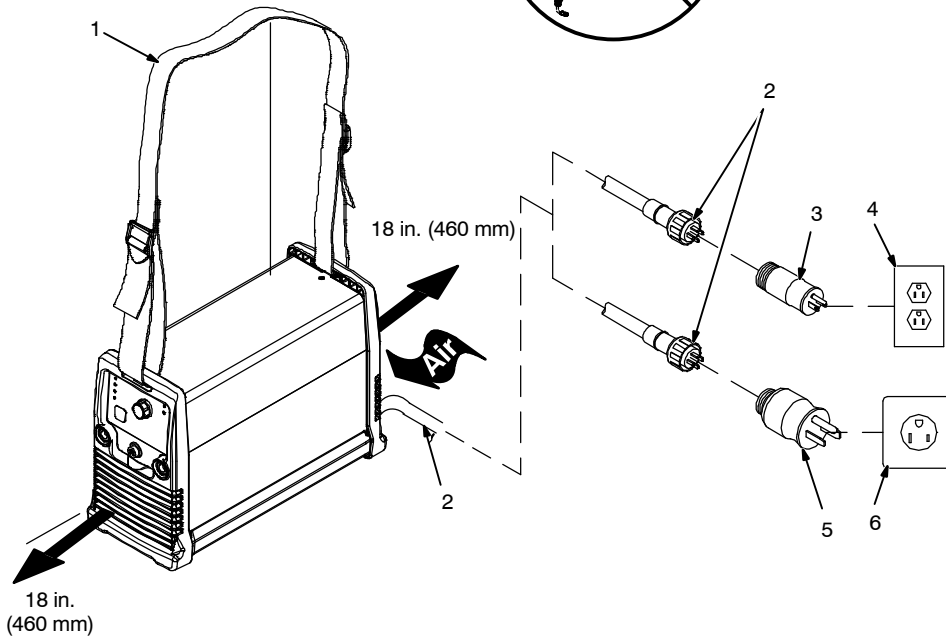
\*Conductor size is based on maximum 3% voltage drop



### 3-9. Selecting A Location, And Connecting Input Power



#### Airflow Distance Requirements



- 1 Welding Power Source Shoulder Strap

Use strap to lift unit.

- ⚠ Do not move or operate unit where it could tip.**
- ⚠ Installation must meet all National and Local Codes – have only qualified persons make this installation.**
- ⚠ Special installation may be required where gasoline or volatile liquids are present – see NEC Article 511 or CEC Section 20.**

The Auto-Line circuitry in this unit automatically links the power source to the primary voltage being applied, either 115 or 230 VAC.

**NOTICE** – Do Not cut off power cord connector and rewire. The power cord connector and plugs will work with standard NEMA receptacles. Modifying power cord, connector, and plugs will void product warranty.

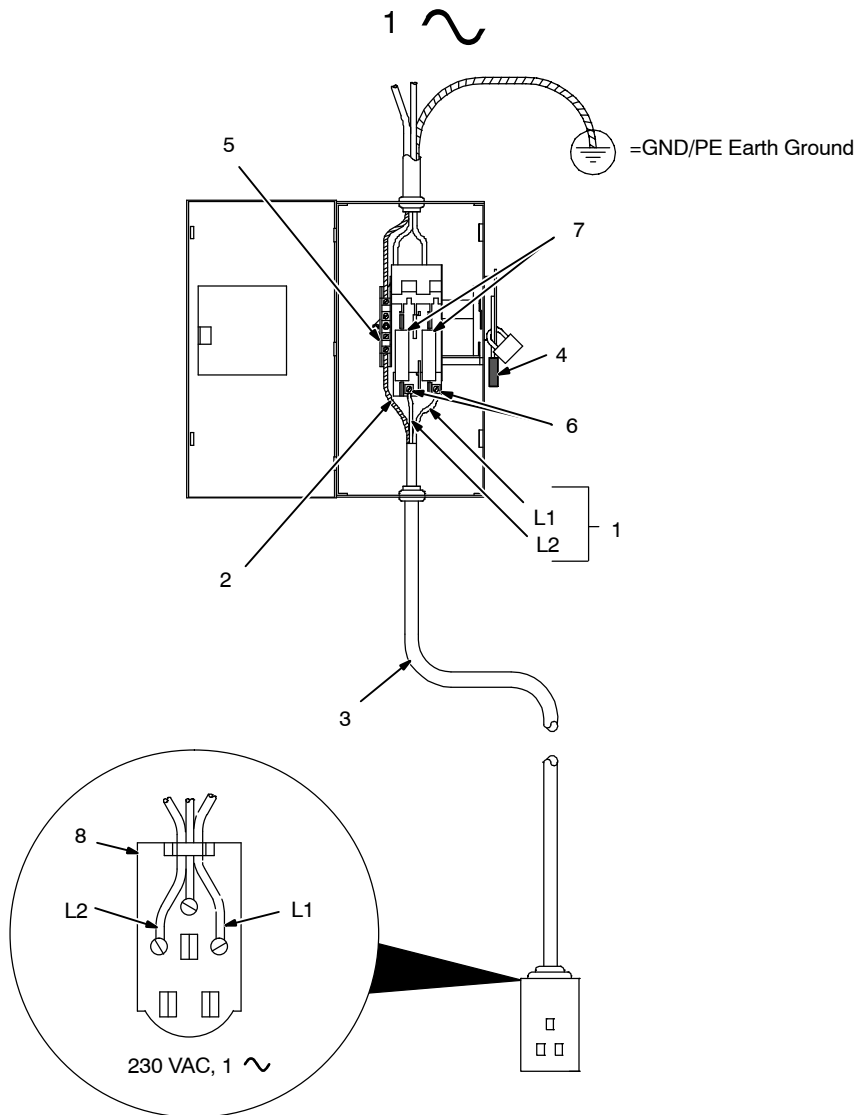
For 115 volts AC input power, a 15 or 20 ampere individual branch circuit protected by time-delay fuses or circuit breaker is required. For 230 volts AC input power, see Section 3-7.

- 2 Power Cord Connector
- 3 Plug – NEMA Type 5–15P
- 4 Receptacle – NEMA Type 5–15R (Customer Supplied)
- 5 Plug – NEMA Type 6–50P
- 6 Receptacle – NEMA Type 6–50R (Customer Supplied)

Select plug for power supply receptacle available at site. Install plug onto power cord adapter. As threaded collar is tightened, push plug onto adapter until collar is completely tight.

Connect plug to receptacle.

### 3-10. Connecting 1-Phase Input Power For 230 VAC



**⚠** 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.

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

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

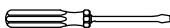
Connect green or green/yellow grounding conductor to disconnect device grounding terminal first.

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

7 Over-Current Protection  
Select type and size of over-current protection using Section 3-7 (fused disconnect switch shown).

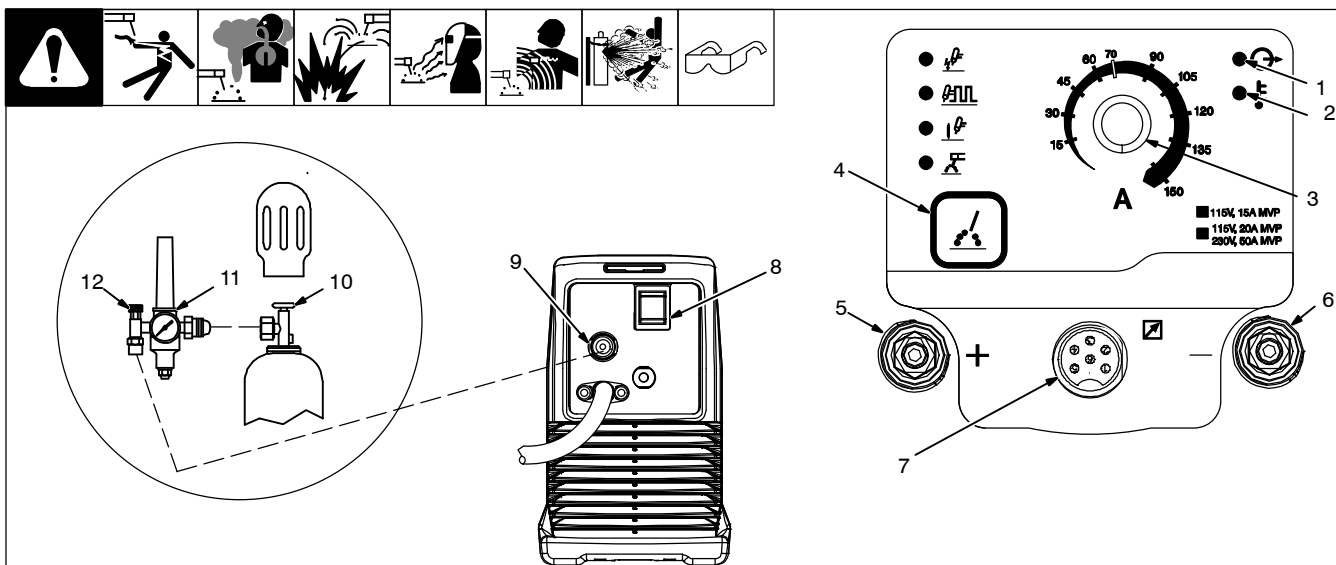
8 Receptacle (NEMA 6-50R)  
Customer Supplied  
Close and secure door on disconnect device. Remove lockout/tagout device, and place switch in the On position.

Tools Needed:



# SECTION 4 – OPERATION

## 4-1. Front Panel Controls And Gas Connection



Ref. 803 375-A / 233 167-A

### 1 Ready Light (LED)

Light comes on approximately two seconds after power switch is placed in On (I) position if Lift-Arc On or Stick has been selected. If TIG Impulse is selected, ready light comes on only after output is enabled. The light indicates that the unit is energized and ready for welding. A flashing light indicates unit is not ready, or that there is a functional error.

The fan motor is thermostatically controlled.

### 2 High Temperature Light (LED)

Light comes on if unit overheats. Once unit has cooled down, welding can resume. If this light flashes, take unit to an Authorized Service Agent.

### 3 Amperage Adjustment Control

This control adjusts welding amperage.

### 4 Process Select Switch

See Section 4-3.

### 5 Positive Weld Output Receptacle

For Stick welding, connect electrode cable to this receptacle. For TIG welding, connect work cable to this receptacle.

### 6 Negative Weld Output Receptacle

For Stick welding, connect work cable to this receptacle. For TIG welding, connect torch cable to this receptacle.

### 7 Remote Receptacle

For TIG Impulse or Lift-Arc TIG, output may be adjusted from min to max of the front panel setting with a remote control.

### 8 Power Switch

Place switch in On (I) or Off (O) position as needed.

### 9 Gas Fitting

Fittings have 5/8-18 right-hand threads (3/8-19 BSPP on CE units).

### 10 Cylinder Valve

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

### 11 Regulator/Flowmeter

### 12 Flow Adjust

Typical flow rate is 15 cubic feet per hour (7.1 liters per minute) **at a maximum of 90 psi (621 kPa)**.

Connect customer supplied gas hose between regulator/flowmeter and gas fitting .

## 4-2. Process Selection (STL Model Only)

○ = Light Off    ● = Light On

1 Process Selector Switch Pad  
Use control to select required welding process. Press switch pad until LED for desired process is illuminated.

2 Lift Arc™ Start  
When selected, a TIG arc starting method in which the electrode must come in contact with the workpiece to initiate an arc is activated (see Section 4-4).

3 Stick (SMAW)  
When selected, Adaptive Hot Start and DIG circuitry are energized.

4 Lift Arc™ Start (Remote)  
A TIG starting method in which the electrode must come in contact with the work and a closure from pin 1 to pin 2 on the remote receptacle (see Section 3-6) is required to initiate an arc.

### 4-3. Process Selection (STH Model Only)

○ =Light Off   ● =Light On   ✱ =Light Flashing

- Process Selector Switch Pad**  
Use control to select required welding process. Press switch pad until light (LED) for desired process is illuminated.
- TIG Impulse Start**  
When selected, an impulse HF arc starting method is activated (see Section 4-4).
- TIG Pulse With TIG Impulse Start**  
When selected, the TIG pulse welding process with impulse HF start is activated.  
  
Pulsing is the alternating raising and lowering of the weld output at a specific rate. To change pulse frequency, see Section 4-5.
- TIG Pulse With Lift-Arc™ Start**  
When selected, the TIG pulse welding process with Lift-Arc start is activated (see Section 4-4).
- Lift-Arc Start**  
When selected, a TIG arc starting method in which the electrode must come in contact with the workpiece to initiate an arc is activated (see Section 4-4).
- Stick (SMAW)**  
When selected, Adaptive Hot Start and DIG circuitry are energized.

### 4-4. Lift-Arc And TIG Impulse Start Procedures

**Lift-Arc Start**

- TIG Electrode
- Workpiece

Touch tungsten electrode to workpiece, **hold for 1-2 seconds**, slowly lift electrode, and an arc forms.

Open-circuit voltage maybe present before electrode touches workpiece.

**TIG Impulse**

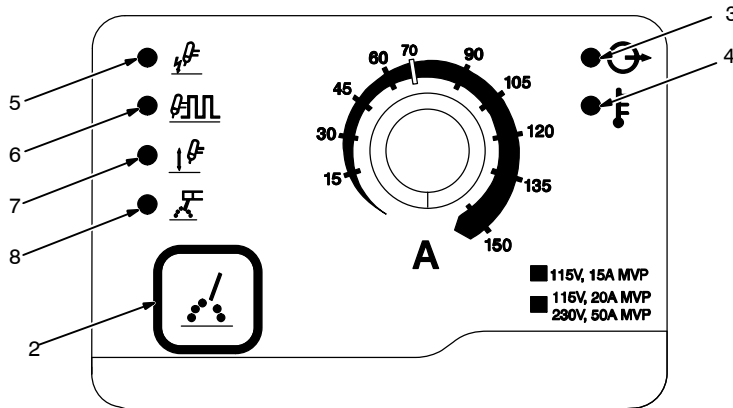
High frequency starts arc when output is enabled without making contact with the workpiece. High frequency turns off when arc is started.

**Do NOT Strike Like A Match!**

*Pictorials show Lift-Arc start method – do not use this method for TIG Impulse starts.*

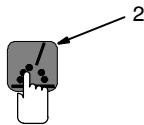
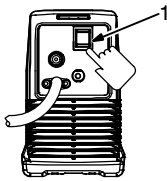


## 4-5. Set-Up Procedure For The TIG Process And Restoring Factory Default Settings (STH Model Only)



### Set-Up Procedure

- 1 Power Switch
- 2 Process Switch Pad
- 3 Ready Light
- 4 High Temp Light
- 5 TIG HF Light
- 6 TIG Pulse Light
- 7 TIG Lift-Arc Light
- 8 Stick Light



To enter Set-Up Mode, turn power On while pressing and holding the Process switch pad for approximately 5 seconds, until the Ready (3) and High Temp (4) lights flash alternately.

### Selectable Features:

#### Feature 1 – Selectable Trigger Method (Three to choose from):

- **Standard trigger** – Typically used with a remote amperage control device. Standard trigger provides non-contact start in DC Impulse TIG mode. It also enables Lift-Arc start, with a remote control, in Lift-Arc mode.
- **Lift-Arc Panel Control** – Allows Lift-Arc start without using a remote control device. Lift-Arc is used when HF starts are not permitted, or to replace scratch starts.
- **2T Trigger Hold** – In the HF mode, used with a push button control device as an on-off switch. In the Lift-Arc mode, using the Lift-Arc method (see Section 4-4), push and release torch trigger to start weld. Push and release torch trigger to end weld current and start Auto Crater. Auto Crater ramps weld current down at a fixed rate to end the weld cycle.

To change trigger method, enter set-up mode as described above and illustrated on the next page.

**Feature 2 – Pulse Frequency:** Choose from the following four intervals: .5 PPS, 1 PPS, 2.5 PPS, or 60 PPS.

To change pulse frequency, enter set-up mode as described above and illustrated on the next page.

### Restoring Factory Default Settings

To restore factory default settings, press and hold process switch pad and turn power On. Ready and high temp lights will begin to flash alternately. Continue holding process switch pad for approximately 10 seconds until the lights begin to flash simultaneously. Release switch pad, as factory default settings are restored. The lights will continue to flash until unit is turned Off. To return to normal welding operation, turn power On.

Factory default settings:

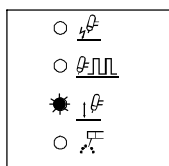
Trigger Methods for Models with Stock No. 907 136-014 only:  
TIG Impulse-standard; Lift-Arc-standard

Trigger Methods: TIG Impulse-Standard; Lift-Arc-On

Pulse Frequency - 2.5 PPS

### Lights Indicate Which Selection Is Active

- ★ Light Flashing = Active Feature
- Light On = Selected Option Of Feature 1 Or 2

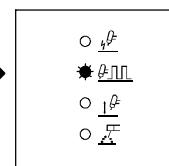
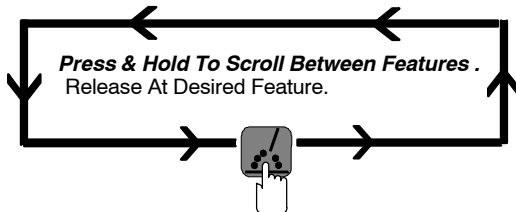


**Feature 1  
Trigger Method**



**Press and release** switch pad to see active Trigger Method. Continue to **press and release** switch pad to change Trigger Method.

☞ If no action is taken within 5 seconds, the light for Feature 1 begins to flash, and last Trigger Method selected remains active.

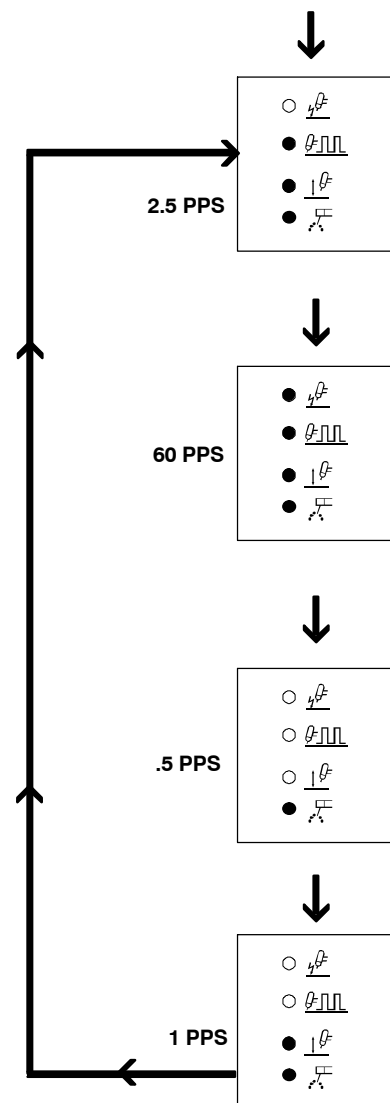
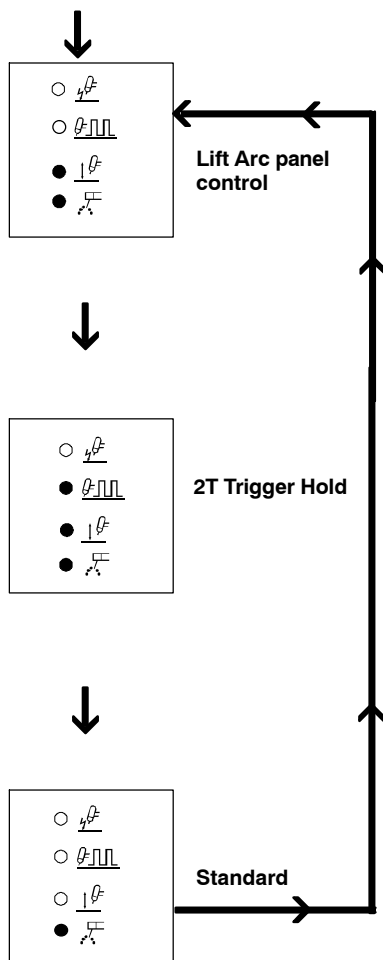


**Feature 2  
Pulse Frequency (PPS)**



**Press and release** switch pad to see active Pulse Frequency. Continue to **press and release** switch pad to change Pulse Frequency.

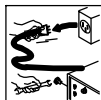
☞ If no action is taken within 5 seconds, the light for Feature 2 begins to flash, and last Pulse Frequency selected remains active.



To save changes and exit set-up mode, press and release torch trigger, or turn power off and wait until lights turn off, and then turn power back on.

# SECTION 5 – MAINTENANCE AND TROUBLESHOOTING

## 5-1. Routine Maintenance



**⚠** Disconnect power before maintaining.

**👉** Maintain more often during severe conditions.

🕒	✓ = Check * To be done by Factory Authorized Service Agent	◇ = Change	● = Clean	Δ = Repair	☆ = Replace
Every 3 Months	 ✓ ☆ Labels	 ✓ ☆ Gas Hoses		 ● Weld Terminals	
Every 3 Months	 ✓ Δ ☆ Cables And Cords				
Every 6 Months	 ●: During heavy service, clean monthly.				

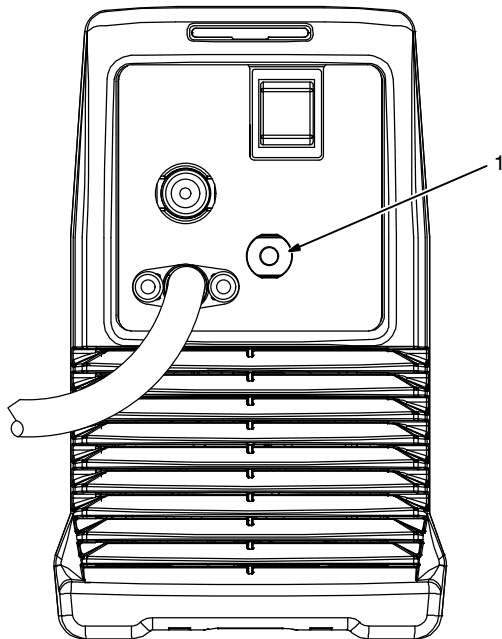
**⚠** Do not remove case when blowing out inside of unit.

Blow out inside. Direct airflow through front and back louvers.

## 5-2. Overload Protection



1 Supplementary Protector CB1  
 CB1 protects unit from overload. If CB1 opens, unit shuts down.  
 Reset supplementary protector.





### 5-3. Troubleshooting



Trouble	Remedy
No weld output; unit completely inoperative; ready light (LED) Off.	Place line disconnect switch in On position.
	Check and replace line fuse(s), if necessary, or reset circuit breaker.
	Be sure power cord is plugged in and that receptacle is receiving input power.
No weld output; ready light (LED) On.	Check and secure loose weld cable(s) into receptacle(s).
	Check and correct poor connection of work clamp to workpiece.
No weld output; high temperature light (LED) On.	Unit overheated causing thermal shutdown. Allow unit to cool with fan On (see Section 3-4).
	Reduce duty cycle or amperage.
	Check and correct blocked/poor airflow to unit (see Section 3-9).
No weld output; high temperature light (LED) Flashing.	Turn Power Off and back On again. If light continues to flash, check with Factory Authorized Service Agent.
No weld output. Blue light (LED) flashes continuously, yellow light (LED) off.	Line voltage too high or too low. Line voltage must be within $\pm 10\%$ .
	Unit needs to reset. Cycle power off and back on. If problem is not corrected, contact Factory Authorized Service Agent.
No weld output. Blue light (LED) flashes 3 times repeatedly, yellow light (LED) off.	Remote trigger left on. Turn off remote trigger, wait five seconds, and restart operation.
No weld output. Blue light (LED) flashes 4 times repeatedly, yellow light (LED) off.	Unit needs to reset. Cycle power off and back on. If problem is not corrected, contact Factory Authorized Service Agent.
Erratic or improper welding arc or output.	Use proper size and type of weld cable (see your Distributor).
	Clean and tighten weld connections.
	Check and reverse polarity; check and correct poor connections to workpiece.
Fan not operating.	Unit not warmed up enough to require fan cooling.
	Check for and remove anything blocking fan movement.
	Have Factory Authorized Service Agent check fan motor and control circuitry.
Stick welding problems: Hard starts; poor welding characteristics; unusual spattering.	Use proper type and size of electrode.
	Check and reverse electrode polarity; check and correct poor connections.
	Make sure a remote control is not connected.
TIG welding problems: Wandering arc; hard starts; poor welding characteristics; spattering problems.	Use proper type and size of tungsten.
	Use properly prepared tungsten.
	Check and reverse electrode polarity.
TIG welding problems: Tungsten electrode oxidizing and not remaining bright after welding.	Shield weld zone from drafts.
	Check for correct type shielding gas.
	Check and tighten gas fittings.
	Check and change electrode polarity.





# SECTION 7 – PARTS LIST FOR S MODELS

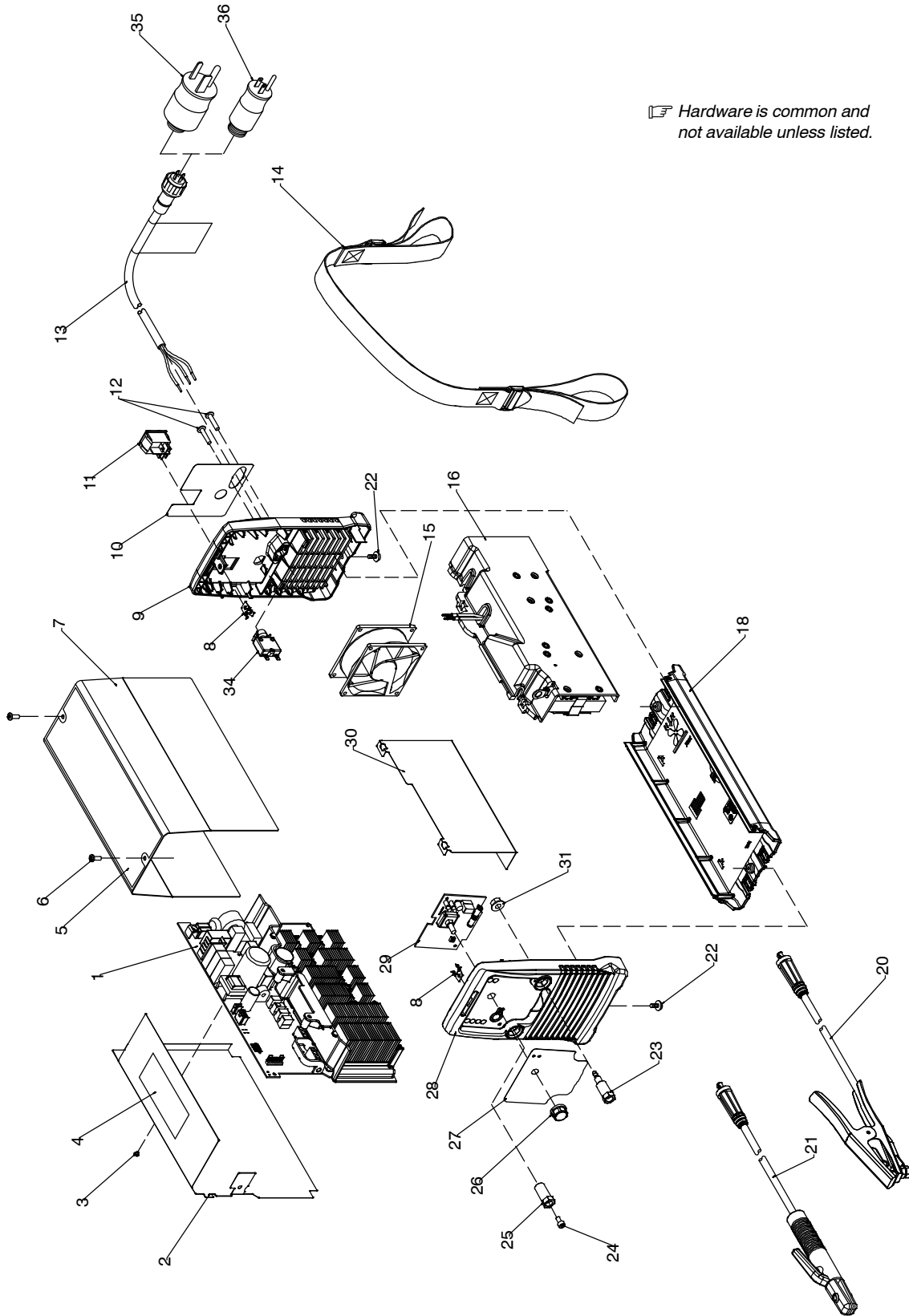



Figure 7-1. Parts View

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
1	PC1	230 210	Kit, pcb assy (windtunnel w/cmpnts)	1
2		208 701	Insulator w/label	1
3		146 549	Fastener, push-in	1
4		208 622	Label, warning	1
5		208 627	Label, warning	1
5		219 674	Label, warning (CE models)	1
6		195 666	Screw, 010-32x .50 torx	2
7		208 700	Wrapper w/label	1
8		208 558	Term, friction .250 x .032	2
9		233 178	Panel, rear w/label	1
9		219 983	Panel, rear w/label (CE models)	1
10		233 171	Nameplate, rear	1
10		219 881	Nameplate, rear (CE models)	1
11		208 550	Switch, rocker dpst 16A 250 VAC	1
12		208 536	Screw, K50 x 25 rnd washer, hd-trx	2
13		225 180	Cable, power	1
14		208 548	Strap, shoulder	1
15	FM	208 496	Fan w/leads and plug	1
16	L1, L2, T1	246 641	Windtunnel, magnetics w/cmpnt	1
16	L1, L2, T1	219 168	Windtunnel, magnetics w/cmpnt (CE models)	1
18			Base w/label, order by serial number	1
20		208 561	Work Cable	1
21		208 596	Holder, electrode	1
22		208 535	Screw, k50 x 12 rnd washer hd-trx	4
23		208 612	Receptacle, twist lock power/gas	1
24		244 862	Screw, m5-.8 x 12 soc hd -torx stl pld sems piloted	1
25		208 498	Receptacle, twist lock power	1
26		174 992	Knob, pointer	1
27			Nameplate, front (order by model and serial number)	1
27			Nameplate, front (CE models) (order by model and serial number)	1
28		233 179	Panel, front w/nameplate	1
28		219 170	Panel, front w/nameplate (CE models)	1
29	PC2	226 864	Circuit board, operator interface	1
30		208 556	Insulator, heat sink	1
31		208 497	Nut, m08-1.2 13 mm hex 8.3 mm t semi cone washer	1
34	CB1	225 844	Supplementary Protector	1
35		219 258	Adapter, power cable 6-50P (230V/50A)	1
36		219 261	Adapter, power cable 5-15P (115V/15A)	1

**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.**

# SECTION 8 – PARTS LIST FOR STL MODELS

 Hardware is common and not available unless listed.

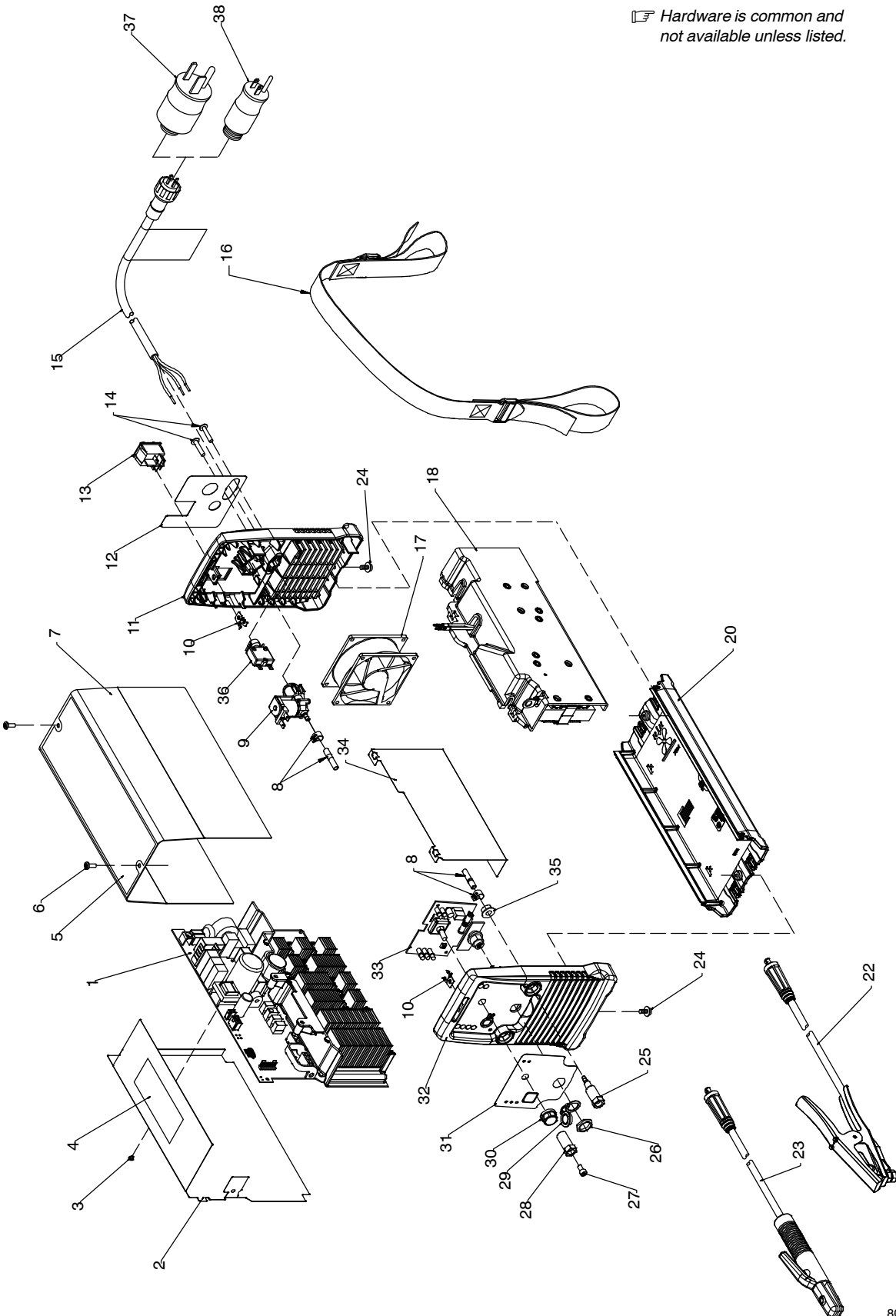



Figure 8-1. Parts View

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
1	PC1	230 210	Kit, pcb assy (windtunnel w/cmpnts)	1
2		208 701	Insulator w/label	1
3		146 549	Fastener, push-in	1
4		208 622	Label, warning	1
5		208 627	Label, warning	1
5		219 674	Label, warning (CE models)	1
6		195 666	Screw, 010-32x .50 torx	2
7		208 700	Wrapper w/label	1
8		208 569	Hose and clamps (2)	1
9	GS1	219 967	Valve, gas w/fittings	1
10		208 558	Term, friction .250 x .032	2
11		233 175	Panel, rear w/label	1
12		233 170	Nameplate, rear	1
13		208 550	Switch, rocker dpst 16A 250 VAC	1
14		208 536	Screw, K50 x 25 rnd washer, hd-trx	2
15		225 180	Cable, power	1
16		208 548	Strap, shoulder	1
17	FM	208 496	Fan w/leads and plug	1
18	L1, L2, T1	246 641	Windtunnel, magnetics w/cmpnt	1
20			Base w/label, order by serial number	1
22		208 561	Work Cable	1
23		208 596	Holder, electrode	1
24		208 535	Screw, k50 x 12 rnd washer hd-trx	4
25		208 612	Receptacle, twist lock power/gas	1
26		208 588	Nut, plastic 625-27.81 hex x .14	1
27		229 337	Screw, m5-.8 x 12 soc hd -torx	1
28		208 498	Receptacle, twist lock power	1
29		208 589	Cover, dust	1
30		174 992	Knob, pointer	1
31			Nameplate, front (order by model and serial number)	1
32		233 177	Panel, front w/nameplate	1
33	PC2, PC3	226 861	Circuit board, operator interface	1
34		208 556	Insualtor, heat sink	1
35		208 497	Nut, m08-1.2 13 mm hex 8.3 mm t semi cone washer	1
36	CB1	225 844	Supplementary Protector	1
37		219 258	Adapter, power cable 6-50P (230V/50A)	1
38		219 261	Adapter, power cable 5-15P (115V/15A)	1

**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.**

# SECTION 9 – PARTS LIST FOR STH MODELS

 Hardware is common and not available unless listed.

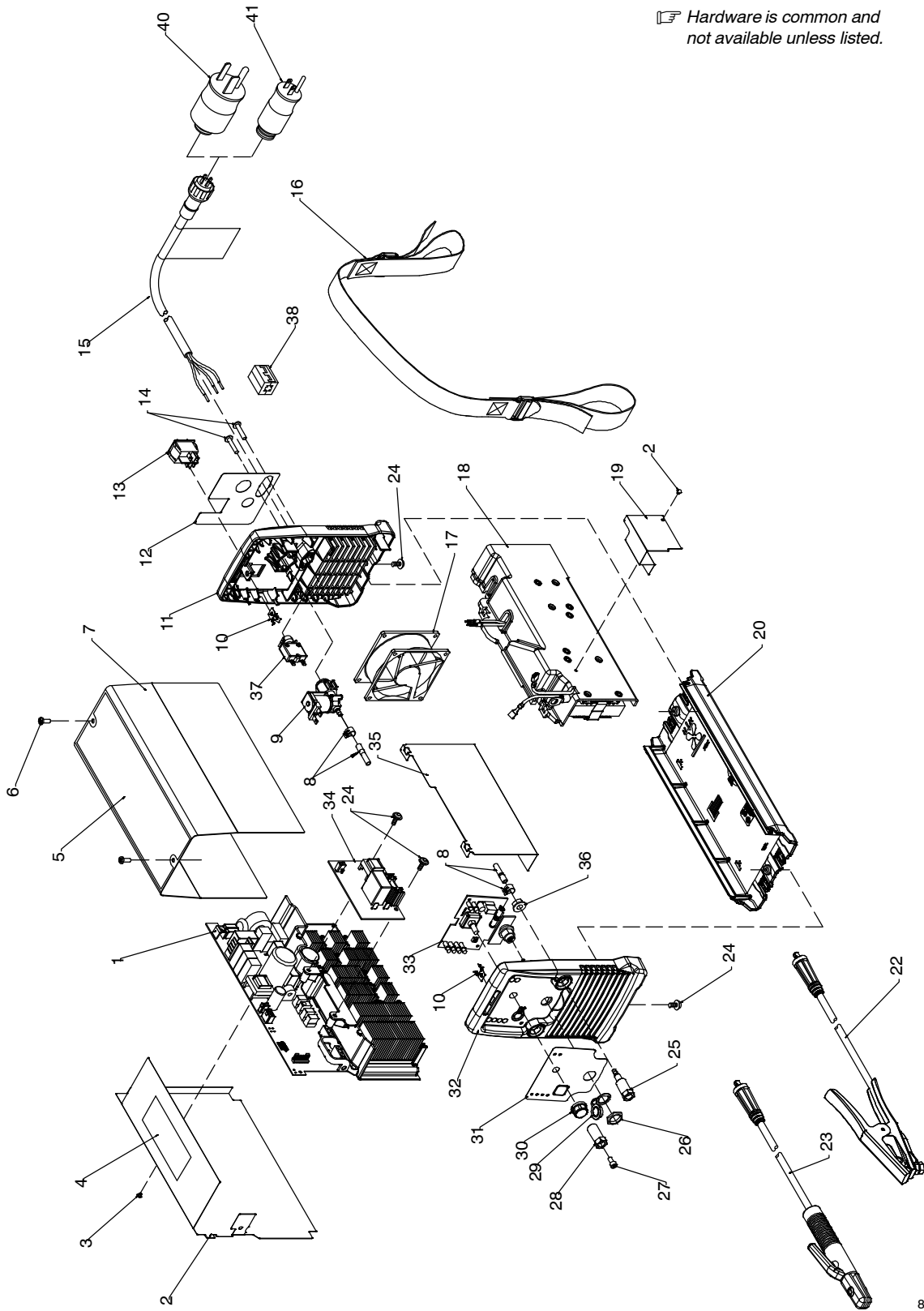


Figure 9-1. Parts View

803 447-J



Item No.	Dia. Mkgs.	Part No.	Description	Quantity
1		208 701	Insulator w/label	1
2		146 549	Fastener, push-in	2
3		208 622	Label, warning	1
4	PC1	230 210	Kit, pcb assy (windtunnel w/cmpnts)	1
5		208 627	Label, warning	1
5		219 674	Label, warning (CE models)	1
6		195 666	Screw, 010-32x .50 torx	2
7		208 700	Wrapper w/label	1
8		208 569	Hose and clamps (2)	1
9	GS1	219 967	Valve, gas w/fitting	1
9	GS1	219 966	Valve, gas w/fitting (CE models)	1
10		208 558	Term, friction .250 x .032	2
11		233 175	Panel, rear w/label	1
11		219 982	Panel, rear w/label (CE models)	1
12		233 170	Nameplate, rear	1
12		219 880	Nameplate, rear (CE models)	1
13		208 550	Switch, rocker dpst 16A 250 vac	1
14		208 536	Screw, K50 x 25 rnd washer, hd-trx	2
15		225 180	Cable, power	1
16		208 548	Strap, shoulder	1
17	FM	208 496	Fan w/leads and plug	1
18	L1, L2, T1	246 642	Windtunnel, magnetics w/cmpnt	1
18	L1, L2, T1	219 169	Windtunnel, magnetics w/cmpnt (CE models)	1
19		208 552	Insulator, negative stud	1
20			Base w/label, order by serial number	1
22		208 561	Work Cable	1
23		208 596	Holder, electrode	1
24		208 535	Screw, k50 x 12 rnd washer hd-trx	4
25		208 612	Receptacle, twist lock power/gas	1
26		208 588	Nut, plastic 625-27.81 hex x .14	1
27		229 337	Screw, m5-.8 x 12 soc hd -torx	1
28		208 498	Receptacle, twist lock power	1
29		208 589	Cover, dust	1
30		174 992	Knob, pointer	1
31			Nameplate, front (order by model and serial number)	1
32		233 176	Panel, front w/nameplate	1
32		219 172	Panel, front w/nameplate (CE models)	1
33	PC2, PC3	224 535	Circuit board, operator interface	1
34	PC4	228 593	Circuit board, arc starter	1
35		208 556	Insualtor, heat sink	1
36		208 497	Nut, m08-1.2 13 mm hex 8.3 mm t semi cone washer	1
37	CB1	225 844	Supplementary Protector	1
38	T3	219 076	Core, ferrite (CE models)	1
40		219 258	Adapter, power cable 6-50P (230V/50A)	1
41		219 261	Adapter, power cable 5-15P (115V/15A)	1

**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<sup>®</sup>

## WARRANTY

Effective January 1, 2010

(Equipment with a serial number preface of MA or newer)

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

### Warranty Questions?

Call  
1-800-4-A-MILLER  
for your local  
Miller distributor.

Your distributor also gives  
you ...

#### Service

You always get the fast,  
reliable response you  
need. Most replacement  
parts can be in your  
hands in 24 hours.

#### Support

Need fast answers to the  
tough welding questions?  
Contact your distributor.  
The expertise of the  
distributor and Miller is  
there to help you, every  
step of the way.

LIMITED WARRANTY – Subject to the terms and conditions below, Miller Electric Mfg. Co., Appleton, Wisconsin, 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.

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 delivery date of the equipment to the original end-user purchaser, and not to exceed one year after the equipment is shipped to a North American distributor or eighteen 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
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)
  - \* Plasma Arc Cutting Power Sources
  - \* Process Controllers
  - \* Semi-Automatic and Automatic Wire Feeders
  - \* Smith 30 Series Flowgauge and Flowmeter Regulators (No Labor)
  - \* Transformer/Rectifier Power Sources
  - \* Water Coolant Systems (Integrated)
3. 2 Years — Parts
  - \* Auto-Darkening Helmet Lenses (No Labor)
4. 1 Year — Parts and Labor Unless Specified
  - \* Automatic Motion Devices
  - \* CoolBelt and CoolBand Blower Unit (No Labor)
  - \* External Monitoring Equipment and Sensors
  - \* Field Options  
**(NOTE: Field options are covered for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)**
  - \* Flowgauge and Flowmeter Regulators (No Labor)
  - \* RFCS Foot Controls (Except RFCS-RJ45)
  - \* Fume Extractors
  - \* HF Units
  - \* ICE Plasma Cutting Torches (No Labor)
  - \* Induction Heating Power Sources, Coolers, and Electronic Controls/Recorders
  - \* Load Banks
  - \* Motor Driven Guns (w/exception of Spoolmate Spoolguns)
  - \* PAPR Blower Unit (No Labor)
  - \* Positioners and Controllers
  - \* Racks
  - \* Running Gear/Trailers
  - \* Spot Welders
  - \* Subarc Wire Drive Assemblies
  - \* Water Coolant Systems (Non-Integrated)
  - \* Weldcraft-Branded TIG Torches (No Labor)
  - \* Work Stations/Weld Tables (No Labor)
5. 6 Months — Parts
  - \* Batteries
  - \* Bernard Guns (No Labor)
  - \* Tregaskiss Guns (No Labor)

6. 90 Days — Parts
  - \* Accessory (Kits)
  - \* Canvas Covers
  - \* Induction Heating Coils and Blankets, Cables, and Non-Electronic Controls
  - \* M-Guns
  - \* MIG Guns and Subarc (SAW) Guns
  - \* Remote Controls and RFCS-RJ45
  - \* Replacement Parts (No labor)
  - \* Roughneck Guns
  - \* Spoolmate Spoolguns

Miller's True Blue<sup>®</sup> Limited Warranty shall not apply to:

1. **Consumable components; such as contact tips, cutting nozzles, contactors, brushes, relays, work station table tops and welding curtains, or parts that fail due to normal wear. (Exception: brushes and relays are covered on all engine-driven products.)**
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 Appleton, Wisconsin, 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.

Some states in the U.S.A. do not allow limitations of how long an implied warranty lasts, or the exclusion of incidental, indirect, special or consequential damages, so the above limitation or exclusion may not apply to you. This warranty provides specific legal rights, and other rights may be available, but may vary from state to state.

In Canada, legislation in some provinces provides for certain additional warranties or remedies other than as stated herein, and to the extent that they may not be waived, the limitations and exclusions set out above may not apply. This Limited Warranty provides specific legal rights, and other rights may be available, but may vary from province to province.





# 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

City

State

Zip



## 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

Personal Safety Equipment

Service and Repair

Replacement Parts

Training (Schools, Videos, Books)

Technical Manuals (Servicing Information and Parts)

Circuit Diagrams

Welding Process Handbooks

To locate a Distributor or Service Agency visit [www.millerwelds.com](http://www.millerwelds.com) or call 1-800-4-A-Miller

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.

### Miller Electric Mfg. Co.

An Illinois Tool Works Company  
1635 West Spencer Street  
Appleton, WI 54914 USA

### International Headquarters—USA

USA Phone: 920-735-4505 Auto-Attended  
USA & Canada FAX: 920-735-4134  
International FAX: 920-735-4125

For International Locations Visit  
[www.MillerWelds.com](http://www.MillerWelds.com)

