Maxstar® 150 S, STL, And STH

CE And Non-CE Models

OWNER’S MANUAL

Visit our website at www.MillerWelds.com
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 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 on the web.
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OPTIONS AND ACCESSORIES

WARRANTY
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:

<table>
<thead>
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<tbody>
<tr>
<td>Maxstar 150 S</td>
<td>907351</td>
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Council Directives:

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

Standards:

- IEC 60974-1:2005 Arc welding equipment – Part 1: Welding power sources
- IEC 60974-10:2007 Arc Welding Equipment – Part 10: Electromagnetic compatibility (EMC) requirements
- EN 50445:2008 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)

Signatory:

David A. Werba
MANAGER, PRODUCT DESIGN COMPLIANCE

Date of Declaration: November 6, 2012
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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.

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 electric 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 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 burns.
- Do not connect more than one electrode or work cable to any single weld output terminal. Disconnect cable for process not in use.

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 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 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.
- 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.

NCYLINDERS 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 correctly 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.
- 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.

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 containers that have held combustibles, or on closed containers such as tanks, drums, or pipes unless they are properly prepared according to AWS F4.1 and AWS A6.0 (see Safety Standards).
- Do not weld where the atmosphere may contain flammable dust, gas, or liquid vapors (such as gasoline).
- Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock, sparks, and fire hazards.
- Do not use welder to thaw frozen pipes.

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.

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

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

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

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

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

**STATIC (ESD) can damage PC boards.**
- Put on grounded wrist strap BEFORE handling boards or parts.
- Use proper static-proof bags and boxes to store, move, or ship PC boards.

**MOVING PARTS can injure.**
- Keep away from moving parts.
- Keep away from pinch points such as drive rolls.

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

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

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

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

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

**ARC WELDING can cause interference.**
- Electromagnetic energy can interfere with sensitive electronic equipment such as computers and computer-driven equipment such as robots.
- Be sure all equipment in the welding area is electromagnetically compatible.
- To reduce possible interference, keep weld cables as short as possible, close together, and down low, such as on the floor.
- Locate welding operation 100 meters from any sensitive electronic equipment.
- Be sure this welding machine is installed and grounded according to this manual.
- If interference still occurs, the user must take extra measures such as moving the welding machine, using shielded cables, using line filters, or shielding the work area.
1-4. California Proposition 65 Warnings

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

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

1-5. Principal Safety Standards


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, 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 – CONSIGNES DE SÉCURITÉ – LIRE AVANT UTILISATION

Pour écarter les risques de blessure pour vous–même et pour autrui — lire, appliquer et ranger en lieu sûr ces consignes relatives aux précautions de sécurité et au mode opératoire.

2-1. Symboles utilisés

DANGER! – Indique une situation dangereuse qui si on l’évite pas peut donner la mort ou des blessures graves. Les dangers possibles sont montrés par les symboles joints ou sont expliqués dans le texte.

Indique une situation dangereuse qui si on l’évite pas peut donner la mort ou des blessures graves. Les dangers possibles sont montrés par les symboles joints ou sont expliqués dans le texte.

NOTE – Indique des déclarations pas en relation avec des blessures personnelles.

2-2. Dangers relatifs au soudage à l’arc

Les symboles représentés ci-dessous sont utilisés dans ce manuel pour attirer l’attention et identifier les dangers possibles. En présence de l’un de ces symboles, prendre garde et suivre les instructions afférentes pour éviter tout risque. Les instructions en matière de sécurité indiquées ci-dessous ne constituent qu’un sommaire des instructions de sécurité plus complètes fournies dans les normes de sécurité énumérées dans la Section 2-5. Lire et observer toutes les normes de sécurité.

Seul un personnel qualifié est autorisé à installer, faire fonctionner, entretenir et réparer cet appareil.

Pendant le fonctionnement, maintenir à distance toutes les personnes, notamment les enfants de l’appareil.

UNE DÉCHARGE ÉLECTRIQUE peut entraîner la mort.

Le contact d’organes électriques sous tension peut provoquer des accidents mortels ou des brûlures graves. Le circuit de l’électrode et de la pièce est sous tension lorsque le courant est délivré à la sortie. Le circuit d’alimentation et les circuits internes de la machine sont également sous tension lorsque l’alimentation est sur Marche. Dans le mode de soudage avec du fil, le fil, le dérouleur, le bloc de commande du rouleau et toutes les parties métalliques en contact avec le fil sont sous tension électrique. Un équipement installé ou mis à la terre de manière incorrecte ou impropre constitue un danger.

• Ne pas toucher aux pièces électriques sous tension.
• Porter des gants isolants et des vêtements de protection secs et sans trous.
• S’isoler de la pièce à couper et du sol en utilisant des housses ou des tapis assez grands afin d’éviter tout contact physique avec la pièce à couper ou le sol.
• Ne pas servir de source électrique à courant électrique dans les zones humides, dans les endroits confinés ou là où on risque de tomber.
• Se servir d’une source électrique à courant électrique UNIQUEMENT si le procédé de soudage le demande.
• Si l’utilisation d’une source électrique à courant électrique s’avère nécessaire, se servir de la fonction de télécommande si l’appareil en est équipé.
• D’autres consignes de sécurité sont nécessaires dans les conditions suivantes : risques électriques dans un environnement humide ou si l’on porte des vêtements mouillés ; sur des structures métalliques telles que sols, grilles ou échafaudages ; en position coincée comme assise, à genoux ou couchée ; ou s’il y a un risque élevé de contact inévitable ou accidentel avec la pièce à souder ou le sol. Dans ces conditions, utiliser les équipements suivants, dans l’ordre indiqué : 1) un poste à souder DC à tension constante (à fil), 2) un poste à souder DC manuel (électrode) ou 3) un poste à souder AC à tension à vide réduite. Dans la plupart des situations, l’utilisation d’un poste à souder DC à fil à tension constante est recommandée. En outre, ne pas travailler seul !
• Installez, mettez à la terre et utilisez correctement cet équipement conformément à son Manuel d’Utilisation et aux réglementations nationales, gouvernementales et locales.
• Toujours vérifier la terre du cordon d’alimentation. Vérifier et s’assurer que le fil de terre du cordon d’alimentation est bien raccordé à la borne de terre du sectionneur ou que la fiche du cordon est raccordée à une prise correctement mise à la terre.
• En effectuant les raccordements d’entrée, fixer d’abord le conducteur de mise à la terre approprié et contre-vérifier les connexions.
• Les câbles doivent être exempts d’humidité, d’huile et de graisse ; protégez−les contre les étincelles et les pièces métalliques chaudes.
• Vérifier fréquemment le cordon d’alimentation afin de s’assurer qu’il n’est pas altéré ou à nu, le remplacer immédiatement s’il l’est.
• Ne pas travailler dans le courant électrique.
• Ne pas toucher le fil à nu ou peut entraîner la mort.
• L’équipement doit être hors tension lorsqu’il n’est pas utilisé.
• Ne pas utiliser des câbles usés, endommagés, de grosseur insuffisante ou mal épissés.
• Ne pas enrouler les câbles autour du corps.
• Si la pièce soudée doit être mise à la terre, le faire directement avec un câble distinct.
• Ne pas toucher l’électrode quand on est en contact avec la pièce, la terre ou une électricité provenant d’une autre machine.
• Ne pas toucher des portes électrodes connectés à deux machines en même temps à cause de la présence d’une tension à vide doublée.
• N’utiliser qu’un matériel en bon état. Réparer ou remplacer sur-le-champ les pièces endommagées. Entretenir l’appareil conformément à ce manuel.
• Porter un harnais de sécurité si l’on doit travailler au-dessus du sol.
• S’assurer que tous les panneaux et couvercles sont correctement en place.
• Fixer le câble de retour de façon à obtenir un bon contact métal-métal avec la pièce à souder ou la table de travail, le plus près possible de la soudure.
• Isoler la pince de masse quand pas mis à la pièce pour éviter le contact avec tout objet métallique.
• Ne pas raccorder plus d’une électrode ou plus d’un câble de masse à une même borne de sortie de soudage. Débrancher le câble pour le procédé non utilisé.
Il reste une TENSION DC NON NÉGLIGÉABLE dans les sources de soudage onduleur UNE FOIS l’alimentation coupée.

- Arrêter les convertisseurs, débrancher le courant électrique et décharger les condensateurs d’alimentation selon les instructions indiquées dans la partie Entretien avant de toucher les pièces.

**LES PIÈCES CHAUDES peuvent provoquer des brûlures.**

- Ne pas toucher à mains nues les parties chaudes.
- Prévoir une période de refroidissement avant de travailler à l’équipement.
- Ne pas toucher aux pièces chaudes, utiliser les outils recommandés et porter des gants de soudage et des vêtements épais pour éviter les brûlures.

**LES FUMÉES ET LES GAZ peuvent être dangereux.**

Le soudage génère des fumées et des gaz. Leur inhalation peut être dangereuse pour votre santé.

- Eloigner votre tête des fumées. Ne pas respirer les fumées.
- À l’intérieur, ventiler la zone et/ou utiliser une ventilation forcée au niveau de l’arc pour l’évacuation des fumées et des gaz de soudage.
- Si la ventilation est médiocre, porter un respirateur anti-vapeurs approuvé.
- Lire et comprendre les spécifications de sécurité des matériaux (MSDS) et les instructions du fabricant concernant les métaux, les consommables, les revêtements, les nettoyants et les dégraissants.
- Travailler dans un espace fermé seulement s’il est bien ventilé ou en portant un respirateur à alimentation d’air. Demander toujours à un surveillant dûment formé de se tenir à proximité. Des fumées et des gaz de soudage peuvent déplacer l’air et abaisser le niveau d’oxygène provoquant des blessures ou des accidents mortels. S’assurer que l’air de respiration ne présente aucun danger.
- Ne pas souder dans des endroits situés à proximité d’opérations de dégraissage, de nettoyage ou de pulvérisation. La chaleur et les rayons de l’arc peuvent réagir en présence de vapeurs et former des gaz hautement toxiques et irritants.
- Ne pas souder des métaux munis d’un revêtement, tels que l’acier galvanisé, plaqué en plomb ou au cadmium à moins que le revêtement n’ait été enlevé dans la zone de soudure, que l’endroit soit bien ventilé, et en portant un respirateur à alimentation d’air. Les revêtements et tous les métaux renfermant ces éléments peuvent dégager des fumées toxiques en cas de soudage.

**LES RAYONS DE L’ARC peuvent provoquer des brûlures dans les yeux et sur la peau.**

Le rayonnement de l’arc du procédé de soudage génère des rayons visibles et invisibles intenses (ultraviolets et infrarouges) susceptibles de provoquer des brûlures dans les yeux et sur la peau. Des étincelles sont projetées pendant la soudage.

- Porter un casque de soudage approuvé muni de verres filtrants approprié pour protéger visage et yeux pour protéger votre visage et vos yeux pendant le soudage ou pour regarder (voir ANSI Z49.1 et Z87.1 énuméré dans les normes de sécurité).
- Porter des lunettes de sécurité avec écrans latéraux même sous votre casque.
- Avoir recours à des écrans protecteurs ou à des rideaux pour protéger les autres contre les rayonnements les éblouissements et les étincelles ; prévenir toute personne sur les lieux de ne pas regarder l’arc.
- Porter des vêtements confectionnés avec des matières résistantes et ignifuges (coton, coton lourd ou laine) et des bottes de protection.

**LES PIECES DE METAL ou DES SALETES peuvent provoquer des blessures dans les yeux.**

- Le soudage, l’écaillage, le passage de la pièce à la brosse en fil de fer, et le meulage génèrent des étincelles et des particules métalliques volantes. Pendant la période de refroidissement des soudures, elles risquent de projeter du laitier.
- Porter des lunettes de sécurité avec écrans latéraux ou un écran facial.
2-3. Dangers supplémentaires en relation avec l’installation, le fonctionnement et la maintenance

**Les accumulations de gaz risquent de provoquer des blessures ou même la mort.**

- Fermer l’alimentation du gaz comprimé en cas de non utilisation.
- Veiller toujours à bien aérer les espaces confinés ou se servir d’un respirateur d’adduction d’air homologué.

**Les champs électromagnétiques (CEM) peuvent affecter les implants médicaux.**

- Les porteurs de stimulateurs cardiaques et autres implants médicaux doivent rester à distance.
- Les porteurs d’implants médicaux doivent consulter leur médecin et le fabricant du dispositif avant de s’approcher de la zone où se déroule du soudage à l’arc, du soudage par points, du gougeage, de la découpe plasma ou une opération de chauffage par induction.

**Le bruit peut endommager l’ouïe.**

Le bruit des processus et des équipements peut affecter l’ouïe.
- Porter des protections approuvées pour les oreilles si le niveau sonore est trop élevé.

**Les bouteilles peuvent exploser si elles sont endommagées.**

Les bouteilles de gaz comprimé contiennent du gaz sous haute pression. Si une bouteille est endommagée, elle peut exploser. Du fait que les bouteilles de gaz font normalement partie du procédé de soudage, les manipuler avec précaution.
- Protéger les bouteilles de gaz comprimé d’une chaleur excessive, des chocs mécaniques, des dommages physiques, du laitier, des flammes ouvertes, des étincelles et des arcs.
- Placer les bouteilles debout en les fixant dans un support stationnaire ou dans un porte-bouteilles pour les empêcher de tomber ou de se renverser.
- Tenir les bouteilles éloignées des circuits de soudage ou autres circuits électriques.
- Ne jamais placer une torche de soudage sur une bouteille à gaz.
- Une électrode de soudage ne doit jamais entrer en contact avec une bouteille.
- Ne jamais souder une bouteille pressurisée – risque d’explosion.
- Utiliser seulement des bouteilles de gaz comprimé, régulateurs, tuyaux et raccords convenables pour cette application spécifique; les maintenir ainsi que les éléments associés en bon état.
- Détourner votre visage du détendeur-régulateur lorsque vous ouvrez la soupape de la bouteille.
- Le couvercle du détendeur doit toujours être en place, sauf lorsque la bouteille est utilisée ou qu’elle est reliée pour usage ultérieur.
- Utiliser les équipements corrects, les bonnes procédures et suffisamment de personnes pour soulever et déplacer les bouteilles.
- Lire et suivre les instructions sur les bouteilles de gaz comprimé, l’équipement connexe et le dépliant P-1 de la CGA (Compressed Gas Association) mentionné dans les principales normes de sécurité.

**Risque d’incendie ou d’explosion.**

- Ne pas placer l’appareil sur, au-dessus ou à proximité de surfaces inflamables.
- Ne pas installer l’appareil à proximité de produits inflammables.
- Ne pas surcharger l’installation électrique – s’assurer que l’alimentation est correctement dimensionnée et protégée avant de mettre l’appareil en service.

**La chute de l’équipement peut provoquer des blessures.**

- Utiliser l’anneau de levage uniquement pour soulever l’appareil, NON PAS les chariots, les bouteilles de gaz ou tout autre accessoire.
- Utiliser un équipement de levage de capacité suffisante pour lever l’appareil.
- En utilisant des fourches de levage pour déplacer l’unité, s’assurer que les fourches sont suffisamment longues pour dépasser du côté opposé de l’appareil.
- Tenir l’équipement (câbles et cordons) à distance des véhicules mobiles lors de toute opération en hauteur.
- Suivre les consignes du Manuel des applications pour l’équation de levage NIOSH révisée (Publication Nº94–110) lors du levage manuel de pièces ou équipements lourds.

**L’emploi excessif peut surchauffer l’équipement.**

- Prévoir une période de refroidissement ; respecter le cycle opératoire nominal.
- Réduire le courant ou le facteur de marche pour respecter la durée de vie de la torche.
- Prévoir une période de refroidissement ; respecter la durée de vie de la torche.
- Ne pas obstruer les passages d’air du poste.

**Les étincelles projetées peuvent provoquer des blessures.**

- Porter un écran facial pour protéger le visage et les yeux.
- Affûter l’électrode au tungstène uniquement à la meuleuse dotée de protecteurs. Cette manœuvre est à exécuter dans un endroit sûr lorsque l’on porte l’équipement homologué de protection du visage, des mains et du corps.
- Les étincelles risquent de causer un incendie – éloigner toute substance inflammable.

**Les charges électrostatisques peuvent endommager les circuits imprimés.**

- Établir la connexion avec la barrette de terre avant de manipuler des cartes ou des pièces.
- Utiliser des pochettes et des boîtes antistatiques pour stocker, déplacer ou expédier des cartes de circuits imprimés.
Les PIÈCES MOBILES peuvent causer des blessures.
- Ne pas s’approcher des organes mobiles.
- Ne pas s’approcher des points de coinement tels que des rouleaux de commande.

LES FILS DE SOUDAGE peuvent provoquer des blessures.
- Ne pas appuyer sur la gâchette avant d’en avoir reçu l’instruction.
- Ne pas diriger le pistolet vers soi, d’autres personnes ou toute pièce mécanique en engageant le fil de soudage.

L’EXPLOSION DE LA BATTERIE peut provoquer des blessures.
- Ne pas utiliser l’appareil de soudage pour charger des batteries ou faire démarrer des véhicules à l’aide de câbles de démarrage, sauf si l’appareil dispose d’une fonctionnalité de charge de batterie destinée à cet usage.

Les PIÈCES MOBILES peuvent causer des blessures.
- S’abstenir de toucher des organes mobiles tels que des ventilateurs.
- Maintenir fermés et verrouillés les portes, panneaux, recouvrements et dispositifs de protection.
- Lorsque cela est nécessaire pour des travaux d’entretien et de dépannage, faire retirer les portes, panneaux, recouvrements ou dispositifs de protection uniquement par du personnel qualifié.
- Remettre les portes, panneaux, recouvrements ou dispositifs de protection quand l’entretien est terminé et avant de rebrancher l’alimentation électrique.

LIRE LES INSTRUCTIONS.
- N’utiliser que les pièces de rechange recommandées par le constructeur.
- Effectuer l’entretien en respectant les manuels d’utilisation, les normes industrielles et les codes nationaux, d’état et locaux.

2-4. Proposition californienne 65 Avertissements

Les équipements de soudage et de coupage produisent des fumées et des gaz qui contiennent des produits chimiques dont l’État de Californie reconnaît qu’ils provoquent des malformations congénitales et, dans certains cas, des cancers. (Code de santé et de sécurité de Californie, chapitre 25249.5 et suivants)

CE PRODUIT CONTIENT DES PRODUITS CHIMIQUES, NOTAMMENT DU PLOMB, DONT L’ÉTAT DE CALIFORNE RECONNAÎT QU’ILS PROVOQUENT DES CANCERS, DES MALFORMATIONS CONGÉNITALES OU D’AUTRES PROBLÈMES DE PROCRÉATION. SE LAVER LES MAINS APRÈS UTILISATION.
2-5. Principales normes de sécurité


2-6. Informations relatives aux CEM

Le courant électrique qui traverse tout conducteur génère des champs électromagnétiques (CEM) à certains endroits. Le courant de soudage crée un CEM autour du circuit et du matériel de soudage. Les CEM peuvent créer des interférences avec certains implants médicaux comme des stimulateurs cardiaques. Des mesures de protection pour les porteurs d’implants médicaux doivent être prises: Limiter par exemple tout accès aux passants ou procéder à une évaluation des risques individuels pour les soudeurs. Tous les soudeurs doivent appliquer les procédures suivantes pour minimiser l’exposition aux CEM provenant du circuit de soudage:

1. Rassembler les câbles en les torsadant ou en les attachant avec du ruban adhésif ou avec une housse.
2. Ne pas se tenir au milieu des câbles de soudage. Disposer les câbles d’un côté et à distance de l’opérateur.
3. Ne pas courber et ne pas entourer les câbles autour de votre corps.
4. Maintenir la tête et le torse aussi loin que possible du matériel du circuit de soudage.
5. Connecter la pince sur la pièce aussi près que possible de la soudeure.
6. Ne pas travailler à proximité d’une source de soudage, ni s’asseoir ou se pencher dessus.
7. Ne pas souder tout en portant la source de soudage ou le dévidoir.

En ce qui concerne les implants médicaux :

Les porteurs d’implants doivent d’abord consulter leur médecin avant de s’approcher des opérations de soudage à l’arc, de soudage par points, de gougeage, du coupage plasma ou de chauffage par induction. Si le médecin approuve, il est recommandé de suivre les procédures précé dentes.
### 3-1. Additional Safety Symbols And Definitions

Some symbols are found only on CE products.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Warning Icon]</td>
<td>Warning! Watch Out! There are possible hazards as shown by the symbols. Safe1 2012−05</td>
</tr>
<tr>
<td>![Gloves Icon]</td>
<td>Wear dry insulating gloves. Do not touch electrode with bare hand. Do not wear wet or damaged gloves. Safe2 2012−05</td>
</tr>
<tr>
<td>![Insulate Icon]</td>
<td>Protect yourself from electric shock by insulating yourself from work and ground. Safe3 2012−05</td>
</tr>
<tr>
<td>![Disconnect Icon]</td>
<td>Disconnect input plug or power before working on machine. Safe5 2012−05</td>
</tr>
<tr>
<td>![Fumes Icon]</td>
<td>Keep your head out of the fumes. Safe6 2012−05</td>
</tr>
<tr>
<td>![Ventilation Icon]</td>
<td>Use forced ventilation or local exhaust to remove the fumes. Safe8 2012−05</td>
</tr>
<tr>
<td>![Ventilating Fan Icon]</td>
<td>Use ventilating fan to remove fumes. Safe10 2012−05</td>
</tr>
<tr>
<td>![Flammables Icon]</td>
<td>Keep flammables away from welding. Do not weld near flammables. Safe12 2012−05</td>
</tr>
<tr>
<td>![Welding Sparks Icon]</td>
<td>Welding sparks can cause fires. Have a fire extinguisher nearby, and have a watchperson ready to use it. Safe14 2012−05</td>
</tr>
<tr>
<td>![Drums Icon]</td>
<td>Do not weld on drums or any closed containers. Safe16 2012−05</td>
</tr>
</tbody>
</table>
Do not remove or paint over (cover) the label.

Safe20 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

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

3-2. Miscellaneous Symbols And Definitions

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Amperes</td>
</tr>
<tr>
<td>V</td>
<td>Volts</td>
</tr>
<tr>
<td>S</td>
<td>Suitable For Areas Of Increased Shock Hazard</td>
</tr>
<tr>
<td></td>
<td>Shielded Metal Arc Welding (SMAW)</td>
</tr>
<tr>
<td></td>
<td>Single Phase Static Frequency Converter-Transformer-Rectifier</td>
</tr>
<tr>
<td></td>
<td>Output</td>
</tr>
<tr>
<td></td>
<td>Negative</td>
</tr>
<tr>
<td></td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td>Hz</td>
</tr>
<tr>
<td></td>
<td>Gas Input</td>
</tr>
<tr>
<td></td>
<td>High Temperature</td>
</tr>
<tr>
<td></td>
<td>Direct Current</td>
</tr>
<tr>
<td></td>
<td>Line Connection</td>
</tr>
<tr>
<td></td>
<td>Percent</td>
</tr>
<tr>
<td></td>
<td>Duty Cycle</td>
</tr>
<tr>
<td></td>
<td>U1</td>
</tr>
<tr>
<td></td>
<td>U2</td>
</tr>
<tr>
<td></td>
<td>Alternating Current</td>
</tr>
<tr>
<td></td>
<td>U0</td>
</tr>
<tr>
<td></td>
<td>I1max</td>
</tr>
<tr>
<td></td>
<td>I2</td>
</tr>
<tr>
<td></td>
<td>I1eff</td>
</tr>
<tr>
<td></td>
<td>Remote</td>
</tr>
<tr>
<td></td>
<td>Lift-Arc Start (GTAW)</td>
</tr>
<tr>
<td></td>
<td>Lift-Arc Start (GTAW)</td>
</tr>
<tr>
<td></td>
<td>Gas Tungsten Arc Welding (GTAW)</td>
</tr>
<tr>
<td></td>
<td>Process</td>
</tr>
<tr>
<td></td>
<td>TIG (GTAW) Pulse</td>
</tr>
<tr>
<td></td>
<td>HF Impulse Starting (GTAW)</td>
</tr>
<tr>
<td></td>
<td>On</td>
</tr>
<tr>
<td></td>
<td>Off</td>
</tr>
<tr>
<td></td>
<td>Look under unit for label</td>
</tr>
</tbody>
</table>
SECTION 4 – SPECIFICATIONS AND INSTALLATION

4-1. 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 can 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.

4-2. 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.

4-3. Selecting A Location

- 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.

Locate unit near correct input power supply. Position unit so air can circulate.
### 4-4. Specifications

<table>
<thead>
<tr>
<th>Input Power</th>
<th>Rated Welding Output</th>
<th>IP Rating</th>
<th>Welding Amperage Range</th>
<th>Max OCV DC (Uo)</th>
<th>Rated Peak Starting Voltage (Up)</th>
<th>Amperes Input At Rated Load Output, 50/60Hz, Single-Phase</th>
<th>KVA @ Duty Cycle</th>
<th>KW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Phase AC</td>
<td>115 Volts Stick 15A</td>
<td>70A @ 22.8 Volts DC, 100% Duty Cycle</td>
<td>23</td>
<td>20 – 70A</td>
<td>90V</td>
<td>**15 KV</td>
<td>17.4</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>115 Volts TIG 15A</td>
<td>100A @ 14 Volts DC, 100% Duty Cycle</td>
<td>23</td>
<td>5 – 100A</td>
<td>90V</td>
<td>**15 KV</td>
<td>18.4</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td>115 Volts Stick 20A</td>
<td>70A @ 22.8 Volts DC, 100% Duty Cycle</td>
<td>23</td>
<td>20 – 100A</td>
<td>90V</td>
<td>**15 KV</td>
<td>17.4</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100A @ 24.0 Volts DC, 35% Duty Cycle</td>
<td>23</td>
<td></td>
<td></td>
<td>**15 KV</td>
<td>26.4</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>115 Volts TIG 20A</td>
<td>100A @ 14.0 Volts DC, 100% Duty Cycle</td>
<td>23</td>
<td>5 – 150A</td>
<td>90V</td>
<td>**15 KV</td>
<td>18.4</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150A @ 16.0 Volts DC, 30% Duty Cycle</td>
<td>23</td>
<td></td>
<td></td>
<td>**15 KV</td>
<td>28.0</td>
<td>3.4</td>
</tr>
<tr>
<td></td>
<td>230 Volts Stick</td>
<td>100A @ 24 Volts DC, 100% Duty Cycle</td>
<td>23</td>
<td>20 – 150A</td>
<td>90V</td>
<td>**15 KV</td>
<td>13.1</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150A @ 26.0 Volts DC, 30% Duty Cycle</td>
<td>23</td>
<td></td>
<td></td>
<td>**15 KV</td>
<td>21.6</td>
<td>4.9</td>
</tr>
<tr>
<td></td>
<td>230 Volts TIG</td>
<td>100A @ 14.0 Volts DC, 100% Duty Cycle</td>
<td>23</td>
<td>5 – 150A</td>
<td>90V</td>
<td>**15 KV</td>
<td>8.3</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150A @ 16.0 Volts DC, 30% Duty Cycle</td>
<td>23</td>
<td></td>
<td></td>
<td>**15 KV</td>
<td>14.2</td>
<td>3.2</td>
</tr>
</tbody>
</table>

**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

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### 4-5. 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, the Overtemperature Light comes On, and the cooling fan runs. Wait fifteen minutes for unit to cool. Reduce amperage or duty cycle before starting to weld again.

**NOTICE** - Exceeding duty cycle can damage unit and void warranty.
### 4-6. Volt-Ampere Curves

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

![Volt-Ampere Curves Diagram]

### 4-7. Remote 6 Receptacle Information (STL And STH Models Only)

<table>
<thead>
<tr>
<th>Socket</th>
<th>Socket Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Contactor control +13.8 volts DC.</td>
</tr>
<tr>
<td>2</td>
<td>Contact closure to 1 completes contactor control circuit and enables output when Lift-Arc TIG remote is selected.</td>
</tr>
<tr>
<td>3</td>
<td>Output to remote control; +10 volts DC output to remote control.</td>
</tr>
<tr>
<td>4</td>
<td>0 to +10 volts DC input command signal from remote control.</td>
</tr>
<tr>
<td>5</td>
<td>Remote control circuit common.</td>
</tr>
<tr>
<td>6</td>
<td>Chassis common.</td>
</tr>
</tbody>
</table>
4-8. Electrical Service Guide

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 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.

<table>
<thead>
<tr>
<th>Input Voltage (V)</th>
<th>50/60 Hz Single Phase</th>
<th>115 Volts AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Amperes (A) At Rated Output</td>
<td>13.1</td>
<td></td>
</tr>
<tr>
<td>Max Recommended Standard Fuse Rating In Amperes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time-Delay Fuses</td>
<td>15</td>
<td>A 15 or 20 ampere individual branch circuit protected by time-delay fuses or circuit breaker is required. See Section 4-10</td>
</tr>
<tr>
<td>Normal Operating Fuses</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Min Input Conductor Size In AWG</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Max Recommended Input Conductor Length In Feet (Meters)</td>
<td>91 (28)</td>
<td></td>
</tr>
<tr>
<td>Min Grounding Conductor Size In AWG</td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

Reference: 2011 National Electrical Code (NEC) (including article 630)

1 If a circuit breaker is used in place of a fuse, choose a circuit breaker with time-current curves comparable to the recommended fuse.
2 “Time-Delay” fuses are UL class “RK5”. See UL 248.
3 “Normal Operating” (general purpose - no intentional delay) fuses are UL class “K5” (up to and including 60 amps), and UL class “H” (65 amps and above).
4 Conductor data in this section specifies conductor size (excluding flexible cord or cable) between the panelboard and the equipment per NEC Table 310.15(B)(16). If a flexible cord or cable is used, minimum conductor size may increase. See NEC Table 400.5(A) for flexible cord and cable requirements.

4-9. Selecting Extension Cord (Use Shortest Cord Possible)

<table>
<thead>
<tr>
<th>Single Phase AC Input Voltage</th>
<th>4 (21.2)</th>
<th>6 (13.3)</th>
<th>8 (8.4)</th>
<th>10 (5.3)</th>
<th>12 (3.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>115</td>
<td>160 (49)</td>
<td>107 (33)</td>
<td>71 (22)</td>
<td>47 (14)</td>
<td>29 (9)</td>
</tr>
<tr>
<td>230</td>
<td>471 (144)</td>
<td>321 (98)</td>
<td>215 (66)</td>
<td>146 (45)</td>
<td>90 (27)</td>
</tr>
</tbody>
</table>

*Conductor size is based on maximum 3% voltage drop
4-10. Connecting 115 VAC Input Power

- **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 4-11.

1. Power Cord
2. Multi-Voltage Plug And Power Cord Connector – NEMA Type 5–15P
3. Receptacle – NEMA Type 5–15R (Customer Supplied)

For multi-voltage plug connections, see Section 4-12.

Connect plug to receptacle.
4-11. Connecting 1-Phase Input Power For 230 VAC

Tools Needed:

A complete Parts List is available at www.MillerWelds.com
4-11. Connecting 1-Phase Input Power For 230 VAC (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.

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

See rating label on unit and check input voltage available at site.

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.

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 4-8 (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.

9 Multi-Voltage Plug And Power Cord Connector (NEMA 6-50P Plug Shown)

For multi-voltage plug connections, see Section 4-12.

Connect plug to receptacle.
4-12. Multi−Voltage Plug (MVP) Connection

Selecting Plug

1. Power Cord Connector From Welding Power Source
   Select plug for power supply receptacle available at site. Not all plugs shown are provided as standard with unit.

2. Plug – NEMA Type 5−15P
3. Receptacle – NEMA Type 5−15R (Customer Supplied)

4. Plug – NEMA Type 5−20P (Optional)
5. Receptacle – NEMA Type 5−20R (Customer Supplied)
6. Plug – NEMA Type 6−50P
7. Receptacle – NEMA Type 6−50R (Customer Supplied)

! Follow electrical service guide for 230 VAC in Section 4-8. Do not use plug rating to size branch circuit protection.

Connecting Plug To Power Cord

Align arrow on plug with arrow on power cord connector. Push together.

Tighten threaded collar. As threaded collar is tightened, push plug onto adapter until collar is completely tight.

Connect plug to receptacle.
SECTION 5 – OPERATION

5-1. Front Panel Controls And Gas Connection

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 5-3.

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.

5-2. Process Selection (STL Model Only)

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 5-4).

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 4-7) is required to initiate an arc.
5-3. Process Selection (STH Model Only)

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

2. TIG Impulse Start
   When selected, an impulse HF arc starting method is activated (see Section 5-4).

3. 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 5-5.

4. TIG Pulse With Lift-Arc Start
   When selected, the TIG pulse welding process with Lift-Arc start is activated (see Section 5-4).

5. 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 5-4).

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

---

5-4. Lift-Arc And TIG Impulse Start Procedures

Lift-Arc Start
1. TIG Electrode
2. Workpiece
   Touch tungsten electrode to workpiece, hold for 1-2 seconds, slowly lift electrode, and an arc forms.
   Open-circuit voltage may be 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.

---

\* Pictorials show Lift-Arc start method – do not use this method for TIG Impulse starts.
For additional welding information and resources, visit: www.MillerWelds.com/resources/improving-your-skills
5-5. Set-Up Procedure For The TIG Process And Restoring Factory Default Settings (STH Model Only)

**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 5-4), 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.

**Standard**

*Press & Hold To Scroll Between Features*
Release At Desired Feature.

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 6 – MAINTENANCE AND TROUBLESHOOTING

6-1. Routine Maintenance

Preventive Maintenance Checklist

- Disconnect power before maintaining.
- Maintain more often during severe conditions.

<table>
<thead>
<tr>
<th>Task</th>
<th>Frequency</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labels</td>
<td>Every 3 Months</td>
<td>Repair</td>
</tr>
<tr>
<td>Gas Hoses</td>
<td>Every 3 Months</td>
<td>Replace</td>
</tr>
<tr>
<td>Cables And Cords</td>
<td>Every 6 Months</td>
<td>Repair</td>
</tr>
</tbody>
</table>

- During heavy service, clean monthly.

6-2. Overload Protection

- Supplementary Protector CB1
  - CB1 protects unit from overload. If CB1 opens, unit shuts down.
  - Reset supplementary protector.
6-3. Troubleshooting

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>No weld output; unit completely inoperative; ready light (LED) Off.</td>
<td>Place line disconnect switch in On position.</td>
</tr>
<tr>
<td></td>
<td>Check and replace line fuse(s), if necessary, or reset circuit breaker.</td>
</tr>
<tr>
<td></td>
<td>Be sure power cord is plugged in and that receptacle is receiving input power.</td>
</tr>
<tr>
<td>No weld output; ready light (LED) On.</td>
<td>Check and secure loose weld cable(s) into receptacle(s).</td>
</tr>
<tr>
<td>No weld output; high temperature light (LED) On.</td>
<td>Check and correct poor connection of work clamp to workpiece.</td>
</tr>
<tr>
<td>No weld output; high temperature light (LED) On.</td>
<td>Unit overheated causing thermal shutdown. Allow unit to cool with fan On (see Section 4-5).</td>
</tr>
<tr>
<td></td>
<td>Reduce duty cycle or amperage.</td>
</tr>
<tr>
<td></td>
<td>Check and correct blocked/poor airflow to unit (see Section 4-10).</td>
</tr>
<tr>
<td>No weld output; Blue light (LED) flashes continuously, yellow light (LED) off.</td>
<td>Turn Power Off and back On again. If light continues to flash, check with Factory Authorized Service Agent.</td>
</tr>
<tr>
<td></td>
<td>Line voltage too high or too low. Line voltage must be within ±10%.</td>
</tr>
<tr>
<td>No weld output; high temperature light (LED) flashing.</td>
<td>Unit needs to reset. Cycle power off and back on. If problem is not corrected, contact Factory Authorized Service Agent.</td>
</tr>
<tr>
<td>No weld output. Blue light (LED) flashes 3 times repeatedly, yellow light (LED) off.</td>
<td>Remote trigger left on. Turn off remote trigger, wait five seconds, and restart operation.</td>
</tr>
<tr>
<td>No weld output. Blue light (LED) flashes 4 times repeatedly, yellow light (LED) off.</td>
<td>Use proper size and type of weld cable (see your Distributor).</td>
</tr>
<tr>
<td>Erratic or improper welding arc or output.</td>
<td>Clean and tighten weld connections.</td>
</tr>
<tr>
<td></td>
<td>Check and reverse polarity; check and correct poor connections to workpiece.</td>
</tr>
<tr>
<td>Fan not operating.</td>
<td>Unit not warmed up enough to require fan cooling.</td>
</tr>
<tr>
<td></td>
<td>Check for and remove anything blocking fan movement.</td>
</tr>
<tr>
<td></td>
<td>Have Factory Authorized Service Agent check fan motor and control circuitry.</td>
</tr>
<tr>
<td>Stick welding problems: Hard starts; poor welding characteristics; unusual spattering.</td>
<td>Use proper type and size of electrode.</td>
</tr>
<tr>
<td></td>
<td>Check and reverse electrode polarity; check and correct poor connections.</td>
</tr>
<tr>
<td></td>
<td>Make sure a remote control is not connected.</td>
</tr>
<tr>
<td>TIG welding problems: Wandering arc; hard starts; poor welding characteristics; spattering problems.</td>
<td>Use proper type and size of tungsten.</td>
</tr>
<tr>
<td></td>
<td>Use properly prepared tungsten.</td>
</tr>
<tr>
<td></td>
<td>Check and reverse electrode polarity.</td>
</tr>
<tr>
<td>TIG welding problems: Tungsten electrode oxidizing and not remaining bright after welding.</td>
<td>Shield weld zone from drafts.</td>
</tr>
<tr>
<td></td>
<td>Check for correct type shielding gas.</td>
</tr>
<tr>
<td></td>
<td>Check and tighten gas fittings.</td>
</tr>
<tr>
<td></td>
<td>Check and change electrode polarity.</td>
</tr>
</tbody>
</table>

SECTION 7 – PARTS LIST

A complete parts list is available at www.MillerWelds.com
Figure 8-1. Circuit Diagram For CE And Non CE Model Welding Power Source
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.

WARRANTY

Effective January 1, 2012

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, 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 SCR’s, 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 if 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/XT Plasma Cutting Torches (No Labor)
   * Induction Heating Power Sources, Coolers
     (NOTE: Digital Recorders are Warranted Separately by the Manufacturer.)
   * Load Banks
   * Motor Driven Guns (w/exception of Spoolmate Spoolguns)
   * PAPR Blower Unit (No Labor)
   * Positioners and Controllers
   * Relays
   * Running Gear/Trailers
   * Spot Welders
   * Subarc Wire Drive Assemblies
   * Water Coolant Systems (Non-Integrated)
   * Wildcraft-Branded TIG Torches (No Labor)
   * Wireless Remote Foot/Hand Controls and Receivers
   * Work Stations/Weld Tables (No Labor)

5. 6 Months — Parts
   * Batteries
   * Bernard Guns (No Labor)
   * Tregaskiss Guns (No Labor)

6. 90 Days — Parts
   * Accessories (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® Limited Warranty shall not apply to:

1. Consumable components; such as contact tips, cutting nozzles, contactors, brushes, relays, work station tables 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 request 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 PURCHASED 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.

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Serial/Style Number</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Purchase Date</th>
<th>(Date which equipment was delivered to original customer.)</th>
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</table>

<table>
<thead>
<tr>
<th>Distributor</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Address</th>
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</table>

<table>
<thead>
<tr>
<th>City</th>
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<table>
<thead>
<tr>
<th>State</th>
<th>Zip</th>
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</table>

## For Service

*Contact a DISTRIBUTOR or SERVICE AGENCY near you.*

Always provide Model Name and Serial/Style Number.

<table>
<thead>
<tr>
<th>Contact your Distributor for:</th>
<th>Welding Supplies and Consumables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Options and Accessories</td>
</tr>
<tr>
<td></td>
<td>Personal Safety Equipment</td>
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<tr>
<td></td>
<td>Service and Repair</td>
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<tr>
<td></td>
<td>Replacement Parts</td>
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<tr>
<td></td>
<td>Training (Schools, Videos, Books)</td>
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<tr>
<td></td>
<td>Technical Manuals (Servicing Information and Parts)</td>
</tr>
<tr>
<td></td>
<td>Circuit Diagrams</td>
</tr>
<tr>
<td></td>
<td>Welding Process Handbooks</td>
</tr>
</tbody>
</table>

To locate a Distributor or Service Agency visit www.millerwelds.com or call 1-800-4-A-Miller

<table>
<thead>
<tr>
<th>Contact the Delivering Carrier to:</th>
<th>File a claim for loss or damage during shipment.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For assistance in filing or settling claims, contact your distributor and/or equipment manufacturer's Transportation Department.</td>
</tr>
</tbody>
</table>