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2006-06

Processes



MIG (GMAW) Welding

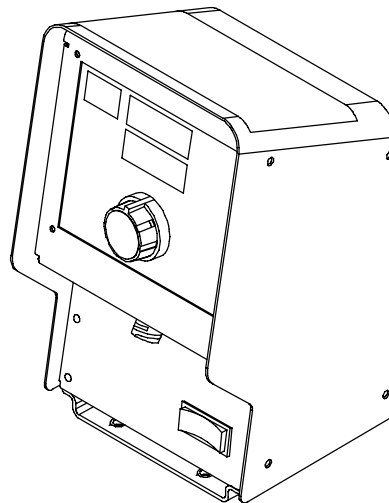
Description



Wire Feeder

ROI

(Remote Operator Interface)



Visit our website at
www.MillerWelds.com/ams

OWNER'S MANUAL

File: Advanced Manufacturing Systems 

From Miller to You

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

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

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

This Owner's Manual is designed to help you get the most out of your Miller products. Please take time to read the Safety precautions. They will help you protect yourself against potential hazards on the worksite.

We've made installation and operation quick and easy. With Miller you can count on years of reliable service with proper maintenance. And if for some reason the unit needs repair, there's a Troubleshooting section that will help you figure out what the problem is. The parts list will then help you to decide the exact part you may need to fix the problem. Warranty and service information for your particular model are also provided.



Miller is the first welding equipment manufacturer in the U.S.A. to be registered to the ISO 9001:2000 Quality System Standard.

Miller Electric manufactures a full line of welders and welding related equipment. For information on other quality Miller products, contact your local Miller distributor to receive the latest full line catalog or individual specification sheets. **To locate your nearest distributor or service agency call 1-800-4-A-Miller, or visit us at www.MillerWelds.com on the web.**



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



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SECTION 1 – SAFETY PRECAUTIONS - READ BEFORE USING

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▲ **Warning: Protect yourself and others from injury — read and follow these precautions.**

1-1. Symbol Usage



Means Warning! Watch Out! There are possible hazards with this procedure! The possible hazards are shown in the adjoining symbols.

▲ **Marks a special safety message.**

☞ Means "Note"; not safety related.



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

1-2. Arc Welding Hazards

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

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

▲ **During operation, keep everybody, especially children, away.**



ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also

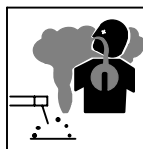
live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

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

- Turn off all equipment when not in use.
- Do not use worn, damaged, undersized, or poorly spliced cables.
- Do not drape cables over your body.
- If earth grounding of the workpiece is required, ground it directly with a separate cable.
- Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.
- Do not touch electrode holders connected to two welding machines at the same time since double open-circuit voltage will be present.
- Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.
- Wear a safety harness if working above floor level.
- Keep all panels and covers securely in place.
- Clamp work cable with good metal-to-metal contact to workpiece or worktable as near the weld as practical.
- Insulate work clamp when not connected to workpiece to prevent contact with any metal object.
- Do not connect more than one electrode or work cable to any single weld output terminal.

SIGNIFICANT DC VOLTAGE exists in inverter-type welding power sources after removal of input power.

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



FUMES AND GASES can be hazardous.

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

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



ARC RAYS can burn eyes and skin.

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

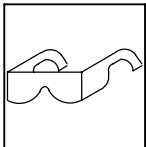
- Wear an approved welding helmet fitted with a proper shade of filter lenses to protect your face and eyes when welding or watching (see ANSI Z49.1 and Z87.1 listed in Safety Standards).
- Wear approved safety glasses with side shields under your helmet.
- Use protective screens or barriers to protect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



WELDING can cause fire or explosion.

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

- Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
- Do not weld where flying sparks can strike flammable material.
- Protect yourself and others from flying sparks and hot metal.
- Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
- Watch for fire, and keep a fire extinguisher nearby.
- Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
- Do not weld on closed containers such as tanks, drums, or pipes, unless they are properly prepared according to AWS F4.1 (see Safety Standards).
- Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock, sparks, and fire hazards.
- Do not use welder to thaw frozen pipes.
- Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
- Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.
- Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding.
- Follow requirements in OSHA 1910.252 (a) (2) (iv) and NFPA 51B for hot work and have a fire watcher and extinguisher nearby.



FLYING METAL can injure eyes.

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



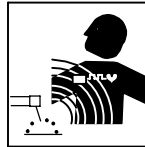
BUILDUP OF GAS can injure or kill.

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



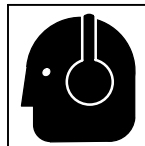
HOT PARTS can cause severe burns.

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



MAGNETIC FIELDS can affect pacemakers.

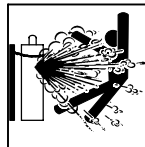
- Pacemaker wearers keep away.
- Wearers should consult their doctor before going near arc welding, gouging, or spot welding operations.



NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

- Wear approved ear protection if noise level is high.



CYLINDERS can explode if damaged.

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

- Protect compressed gas cylinders from excessive heat, mechanical shocks, physical damage, slag, open flames, sparks, and arcs.
- Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping.
- Keep cylinders away from any welding or other electrical circuits.
- Never drape a welding torch over a gas cylinder.
- Never allow a welding electrode to touch any cylinder.
- Never weld on a pressurized cylinder – explosion will result.
- Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
- Turn face away from valve outlet when opening cylinder valve.
- Keep protective cap in place over valve except when cylinder is in use or connected for use.
- Use the right equipment, correct procedures, and sufficient number of persons to lift and move cylinders.
- Read and follow instructions on compressed gas cylinders, associated equipment, and Compressed Gas Association (CGA) publication P-1 listed in Safety Standards.

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



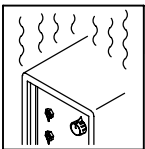
FIRE OR EXPLOSION hazard.

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



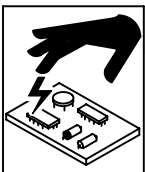
FALLING UNIT can cause injury.

- Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories.
- Use equipment of adequate capacity to lift and support unit.
- If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.



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.



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 cause injury.

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



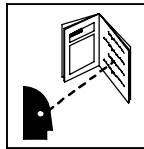
WELDING WIRE can cause injury.

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



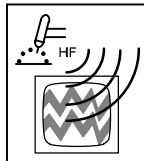
MOVING PARTS can cause injury.

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



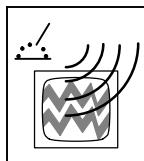
READ INSTRUCTIONS.

- Read Owner's Manual before using or servicing unit.
- Use only genuine Miller/Hobart replacement parts.



H.F. RADIATION can cause interference.

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



ARC WELDING can cause interference.

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

1-4. California Proposition 65 Warnings

- ▲ **Welding or cutting equipment produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)**
- ▲ **Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.**

For Gasoline Engines:

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

For Diesel Engines:

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

1-5. Principal Safety Standards

Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ihs.com).

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

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269-9101 (phone: 617-770-3000, website: www.nfpa.org).

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1735 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202-4102 (phone: 703-412-0900, website: www.cganet.com).

Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale

Boulevard, Rexdale, Ontario, Canada M9W 1R3 (phone: 800-463-6727 or in Toronto 416-747-4044, website: www.csa-international.org).

Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 11 West 42nd Street, New York, NY 10036-8002 (phone: 212-642-4900, website: www.ansi.org).

Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B, from National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269-9101 (phone: 617-770-3000, website: www.nfpa.org).

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

1-6. EMF Information

Considerations About Welding And The Effects Of Low Frequency Electric And Magnetic Fields

Welding current, as it flows through welding cables, will cause electromagnetic fields. There has been and still is some concern about such fields. However, after examining more than 500 studies spanning 17 years of research, a special blue ribbon committee of the National Research Council concluded that: "The body of evidence, in the committee's judgment, has not demonstrated that exposure to power-frequency electric and magnetic fields is a human-health hazard." However, studies are still going forth and evidence continues to be examined. Until the final conclusions of the research are reached, you may wish to minimize your exposure to electromagnetic fields when welding or cutting.

To reduce magnetic fields in the workplace, use the following procedures:

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep welding power source and cables as far away from operator as practical.
5. Connect work clamp to workpiece as close to the weld as possible.

About Pacemakers:

Pacemaker wearers consult your doctor before welding or going near welding operations. If cleared by your doctor, then following the above procedures is recommended.

SECTION 2 – CONSIGNES DE SÉCURITÉ – LIRE AVANT UTILISATION

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▲ **Avertissement : se protéger et protéger les autres contre le risque de blessure — lire et respecter ces consignes.**

2-1. Symboles utilisés



Symbole graphique d'avertissement ! Attention ! Cette procédure comporte des risques possibles ! Les dangers éventuels sont représentés par les symboles graphiques joints.



Ce groupe de symboles signifie Avertissement ! Attention ! Risques d'ÉLECTROCUTION, ORGANES MOBILES et PARTIES CHAUDES. Consulter les symboles et les instructions afférentes ci-dessous concernant les mesures à prendre pour supprimer les dangers.

▲ **Indique un message de sécurité particulier**

☞ Signifie NOTE ; n'est pas relatif à la sécurité.

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

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

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

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



UNE DÉCHARGE ÉLECTRIQUE peut entraîner la mort.

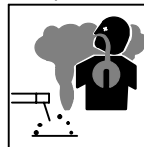
Le contact d'organes électriques sous tension peut provoquer des accidents mortels ou des brûlures graves. Le circuit de l'électrode et de la pièce est sous tension lorsque le courant est délivré à la sortie. Le circuit d'alimentation et les circuits internes de la machine sont également sous tension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

- Ne pas toucher aux pièces électriques sous tension.
- Porter des gants isolants et des vêtements de protection secs et sans trous.
- S'isoler de la pièce à couper et du sol en utilisant des housses ou des tapis assez grands afin d'éviter tout contact physique avec la pièce à couper ou le sol.
- Ne pas se servir de source électrique à courant électrique dans les zones humides, dans les endroits confinés ou là où on risque de tomber.
- Se servir d'une source électrique à courant électrique UNIQUEMENT si le procédé de soudage le demande.
- Si l'utilisation d'une source électrique à courant électrique s'avère nécessaire, se servir de la fonction de télécommande si l'appareil en est équipé.
- D'autres consignes de sécurité sont nécessaires dans les conditions suivantes : risques électriques dans un environnement humide ou si l'on porte des vêtements mouillés ; sur des structures métalliques telles que sols, grilles ou échafaudages ; en position coincée comme assise, à genoux ou couchée ; ou s'il y a un risque élevé de contact inévitable ou accidentel avec la pièce à souder ou le sol. Dans ces conditions, utiliser les équipements suivants, dans l'ordre indiqué : 1) un poste à souder DC à tension constante (à fil), 2) un poste à souder DC manuel (électrode) ou 3) un poste à souder AC à tension à vide réduite. Dans la plupart des situations, l'utilisation d'un poste à souder DC à fil à tension constante est recommandée. En outre, ne pas travailler seul !
- Couper l'alimentation ou arrêter le moteur avant de procéder à l'installation, à la réparation ou à l'entretien de l'appareil. Déverrouiller l'alimentation selon la norme OSHA 29 CFR 1910.147 (voir normes de sécurité).
- Installer le poste correctement et le mettre à la terre convenablement selon les consignes du manuel de l'opérateur et les normes nationales, provinciales 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.

- Vérifier fréquemment le cordon d'alimentation afin de s'assurer qu'il n'est pas altéré ou à nu, le remplacer immédiatement s'il l'est. Un fil à nu 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 épluchés.
- Ne pas enrouler les câbles autour du corps.
- Si la pièce soudée doit être mise à la terre, le faire directement avec un câble distinct.
- Ne pas toucher l'électrode quand on est en contact avec la pièce, la terre ou une électrode provenant d'une autre machine.
- Ne pas toucher des porte électrodes connectés à deux machines en même temps à cause de la présence d'une tension à vide doublée.
- N'utiliser qu'un matériel en bon état. Réparer ou remplacer sur-le-champ les pièces endommagées. Entretien l'appareil conformément à ce manuel.
- Porter un harnais de sécurité si l'on doit travailler au-dessus du sol.
- S'assurer que tous les panneaux et couvercles sont correctement en place.
- Fixer le câble de retour de façon à obtenir un bon contact métal-métal avec la pièce à souder ou la table de travail, le plus près possible de la soudure.
- Isoler la pince de masse quand pas mis à la pièce pour éviter le contact avec tout objet métallique.
- Ne pas raccorder plus d'une électrode ou plus d'un câble de masse à une même borne de sortie de soudage.

Il reste une TENSION DC NON NÉGLIGEABLE dans les sources de soudage onduleur quand on a coupé l'alimentation.

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



LES FUMÉES ET LES GAZ peuvent être dangereux.

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

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



LES RAYONS D'ARC peuvent entraîner des brûlures aux yeux et à la peau.

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

Des étincelles sont projetées pendant le soudage.

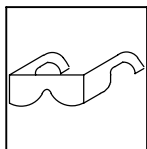
- Porter un casque de soudage approuvé muni de verres filtrants appropriés pour protéger visage et yeux pendant le soudage (voir ANSI Z49.1 et Z87.1 énumérés dans les normes de sécurité).
- Porter des lunettes de sécurité avec écrans latéraux même sous votre casque.
- Avoir recours à des écrans protecteurs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



LE SOUDAGE peut provoquer un incendie ou une explosion.

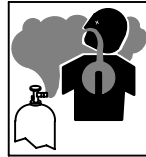
Le soudage effectué sur des conteneurs fermés tels que des réservoirs, tambours ou des conduites peut provoquer leur éclatement. Des étincelles peuvent être projetées de l'arc de soudure. La projection d'étincelles, des pièces chaudes et des équipements chauds peuvent provoquer des incendies et des brûlures. Le contact accidentel de l'électrode avec des objets métalliques peut provoquer des étincelles, une explosion, une surchauffe ou un incendie. Avant de commencer le soudage, vérifier et s'assurer que l'endroit ne présente pas de danger.

- Déplacer toutes les substances inflammables à une distance de 10,7 m de l'arc de soudage. En cas d'impossibilité, les recouvrir soigneusement avec des protections homologuées.
- Ne pas souder dans un endroit où des étincelles peuvent tomber sur des substances inflammables.
- Se protéger, ainsi que toute autre personne travaillant sur les lieux, contre les étincelles et le métal chaud.
- Des étincelles et des matériaux chauds du soudage peuvent facilement passer dans d'autres zones en traversant de petites fissures et des ouvertures.
- Afin d'éliminer tout risque de feu, être vigilant et garder toujours un extincteur à la portée de main.
- Le soudage effectué sur un plafond, plancher, paroi ou séparation peut déclencher un incendie de l'autre côté.
- Ne pas effectuer le soudage 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 (voir les normes de sécurité).
- Brancher le câble de masse sur la pièce la plus près possible de la zone de soudage pour éviter le transport du courant sur une longue distance par des chemins inconnus éventuels en provoquant des risques d'électrocution, d'étincelles et d'incendie.
- Ne pas utiliser le poste de soudage pour dégeler des conduites gelées.
- En cas de non-utilisation, enlever la baguette d'électrode du porte-électrode ou couper le fil à la pointe de contact.
- Porter des vêtements de protection exempts d'huile tels que des gants en cuir, une veste résistante, des pantalons sans revers, des bottes et un casque.
- Avant de souder, retirer toute substance combustible de ses poches telles qu'un allumeur au butane ou des allumettes.
- Suivre les consignes de OSHA 1910.252 (a) (2) (iv) et de NFPA 51B pour travaux de soudage et prévoir un détecteur d'incendie et un extincteur à proximité.



DES PARTICULES VOLANTES peuvent blesser les yeux.

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



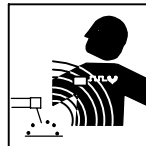
LES ACCUMULATIONS DE GAZ risquent de provoquer des blessures ou même la mort.

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



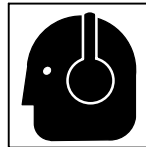
DES PIÈCES CHAUDES peuvent provoquer des brûlures graves.

- Ne pas toucher des parties chaudes à mains nues.
- Prévoir une période de refroidissement avant d'utiliser le pistolet ou la torche.
- 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 CHAMPS MAGNÉTIQUES peuvent affecter les stimulateurs cardiaques.

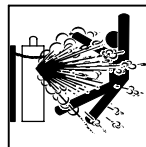
- Porteurs de stimulateur cardiaque, rester à distance.
- Les porteurs d'un stimulateur cardiaque doivent d'abord consulter leur médecin avant de s'approcher des opérations de soudage à l'arc, de gougeage ou de soudage par points.



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.

Des bouteilles de gaz protecteur contiennent du gaz sous haute pression. Si une bouteille est endommagée, elle peut exploser. Du fait que les bouteilles de gaz font normalement partie du procédé de soudage, les manipuler avec précaution.

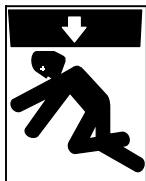
- Protéger les bouteilles de gaz comprimé d'une chaleur excessive, des chocs mécaniques, des dommages physiques, du laitier, des flammes ouvertes, des étincelles et des arcs.
- Placer les bouteilles debout en les fixant dans un support stationnaire ou dans un porte-bouteilles pour les empêcher de tomber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

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



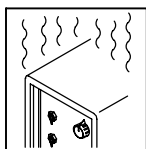
Risque D'INCENDIE OU D'EXPLOSION.

- 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.



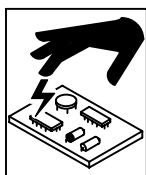
LA CHUTE DE L'APPAREIL peut blesser.

- Utiliser l'anneau de levage uniquement pour soulever l'appareil, NON PAS les chariots, les bouteilles de gaz ou tout autre accessoire.
- Utiliser un équipement de levage de capacité suffisante pour lever l'appareil.
- En utilisant des fourches de levage pour déplacer l'unité, s'assurer que les fourches sont suffisamment longues pour dépasser du côté opposé de l'appareil.



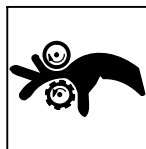
L'EMPLOI EXCESSIF peut SURCHAUFFER L'ÉQUIPEMENT.

- 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 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 PC.



DES ORGANES MOBILES peuvent provoquer des blessures.

- Ne pas s'approcher des organes mobiles.
- Ne pas s'approcher des points de coincement tels que des rouleaux de commande.



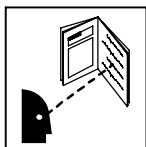
LES FILS DE SOUDAGE peuvent provoquer des blessures.

- 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.



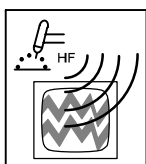
DES ORGANES MOBILES peuvent provoquer des blessures.

- S'abstenir de toucher des organes mobiles tels que des ventilateurs.
- Maintenir fermés et verrouillés les portes, panneaux, recouvrements et dispositifs de protection.
- Seules des personnes qualifiées sont autorisées à enlever les portes, panneaux, recouvrements ou dispositifs de protection pour l'entretien.
- Remettre les portes, panneaux, recouvrements ou dispositifs de protection quand l'entretien est terminé et avant de rebrancher l'alimentation électrique.



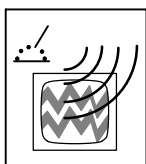
LIRE LES INSTRUCTIONS.

- Lire le manuel d'utilisation avant d'utiliser ou d'intervenir sur l'appareil.
- Utiliser uniquement des pièces de rechange Miller/Hobart.



LE RAYONNEMENT HAUTE FRÉQUENCE (HF) risque de provoquer des interférences.

- Le rayonnement haute fréquence (HF) peut provoquer des interférences avec les équipements de radio-navigation et de communication, les services de sécurité et les ordinateurs.
- Demander seulement à des personnes qualifiées familiarisées avec des équipements électroniques de faire fonctionner l'installation.
- L'utilisateur est tenu de faire corriger rapidement par un électricien qualifié les interférences résultant de l'installation.
- Si le FCC signale des interférences, arrêter immédiatement l'appareil.
- Effectuer régulièrement le contrôle et l'entretien de l'installation.
- Maintenir soigneusement fermés les portes et les panneaux des sources de haute fréquence, maintenir les éclateurs à une distance correcte et utiliser une terre et un blindage pour réduire les interférences éventuelles.



LE SOUDAGE À L'ARC risque de provoquer des interférences.

- L'énergie électromagnétique peut gêner le fonctionnement d'appareils électroniques comme des ordinateurs et des robots.
- Veiller à ce que tout l'équipement de la zone de soudage soit compatible électromagnétiquement.
- Pour réduire la possibilité d'interférence, maintenir les câbles de soudage aussi courts que possible, les grouper, et les poser aussi bas que possible (ex. par terre).
- Veiller à souder à une distance de 100 mètres de tout équipement électronique sensible.
- Veiller à ce que ce poste de soudage soit posé et mis à la terre conformément à ce mode d'emploi.
- En cas d'interférences après avoir pris les mesures précédentes, il incombe à l'utilisateur de prendre des mesures supplémentaires telles que le déplacement du poste, l'utilisation de câbles blindés, l'utilisation de filtres de ligne ou la pose de protecteurs dans la zone de travail.

2-4. Proposition californienne 65 Avertissements

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

▲ Les batteries, les bornes et autres accessoires contiennent du plomb et des composés à base de plomb, produits chimiques dont l'État de Californie reconnaît qu'ils provoquent des cancers et des malformations congénitales ou autres problèmes de procréation. Se laver les mains après manipulation.

Pour les moteurs à essence :

▲ Les gaz d'échappement des moteurs contiennent des produits chimiques dont l'État de Californie reconnaît qu'ils provoquent des cancers et des malformations congénitales ou autres problèmes de procréation.

Pour les moteurs diesel :

▲ Les gaz d'échappement des moteurs diesel et certains de leurs composants sont reconnus par l'État de Californie comme provoquant des cancers et des malformations congénitales ou autres problèmes de procréation.

2-5. Principales normes de sécurité

Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, de Global Engineering Documents (téléphone : 1-877-413-5184, site Internet : www.global.ihs.com).

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

National Electrical Code, NFPA Standard 70, de National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269-9101 (téléphone : 617-770-3000, site Internet : www.nfpa.org).

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, de Compressed Gas Association, 1735 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202-4102 (téléphone : 703-412-0900, site Internet : www.cganet.com).

Code for Safety in Welding and Cutting, CSA Standard W117.2, de Canadian Standards Association, Standards Sales, 178 Rexdale

Boulevard, Rexdale, Ontario, Canada M9W 1R3 (téléphone : 800-463-6727 ou à Toronto 416-747-4044, site Internet : www.csa-international.org).

Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, de American National Standards Institute, 11 West 42nd Street, New York, NY 10036-8002 (téléphone : 212-642-4900, site Internet : www.ansi.org).

Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B, de National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269-9101 (téléphone : 617-770-3000, site Internet : www.nfpa.org).

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910, Subpart Q, and Part 1926, Subpart J, de U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250 (il y a 10 bureaux régionaux—le téléphone de la région 5, Chicago, est 312-353-2220, site Internet : www.osha.gov).

2-6. Information EMF

Considérations sur le soudage et les effets de basse fréquence et des champs magnétiques et électriques.

Le courant de soudage, pendant son passage dans les câbles de soudage, causera des champs électromagnétiques. Il y a eu et il y a encore un certain souci à propos de tels champs. Cependant, après avoir examiné plus de 500 études qui ont été faites pendant une période de recherche de 17 ans, un comité spécial ruban bleu du National Research Council a conclu : « L'accumulation de preuves, suivant le jugement du comité, n'a pas démontré que l'exposition aux champs magnétiques et champs électriques à haute fréquence représente un risque à la santé humaine ». Toutefois, des études sont toujours en cours et les preuves continuent à être examinées. En attendant que les conclusions finales de la recherche soient établies, il vous serait souhaitable de réduire votre exposition aux champs électromagnétiques pendant le soudage ou le coupage.

Pour réduire les champs magnétiques sur le poste de travail, appliquer les procédures suivantes :

1. Maintenir les câbles ensemble en les tordant ou en les enveloppant.
2. Disposer les câbles d'un côté et à distance de l'opérateur.
3. Ne pas courber pas et ne pas entourer pas les câbles autour de votre corps.
4. Garder le poste de soudage et les câbles le plus loin possible de vous.
5. Connecter la pince sur la pièce aussi près que possible de la soudeuse.

En ce qui concerne les stimulateurs cardiaques

Les porteurs de stimulateur cardiaque doivent consulter leur médecin avant de souder ou d'approcher des opérations de soudage. Si le médecin approuve, il est recommandé de suivre les procédures précédentes.

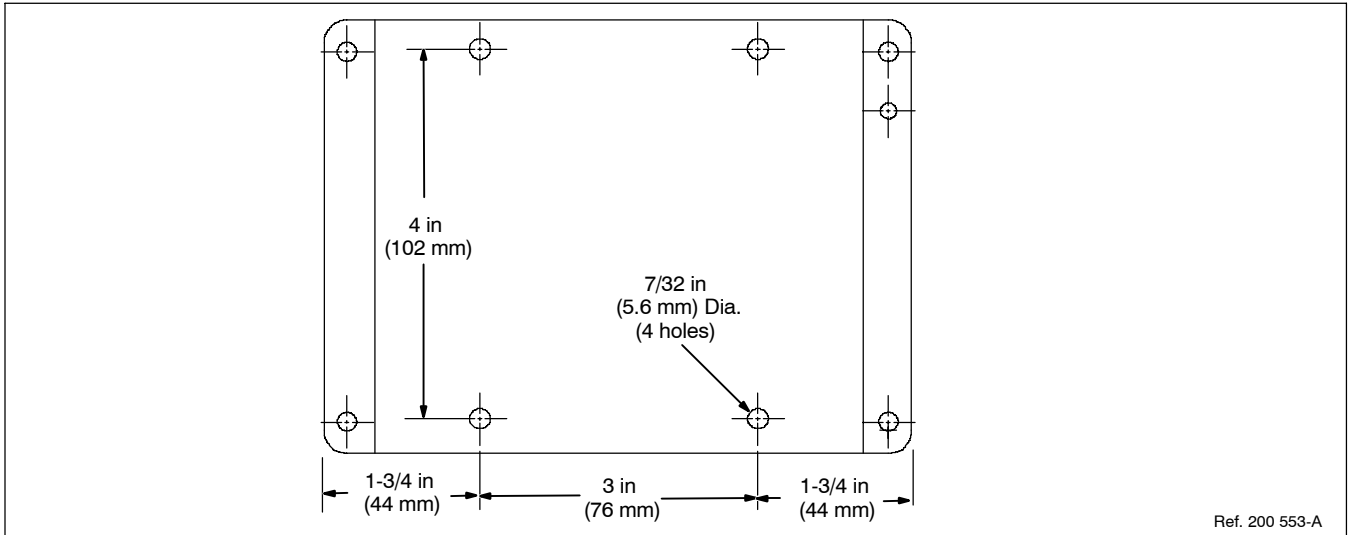
SECTION 3 – INTRODUCTION

3-1. Specifications

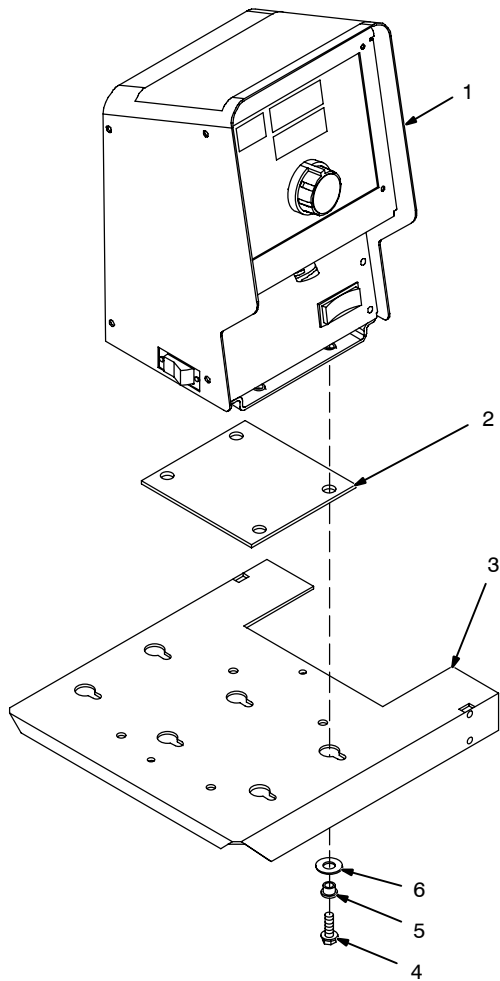
Type of Input Power	Welding Power Source Type	Wire Feed Speed Range	Wire Diameter Range	Welding Circuit Rating	Overall Dimensions	Weight
40 Volts DC 10 Amperes	Access Series	Standard: 40 To 1400 ipm (1.0 To 35.6 mpm)	.035 To 1/16 in (0.8 To 1.6 mm) Max Spool Weight: 60 lb (27 kg)	100 Volts, 750 Amperes, 100% Duty Cycle	Length: 7 in (178 mm) Width: 7 in (178 mm) Height: 12 in (305 mm)	11 lb (5 kg)

SECTION 4 – INSTALLATION

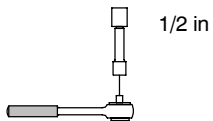
4-1. Mounting Plate Hole Layout



4-2. Installing Insulator Kit



Tools Needed:



▲ Turn Off and disconnect input power.

- 1 ROI Control
- 2 Insulator Plate
- 3 Mounting Plate
- 4 1/4-20x3/4 in Screw (4)
- 5 Nylon Shoulder Washer (4)
- 6 3/8 in Flat Washer (4)

Place insulator plate between ROI base and metal mounting surface.

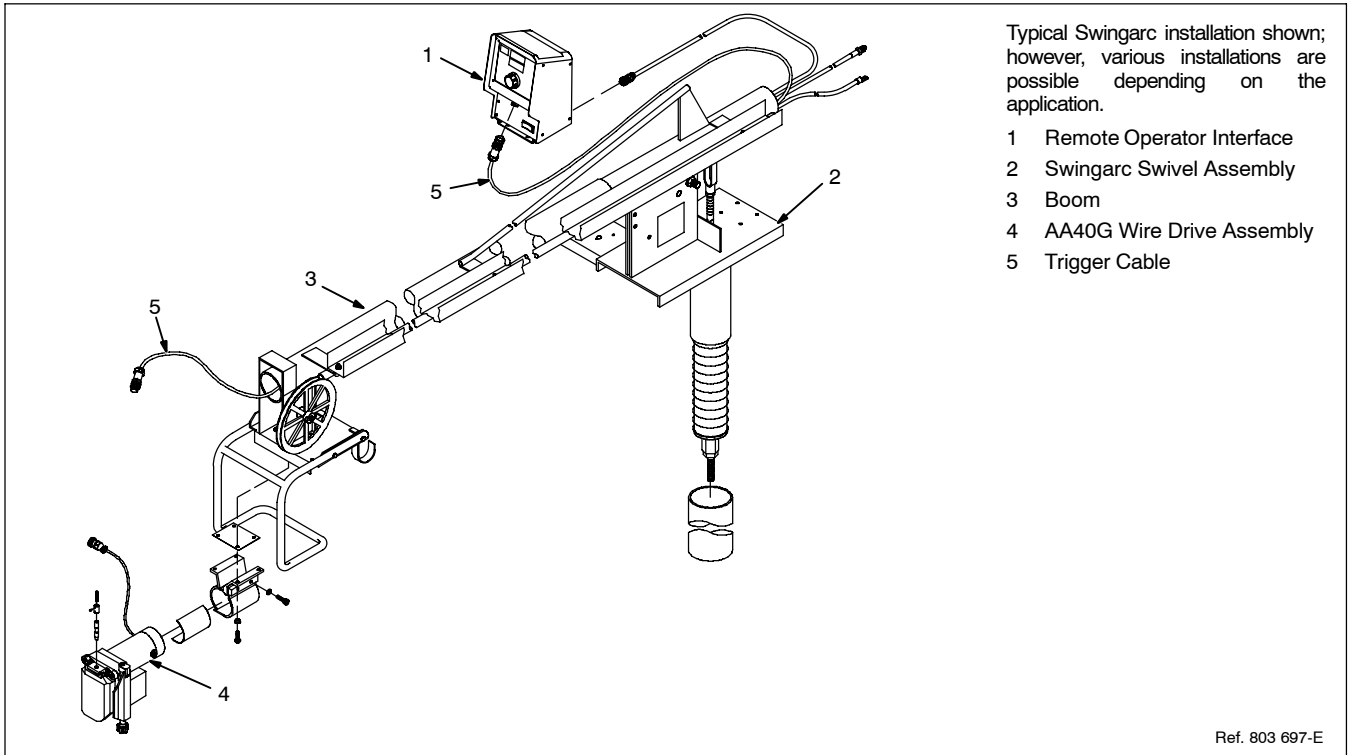
Place nylon shoulder washer over screw.

Place flat washer over shoulder washer.

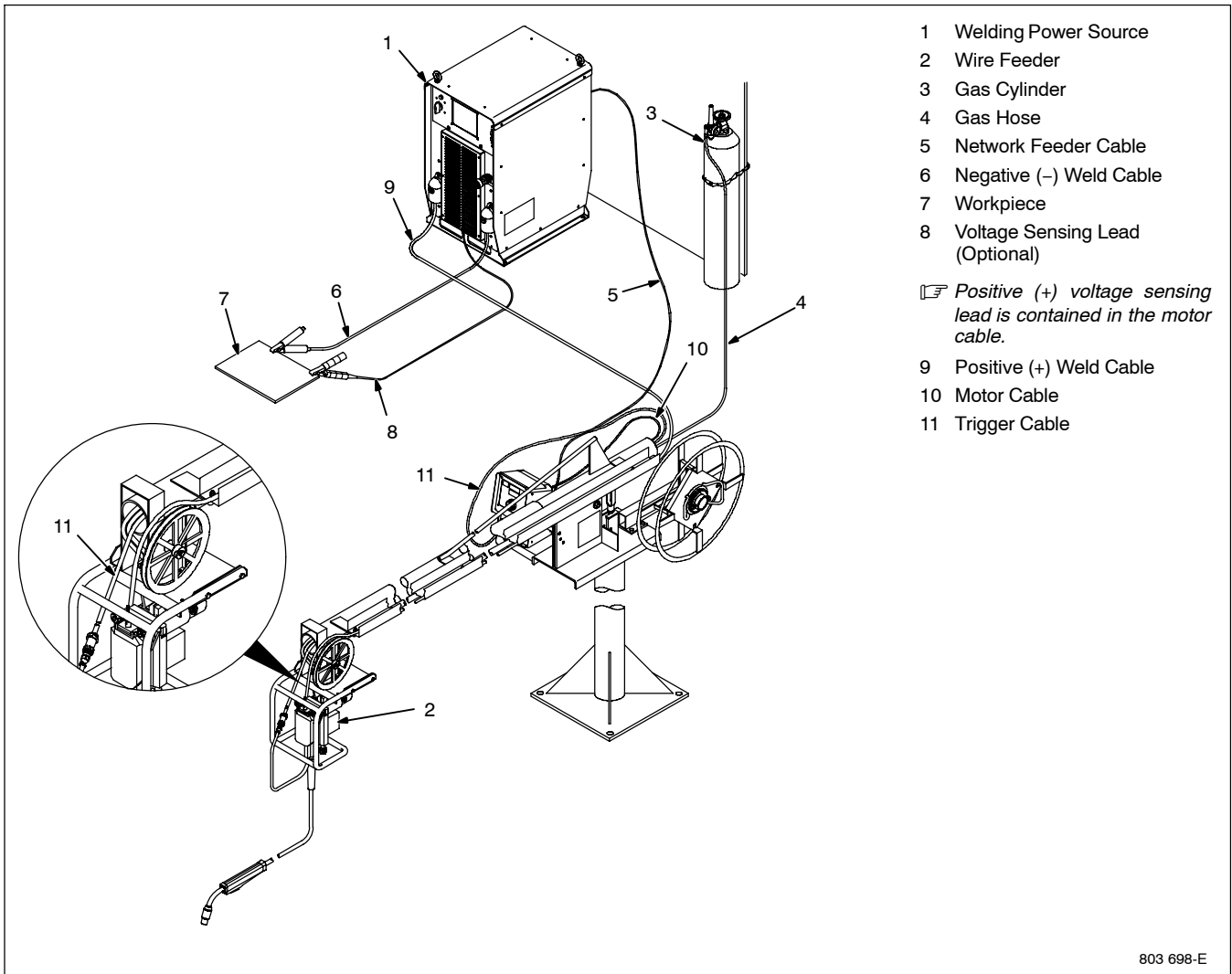
Insert hardware assembly through hole in metal mounting base, insulator, and into ROI base (4 locations). Tighten hardware to secure control.

804 165-A

4-3. Remote Operator Interface And Wire Drive Installation



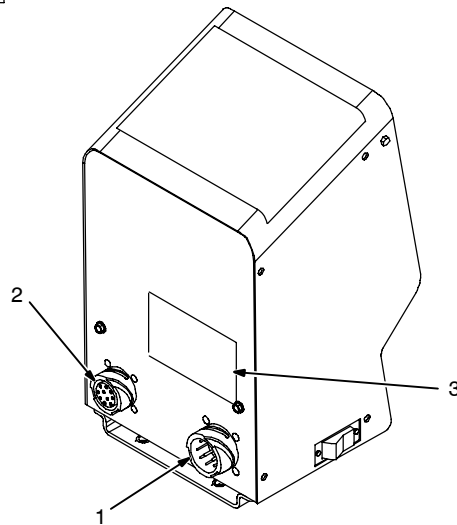
4-4. Connection Diagram



4-5. Rear Panel Connections


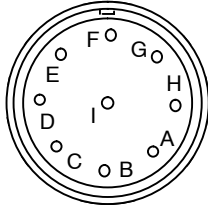


- 1 9-Pin Network Receptacle
- 2 Motor Control/Shielding Gas Valve Receptacle
- 3 Rating Label Location



Ref. 803 503-A

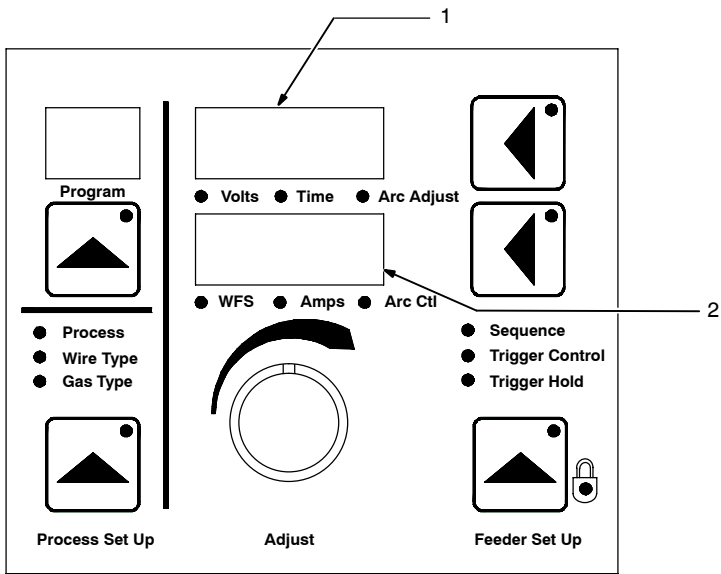
4-6. 9-Pin Network Receptacle Information

 REMOTE 9	Pin	Pin Information
	A	Capacitor C1 to ground
	B	Shield
	C	Volt sense
	D	Can low
	E	Can high
	F	+24 volts dc common
	G	+ 24 volts dc
	H	Motor voltage +40 volts dc common
	I	Motor voltage +40 volts dc

4-7. Gun Recommendation Table

Process	Gun
GMAW – Hard or Cored Wires	400, 500, And 600 Amp Air-Cooled Guns
GMAW – Pulse	Water-Cooled Guns

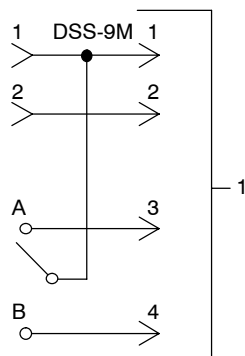
4-8. Power Source Display At Power Up



- 1 Upper Display
- 2 Lower Display

Power Source	Upper Display	Lower Display	Voltage Range	
	Net	Wait		
	DTEC	OFF		
Axcess	Axcs	300/450/675	10	44

4-9. Dual Schedule Switch Option



- 1 Maint 2P (Maintained-Contact 2-Pole Switch)
- DSS-9M Part# 041 793

SECTION 5 – OPERATION

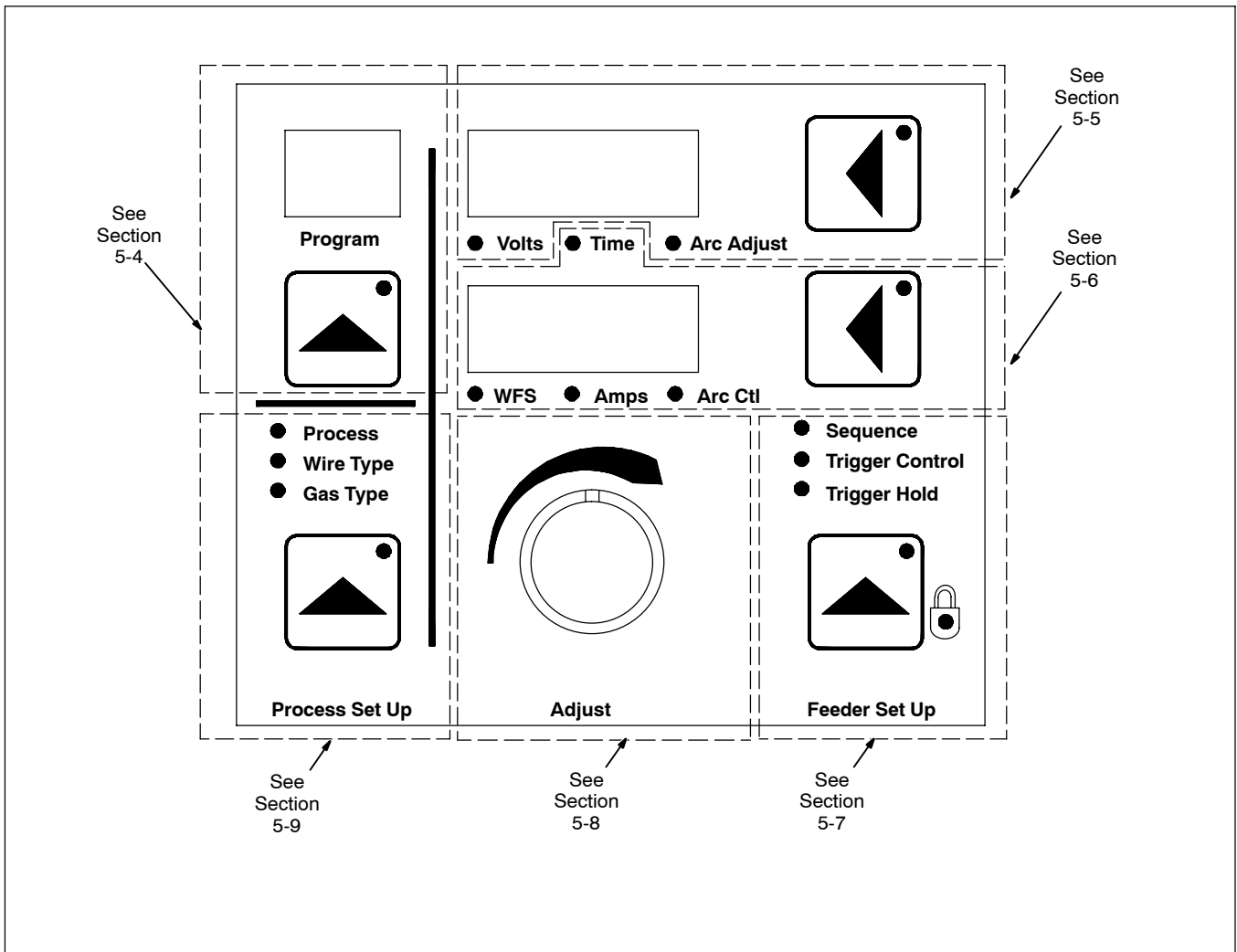
5-1. Operational Terms

The following is a list of terms and their definitions as they apply to the interface unit in the wire feeder:

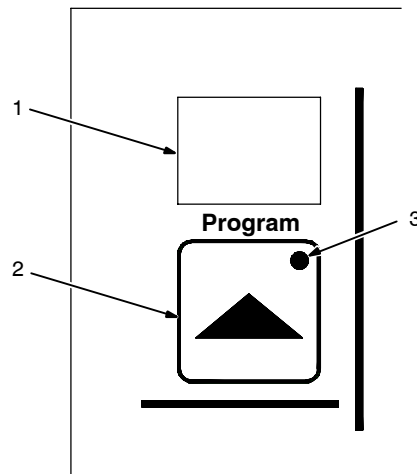
General Terms:

Arc Adjust	Term used to represent arc length adjustments in pulse programs. Increasing Arc Adjust increases the actual arc length. Likewise, decreasing arc adjust shortens arc length. Arc Adjust is replaced by volts in MIG programs.
Trigger Control	Selecting Trigger Control allows activating trigger functions such as DS, TH, 4T, TDS, and TPS.
DS (Dual Schedule)	Dual Schedule allows selecting a pair of programs that can be used together.
TH (Trigger Hold)	Trigger Hold allows the operator to feed wire without continuously pressing the gun trigger. In trigger hold mode, momentarily press gun trigger, and wire will feed until gun trigger is momentarily pressed again.
4T	4T allows the operator to select between weld parameters and crater parameters using the gun trigger. Crater time must be set for at least 0.2 seconds to make this function operational. If gun trigger is released during welding, unit goes into trigger hold, then pressing and holding trigger again causes unit to stay in crater until trigger is released and crater parameter times out.
TDS (Trigger Dual Schedule)	TDS allows the operator to select between a pair of weld programs by using the gun trigger. In TDS mode, momentarily pressing the gun trigger allows the operator to cycle between a pair of preselected weld programs.
TPS (Trigger Program Schedule)	TPS allows the operator to select weld programs by using the gun trigger. In TPS mode, momentarily pressing the gun trigger allows the operator to cycle through preselected weld programs up to a total of 8 programs.
Program	Eight active slots for selection of various processes, wire type, and parameters.
Process	A selection made for MIG, Pulse, Accu-pulse, and RMD (optional).
MIG	CV weld process with individual settings of voltage and wire speed.
Pulse	Conventional pulse program using peak, background, pulse width, frequency, and peak voltage as factory taught data. Adaptive method is controlled by frequency adjustment.
Accu-pulse	Pulse process utilizing constant current ramps with constant voltage control of peaks and backgrounds. Adaptive response is controlled by peak and minimum current levels. Benefits are shorter arc lengths, better puddle control, more tolerant of tip-to-work variation, less audible noise, no arc wandering, allows weld to fill in at toes increasing travel speed and deposition, and more tolerant to poor fit up and gaps.
Accuspeed	CV Pulse process designed for high travel speeds. Typically used in Robotic applications. Arc is designed to be tight and fast. Front panel display is ACCU – SPED.
AccuCurve	CV Pulse process using a pulse waveform with modified curves at particular locations within the waveform. Has a distinguished change in arc characteristics. Front panel display is ACCU – CURV.
RMD (optional)	RMD refers to Regulated Metal Deposition. A precisely controlled short-circuit transfer. Benefits of RMD are well suited to thin materials, improves gap filling and spatter reduction. Provides less heat input into workpiece, minimizes distortion and allows use of larger diameter wire on thin gauge materials.
Wire Type	Selection of wire type by alloys and classification.
Gas Type	Selection of shielding gas being used in application.
Process Set Up	Selection procedure for entering program.
Program Load	Enters selected program information into program slot.
Volts	Preset voltage in MIG mode at idle, actual voltage while welding, and 3 seconds hold value at end of weld.
Time	Indicates time values being set for timed functions (e.g. Preflow, Postflow which are only available in the Arc On and Analog input or the Arc On and No Analog input modes).
Arc Length	Distance from end of wire electrode to workpiece.
WFS	Term used to represent wire feed speed. In MIG mode, wire feed setting is independent of voltage setting. In pulse, Accu-pulse, and RMD (optional) adjusting wire feed speed also increases power level on wire electrode (one knob control).
Amps	Indicates average amperage while welding and 3 seconds hold value at end of weld.
Arc Control	Allows setting of inductance in MIG mode. In pulse and Accu-pulse mode, this adjustment changes the arc cone by adjusting the preprogrammed factory pulse data. In RMD (optional), this control will affect the in much the same way as inductance.
Inductance	In short circuit GMAW welding, an increase in inductance will decrease the number of short circuit transfers per second (provided no other changes are made) and increase the arc-on time. The increased arc-on time makes the welding puddle more fluid.
Adjust	Control knob used to change or set parameters and functions.

5-3. Front Panel Sections



5-4. Program Push Button



1 Program Display

The number of the active program is displayed.

2 Program Push Button

3 Program Push Button LED

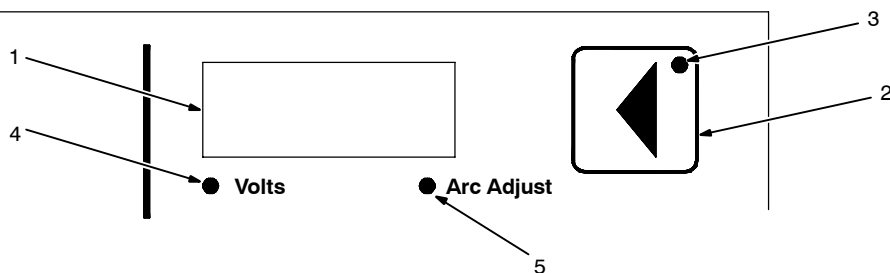
The LED lights to indicate that programs can be changed using the Adjust knob.

Momentarily press button to illuminate LED. To change the program number, rotate Adjust knob to select one of eight programs.

Pressing and holding the push button will display the program name, current wire size, wire type, and process.

To reset feeder to factory settings, turn power source off for 10 seconds. Press and hold button in on power up, wait until top display shows RST and bottom display shows NO before releasing button. Feeder Set Up button LED will begin flashing. Turn Adjust knob to change bottom display to show YES, then press Feeder Set Up button to confirm selection. The top display will show CYCL and the lower display will show PWR. Turn welding power source power off for 10 seconds, then turn power back on again.

5-5. Upper Display



1 Upper Display

The upper display at idle (not welding) shows preset volts with process selection MIG or Arc Adjust for all other processes. When welding, the display shows actual voltage. The display will show actual voltage for approximately 3 seconds after welding stops before returning to preset value.

2 Upper Display Push Button

Press the button to illuminate the LED and allow changing information in the display.

3 Upper Display Push Button LED

The upper display push button LED


illuminates to indicate that information displayed can be changed by the Adjust knob.

4 Volts LED

Indicates a voltage value is being displayed, preset voltage in MIG when not welding and actual voltage while welding.

5 Arc Adjust LED

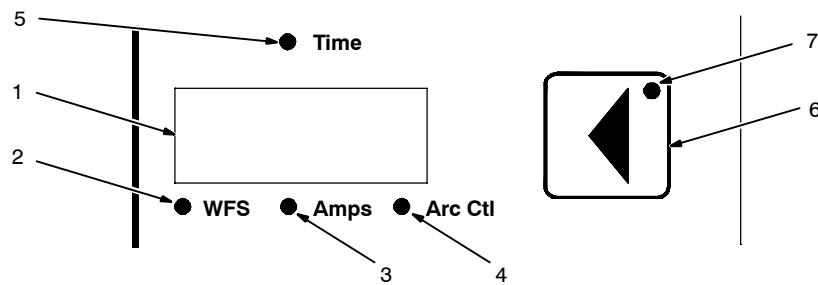
Indicates that displayed value is an arc length value when the process is Pulse, Accu-pulse, or RMD (optional).

 At any time while welding, the display allows adjustment of the weld voltage or arc adjust preset values by turning the

Adjust knob. The preset values will be displayed while the knob is being rotated and return to displaying actual values when adjustment is completed.

To activate Carbon Arc Gouging (CAC), press and hold the upper display push button in on power up. CAC will appear on the upper display and NO will appear on the lower display. Rotate adjust knob to YES on the lower display, and press the flashing Feeder Set up push button. CYCL will appear on the upper display and PWR will appear on the lower display. Turn welding power source off and back on again to enable the Carbon Arc Gouging process selection.

5-6. Lower Display



1 Lower Display

The lower display shows WFS (wire feed speed), AMPS (amperage), ARC CTL (arc control), or Time. The feeder displays only preset wire speed at idle (not welding). While welding, the average amperage is displayed. The lower display shows welding sequence time when the Time LED is illuminated.

2 WFS (Wire Feed Speed) LED

LED illuminates to indicate the preset wire feed value is being displayed and can be adjusted using the Adjust knob.

3 Amps LED

LED illuminates to indicate the average amperage is being displayed while welding and for 3 seconds after welding is terminated. The amperage must be above a minimum value of 25 amps for this function to operate.

4 Arc Ctl (Arc Control) LED

LED illuminates to indicate that inductance (MIG) or ARC [Pulse, Accu-pulse, or RMD (optional)] is being displayed and can be adjusted using the Adjust knob.

5 Time LED

LED illuminates to indicate that a time value is being displayed for a sequence function and can be adjusted using the Adjust knob.

6 Lower Display Push Button


7 Lower Display Push Button LED

Pressing the button illuminates the LED and selects either WFS or Arc Ctl value for changing using the Adjust knob.

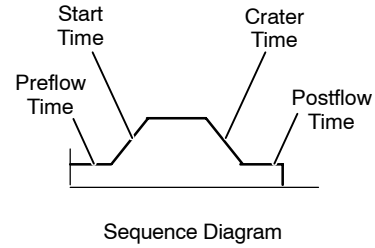
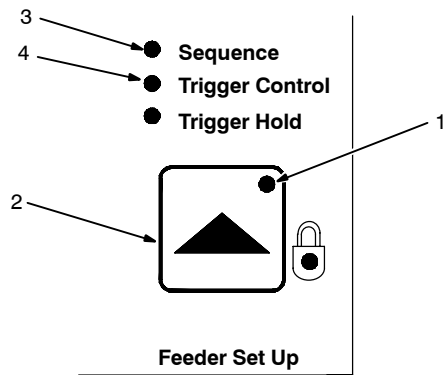
To select Arc Ctl, press and hold lower display button for 2 seconds. The top display will show either INDU for a MIG program or ARC for Pulse, Accu-pulse, or RMD (optional). To exit Arc Ctl or INDU, either press the upper display push button or press and hold the lower display push button for 2 seconds.

When the lower display push-button LED and the WFS LED are both illuminated, it is possible to change WFS while welding by using the Adjust knob. The value in the display will switch momentarily to show preset wire feed speed while turning the Adjust knob and revert back to actual value when adjustment is completed.

When the Arc Ctl LED is illuminated, it is possible to change values while welding by using the Adjust knob. To return to actual values on the display, exit the Arc Ctl display.

 The lower display push button has additional functions when entering the sequence and trigger control functions (see Section 5-7).

5-7. Feeder Set Up Push Button



- 1 Feeder Set Up Push Button LED
 - 2 Feeder Set Up Push Button
- Press button to choose Sequence. Feeder Set Up push-button LED will illuminate.
- 3 Sequence LED
- When the Feeder Set Up button is pressed once, the Sequence LED will illuminate and the upper display will show sequence options. Use the Adjust knob to select PRE (preflow), STRT (start), CRTR (crater), or POST (postflow).
 - Press the lower display push button and the Lower Display push-button LED will illuminate as well as the lower display. The Time LED will automatically begin flashing indicating that a time value can be entered by turning the Adjust knob. By entering a time value the sequence state will become active. To turn off a sequence state, change the time value to OFF. To step back for selecting another sequence option, press

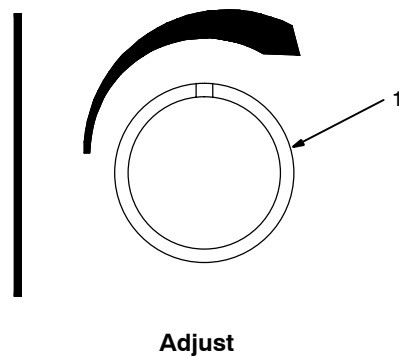
the Upper Display push button.

- The Sequence option STRT and CRTR will have additional parameter settings. By pushing the Lower Display push button a second time, while STRT or CRTR appear in the upper display, allows entering voltage (MIG) or Arc Adjust [Pulse, Accu-pulse, or RMD (optional)]. Use the Adjust knob to change the values indicated by the flashing LED for either Volts or Arc Adjust. Pressing the Lower Display push button a third time will activate the WFS setting for either STRT or CRTR and the WFS LED will begin flashing. Use the Adjust knob to change the WFS value.
 - Pressing the Feeder Set Up button two more times will exit the Sequence menu and return the system to standby mode.
- 4 Trigger Control LED
- Press the Feeder Set Up button twice and the Trigger Control LED will illuminate, and the upper display will show the different trig-

ger control selections. Use the Adjust knob to cycle through the trigger control methods as follows: DS, TH, TDS, TPS, and 4T (see Section 5-1 for definitions). The lower display will show the current state of each trigger control method as being on or off. Not all trigger control methods are compatible with each other, therefore, turning on certain trigger selections will cause other trigger selections to turn off.

- Press the lower display push button to illuminate the push-button LED and enable the use of the Adjust knob to allow turning selected trigger control methods on or off. If trigger hold is set to on, the Trigger Hold LED will illuminate.
- ☞ Trigger Hold is automatically set to On with the 4T trigger selection. This is part of the 4T function.*
- Press the Feeder Set Up button a third time to cycle back to standby mode.

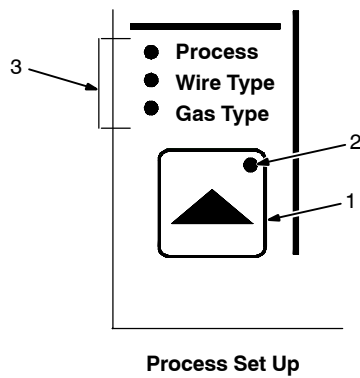
5-8. Adjust Knob



- 1 Adjust Knob

The Adjust knob is used to change functions and parameters. Refer to the front panel sections for information regarding use of this control.

5-9. Process Set Up Push Button



- 1 Process Set Up Push Button
- 2 Process Set Up LED
- 3 Program Selection LEDs

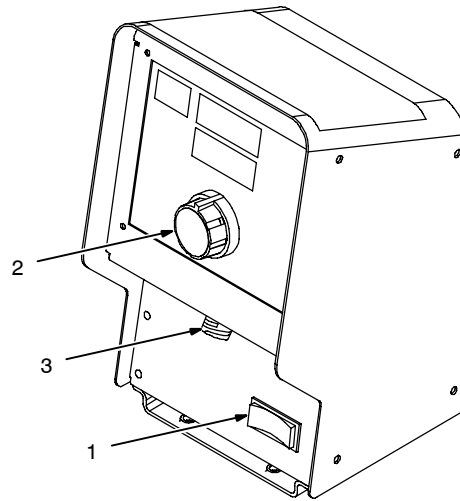
- Press the Process Set Up push button the first time will illuminate the button LED and the Process LED. The upper and lower displays will be used for Accu-pulse and only the lower display for MIG, Pulse and RMD (optional) to show the current process installed in this program. To change process, turn the adjust knob.
- Pressing the Process Set Up push button a second time will illuminate the Wire Type LED and the lower display will show wire types available for selected processes (see Table 4-1 for wire abbreviation). To make a selection, turn the Adjust knob.
- Pressing the Process Set Up push button a third time will keep Wire Type LED lit and the upper display will show wire alloy type (see Table 4-1 for alloy types). The upper display push-button LED will be flashing indicating that turning the Adjust knob will change the alloy type for the selected process and wire type.
- Pressing the Process Set Up push button a fourth time will keep Wire Type LED lit and the upper display will show wire size. The upper display push button will be flashing indicating that turning the Adjust knob will select wire sizes available for that particular process and wire type.
- Pressing the Process Set Up push button a fifth time will illuminate the Gas Type LED and the lower display will show GAS and the upper display will show gas selection (see Table 4-1 for gas abbreviations). To make a gas type selection, turn the Adjust knob.
- If any of the Process, wire type, alloy type, wire size, or gas type was changed, then pressing the Process Set Up push button a sixth time will show PROG in the upper display and LOAD in the lower display. The new program would be loaded for that particular program in slot 1 thru 8. If no changes were made to any setup items, no program will be loaded, and unit will return to standby mode.
- If a custom program is loaded using an optional PDA with File Management/WaveWriter software, the Program Display will have a "C" in front of the program number. This indicates that the program is not a factory default program and has been modified. By selecting or changing any process variable and performing a program load will restore the program back to the factory default program.
- Pressing and holding the Process Set Up push button in on power up allows viewing the software revisions of each circuit board in the system. The top display shows the board (PCM, UIM, WFCM, and AIM (automated units only) and the lower display shows the last 3 digits of the circuit board part number plus a letter designator. Press the flashing Feeder Set Up push button to exit the screen displays and continue the power up process.

Table 4-1. Welding Wire And Gas Abbreviations*

Wire Description	Wire Abbreviation	Alloy Type	Gas Type	Gas Abbreviation
Steel	STL	E70, E100, E120	100% CO ₂ , 90% Argon/10% CO ₂ , 85% Argon/15% CO ₂ , 75% Argon/25% CO ₂ , 95% Argon/5% CO ₂ , 95% Argon /5% O ₂ , 98% Argon/2% O ₂	CO2 C10 C15 C25 C5 OX5 OX2
Stainless Steel	SS	308, 309, 312, 316	98% Argon, 2% O ₂ (81Ar/18HE/1CO ₂ Accu-pulse)	OX2 Tri Gas
			90HE/7-1/2Ar/2-1/2CO ₂ MIG/RMD)	Tri Gas
Cored Tubular Wire	MCOR	71, 76, 86R, 409	90% Argon/10% CO ₂	C10
			98% Argon/2% O ₂	OX2
Aluminum	ALUM	4XXX, 5XXX	100% Argon	ARGN

* Not all wire types may be available with your unit.

5-10. Jog/Purge




- 1 Jog/Purge Push Button
- 2 Adjust Control
- 3 Gun Trigger Receptacle

803 693-A

The Jog/Purge switch provides the following functions:

- Pressing left side of the Jog/Purge switch allows the operator to feed wire without energizing the weld power or gas valve circuit. The wire will feed at a 60 ipm rate for 3 seconds, then the rate ramps up to 700 ipm until the Jog switch is released.
- The unit also provides the ability to jog the wire feeder by means of the gun trigger. When the gun trigger is pressed without starting an arc, the wire will feed at run-in speed for the first 3 seconds. During this time OCV (open circuit voltage) will be pres-

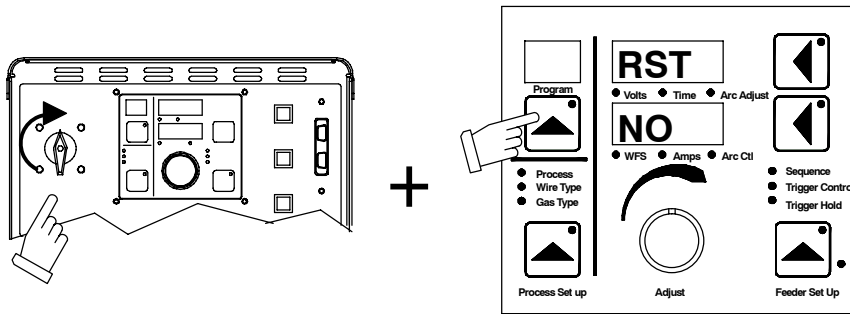
ent as indicated on feeder upper display. After 3 seconds the weld output turns off and the wire will feed at 60 ipm for the next 3 seconds and then ramps up to 700 ipm until trigger is released or 30 seconds elapses. If the gun trigger is still activated after 30 seconds, the jog operation is terminated to prevent complete unspooling of the wire and an "ERR STRT" message is displayed on the upper and lower displays. Releasing and pressing the trigger again will clear the error.

 If Start Error is enabled using an optional PDA with File Management/WaveWriter software, an "ERR STRT" will occur after

the first 3 seconds of run in and jogging from the trigger is not possible.

- Pressing right side of the Jog/Purge switch allows the operator to purge gas lines before welding and to preset gas pressure at the regulator.
- This unit is equipped with Auto Thread capability. By rocking the switch from purge to jog within 0.5 seconds will automatically feed wire for a factory default setting of 192 in (4877 mm) of wire before stopping. The default feed rate is 700 ipm. These settings can be changed using an optional PDA with File Management/WaveWriter software.

5-11. Reset Mode

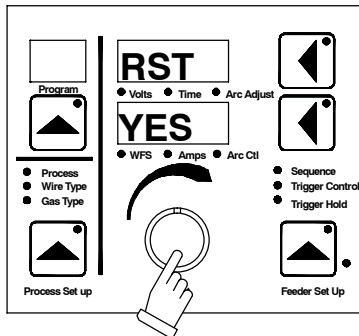


Reset mode is not active when Program Lock is enabled.

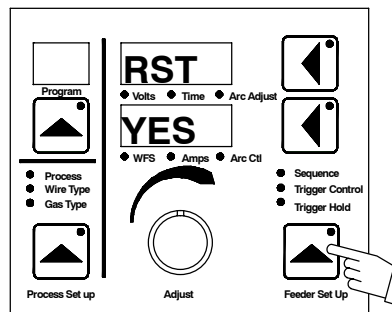
The reset mode allows the operator to reload factory program settings for all eight active programs in the unit.

System configuration data will be lost during the Reset operation.

Enter reset mode by turning power On and pressing the Program Push Button until the RST NO message is displayed. RST NO message will not display until after the power-up sequence is completed (approximately 20 seconds).



Rotate Adjust knob to change NO to YES.

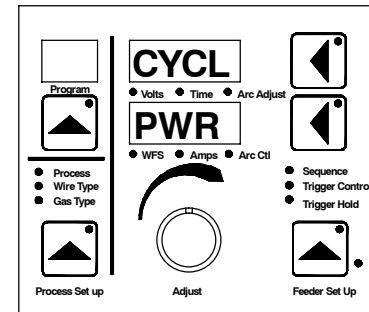


Press the Arc Control button to confirm the reset.

The reset message is displayed for 2 seconds while factory program settings are being reloaded.

During the reset mode the following factory default programs are loaded into the unit:

Program 1	Pulse .035 Mild Steel 90% Argon, 10% CO ₂
Program 2	MIG .035 Mild Steel 75% Argon, 25% CO ₂
Program 3	Accu-pulse .035 Mild Steel 90% Argon, 10% O ₂
Program 4	Pulse .045 Mild Steel 90% Argon, 10% CO ₂
Program 5	MIG .045 Mild Steel 75% Argon, 25% CO ₂
Program 6	Accu-pulse .045 Mild Steel 90% Argon, 10% O ₂
Program 7	Pulse .052 Mild Steel 90% Argon, 10% CO ₂
Program 8	MIG .052 Mild Steel 75% Argon, 25% CO ₂



Cycl Pwr message appears on the display when programs complete loading.

Turn power off, wait 10 seconds, and turn power back on again to complete the reset operation.

After Reset is complete, be sure to load appropriate programs that contain the correct wire size, process, and shielding gas for the welding operation

SECTION 6 – SETTING SEQUENCE PARAMETERS

6-1. Sequence Parameters In A Program



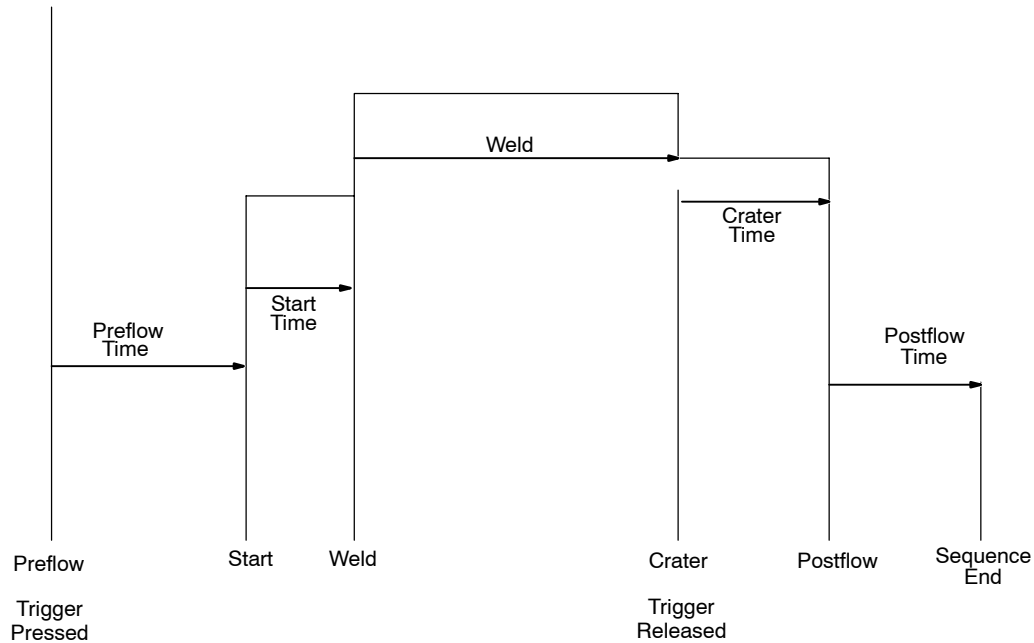
☞ For more information on Sequence mode, see Feeder Set Up Push Button in Section 5-7.

Weld Time can only be set by using an optional PDA with File Management/WaveWriter software.

If time is set to zero in any timed sequence, the sequence is skipped.

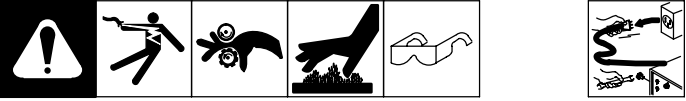




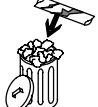


☞ Maximum IPM may actually be lower depending on the process and wire type selection.

Sequence	Parameters		
	Volts/Arc Adjust	IPM	Seconds
1. Preweld			Off-5.0
2. Postflow			Off-5.0
3. Start	10.0-44.0/ 0-99	40-1400	Off-5.0
4. Crater	10.0-44.0/ 0-99	40-1400	Off-5.0



SECTION 7 – MAINTENANCE

7-1. Routine Maintenance

					 Disconnect power before maintaining.	 <i>Maintain more often during severe conditions.</i>
	✓ = Check ◇ = Change ● = Clean ☆ = Replace * To be done by Factory Authorized Service Agent				Reference	
Every 3 Months	 ☆ Unreadable Labels	 ✓☆ Cracked Parts	 ✓☆ Cords			
Every 6 Months	 ● Inside Unit					

7-2. Diagnostics

The following error messages are shown on the upper and lower displays to indicate specific errors. Explanations are in the text below:

ERR

TACH

Indicates a tachometer error.

ERR

MOTR

Indicates a motor error.

ERR

WFS

Indicates a wire feed speed error.

ERR

STRT

Indicates an arc start error.

ERR

STOP

Indicates an arc stop error.

ERR

FLOW

Indicates a gas flow error.

ERR

COOL

Indicates a coolant flow error.

ERR

GND

Indicates a ground current error.

ERR

STUK

Indicates a wire stuck error.

ERR

TEMP

Indicates a temperature error.

ERR

LINE

Indicates a line error.

ERR

ARC

Indicates an arc error.

ERR TACH

- **The tach error** occurs 2 seconds after the loss of tachometer feedback. The motor speed is regulated through the monitoring of voltage and current. Press Jog/Purge button to clear error.

ERR MOTR

- **The motor error** indicates that the motor has been drawing too much current for too long. To remedy this, reduce the wire feed speed or the wire feeder torque load/duty cycle. Press Jog/Purge button to clear error.

ERR WFS

- **The wire feed speed error** indicates actual wire feed speed does not match wire feed speed command. Press Jog/Purge button to clear error.

ERR STRT

- **The start error** occurs if the user has the trigger held for more than 3 seconds without striking an arc, or if a valid arc voltage and current is not detected. The 3 second arc start error time can be changed using an optional PDA with File Management software.

ERR STOP

- **The stop error** occurs as result of obstructions in the wire feed system or a faulty wire drive system. Check wire feed and wire drive systems. Press Jog/Purge button to clear error.

ERR FLOW

- **The flow error** indicates no gas flow to the gun. The error may be reset by reestablishing gas flow to the gun, and then pressing the Jog/Purge button.

ERR COOL

- **The cool error** indicates no coolant flow in water flow switch option. The error may be reset by reestablishing coolant flow to the gun, and then pressing the Jog/Purge button.

ERR GND

- **The ground current error** occurs if weld current is detected in the earth ground connection. May be caused by a conductor making contact with unit chassis. Check and repair feeder weld connections. Press Jog/Purge button to clear error.

ERR STUK

- **The stuck error** occurs if the welding wire sticks to the workpiece at the end of a weld. May be caused by poor weld conditions. The error may be cleared by cutting wire from workpiece, and pressing the Jog/Purge button.

ERR TEMP

- **The temperature error** indicates welding power source has overheated and shutdown. The error may be cleared by allowing unit to cool down, and pressing the Jog/Purge button.

ERR LINE

- **The line error** indicates input power is outside of unit operating range. Check and correct input power. Press Jog/Purge button to clear error.

ERR ARC


- **The arc error** indicates an arc outage occurred possibly from a wire feeder error or power source error. Check wire feeder and power source. Press Jog/Purge button to clear error.

7-2. Diagnostics (Continued)

<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">WELD</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">WAIT</div> <p>Indicates a weld cycle wait error.</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">MOTR</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">COM</div> <p>Indicates a motor communication error.</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">PLS</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">WAIT</div> <p>Indicates a UIM communication error.</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">OVER</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">CRNT</div> <p>Indicates an overcurrent error.</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">LOW</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">WFS</div> <p>Indicates a low WFS command error.</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">E</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">STOP</div> <p>Indicates an emergency stop error.</p>
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">RMD</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">DONE</div> <p>Indicates an arc error.</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">OVER</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">AVER</div> <p>Indicates an over average current error.</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">REL</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">TRIG</div> <p>Indicates a trigger closed error.</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">ERR</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">UNKN</div> <p>Indicates an unknown error.</p>		

<p>WELD WAIT</p> <ul style="list-style-type: none"> • The weld wait error indicates unit was not ready for a weld sequence. Press Jog/Purge button to clear error. <p>MOTR COM</p> <ul style="list-style-type: none"> • The motor communication error indicates motor board lost data communications. Press Jog/Purge button to clear error. <p>PLS WAIT</p> <ul style="list-style-type: none"> • The uim communication error indicates user interface board lost data communications. Press Jog/Purge button to clear error. <p>OVER CRNT</p> <ul style="list-style-type: none"> • The over current error indicates welding power source primary current is too high. Check and correct input power. Press Jog/Purge button to clear error. 	<p>LOW WFS</p> <ul style="list-style-type: none"> • The low wire feed speed error indicates actual wire feed speed is lower than wire feed speed command. Check for obstructions in the wire feed system or a faulty wire drive system. Press Jog/Purge button to clear error. <p>E STOP</p> <ul style="list-style-type: none"> • The emergency stop error occurs if the user presses an emergency stop button. Reset the emergency stop button and press Jog/Purge button to clear error. <p>RMD DONE</p> <ul style="list-style-type: none"> • The RMD done error indicates the RMD demo is completed. Press Jog/Purge button to clear error. 	<p>OVER AVER</p> <ul style="list-style-type: none"> • The over average error indicates that current is outside the average range for the set program parameters. Check and correct program parameters. Press Jog/Purge button to clear error. <p>REL TRIG</p> <ul style="list-style-type: none"> • The release trigger error indicates the user held the trigger when starting a weld program. Press Jog/Purge button to clear error. <p>ERR UNKN</p> <ul style="list-style-type: none"> • The unknown error indicates a malfunction in the system somewhere. Press Jog/Purge button to clear error.
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SECTION 8 – ELECTRICAL DIAGRAM

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

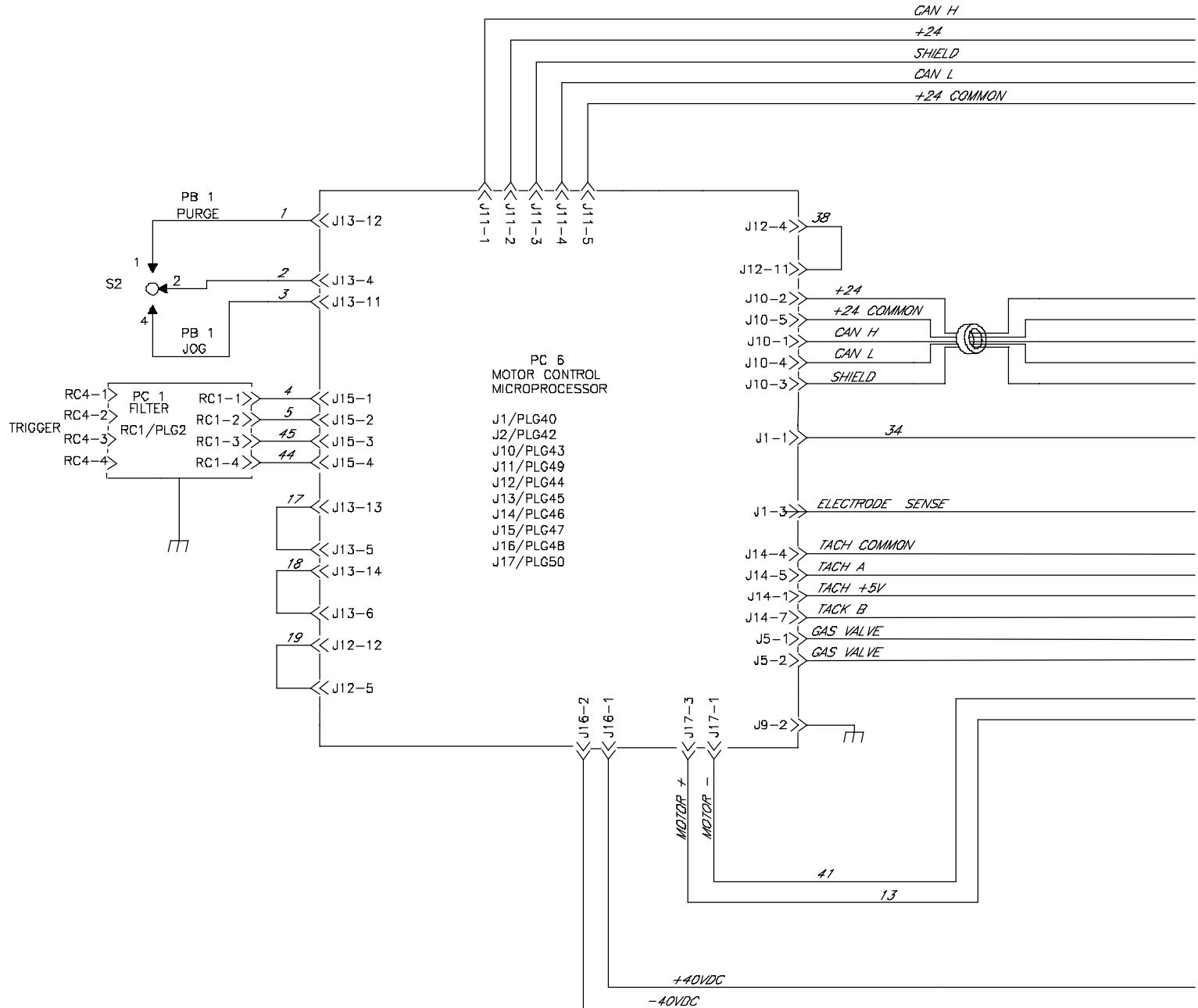
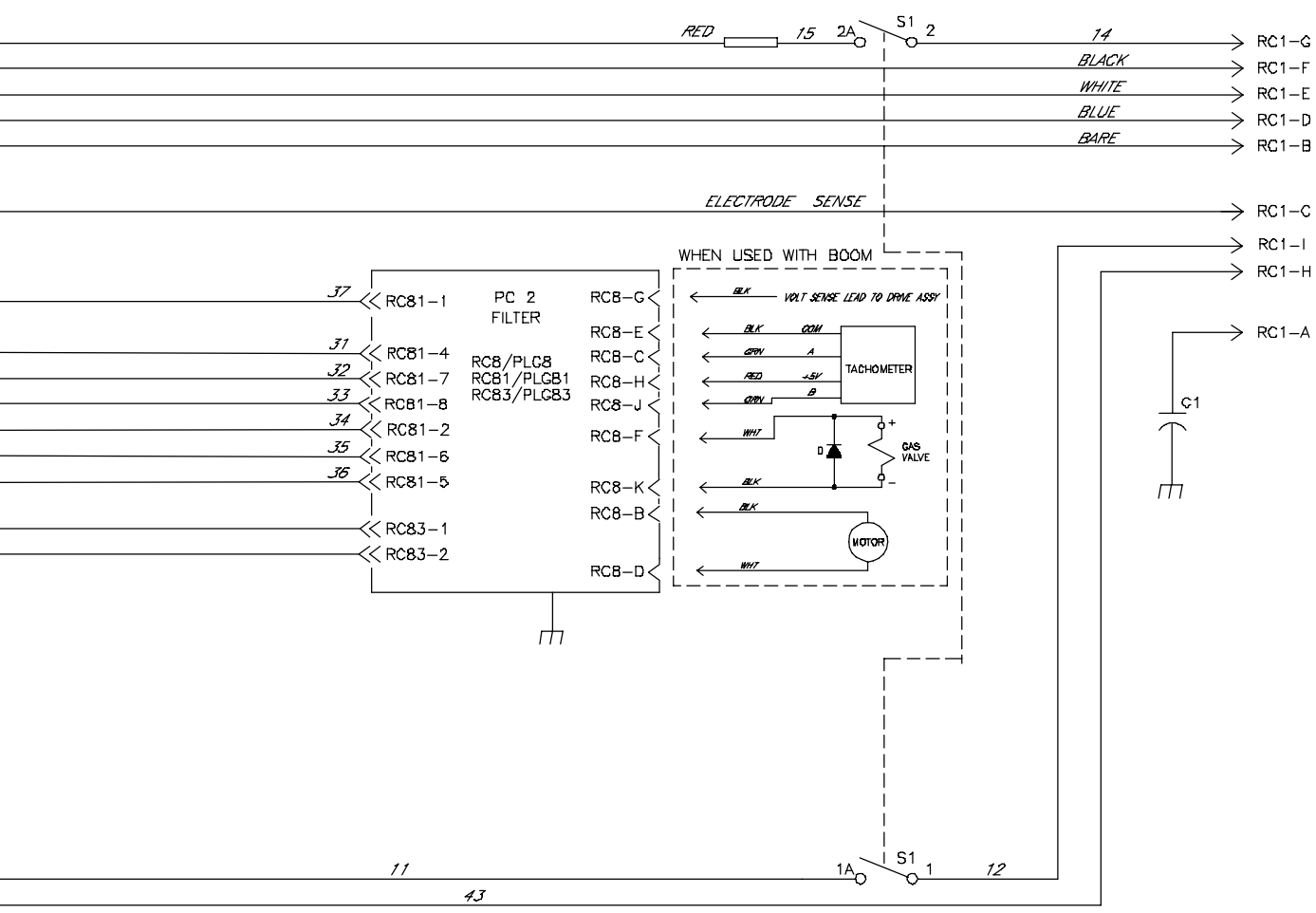
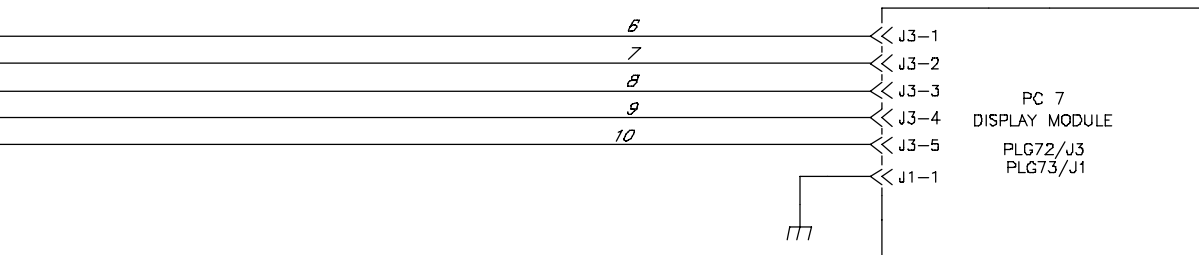
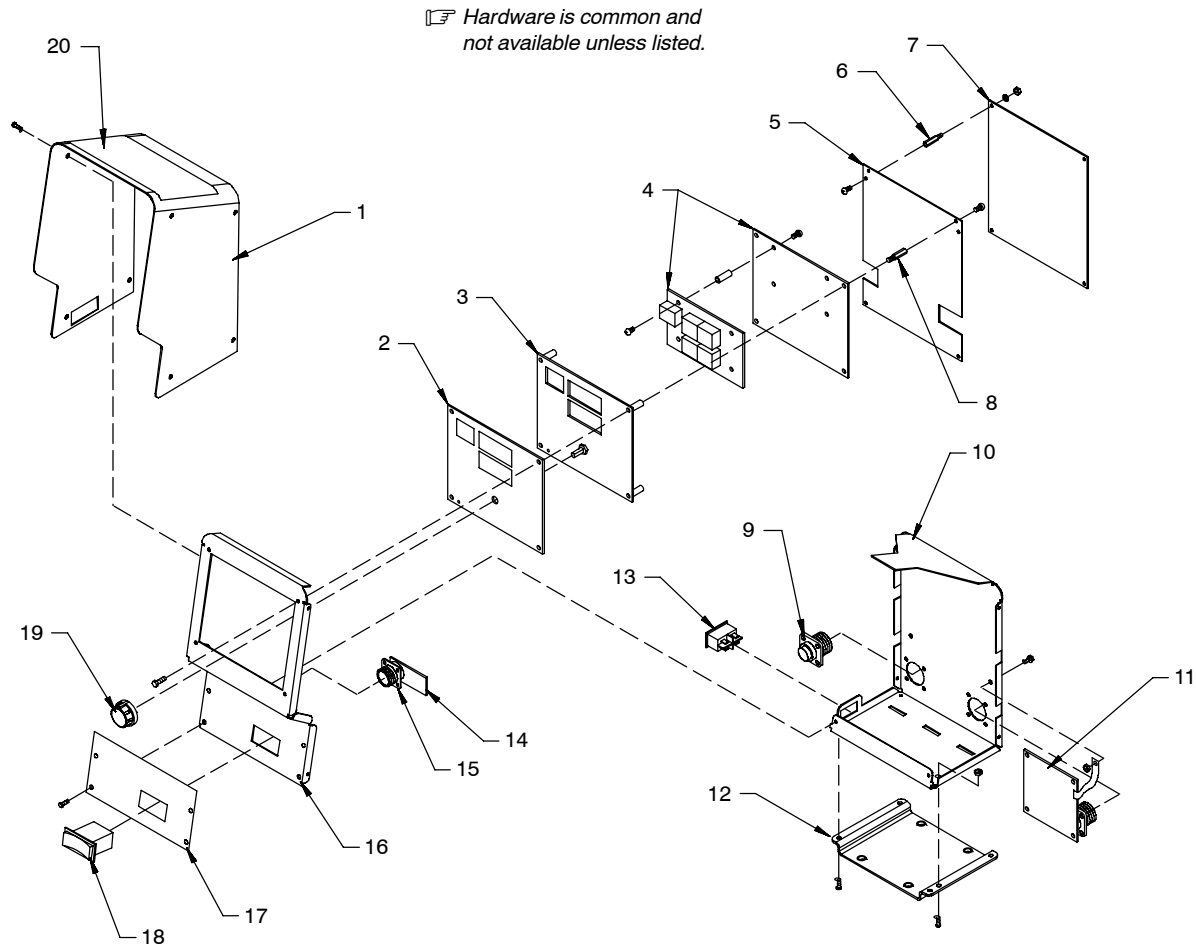


Figure 8-1. Circuit Diagram



SECTION 9 – PARTS LIST



803 696-B

Figure 9-1. Remote Operator Interface

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
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Figure 9-1. Remote Operator Interface

...	1	214 839	.. WRAPPER, feeder	1	
...		211 164	.. PANEL, pc card switch/overlay (including)	1	
...	2	210 655 NAMEPLATE, overlay	1	
...	3	PC5	227 879 CIRCUIT CARD ASSY, switches	1
...	4	PC7	221 278 USER INTERFACE MODULE	1
...	5		212 808	.. BAFFLE, pc mounting	1
...	6		207 676	.. STAND-OFF, no 6-32 x .250 lg .250 hex	4
...	7	PC6	221 280	.. WIRE FEED MODULE	1
...	8		097 132	.. STAND-OFF SUPPORT, pc card	4
...	9	RC1	211 018	.. CONNECTOR, circ 97/met 9 pin size 20 rcpt	1
...		PLG40,43,48	115 093 HOUSING PLUG+SKTS, (service kit)	1
...	10		211 002	.. ENCLOSURE, control	1
...	11	PC2	212 463	.. CIRCUIT CARD ASSY, motor filter	1
...	12		200 553	.. BRACKET, mtg control box	1
...	13	S1	213 632	.. SWITCH, rocker dpdt 10A 250VAC/20A 30VAC on-none-on	1

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
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Figure 9-1. Remote Operator Interface (Continued)

... 14	PC1	212 459	.. CIRCUIT CARD ASSY, trigger filter	1
... 15	RC4	048 282	.. RCPT W/SKTS, (service kit)	1
... 16		211 085	.. PANEL, front	1
... 17		217 809	.. NAMEPLATE	1
... 18	S2	210 998	.. SWITCH ASSY, jog/purge (including)	1
		200 295	... SWITCH, rocker spdt 15A 12V (on)-off-(on)	1
		131 056	... HOUSING PLUG+SKTS, (service kit)	1
		131 052	... HOUSING PLUG+SKTS, (service kit)	1
... 19		179 851	.. KNOB, pointer 1.670 dia x .250 id push on w/spring	1
... 20		134 327	.. LABEL, Warning General Precautionary	1
	PLG47	115 094	.. HOUSING PLUG+SKTS, (service kit)	1
	PLG48	202 592	.. HOUSING PLUG+SKTS, (service kit)	1
	PLG4	136 810	.. HOUSING PLUG+SKTS, (service kit)	1
	PLG81	115 092	.. HOUSING PLUG+SKTS, (service kit)	1
	PLG10	130 203	.. HOUSING PLUG+SKTS, (service kit)	1
	PLG50	136 810	.. HOUSING PLUG+SKTS, (service kit)	1
	PLG44	131 058	.. HOUSING PLUG+SKTS, (service kit)	1
	PLG45	188 352	.. HOUSING RCPT+SKTS, (service kit)	1
	PLG42	131 054	.. HOUSING RCPT+SKTS, (service kit)	1
	PLG40	201 665	.. HOUSING RCPT PLUG+SKTS, (service kit)	1
		149 251	.. CABLE, trigger 17 ft (including)	1
		080 328	... CONNECTOR w/SOCKETS, free hanging	1
		079 531	... CONNECTOR, circ clamp str rlf size 11 Amp 206358-2	2
		605 156	... CABLE, port No18 4/C (order by ft)	17ft
		079 878	... HOUSING PLUG & PINS, (service kit)	1
		224 363	.. KIT, insulator ROI (including)	1
		224 193	... INSULATOR, plate ROI mounting	1
		159 360	... INSULATOR, screw machine	4
		010 910	... WASHER, flat .406 ID x .812 OD x .65 T stl pld	4
		604 224	... SCREW, 250-20 x .75 hexwhd .50 D stl pld	4

TRUE BLUE® WARRANTY

Effective January 1, 2006

(Equipment with a serial number preface of "LG" or newer)

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

Warranty Questions?

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for your local
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you ...

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

Support

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

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

Within the warranty periods listed below, Miller will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. Miller must be notified in writing within thirty (30) days of such defect or failure, at which time Miller will provide instructions on the warranty claim procedures to be followed.

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

1. 5 Years Parts — 3 Years Labor
 - * Original main power rectifiers
2. 3 Years — Parts and Labor
 - * Transformer/Rectifier Power Sources
 - * Plasma Arc Cutting Power Sources
 - * Process Controllers
 - * Semi-Automatic and Automatic Wire Feeders
 - * Inverter Power Sources (Unless Otherwise Stated)
 - * Water Coolant Systems (Integrated)
 - * Intellitig
 - * Engine Driven Welding Generators
(NOTE: Engines are warranted separately by the engine manufacturer.)
3. 1 Year — Parts and Labor Unless Specified
 - * Motor Driven Guns (w/exception of Spoolmate Spoolguns)
 - * Positioners and Controllers
 - * Automatic Motion Devices
 - * RFCS Foot Controls
 - * Induction Heating Power Sources, Coolers, and Electronic Controls/Recorders
 - * Water Coolant Systems (Non-Integrated)
 - * Flowgauge and Flowmeter Regulators (No Labor)
 - * HF Units
 - * Grids
 - * Spot Welders
 - * Load Banks
 - * Arc Stud Power Sources & Arc Stud Guns
 - * Racks
 - * Running Gear/Trailers
 - * Plasma Cutting Torches (except APT & SAF Models)
 - * Field Options
(NOTE: Field options are covered under True Blue® for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)
 - * Bernard-Branded Mig Guns (No Labor)
 - * Weldcraft-Branded TIG Torches (No Labor)
 - * Subarc Wire Drive Assemblies
4. 6 Months — Batteries
5. 90 Days — Parts
 - * MIG Guns/TIG Torches and Subarc (SAW) Guns

- * Induction Heating Coils and Blankets, Cables, and Non-Electronic Controls
- * APT & SAF Model Plasma Cutting Torches
- * Remote Controls
- * Accessory (Kits)
- * Replacement Parts (No labor)
- * Spoolmate Spoolguns
- * Canvas Covers

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

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

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

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

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

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

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





Owner's Record

Please complete and retain with your personal records.

Model Name

Serial/Style Number

Purchase Date

(Date which equipment was delivered to original customer.)

Distributor

Address

City

State

Zip



For Service

Contact a DISTRIBUTOR or SERVICE AGENCY near you.

Always provide Model Name and Serial/Style Number.

Contact your Distributor for:

Welding Supplies and Consumables

Options and Accessories

Personal Safety Equipment

Service and Repair

Replacement Parts

Training (Schools, Videos, Books)

Technical Manuals (Servicing Information and Parts)

Circuit Diagrams

Welding Process Handbooks

To locate a Distributor or Service Agency visit www.millerwelds.com 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.

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