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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**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>
<tr>
<th>Product</th>
<th>Stock Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension 650 380/400V CE</td>
<td>907618</td>
</tr>
</tbody>
</table>

Council Directives:
- 2014/35/EU Low voltage
- 2014/30/EU Electromagnetic compatibility
- 2011/65/EU Restriction of the use of certain hazardous substances in electrical and electronic equipment

Standards:
- IEC 60974-1:2012 Arc welding equipment – Part 1: Welding power sources

Signatory:

David A. Werba
Manager, Product Design Compliance

Date of Declaration: April 6, 2017
EMF DATA SHEET FOR ARC WELDING POWER SOURCE

Product/Apparatus Identification

<table>
<thead>
<tr>
<th>Product</th>
<th>Stock Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIMENSION 650 380/400V 50/60HZ CE</td>
<td>907618</td>
</tr>
</tbody>
</table>

Compliance Information Summary

Applicable regulation Directive 2014/35/EU

Intended use ☑ for occupational use ☐ for use by laymen

Non-thermal effects need to be considered for workplace assessment ☑ YES ☐ NO
Thermal effects need to be considered for workplace assessment ☐ YES ☑ NO

Data is based on maximum power source capability (valid unless firmware/hardware is changed)
Data is based on worst case setting/program (only valid until setting options/welding programs are changed)
Data is based on multiple settings/programs (only valid until setting options/welding programs are changed)

Occupational exposure is below the Exposure Limit Values (ELVs) for health effects at the standardized configurations ☑ YES ☐ NO
Occupational exposure is below the Exposure Limit Values (ELVs) for sensory effects at the standardized configurations ☐ n.a ☑ YES ☐ NO
Occupational exposure is below the Action Levels (ALs) at the standardized configurations ☐ n.a ☑ YES ☐ NO

EMF Data for Non-thermal Effects

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

<table>
<thead>
<tr>
<th>Head</th>
<th>Sensory Effects</th>
<th>Health Effects</th>
<th>Trunk</th>
<th>Limb (hand)</th>
<th>Limb (thigh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standardized distance</td>
<td>10 cm</td>
<td>10 cm</td>
<td>10 cm</td>
<td>3 cm</td>
<td>3 cm</td>
</tr>
<tr>
<td>ELV EI @ standardized distance</td>
<td>0.13</td>
<td>0.11</td>
<td>0.18</td>
<td>0.10</td>
<td>0.23</td>
</tr>
<tr>
<td>Required minimum distance</td>
<td>1 cm</td>
<td>1 cm</td>
<td>1 cm</td>
<td>1 cm</td>
<td>1 cm</td>
</tr>
</tbody>
</table>

Distance where all occupational ELV Exposure Indices fall below 0.20 (20%) 8 cm
Distance where all general public ELV Exposure Indices fall below 1.00 (100%) 163 cm

Tested by: Tony Samimi Date tested: 2016-02-15

275680-A
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.

For additional safety precautions, refer to the Safety Standards listed in Section 1-5. Read and follow all Safety Standards.

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 equipment. A qualified person is defined as one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated ability to solve or resolve problems relating to the subject matter, the work, or the project and has received safety training to recognize and avoid the hazards involved.

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

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

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

ARC RAYS can burn eyes and skin.

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

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

WELDING can cause fire or explosion.

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

- Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
- Do not weld where flying sparks can strike flammable material.
- Protect yourself and others from flying sparks and hot metal.
- Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
- Watch for fire, and keep a fire extinguisher nearby.
- Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.

- Do not cut or weld on tire rims or wheels. Tires can explode if heated. Repaired rims and wheels can fail. See OSHA 29 CFR 1910.177 listed in Safety Standards.
- Do not weld on containers that have held combustibles, or on closed containers such as tanks, drums, or pipes unless they are properly prepared according to AWS F4.1 and AWS A6.0 (see Safety Standards).
- Do not weld where the atmosphere can contain flammable dust, gas, or liquid vapors (such as gasoline).
- Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock, sparks, and fire hazards.
- Do not use welder to thaw frozen pipes.
- Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
- Wear body protection made from durable, flame–resistant material (leather, heavy cotton, wool). Body protection includes oil-free clothing such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.
- Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding.
- After completion of work, inspect area to ensure it is free of sparks, glowing embers, and flames.
- Use only correct fuses or circuit breakers. Do not oversize or bypass them.
- Follow requirements in OSHA 1910.252 (a) (2) (iv) and NFPA 51B for hot work and have a fire watcher and extinguisher nearby.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.

FLYING METAL or DIRT can injure eyes.

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

BUILDUP OF GAS can injure or kill.

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

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

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

NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

- Wear approved ear protection if noise level is high.
Compressed gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

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

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

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

WARNING: This product can expose you to chemicals including lead, which are known to the state of California to cause cancer and birth defects or other reproductive harm.

For more information, go to www.P65Warnings.ca.gov.

1-5. Principal Safety Standards


1-6. EMF Information

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

1. Keep cables close together by twisting or taping them, or using a cable cover.
2. Do not place your body between welding cables. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep head and trunk as far away from the equipment in the welding circuit as possible.
5. Connect work clamp to workpiece as close to the weld as possible.
6. Do not work next to, sit or lean on the welding power source.
7. Do not weld whilst carrying the welding power source or wire feeder.

About Implanted Medical Devices:
Implanted Medical Device wearers should consult their doctor and the device manufacturer before performing or going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating Operations. If cleared by your doctor, then following the above procedures is recommended.
SECTION 2 – CONSIGNES DE SÉCURITÉ – LIRE AVANT UTILISATION

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.

**AVIS** – Indique des déclarations pas en relation avec des blessures personnelles.

**□** Indique des instructions spécifiques.

Ce groupe de symboles veut dire Avertissement! Attention! DANGER DE CHOC ÉLECTRIQUE, PIECES EN MOUVEMENT, et PIECES CHAUDES. Consulter les symboles et les instructions ci-dessous y afférent pour les actions nécessaires afin d’éviter le danger.

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.

L’installation, l’utilisation, l’entretien et les réparations ne doivent être confiés qu’à des personnes qualifiées. Une personne qualifiée est définie comme celle qui, par la possession d’un diplôme reconnu, d’un certificat ou d’un statut professionnel, ou qui, par une connaissance, une formation et une expérience approfondies, a démontré avec succès sa capacité à résoudre les problèmes liés à la tâche, le travail ou le projet et a reçu une formation en sécurité afin de reconnaître et d’éviter les risques inhérents.

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 gros afin d’éviter tout contact physique avec la pièce à couper ou le sol.
- Ne pas utiliser de sortie de soudage CA dans des zones humides ou confinées ou s’il y a un risque de chute.
- 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 où l’on porte des vêtements mouillés ; sur des structures métalliques telles que sols, grilles ou échafaudages ; en position coïncide 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 !

- Installer, mettre à la terre et utiliser 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 graissage ; protégez−les contre les étincelles et les pièces métalliques chaude.
- Vérifier fréquemment le cordon d’alimentation et le conducteur de mise à la terre afin de s’assurer qu’il n’est pas altéré ou dénudé −. Un fil dénudé 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 soude 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 électrode provenant d’une autre machine.
- Ne pas toucher des portes électrodes connectées 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. Entretienner 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 fixés 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.
- Iso ler 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.
- Utiliser une protection différentielle lors de l’utilisation d’un équipement d’alimentation aux étourdis humides ou mouillés.

Il reste une TENSION DC NON NEGLIGEABLE dans les sources de soudage onduleur UNE FOIS l’alimentation coupée.

- Éteignez l’unité, débranchez le courant électrique, et déchargez les condensateurs d’alimentation selon les instructions indiquées dans le manuel 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. Il est nécessaire de prendre les mesures suivantes.
- 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. Pour déterminer la bonne ventilation, il est recommandé de procéder à un prélèvement pour la composition et la quantité de fumées et de gaz auxquelles est exposé le personnel.
- Si la ventilation est médiocre, porter un respirateur antivapeurs approfondi.
- Lire et comprendre les fiches de données de sécurité et les instructions du fabricant concernant les adhésifs, les revêtements, les nettoyants, les consommables, les produits de refroidissement, les dégraissateurs, les flux et les métaux.
- 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 déclencher 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. Les rayons de l’arc peuvent réagir en présence de vapeurs et former des gaz hautement toxiques et irritants. S’assurer que l’air de respiration ne présente aucun danger.
- Porter un casque de soudage approuvé muni de verres filtrants appropriés 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 ou un écran facial.
- 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 un équipement de protection pour le corps fait d’un matériau résistant et ignifuge (cuir, coton robuste, laine). La protection du corps comporte des vêtements sans huile comme par ex. des gants de cuir, une chemise solide, des pantalons sans revers, des chaussures hautes et une casquette.

LE SOUDAGE peut provoquer un incendie ou une explosion.
Le soudage effectué sur des conteneurs fermés tels que des réservoirs, tambours, ou conduites, à moins qu’ils n’aient été préparés correctement conformément à AWS F4.1 et AWS A6.0 (voir les Normes de Sécurité).
- Ne pas effectuer le soudage sur des conteneurs fermés tels que des réservoirs, tambours, ou conduites, à moins qu’ils n’aient été approuvés.
- Ne pas utiliser le poste de soudage pour dégeler des conduites gelées.
- En cas de non utilisation, enlever la baguette d’électrode du porte-electrode ou couper le fil à la pointe de contact.
- Porter un équipement de protection pour le corps fait d’un matériau résistant et ignifuge (cuir, coton robuste, laine). La protection du corps comporte des vêtements sans huile comme par ex. des gants de cuir, une chemise solide, des pantalons sans revers, des chaussures hautes et une casquette.
- Avant de souder, retirer toute substance combustible de vos poches telles qu’un allumeur au butane ou des allumettes.
- Une fois le travail achevé, assurez-vous qu’il ne reste aucune trace d’étincelles incandescentes ni de flammes.
- Utiliser exclusivement des fusibles ou coupe-circuits appropriés. Ne pas augmenter leur puissance; ne pas les poncer.
- Suivre les recommandations dans OSHA 1910.252(a)(2)(iv) et NFPA 51B pour les travaux à chaud et avoir de la surveillance et un extincteur à proximité.

DES PIÈCES DE METAL ou DES SALETES peuvent provoquer des blessures dans les yeux.
- Le soudage, l’écailllement, 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.

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 le 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.

2-3. Dangers supplémentaires en relation avec l’installation, le fonctionnement et la maintenance

Risque D’INCENDIE OU D’EXPLOSION.

- Ne pas placer l’appareil sur, au-dessus ou à proximité de surfaces inflammables.
- 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.
- Utilisez les procédures correctes et des équipements d’une capacité appropriée pour soulever et supporter l’appareil.
- En utilisant des torches de levage pour déplacer l’outil, s’assurer que les torches sont suffisamment longues pour dépasser du côté opposé de l’appareil.
- Tenir l’équipement (câbles et cordons) à distance des véhicules tels que les fourches sont suffisamment longues pour dépasser du côté opposé de l’appareil.
- Tourner le dos à la sortie de vanne lors de l’ouverture de la vanne de la bouteille. Ne pas se tenir devant ou derrière le régulateur lors de l’ouverture de la vanne.
- Le couvercle du détendeur doit toujours être en place, sauf lorsque la bouteille est utilisée ou qu’elle est reliée pour usage ultérieur.
- Utilisez les équipements corrects, les bonnes procédures et suffisamment de personnes pour soulever, déplacer et transporter 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.

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 avant de poursuivre le soudage.
- 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 ÉLECTROSTATIQUES 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 coincement 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.
2-4. Proposition californienne 65 Avertissements

AVERTISSEMENT : ce produit peut vous exposer à des produits chimiques tels que le plomb, reconnu par l’État de Californie comme cancérogènes et sources de malformations ou d’autres troubles de la reproduction.

Pour plus d’informations, consulter www.P65Warnings.ca.gov.

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 issu d’un soudage à l’arc (et de procédés connexes, y compris le soudage par points, le gougeage, le découpage plasma et les opérations de chauffage par induction) crée un champ électromagnétique (CEM) autour du circuit de soudage. Les champs électromagnétiques produits peuvent causer interférence à certains implants médicaux, p. ex. les stimulateurs cardiaques. Des mesures de protection pour les porteurs d’implants médicaux doivent être prises: Limiter par exemple tout accès aux passants ou procédé 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 entortiller 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 soudure.
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 découpage plasma ou de chauffage par induction. Si le médecin approuve, il est recommandé de suivre les procédures précédentes.
### SECTION 3 – DEFINITIONS

#### 3-1. Additional Safety Symbols And Definitions

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Warning Symbol" /></td>
<td>Warning! Watch Out! There are possible hazards as shown by the symbols. Safe1 2012-05</td>
</tr>
<tr>
<td><img src="image" alt="Waste Recycling Symbol" /></td>
<td>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 2017-04</td>
</tr>
<tr>
<td><img src="image" alt="Dry Insulating Gloves Symbol" /></td>
<td>Wear dry insulating gloves. Do not touch electrode with bare hand. Do not wear wet or damaged gloves. Safe2 2017-04</td>
</tr>
<tr>
<td><img src="image" alt="Electric Shock Protection Symbol" /></td>
<td>Protect yourself from electric shock by insulating yourself from work and ground. Safe3 2017-04</td>
</tr>
<tr>
<td><img src="image" alt="Input Plug Disconnection Symbol" /></td>
<td>Disconnect input plug or power before working on machine. Safe5 2017-04</td>
</tr>
<tr>
<td><img src="image" alt="Head Protection Symbol" /></td>
<td>Keep your head out of the fumes. Safe6 2017-04</td>
</tr>
<tr>
<td><img src="image" alt="Ventilation Symbol" /></td>
<td>Use forced ventilation or local exhaust to remove the fumes. Safe8 2012-05</td>
</tr>
<tr>
<td><img src="image" alt="Ventilation Fan Symbol" /></td>
<td>Use ventilating fan to remove fumes. Safe10 2012-05</td>
</tr>
<tr>
<td><img src="image" alt="Flammables Protection Symbol" /></td>
<td>Keep flammables away from welding. Do not weld near flammables. Safe12 2012-05</td>
</tr>
</tbody>
</table>

*Some symbols are found only on CE products.*
Welding sparks can cause fires. Have a fire extinguisher nearby, and have a watchperson ready to use it.

Safe14 2012–05

Do not weld on drums or any closed containers.

Safe16 2017–04

Do not remove or paint over (cover) the label.

Safe20 2017–04

Flying pieces of parts can cause injury. Always wear a face shield when servicing unit.

Safe27 2012–05

Always wear long sleeves and button your collar when servicing unit.

Safe28 2012–05

After taking proper precautions as shown, connect power to unit.

Safe29 2012–05

Disconnect input plug or power before working on machine.

Safe30 2012–05

Consult rating label for input power requirements.

Safe34 2012–05

Become trained and read the instructions and labels before working on machine.

Safe35 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.

Hazardous voltage remains on input capacitors after power is turned off. Do not touch fully charged capacitors. Always wait 60 seconds after power is turned off before working on unit, AND check input capacitor voltage, and be sure it is near 0 before touching any parts.

Connect Green Or Green/Yellow grounding conductor to ground terminal first. Connect input conductors (U/L1, V/L2, W/L3) to line terminals.

Use lifting eye to lift unit and properly installed units only. Use a proper cart to move unit.

3-2. Miscellaneous Symbols And Definitions

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Amperage</td>
</tr>
<tr>
<td>V</td>
<td>Voltage</td>
</tr>
<tr>
<td>I</td>
<td>On</td>
</tr>
<tr>
<td>O</td>
<td>Off</td>
</tr>
<tr>
<td>∅</td>
<td>Input Voltage</td>
</tr>
<tr>
<td>⦨</td>
<td>Output</td>
</tr>
<tr>
<td>⬇️</td>
<td>Remote</td>
</tr>
<tr>
<td>⬆️</td>
<td>Gas Metal Arc Welding (GMAW)</td>
</tr>
<tr>
<td>⬆️</td>
<td>Flux Cored Arc Welding (FCAW)</td>
</tr>
<tr>
<td>⬆️</td>
<td>Air Carbon Arc Cutting (CAC-A)</td>
</tr>
<tr>
<td>⬆️</td>
<td>Shielded Metal Arc Welding (SMAW)</td>
</tr>
<tr>
<td>⬆️</td>
<td>Lift-Arc (GTAW)</td>
</tr>
<tr>
<td>⬆️</td>
<td>Submerged Arc Welding (SAW)</td>
</tr>
<tr>
<td>⬆️</td>
<td>Gas Tungsten Arc Welding (GTAW)</td>
</tr>
<tr>
<td>⬆️</td>
<td>Variable Inductance</td>
</tr>
<tr>
<td>⬆️</td>
<td>Arc Force</td>
</tr>
<tr>
<td>⬆️</td>
<td>Positive</td>
</tr>
<tr>
<td>⬆️</td>
<td>Negative</td>
</tr>
<tr>
<td>⬆️</td>
<td>Three Phase Static Frequency Converter- Transformer-Rectifier</td>
</tr>
<tr>
<td>⬆️</td>
<td>Conventional Load Voltage</td>
</tr>
<tr>
<td>⬆️</td>
<td>Rated Welding Current</td>
</tr>
<tr>
<td>⬆️</td>
<td>Primary Voltage</td>
</tr>
<tr>
<td>⬆️</td>
<td>Hertz</td>
</tr>
<tr>
<td>⬆️</td>
<td>Maximum Effective Supply Current</td>
</tr>
<tr>
<td>⬆️</td>
<td>Rated No Load Voltage (OCV)</td>
</tr>
<tr>
<td>X</td>
<td>Duty Cycle</td>
</tr>
<tr>
<td>%</td>
<td>Percent</td>
</tr>
<tr>
<td>3</td>
<td>Three Phase</td>
</tr>
<tr>
<td>⬇️</td>
<td>Direct Current (DC)</td>
</tr>
<tr>
<td>⬆️</td>
<td>Suitable For Welding In An Environment With Increased Risk Of Electric Shock</td>
</tr>
<tr>
<td>I₁max</td>
<td>Rated Maximum Supply Current</td>
</tr>
<tr>
<td>IP</td>
<td>Degree Of Protection</td>
</tr>
<tr>
<td>⬆️</td>
<td>Line Connection</td>
</tr>
<tr>
<td>⬆️</td>
<td>Alternating Current (AC)</td>
</tr>
<tr>
<td>⬆️</td>
<td>Protective Earth (Ground)</td>
</tr>
<tr>
<td>⬆️</td>
<td>Frame or Chassis</td>
</tr>
<tr>
<td>⬆️</td>
<td>Circuit Breaker</td>
</tr>
</tbody>
</table>

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SECTION 4 − SPECIFICATIONS

4-1. Features And Benefits
LVC™ Line Voltage Compensation is circuitry that keeps the power source output constant regardless of input power fluctuation.
Wind Tunnel Technology™ circulates air over components that require cooling, not over electronic circuitry, which reduces contaminants and improves reliability in harsh welding environments.
Fan-On-Demand™ cooling system operates only when needed, reducing noise, energy use and the amount of contaminants pulled through the machine.
Thermal Overload Protection automatically shuts down the unit, only when necessary to prevent damage to internal components if the duty cycle is exceeded or air flow and cooling are restricted (see Section 4-8).
Auto Remote Sense enables the unit to automatically sense the connection of a remote control. Operation of the remote control is dependent on the Mode Switch Setting (see Section 6-2).
Lift-Arc™ TIG starts provide a contamination free weld without the use of high frequency (see Section 7-3).
Adaptive Hot Start™ for Stick increases the output amperage at the start of a weld to eliminate electrode sticking (see Sections 9-2 and 9-3).

4-2. Arc Controls
Arc Control in Stick Modes allows the arc characteristics, soft versus stiff, to be changed for specific applications and electrodes (see Section 9-2).
Arc Control in Wire Modes influences the arc stiffness, bead width and appearance, and puddle fluidity (see Sections 8-2 and 8-3).

4-3. Serial Number And Rating Label Location
The serial number and rating information for this product is located on the rear panel. Use rating label to determine input power requirements and/or rated output. For future reference, write serial number in space provided on back cover of this manual.

4-4. Software Licensing Agreement
The End User License Agreement and any third-party notices and terms and conditions pertaining to third-party software can be found at https://www.millerwelds.com/eula and are incorporated by reference herein.

4-5. Unit Specifications
Do not use information in unit specifications table to determine electrical service requirements. See Sections 5-7 and 5-8 for information on connecting input power.
This equipment will deliver rated output at an ambient air temperature up to 104°F (40°C).

A. Input Voltage And Current At Rated Output

<table>
<thead>
<tr>
<th>Process</th>
<th>Output Ratings</th>
<th>Amperes Input At Rated Output (50 Hz)</th>
<th>Input Power (50 Hz Three Phase)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current (Amperes)</td>
<td>Voltage (DC)</td>
<td>Duty Cycle (%)</td>
</tr>
<tr>
<td>GTAW (Lift-Arc TIG)</td>
<td>650</td>
<td>34</td>
<td>100</td>
</tr>
<tr>
<td>GTAW (TIG)</td>
<td>750</td>
<td>34</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>815</td>
<td>34</td>
<td>25</td>
</tr>
<tr>
<td>SMAW (Stick)</td>
<td>650</td>
<td>44</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>750</td>
<td>44</td>
<td>60</td>
</tr>
<tr>
<td>GMAW/FCAW (Gas)</td>
<td>650</td>
<td>44</td>
<td>100</td>
</tr>
<tr>
<td>FCAW-S (No Gas)</td>
<td>750</td>
<td>44</td>
<td>60</td>
</tr>
<tr>
<td>SAW (Subarc)</td>
<td>815</td>
<td>44</td>
<td>25</td>
</tr>
<tr>
<td>CAC-A (Gouge)</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idle (Fan Off)</td>
<td>1.07</td>
<td>1.70</td>
<td></td>
</tr>
</tbody>
</table>
B. Output Range

<table>
<thead>
<tr>
<th>Process</th>
<th>Output Range</th>
<th>Rated No-Load Voltage (Uo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GTAW (Lift-Arc TIG)</td>
<td>Output On 10A–815A</td>
<td>12V</td>
</tr>
<tr>
<td>GTAW (TIG)</td>
<td>Remote 10A–815A</td>
<td>61V</td>
</tr>
<tr>
<td>SMAW (Stick)</td>
<td>Remote 30A–815A</td>
<td>65V</td>
</tr>
<tr>
<td></td>
<td>Output On 30A–815A</td>
<td>65V*</td>
</tr>
<tr>
<td>CAC-A (Gouge)</td>
<td>Output On 30A–815A</td>
<td>65V*</td>
</tr>
<tr>
<td>GTAW/FCAW (Gas)</td>
<td>Remote 10V–44V</td>
<td>65V</td>
</tr>
<tr>
<td></td>
<td>Output On 10V–44V</td>
<td>65V</td>
</tr>
<tr>
<td>FCAW-S (No Gas)</td>
<td>Output On 10V–44V</td>
<td>65V</td>
</tr>
<tr>
<td>SAW (Subarc)</td>
<td>Remote 10V–65V</td>
<td>65V</td>
</tr>
</tbody>
</table>

*Unit can be configured to reduce Rated No-Load Voltage - Uo. See Section 6-3 for more information.

4-6. Dimensions And Weight

<table>
<thead>
<tr>
<th>Hole Layout Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 14-1/4 in. (362 mm)</td>
</tr>
<tr>
<td>B 30-1/4 in. (768 mm)</td>
</tr>
<tr>
<td>C 11/16 in. (17 mm)</td>
</tr>
</tbody>
</table>

Weight

168 lb (76.2 kg)

4-7. Environmental Specifications

A. IP Rating

<table>
<thead>
<tr>
<th>IP Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP23</td>
</tr>
<tr>
<td>This equipment is designed for outdoor use.</td>
</tr>
</tbody>
</table>

B. Temperature Specifications

<table>
<thead>
<tr>
<th>Operating Temperature Range*</th>
<th>Storage/Transportation Temperature Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 to 104°F (−10 to 40°C)</td>
<td>−4 to 131°F (−20 to 55°C)</td>
</tr>
</tbody>
</table>

*Output is derated at temperatures above 104°F (40°C).
C. Information On Electromagnetic Compatibility (EMC)

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

This equipment complies with IEC61000-3-11 and IEC 61000-3-12 and can be connected to public low-voltage systems provided that the public low-voltage system impedance $Z_{max}$ at the point of common coupling is less than 14.74 m$\Omega$ (or the short-circuit power $S_{sc}$ is greater than 10,854,131 VA). It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the system impedance complies with the impedance restrictions.

4-8. 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, error message is displayed (see Section 11-3), and cooling fan runs. Wait for unit to cool and error message to clear. Reduce amperage or duty cycle before welding.

NOTICE – Exceeding duty cycle can damage unit and void warranty.

4-9. Static Output Characteristics

The static (output) characteristics of the welding power source can be described as flat during the GMAW, FCAW and SAW processes and drooping during the SMAW, CAC–A and GTAW processes. Static characteristics are also affected by control settings (including software), electrode, shielding gas, weldment material, and other factors. Contact the factory for specific information on the static characteristics of the welding power source.
SECTION 5 − INSTALLATION

5-1. Selecting A Location

Movement

Do not move or operate unit where it could tip.

Location And Airflow

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

1 Lifting Eye
2 Lifting Forks
Use lifting eye or lifting forks to move unit.
If using lifting forks, extend forks beyond opposite side of unit.
3 Line Disconnect Device
Locate unit near correct input power supply.

Notes
## 5-2. Selecting Cable Sizes*

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

<table>
<thead>
<tr>
<th>Welding Amperes</th>
<th><strong>Weld Cable Size</strong> and Total Cable (Copper) Length in Weld Circuit</th>
<th>100 ft (30 m) or Less</th>
<th>150 ft (45 m)</th>
<th>200 ft (60 m)</th>
<th>250 ft (70 m)</th>
<th>300 ft (90 m)</th>
<th>350 ft (105 m)</th>
<th>400 ft (120 m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>10 – 60% Duty Cycle</td>
<td>AWG (mm²)</td>
<td>4 (20)</td>
<td>3 (30)</td>
<td>2 (35)</td>
<td>1 (50)</td>
<td>1/0 (60)</td>
<td>1/0 (60)</td>
</tr>
<tr>
<td>150</td>
<td>60 – 100% Duty Cycle</td>
<td>AWG (mm²)</td>
<td>2 (35)</td>
<td>1 (50)</td>
<td>1/0 (60)</td>
<td>2/0 (70)</td>
<td>3/0 (95)</td>
<td>4/0 (120)</td>
</tr>
<tr>
<td>200</td>
<td>2 (35)</td>
<td>AWG (mm²)</td>
<td>1 (50)</td>
<td>1/0 (60)</td>
<td>2/0 (70)</td>
<td>3/0 (95)</td>
<td>4/0 (120)</td>
<td>4/0 (120)</td>
</tr>
<tr>
<td>250</td>
<td>1 (50)</td>
<td>AWG (mm²)</td>
<td>1/0 (60)</td>
<td>2/0 (70)</td>
<td>3/0 (95)</td>
<td>4/0 (120)</td>
<td>2x2/0 (2x70)</td>
<td>2x2/0 (2x70)</td>
</tr>
<tr>
<td>300</td>
<td>2 (35)</td>
<td>AWG (mm²)</td>
<td>1/0 (60)</td>
<td>2/0 (70)</td>
<td>3/0 (95)</td>
<td>4/0 (120)</td>
<td>2x2/0 (2x70)</td>
<td>2x2/0 (2x70)</td>
</tr>
<tr>
<td>350</td>
<td>1 (50)</td>
<td>AWG (mm²)</td>
<td>2/0 (70)</td>
<td>3/0 (95)</td>
<td>4/0 (120)</td>
<td>2x2/0 (2x70)</td>
<td>2x3/0 (2x95)</td>
<td>2x4/0 (2x120)</td>
</tr>
<tr>
<td>400</td>
<td>1/0 (60)</td>
<td>AWG (mm²)</td>
<td>2/0 (70)</td>
<td>3/0 (95)</td>
<td>4/0 (120)</td>
<td>2x2/0 (2x70)</td>
<td>2x3/0 (2x95)</td>
<td>2x4/0 (2x120)</td>
</tr>
<tr>
<td>500</td>
<td>3/0 (95)</td>
<td>AWG (mm²)</td>
<td>4/0 (120)</td>
<td>2x2/0 (2x70)</td>
<td>2x3/0 (2x95)</td>
<td>2x4/0 (2x120)</td>
<td>3x3/0 (3x95)</td>
<td>3x4/0 (3x120)</td>
</tr>
<tr>
<td>600</td>
<td>4/0 (120)</td>
<td>AWG (mm²)</td>
<td>2x2/0 (2x70)</td>
<td>2x3/0 (2x95)</td>
<td>2x4/0 (2x120)</td>
<td>3x3/0 (3x95)</td>
<td>3x4/0 (3x120)</td>
<td>3x4/0 (3x120)</td>
</tr>
<tr>
<td>700</td>
<td>2x2/0 (2x70)</td>
<td>AWG (mm²)</td>
<td>2x3/0 (2x95)</td>
<td>2x4/0 (2x120)</td>
<td>3x3/0 (3x95)</td>
<td>3x4/0 (3x120)</td>
<td>3x4/0 (3x120)</td>
<td>4x4/0 (4x120)</td>
</tr>
<tr>
<td>800</td>
<td>2x2/0 (2x70)</td>
<td>AWG (mm²)</td>
<td>2x3/0 (2x95)</td>
<td>2x4/0 (2x120)</td>
<td>3x3/0 (3x95)</td>
<td>3x4/0 (3x120)</td>
<td>4x4/0 (4x120)</td>
<td>4x4/0 (4x120)</td>
</tr>
<tr>
<td>900</td>
<td>2x2/0 (2x70)</td>
<td>AWG (mm²)</td>
<td>2x3/0 (2x95)</td>
<td>2x4/0 (2x120)</td>
<td>3x3/0 (3x95)</td>
<td>3x4/0 (3x120)</td>
<td>4x4/0 (4x120)</td>
<td>4x4/0 (4x120)</td>
</tr>
</tbody>
</table>

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

**Weld cable size (AWG) is based on either a 4 volts or less drop or a current density of at least 300 circular mils per ampere.

( ) = mm² for metric use

***For distances longer than those shown in this guide, see AWS Fact Sheet No. 39, Welding Cables, available from the American Welding Society at http://www.aws.org.

---

## 5-3. Weld Output Terminals

- **Turn off power before connecting to weld output terminals.**
- **Do not use worn, damaged, undersized, or repaired cables.**
- **Positive (+) Weld Output Terminal**
- **Negative (−) Weld Output Terminal**

See Section 5-4 for information on connecting to weld output terminals, and Sections 7-1 thru 10-1 for standard connection diagrams.
5-4. Connecting Weld Output Cables

⚠️ Turn off power before connecting to weld output terminals.
⚠️ Failure to properly connect weld cables may cause excessive heat and start a fire, or damage your machine.
⚠️ Use correct size weld cables (see Section 5-2).

Remove supplied Bolt and nut from weld output terminal. Secure weld cable terminals to weld output terminal with nut and bolt as shown, so that weld cable terminal is tight against copper bar. Do not place anything between weld cable terminal and copper bar. Make sure that the surfaces of the weld cable terminal and copper bar are clean.

**Tools Needed:**
- 3/4 in. (19 mm)

5-5. Remote 14 Receptacle Information

**REMOTE CONTROL**

<table>
<thead>
<tr>
<th>Socket</th>
<th>Socket Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>24 volts AC. Protected by supplementary protector CB2.</td>
</tr>
<tr>
<td>B</td>
<td>Contact closure to A completes 24 volts AC contactor control circuit.</td>
</tr>
<tr>
<td>C</td>
<td>Output to remote control; +10 volts DC.</td>
</tr>
<tr>
<td>D</td>
<td>Remote control circuit common.</td>
</tr>
<tr>
<td>E</td>
<td>0 to +10 volts DC input command signal from remote control.</td>
</tr>
<tr>
<td>F</td>
<td>Current feedback; +1 volt DC per 100 amperes.</td>
</tr>
<tr>
<td>H</td>
<td>Voltage feedback; +1 volt DC per 10 arc volts.</td>
</tr>
<tr>
<td>G</td>
<td>Circuit common for 24 volt AC circuit.</td>
</tr>
<tr>
<td>K</td>
<td>Chassis common.</td>
</tr>
</tbody>
</table>

*The remaining sockets are not used.*
5-6. Supplementary Protector

1 115 V 20 Amp AC Receptacle
2 Supplementary Protector CB1
3 Supplementary Protector CB2

CB1 protects duplex receptacle.
CB2 protects 24 volts AC portion of Remote 14 receptacle from overload.
Press button to reset supplementary protector.

Ref 272773-A

5-7. Electrical Service Guide

NOTICE – INCORRECT INPUT POWER can damage this welding power source. This welding power source requires a CONTINUOUS supply of input power at rated frequency (±10%) and voltage (±10%). Phase to ground voltage shall not exceed +10% of rated input voltage. Do not use a generator with automatic idle device (that idles engine when no load is sensed) to supply input power to this welding power source.

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

CE-marked equipment shall only be used on a supply network that is a three-phase, four-wire system with an earthed neutral.

<table>
<thead>
<tr>
<th>50/60 Hz Three Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage (V)</td>
</tr>
<tr>
<td>Rated Maximum Supply Current $I_{\text{max}}$ (A)</td>
</tr>
<tr>
<td>Maximum Effective Supply Current $I_{\text{eff}}$ (A)</td>
</tr>
<tr>
<td>Max Recommended Standard Fuse Rating In Amperes$^1$</td>
</tr>
<tr>
<td>Time-Delay Fuses$^2$</td>
</tr>
<tr>
<td>Normal Operating Fuses $^3$</td>
</tr>
<tr>
<td>Min Input Conductor Size In AWG $^4$</td>
</tr>
<tr>
<td>Max Recommended Input Conductor Length In Feet (Meters)</td>
</tr>
<tr>
<td>Min Grounding Conductor Size In AWG $^4$</td>
</tr>
</tbody>
</table>

Reference: 2017 National Electrical Code (NEC) (including article 630)
1 If a circuit breaker is used in place of a fuse, choose a circuit breaker with time-current curves comparable to the recommended fuse.
2 “Time-Delay” fuses are UL class “RK5”. See UL 248.
3 “Normal Operating” (general purpose - no intentional delay) fuses are UL class “K5” (up to and including 60 amps), and UL class “H” (65 amps and above).
4 Conductor data in this section specifies conductor size (excluding flexible cord or cable) between the panelboard and the equipment per NEC Table 310.15(B)(16) and is based on allowable ampacities of insulated copper conductors having a temperature rating of 167°F (75°C) with not more than three single current-carrying conductors in a raceway. If a flexible cord or cable is used, minimum conductor size may increase. See NEC Table 400.5(A) for flexible cord and cable requirements.
5-8. Connecting Input Power

Tools Needed:
- 3/8 in.
- 3/16 in.

= GND/PE
Earth Ground

U (L1)
V (L2)
W (L3)

1
2
3
4
5
6
7
8
9
10
11
12
5-8. Connecting Input Power (Continued)

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Input Power Conductors (Customer Supplied Cord)</td>
</tr>
<tr>
<td>2</td>
<td>Input Power Cover</td>
</tr>
<tr>
<td>3</td>
<td>Strain Relief Kit (Supplied With Machine)</td>
</tr>
<tr>
<td>4</td>
<td>Input Power Connection Block</td>
</tr>
<tr>
<td>5</td>
<td>Welding Power Source Grounding Terminal</td>
</tr>
<tr>
<td>6</td>
<td>Green Or Green/Yellow Grounding Conductor</td>
</tr>
<tr>
<td>7</td>
<td>Welding Power Source Line Terminals</td>
</tr>
<tr>
<td>8</td>
<td>Input Conductors U (L1), V (L2), W (L3)</td>
</tr>
</tbody>
</table>

Notes

---

1. Disconnect and lockout/tagout input power before connecting input conductors from unit. Follow established procedures regarding the installation and removal of lockout/tagout devices.
2. Installation must meet all National and Local Codes—have only qualified persons make this installation.
3. Disconnect and lockout/tagout input power before connecting input conductors from unit. Follow established procedures regarding the installation and removal of lockout/tagout devices.
4. Always connect green or green/yellow conductor to supply grounding terminal first, and never to a line terminal.
5. Make input power connections to the welding power source first.
6. See rating label on unit and check input voltage available at site.
7. Input Power Connections

Disconnect Device Input Power Connections

9. Disconnect Device (switch shown in the OFF position)
10. Disconnect Device Grounding Terminal
11. Disconnect Device Line Terminals

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

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

12. Over-Current Protection

Select type and size of over-current protection using Section 5-7 (fused disconnect switch shown).

Close and secure door on disconnect device. Remove lockout/tagout device, and place switch in the On position.
SECTION 6 − GENERAL OPERATION

6-1. Front Panel

Weld process operation sections describe functionality of the identified items (See Sections 7-1 thru 9-4).

1. Remote 14 Receptacle
2. Left Display
3. Right Display
4. Adjust Control
5. Power Switch
6. Arc Control
7. Remote In Use Indicator
8. Mode Switch
9. Weld Output Terminal (−)
10. Weld Output Terminal (+)

The meters display the actual weld output values after arc initiation and remains displayed for approximately three seconds after the arc is broken.
### 6-2. Mode Switch Settings

<table>
<thead>
<tr>
<th>Switch Position</th>
<th>Process</th>
<th>Output Control</th>
<th>Panel Adjust</th>
<th>Remote Adjust</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GMAW/FCAW Gas</td>
<td>Output On</td>
<td>Volts</td>
<td>Volts</td>
</tr>
<tr>
<td></td>
<td>FCAW−S No-Gas</td>
<td>Output On</td>
<td>Volts</td>
<td>Volts</td>
</tr>
<tr>
<td></td>
<td>SMAW Stick</td>
<td>Output On</td>
<td>Amps</td>
<td>No Remote Adjust - Panel Only*</td>
</tr>
<tr>
<td></td>
<td>CAC−A Gouge</td>
<td>Output On</td>
<td>Amps</td>
<td>No Remote Adjust - Panel Only*</td>
</tr>
<tr>
<td></td>
<td>GTAW Lift-Arc TIG</td>
<td>Output On</td>
<td>Amps</td>
<td>% Panel Amps</td>
</tr>
<tr>
<td></td>
<td>GTAW TIG</td>
<td>Remote 14</td>
<td>Amps</td>
<td>% Panel Amps</td>
</tr>
<tr>
<td></td>
<td>SMAW Stick</td>
<td>Remote 14</td>
<td>Amps</td>
<td>% Panel Amps</td>
</tr>
<tr>
<td></td>
<td>SAW Subarc</td>
<td>Remote 14</td>
<td>Volts</td>
<td>Volts</td>
</tr>
<tr>
<td></td>
<td>GMAW/FCAW Gas</td>
<td>Remote 14</td>
<td>Volts</td>
<td>Volts</td>
</tr>
</tbody>
</table>

*See Section 6-4 For Alternate Configuration Functions.

### 6-3. Optional Low Open Circuit Voltage (OCV) Welding Modes

**Low OCV Operation**

The unit can be optionally configured for low open circuit voltage (OCV) operation in SMAW (Stick) and CAC-A (Gouge) Output-On modes. When the unit is configured for low OCV operation, a low sensing voltage (approximately 12 VDC) is present between the electrode and the workpiece prior to the electrode touching the workpiece. Consult a Factory Authorized Agent for information regarding how to configure unit for low OCV welding operation.
6-4. Alternate Configuration Functions

The function of the remote control and panel meters can be changed on this machine.
To view or change the active configuration:
- Place the process selection switch into SMAW (Stick) Output-On mode.
- Quickly tap (press and release) the wire feeder gun trigger or remote output on-off switch 3 to 5 times within a few seconds to view the active configuration.
- Repeat the tapping sequence to switch to the next configuration. The right meter will briefly display the new configuration before returning to the preset display.

⚠️ Do not turn power off for at least 5 seconds to ensure the new configuration is saved. If supported, Preflow must be disabled on the wire feeder to recognize gun trigger taps.

Alternate configurations are explained below. See Section 6-2 for default configuration operation.

**C 1**

**SMAW (Stick), CAC-A (Gouge), and SMAW (Stick) Remote:** The right meter displays the preset amperage set with the panel Adjust Control. When connected, the remote control sets the percentage of preset amperage. The Remote In Use indicator is lit while the remote control is connected.

**C 2**

This is the default configuration as shipped from the factory.

**SMAW (Stick) and CAC-A (Gouge):** The remote amperage control is ignored. The Remote In Use indicator is not lit. The right meter displays the preset amperage.

**SMAW (Stick) Remote:** The right meter displays the preset amperage set with the panel Adjust Control. When connected, the remote control sets the percentage of preset amperage. The Remote In Use indicator is lit while the remote control is connected.

**C 3**

**SMAW (Stick) and CAC-A (Gouge):** The remote amperage control is ignored. The Remote In Use indicator is not lit. The right meter displays the preset amperage.

**SMAW (Stick) Remote:** The right meter displays the percentage of preset amperage with a remote connected. The remote control sets the percentage of preset amperage. The Remote In Use indicator is lit while the remote control is connected. Turning the panel Adjust Control will briefly display the preset amperage for 100%.

⚠️ Configurations 2 and 3 prevent a wire feeder from affecting the preset amperage of the Stick and Gouge Output-On modes.
### SECTION 7 – GTAW OPERATION

**7-1. Typical Connection For GTAW Process**

- **Turn off power before making connections.**
- **1 Foot Control**
- **2 Positive (+) Weld Output Terminal**
- **3 Remote 14 Receptacle**
- **4 Gas Cylinder**
- **5 Gas Hose**
- **6 Negative (−) Weld Output Terminal**
- **7 TIG Torch**
- **8 Workpiece**

Connect desired remote control to Remote 14 receptacle if required.
GTAW - TIG Remote Welding Mode

1. Mode Switch
2. Right Display
3. Adjust Control

Setup
For typical system connections refer to Section 7-1.
Rotate Mode Switch to GTAW - TIG Remote position as shown.
The preset amperage is shown in the Right Display.

Operation
The Adjust Control is used to set desired preset amperage.
A remote control is required to turn on the weld output.

If the remote control has an amperage adjustment, the adjustment will function as a percentage of the preset amperage. The Remote In Use indicator will be lit.

For best results, gently scratch the tungsten electrode to the work to initiate an arc. To minimize arc flare at the end of the weld, pull back the electrode quickly to extinguish the arc.

Weld terminals are energized through the remote control in GTAW - TIG Remote welding mode.

1. Mode Switch
2. Right Display
3. Adjust Control

263561-B
7-3. GTAW - Lift-Arc TIG Output-On Welding Mode

Weld terminals are energized at all times in GTAW - Lift-Arc TIG Output-On welding mode.

1. Mode Switch
2. Left Display
3. Right Display
4. Adjust Control
5. Workpiece
6. Tungsten Electrode

Setup
For typical system connections refer to Section 7-1.

- Rotate Mode Switch to GTAW - LIFT-ARC TIG Output-On position as shown.
- The open-circuit voltage is shown in the Left Display. Preset amperage is shown in the Right Display.
- Normal open-circuit voltage is not present before the electrode touches the workpiece, instead a low sensing voltage is present. The sensing voltage allows the electrode to touch the workpiece without overheating, sticking, or getting contaminated.

Operation
The Adjust Control is used to set desired preset amperage.

- If a remote control is used for amperage adjustment, the adjustment will function as a percentage of the preset amperage. The Remote In Use indicator will be lit.
- For best results, firmly touch the tungsten electrode to the workpiece at the weld start point. Hold electrode to workpiece for 1-2 seconds, and lift electrode. An arc will form when the electrode is lifted. To minimize arc flare at the end of the weld, pull back the electrode quickly to extinguish the arc.

"Touch" 1 - 2 Seconds

Do NOT Strike Like A Match!
SECTION 8 – GMAW/FCAW OPERATION

8-1. Typical Connection For Remote Control Feeder GMAW/FCAW Process

⚠️ Turn off power before making connections.

1. Remote 14-Receptacle
2. Positive (+) Weld Output Terminal
3. Negative (−) Weld Output Terminal
4. Ground Cable to Workpiece
5. Workpiece
6. Gun
7. Wire Feeder
8. Gas Hose
9. Gas Cylinder

Use of shielding gas is dependant on Wire Type.

The connection diagram illustrates DCEP (reverse polarity) suitable for all wires except self-shielded FCAW. The majority of self-shielded FCAW wires require DCEN (straight polarity).
8-2. GMAW/FCAW - Remote Welding Mode

Weld terminals are energized through the remote control in GMAW/FCAW Remote welding mode.

1. Mode Switch
2. Left Display
3. Adjust Control
4. Arc Control

Setup
For typical system connections refer to Section 8-1.

Operation
The preset voltage is shown in the Left Display.

The preset voltage can be adjusted remotely at the wire feeder if the feeder has a voltage control. This voltage control will override the Adjust Control of preset voltage on the welding power source. The Remote In Use indicator will be lit.

Arc Control
Arc control allows the arc characteristics, soft versus stiff, to be changed for specific applications and wires. The star setting is good for most applications. Use soft settings (0–25) to soften the arc and increase puddle fluidity. Use stiff settings (0–25) to stiffen the arc and reduce puddle fluidity.
8-3. Typical Connection For Voltage-Sensing Feeder GMAW/FCAW Process

1. Positive (+) Weld Output Terminal
2. Negative (−) Weld Output Terminal
3. Ground Cable to Workpiece
4. Workpiece
5. Voltage Sensing Clamp

6. Gun
7. Gun Trigger Receptacle
8. Wire Feeder
9. Gas Hose
10. Gas Cylinder

⚠️ Turn off power before making connections.

Use of shielding gas is dependant on Wire Type.

The connection diagram illustrates DCEP (reverse polarity) suitable for all wires except self-shielded FCAW. The majority of self-shielded FCAW wires require DCEN (straight polarity).
8-4. GMAW/FCAW - (Gas) Output-On Welding Mode

Weld terminals are energized at all times in GMAW/FCAW (Gas) Output-On welding mode.

1. Mode Switch
2. Left Display
3. Adjust Control
4. Arc Control

Setup
For typical system setup connections refer to Section 8-3.

Rotate Mode Switch to GMAW/FCAW (Gas) Output-On position as shown.

The Left Display toggles between open circuit voltage and preset voltage.

Operation
The Adjust Control is used to set desired preset voltage.

The Left Display toggling momentarily pauses while the preset voltage is adjusted.

Arc Control
Arc control allows the arc characteristics, soft versus stiff, to be changed for specific applications and wires. The star setting is good for most applications. Use soft settings (0–25) to soften the arc and increase puddle fluidity. Use stiff settings (0–25) to stiffen the arc and reduce puddle fluidity.
8-5. FCAW-S (No Gas) Output-On Welding Mode

Weld terminals are energized at all times in FCAW-S (No Gas) Output-On welding mode.

1. Mode Switch
2. Left Display
3. Adjust Control
4. Arc Control

Setup
For typical system setup connections refer to Section 8-3.
Rotate Mode Switch to FCAW-S (No Gas) Output-On position as shown.
The Left Display toggles between open circuit voltage and preset voltage.

Operation
The Adjust Control is used to set desired preset voltage.

Arc Control
Arc control allows the arc characteristics, soft versus stiff, to be changed for specific applications and wires. The star setting is good for most applications. Use soft settings (0–25) to soften the arc and increase puddle fluidity. Use stiff settings (0–25) to stiffen the arc and reduce puddle fluidity.

The Left Display toggling momentarily pauses while the preset voltage is adjusted.
9-1. Typical Connection For SMAW And CAC-A Process

1. Turn off power before making connections.

1. Electrode Holder (Carbon Arc)

For CAC-A process connect carbon arc cutting torch to positive weld output terminal.

2. Electrode Holder

3. Positive (+) Weld Output Terminal

4. Remote 14 Receptacle

5. Compressed Air Line

6. Negative (−) Weld Output Terminal

7. Workpiece

Connect desired remote control to remote 14 receptacle as required.
9-2. SMAW - Stick Remote Welding Mode

Weld terminals are energized through the remote control in SMAW - Stick Remote welding mode.
1 Mode Switch
2 Right Display
3 Adjust Control
4 Arc Control

Setup
For typical system connections refer to Section 9-1.
Rotate Mode Switch to SMAW - Stick Remote position as shown.
The preset amperage is shown in the Right Display with the Amps Indicator lit.

Operation
The Adjust Control is used to set desired preset amperage.
A remote control is required to turn on the weld output.

If the remote control has an amperage adjustment, the adjustment will function as a percentage of the preset amperage. The Remote In Use indicator will be lit.

Adaptive Hot Start automatically increases welding amperage at the start of a weld. This helps eliminate electrode sticking during arc initiation.

For best results at the end of the weld, pull back the electrode quickly to extinguish the arc.

Arc Control
Arc control allows the arc characteristics, soft versus stiff, to be changed for specific applications and electrodes. The star setting is good for most applications. Use soft settings (0 to 25) for smooth running electrodes like E7018. Use stiff settings (0 to 25) for penetrating electrodes like E6010.
Weld terminals are energized at all times in SMAW - Stick Output-On welding mode.

1. Mode Switch
2. Left Display
3. Right Display
4. Adjust Control
5. Arc Control

**Setup**
For typical system connections refer to Section 9-1.
Rotate Mode Switch to SMAW - Stick Output-On position as shown.

The open circuit voltage is shown in the Left Display and the preset amperage is shown in the Right Display.

**Operation**
The Adjust Control is used to set desired preset amperage.
Adaptive Hot Start automatically increases welding amperage at the start of a weld. This helps eliminate electrode sticking during arc initiation.

For best results at the end of the weld, pull back the electrode quickly to extinguish the arc.

**Arc Control**
Arc control allows the arc characteristics, soft versus stiff, to be changed for specific applications and electrodes. The star setting is good for most applications. Use soft settings (0 to 25) for smooth running electrodes like E7018. Use stiff settings (0 to 25) for penetrating electrodes like E6010.
9-4. CAC-A - Gouge Output-On Mode

Weld terminals are energized at all times in CAC-A - Gouge Output-On welding mode.

1. Mode Switch
2. Left Display
3. Right Display
4. Adjust Control

Setup
For typical system connections refer to Section 9-1.
Rotate Mode Switch to CAC-A - Gouge Output-On position as shown.
The open circuit voltage is shown in the Left Display and the preset amperage is shown in the Right Display.

Operation
The Adjust Control is used to set desired preset amperage.
10-1. Typical Connection For SAW Process

⚠️ Turn off power before making connections.

1. Positive (+) Weld Output Terminal
2. Negative (−) Weld Output Terminal
3. Ground Cable to Workpiece
4. Workpiece
5. Wire Drive Assembly
6. 10 Pin Motor Control Cord
7. Saw Control
8. Flux System
9. Flux Valve
10. 14 Pin/115V Y–Cord
10-2. SAW - Subarc Remote Welding Mode

Weld terminals are energized through the remote control in SAW - Subarc Remote welding mode.

1. Mode Switch
2. Left Display
3. Adjust Control

Setup
For typical system connections refer to Section 10-1.

Welding Power Source
Rotate Mode Switch to SAW - Subarc Remote position as shown. The preset voltage is shown in the Left Display.

SAW Controller
When using Miller Electric HDC DX controller, select Dimension 652 or SubArc DC 650 for power source selection.

Operation
Adjust preset voltage remotely at the SAW controller. This voltage control will override the Adjust Control of preset voltage on the welding power source. The Remote In Use indicator will be lit. See SAW controller Owner’s Manual for additional information.

This product is not compatible with digital series of subarc equipment.
## 11-1. Routine Maintenance

<table>
<thead>
<tr>
<th>Maintenance Task</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disconnect power before maintaining.</td>
<td>Maintain more often during severe conditions.</td>
</tr>
<tr>
<td>3 Months</td>
<td></td>
</tr>
<tr>
<td>Replace Damaged Or Unreadable Labels</td>
<td></td>
</tr>
<tr>
<td>Repair Or Replace Cracked Cables</td>
<td></td>
</tr>
<tr>
<td>Replace Cracked Torch Body</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Repair Or Replace Cracked Cables And Cords</td>
<td></td>
</tr>
<tr>
<td>Clean And Tighten Weld Connections</td>
<td></td>
</tr>
<tr>
<td>6 Months</td>
<td></td>
</tr>
<tr>
<td>Blow Out Inside</td>
<td></td>
</tr>
</tbody>
</table>

## 11-2. Blowing Out Inside Of Unit

- Do not remove case when blowing out inside of unit.
- To blow out unit, direct airflow through front and back louvers as shown.
11-3. Help Displays

All directions are in reference to the front of the unit. All circuitry referred to is located inside the unit.

Help 1, 6, 7 Display
Indicates a malfunction in the primary power circuit. If this display is shown, contact a Factory Authorized Service Agent.

Help 2 Display
Indicates a malfunction in the thermal protection circuitry. If this display is shown, contact a Factory Authorized Service Agent.

Help 3 Display
Indicates the left side of the unit has overheated. The unit has shut down to allow the fan to cool it (see Section 4-8). Operation will continue when the unit has cooled.

Help 4 Display
Indicates the auxiliary circuit has overheated. The unit has shut down to allow the fan to cool it. Operation will continue when the unit has cooled.

Help 5 Display
Indicates the right side of the unit has overheated. The unit has shut down to allow the fan to cool it (see Section 4-8). Operation will continue when the unit has cooled.

Help 8 Display
Indicates a malfunction in the secondary power circuit of the unit. If this display is shown, contact a Factory Authorized Service Agent.

Help 25 Display
Indicates machine has reached Duty Cycle limit (See Section 4-8). Unit must be left on to power the fan for cooling. Duty Cycle limit will automatically reset when unit has cooled.
## 11-4. Troubleshooting

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>No weld output; unit completely inoperative.</td>
<td>Place line disconnect switch in On position (see Section 5-8).</td>
</tr>
<tr>
<td></td>
<td>Check and replace line fuse(s), if necessary, or reset circuit breaker (see Section 5-8).</td>
</tr>
<tr>
<td></td>
<td>Check for proper input power connections (see Section 5-8).</td>
</tr>
<tr>
<td>No weld output; meter display On.</td>
<td>Input voltage outside acceptable range of variation (see Section 5-7).</td>
</tr>
<tr>
<td></td>
<td>Check, repair, or replace remote control.</td>
</tr>
<tr>
<td></td>
<td>Unit overheated. Allow unit to cool with fan On (see Section 4-8).</td>
</tr>
<tr>
<td>Erratic or improper weld output.</td>
<td>Use proper size and type of weld cable (see Section 5-2).</td>
</tr>
<tr>
<td></td>
<td>Clean and tighten all weld connections.</td>
</tr>
<tr>
<td></td>
<td>Check for correct polarity.</td>
</tr>
<tr>
<td>No 24 volts AC output at Remote 14 receptacle.</td>
<td>Reset supplementary protector CB2 (see Section 5-6).</td>
</tr>
<tr>
<td>No 115 volts AC output at duplex receptacle.</td>
<td>Reset supplementary protector CB1 (see Section 5-6).</td>
</tr>
<tr>
<td></td>
<td>Auxiliary circuit overheated. Allow unit to cool with fan on (see Section 4-8).</td>
</tr>
</tbody>
</table>

## Notes
Figure 12-1. Circuit Diagram For Dimension 650 CC/CV 380/400V
WARNING

Do not touch live electrical parts.
Disconnect input power or stop engine before servicing.
Do not operate with covers removed.
Have only qualified persons install, use, or service this unit.
SECTION 13 − PARTS LIST

Figure 13-1. Main Assembly
<table>
<thead>
<tr>
<th>Item No.</th>
<th>Dia. Mkgs.</th>
<th>Part No.</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>267295</td>
<td>Box, Louver</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>263624</td>
<td>Shroud, Fan</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>FM1,FM2</td>
<td>213072</td>
<td>Fan, Muffin 115V 60Hz 3400 RPM 6.378 Mtg Holes</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>See Figure 13-2</td>
<td>Panel, Front W/Cmpnts</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>176226</td>
<td>Insulator, Switch Power</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>RC2</td>
<td>143976</td>
<td>Rcpt W/Skts, (Service Kit)</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>S1</td>
<td>244920</td>
<td>Switch, Tgl 3Pst 40A 600VAC Scr Term Wide Tgl</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>See Figure 13-4</td>
<td>Windtunnel, Lh W/Cmpnts</td>
<td>1</td>
</tr>
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<td>9</td>
<td></td>
<td>272702</td>
<td>Panel, Side Rh (Includes)</td>
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<tr>
<td>10</td>
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<td>263620</td>
<td>Panel, Side Folded Edge Right</td>
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<td>11</td>
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<td>234534</td>
<td>Label, Miller (Not Shown)</td>
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<tr>
<td>12</td>
<td>+</td>
<td>263619</td>
<td>Panel, Side Lh (Includes)</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>234534</td>
<td>Label, Miller (Not Shown)</td>
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</tr>
<tr>
<td>14</td>
<td></td>
<td>267339</td>
<td>Bracket, Corner Front (Casting)</td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>+</td>
<td>263606</td>
<td>Cover, Top Folded Edge</td>
<td>1</td>
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<tr>
<td>16</td>
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<td>274964</td>
<td>Label, Warning General Precautionary (En/Fr/Sp)</td>
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<td>274966</td>
<td>Label, Warning Falling Equipment (En/Fr/Sp–Sym)</td>
<td>1</td>
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<td>18</td>
<td>+</td>
<td>272469</td>
<td>Bracket, Mtg Contactor</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
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<td>180270</td>
<td>Contactor, Def Prp 40A 3P 24 VAC Coil W/Boxlug</td>
<td>1</td>
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<tr>
<td>20</td>
<td>W2</td>
<td>255744</td>
<td>Relay, Encl 24 VDC Spst 30A/300Vac 4Pin Flange Mtg</td>
<td>1</td>
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<td>272469</td>
<td>Bracket, Mtg Fan</td>
<td>1</td>
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<tr>
<td>22</td>
<td>W1</td>
<td>182070</td>
<td>Contact, Def Prp 40A 3P 24 VAC Coil W/Boxlug</td>
<td>1</td>
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<tr>
<td>23</td>
<td>FM3</td>
<td>183918</td>
<td>Motor, Fan 24VDC 3000 RPM 43 Cfm W/10 Ohm Resistor</td>
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<td>24</td>
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<td>263623</td>
<td>Bracket, Mtg Fan</td>
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<td>267340</td>
<td>Bracket, HF Lead Tray</td>
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<td>T2</td>
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<td>XFRM, Control 380/460 VAC Pri</td>
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<td>27</td>
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<td>272493</td>
<td>Baffle, (Lower)</td>
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<td>263597</td>
<td>Base, W/Studs</td>
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<td>29</td>
<td></td>
<td>264243</td>
<td>Bus Bar, Stabilizer/Output</td>
<td>1</td>
</tr>
<tr>
<td>30</td>
<td></td>
<td>269271</td>
<td>Insulator, Windtunnel/Bus Bar</td>
<td>1</td>
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<tr>
<td>31</td>
<td></td>
<td>272700</td>
<td>Label, Warning Electric Shock/Exploding Parts</td>
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<tr>
<td>32</td>
<td>PC2</td>
<td>263632</td>
<td>Circuit Card Assy, Interconnecting</td>
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<tr>
<td>33</td>
<td></td>
<td>See Figure 13-5</td>
<td>Panel, Rear W/Cmpnts</td>
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<tr>
<td>34</td>
<td></td>
<td>262913</td>
<td>Kit, Strain Relief 1.250</td>
<td>1</td>
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<tr>
<td>PLG1</td>
<td></td>
<td>241172</td>
<td>Housing Plug + Skts, (Service Kit)</td>
<td>1</td>
</tr>
<tr>
<td>PLG2</td>
<td>11, 12, 13, 14, 70</td>
<td>131054</td>
<td>Housing Rcpt + Skts, (Service Kit)</td>
<td>6</td>
</tr>
<tr>
<td>RC11</td>
<td>RC12, RC13</td>
<td>RC13</td>
<td>Housing Plug + Pins, (Service Kit)</td>
<td>5</td>
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<tr>
<td>PLG17</td>
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<td>131204</td>
<td>Housing Plug + Skts, (Service Kit)</td>
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<tr>
<td>RC71</td>
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<td>131203</td>
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<td>PLG19</td>
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<td>115094</td>
<td>Housing Plug + Skts, (Service Kit)</td>
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<tr>
<td>RC10</td>
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<td>275039</td>
<td>Housing Plug + Skts, (Service Kit)</td>
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</tbody>
</table>

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

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.
Hardware is common and not available unless listed.

Figure 13-2. Front Panel

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Dia. Mkgs.</th>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+264279</td>
<td>Panel, Front W/Studs</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>263561</td>
<td>Label, Nameplate Miller Dimension 650</td>
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</tr>
<tr>
<td>3</td>
<td>231468</td>
<td>Nut, 375-32 .56Hex .22H Brs Conical Knurl</td>
<td>2</td>
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<td>4</td>
<td>245663</td>
<td>Knob, Encoder 1.25 Dia X .250 Id Push On W/Spring</td>
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<tr>
<td>5</td>
<td>231469</td>
<td>Nut, 500-28 .69Hex .28H Brs Conical Knurl</td>
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<td>213134</td>
<td>Knob, Encoder 1.670 Dia X .250 Id Push On W/Spring</td>
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<td>174991</td>
<td>Knob, Pointer 1.250 Dia X .250 Id W/Spring Clip-.21</td>
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<td>8</td>
<td>181169</td>
<td>Spacer, Output Stud</td>
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<td>268891</td>
<td>Washer, Output Stud</td>
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<td>264114</td>
<td>Boot, Generic Output Stud</td>
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<td>263560</td>
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<td>190512</td>
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<tr>
<td>15 PC1</td>
<td>274999</td>
<td>Kit, Circuit Card Assy Front Panel &amp; Display W/Prgm</td>
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<tr>
<td>PLG56</td>
<td>241167</td>
<td>Housing Plug + Skts, (Service Kit)</td>
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<tr>
<td>PLG59, PLG53</td>
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<td>Housing Plug + Skts, (Service Kit)</td>
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<td>PLG60</td>
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<td>PLG57</td>
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<tr>
<td>PLG55</td>
<td>241171</td>
<td>Housing Plug + Skts, (Service Kit)</td>
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<tr>
<td>PLG54</td>
<td>241172</td>
<td>Housing Plug + Skts, (Service Kit)</td>
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<td>PLG58</td>
<td>269989</td>
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<tr>
<td>C13,C14</td>
<td>267745</td>
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<tr>
<td>VR1, VR2</td>
<td>274779</td>
<td>Varistor, W/Terminals</td>
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<td>263611</td>
<td>Plug, W/Leads (Voltage Feedback)</td>
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<td>263613</td>
<td>Cable Assy, Current Feedback W/Ferrite Core</td>
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<td>266925</td>
<td>Plugs, W/Leads &amp; Current Xfmr (Includes)</td>
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<td>CT1, CT2</td>
<td>266798</td>
<td>XFMR, Current Sensing 200/1</td>
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<tr>
<td>269893</td>
<td>Screw, 500–13x1.00 (Not Shown) Output Stud Hardware</td>
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<tr>
<td>222794</td>
<td>Nut, 500–13.75 Hex (Not Shown) Output Stud Hardware</td>
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</tbody>
</table>

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

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.
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.
Hardware is common and not available unless listed.

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Dia. Mkgs.</th>
<th>Part No.</th>
<th>Description</th>
<th>Quantity</th>
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<tr>
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<td>Windtunnel, LH</td>
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<td>2</td>
<td>245520</td>
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<td>Bushing, Snap–In Nyl 1.062 Id X 1.500 Mtg Hole Cent</td>
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<td>3</td>
<td>272700</td>
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<td>Label, Warning Electric Shock/Exploding Parts</td>
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<td>4</td>
<td>183387</td>
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<td>Washer, Cone .380idx .860odx.109T Stl Pld 4000lbs</td>
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<td>5</td>
<td>263571</td>
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<td>Bus Bar, Diode</td>
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<tr>
<td>6</td>
<td>HD1</td>
<td>168829</td>
<td>Transducer, Current 1000A Module Max Open Loop</td>
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<td>7</td>
<td>264242</td>
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<td>Bracket, Mtg Lem</td>
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<td>8</td>
<td>263559</td>
<td></td>
<td>Terminal, Pwr Output Red</td>
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<tr>
<td>9</td>
<td>196355</td>
<td></td>
<td>Insulator, Screw</td>
<td>6</td>
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<tr>
<td>10</td>
<td>T1</td>
<td>269226</td>
<td>Xfmr Assy, Hf</td>
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<td>263556</td>
<td>Insulator, Heatsink</td>
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<td>12</td>
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<td>199840</td>
<td>Bus Bar, Diode</td>
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<td>13</td>
<td>D1–D4</td>
<td>269909</td>
<td>Kit, Diode Power Module (Vishay)</td>
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<td>14</td>
<td>R1/C15,R2/C16</td>
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<td>15</td>
<td>RT2</td>
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<td>Thermistor, Ntc 30K Ohm @ 25 Deg C 12.00 in. Lead</td>
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<td>16</td>
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<td>263554</td>
<td>Heat Sink, Rect Output</td>
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<td>17</td>
<td>R3</td>
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<td>Resistor W/Leads</td>
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<td>18</td>
<td>C18, C19</td>
<td>219191</td>
<td>Capacitor, Polyp Film</td>
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</table>

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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.
Hardware is common and not available unless listed.

Figure 13-5. Rear Panel Assembly

<table>
<thead>
<tr>
<th>Item No.</th>
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<th>Part No.</th>
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<td>. 1</td>
<td>PC7</td>
<td>272312</td>
<td>Circuit Card Assy, Input Filter</td>
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<td>272347</td>
<td>Stand-Off, No 10-32 X 1.500 Lg .375 Hex Nyl Fem</td>
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<td>. 3</td>
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<td>272486</td>
<td>Stand-Off, No 10-32 X 1.500 Lg .375 Hex Al Fem</td>
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<tr>
<td>. 4</td>
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<td>170647</td>
<td>Bushing, Snap-In Nyl 1.312 Id X 1.500 Mtg Hole</td>
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<td>. 5</td>
<td></td>
<td>272479</td>
<td>Enclosure Assy, Primary Power Input</td>
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<td>. 6</td>
<td>TE2</td>
<td>272482</td>
<td>Block, Terminal 1 Pole</td>
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<td>. 7</td>
<td>TE1</td>
<td>198951</td>
<td>Block, Terminal 3 Pole</td>
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<td>. 8</td>
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<td>272481</td>
<td>Bracket, Mtg Primary Block Cover</td>
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<td>. 9</td>
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<td>265204</td>
<td>Ring, Aux Power Receptacle</td>
<td>1</td>
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<td>. 10</td>
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<td>214918</td>
<td>Rcpt, Str Dx Grd 2P3W 20A 125V *5-20R</td>
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<td>. 11</td>
<td>C17</td>
<td>270072</td>
<td>Capacitor Assy, W/Lead</td>
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<tr>
<td>. 12</td>
<td>CB2</td>
<td>083432</td>
<td>Supplementary Pro, Man Reset 1P 10A 250VAC FRICT</td>
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<tr>
<td>. 13</td>
<td>CB1</td>
<td>093996</td>
<td>Supplementary Pro, Man Reset 1P 20A 250VAC FRICT</td>
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<td>. 14</td>
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<td>272478</td>
<td>Panel, Rear</td>
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<td>. 15</td>
<td></td>
<td>154022</td>
<td>Cover, Receptacle Duplex GFCI</td>
<td>1</td>
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<td>. 16</td>
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<td>272480</td>
<td>Door, Primary Access</td>
<td>1</td>
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<td>. 17</td>
<td></td>
<td>272793</td>
<td>Spacer, Hinge</td>
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</tr>
<tr>
<td>. 18</td>
<td></td>
<td>272792</td>
<td>Hinge, Door</td>
<td>2</td>
</tr>
</tbody>
</table>

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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.
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. LLC, Appleton, Wisconsin, warrants to authorized distributors 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. Notifications submitted as online warranty claims must provide detailed descriptions of the fault and troubleshooting steps taken to diagnose failed parts. Warranty claims that lack the required information as defined in the Miller Service Operation Guide (SOG) may be denied by Miller.

Miller shall honor warranty claims on warranted equipment listed below in the event of a defect within the warranty coverage time periods listed below. Warranty time periods start on the delivery date of the equipment to the end-user purchaser, or 12 months after the equipment is shipped to a North American distributor, or 18 months after the equipment is shipped to an international distributor, whichever occurs first.

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 Unless Specified
   * Auto-Darkening Helmet Lenses (No Labor) (See Classic Series Exceptions Below)
   * Engine Driven Welder/Generators
   (NOTE: Engines are Warranted Separately by the Engine Manufacturer)
   * Insight Welding Intelligence Products
   * Inverter Power Sources
   * Plasma Arc Cutting Power Sources
   * Process Controllers
   * Semi-Automatic and Automatic Wire Feeders
   * Transformer/Rectifier Power Sources
3. 2 Years Parts and Labor
   * Auto-Darkening Helmet Lenses – Classic Series Only (No Labor)
   * Auto-Darkening Weld Masks (No Labor)
   * Fume Extractors – Capture 5, Filter 400 and Industrial Collector Series
4. 1 Year Parts and Labor Unless Specified
   * AugmentedArc and LiveArc Welding Systems
   * Automatic Motion Devices
   * Bernard BTB Air-Cooled MIG Guns (No Labor)
   * CoolBelt and CoolBand Blower Unit (No Labor)
   * Desiccant Air Dryer System
   * 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)
   * RFCS Foot Controls (Except RFCS-RJ45)
   * Fume Extractors – Filter 130, MWX and SWX Series
   * 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 (except Spoolmate Spoolguns)
   * PAPR Blower Unit (No Labor)
   * Positioners and Controllers
   * Rack (For Housing Multiple Power Sources)
   * Running Gear/Trailers
   * Spot Welders
   * Subarc Wire Drive Assemblies
   * TIG Torches (No Labor)
   * Tregaskiss Guns (No Labor)
   * Water Cooling Systems
   * Wireless Remote Foot/Hand Controls and Receivers
   * Work Stations/Weld Tables (No Labor)

5. 6 Months — Parts
   * Batteries
6. 90 Days — Parts
   * Accessories (Kits)
   * Canvas Covers
   * Induction Heating Coils and Blankets, Cables, and Non-Electronic Controls
   * M-Guns
   * MIG Guns, Subarc (SAW) Torches, and External Cladding Heads
   * Remote Controls and RFCS-RJ45
   * Replacement Parts (No labor)
   * Spoolmate Spoolguns

Miller’s True Blue® Limited Warranty shall not apply to:

1. Consumable components; such as contact tips, cutting nozzles, connectors, 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.

4. Defects caused by accident, unauthorized repair, or improper testing.

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

The exclusive remedies for warranty claims are, at Miller’s option, either: (1) repair; or (2) replacement; or, if approved in writing by Miller, (3) the pre-approved 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 use). Products may not be returned without Miller’s written approval. Return shipment shall be at customer’s risk and expense.

The above remedies are F.O.B. Appleton, WI, or Miller’s authorized service facility. Transportation and freight are the customer’s responsibility. TO THE EXTENT PERMITTED BY LAW, THE REMEDIES HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES REGARDLESS OF THE LEGAL THEORY. ANY WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY, OR REPRESENTATION, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, ARE EXCLUDED AND DISCLAIMED BY MILLER.

Some US states do not allow limiting the duration of an implied warranty or the exclusion of certain damages, so the above limitations may not apply to you. This warranty provides specific legal rights, and other rights may be available depending on your state. In Canada, some provinces provide additional warranties or remedies, and to the extent the law prohibits their waiver, the limitations set out above may not apply. This Limited Warranty provides specific legal rights, and other rights may be available, but may vary by province.
## Owner’s Record

Please complete and retain with your personal records.

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

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

## 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 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.