OM-230 009F

2008–01

Processes

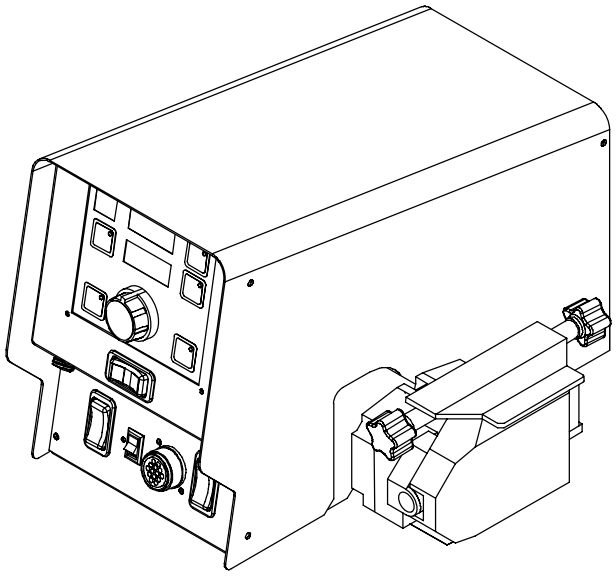
MIG (GMAW) Welding
Flux Cored (FCAW) Welding
(Gas- And Self-Shielded)

Description

CV

Wire Feeder

PipePro Dual DX Feeder



OWNER'S MANUAL

File: MIG (GMAW)

Visit our website at
www.MillerWelds.com

From Miller to You

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

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

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

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

ISO 9001:2000 REGISTERED QUALITY SYSTEM

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

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

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

TRUE BLUE® WARRANTY

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

Miller®

Mil_Thank 4/05

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SECTION 1 – SAFETY PRECAUTIONS - READ BEFORE USING

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

1-1. Symbol Usage

DANGER! – Indicates a hazardous situation which, if not avoided, will result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.

Indicates a hazardous situation which, if not avoided, could result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.

NOTICE *– Indicates statements not related to personal injury.*

☞ *Indicates special instructions.*

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

1-2. Arc Welding Hazards

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

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

During operation, keep everybody, especially children, away.

ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

- Do not touch live electrical parts.
- Wear dry, hole-free insulating gloves and body protection.
- Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.
- Do not use AC output in damp areas, if movement is confined, or if there is a danger of falling.
- Use AC output ONLY if required for the welding process.
- If AC output is required, use remote output control if present on unit.
- Additional safety precautions are required when any of the following electrically hazardous conditions are present: in damp locations or while wearing wet clothing; on metal structures such as floors, gratings, or scaffolds; when in cramped positions such as sitting, kneeling, or lying; or when there is a high risk of unavoidable or accidental contact with the workpiece or ground. For these conditions, use the following equipment in order presented: 1) a semiautomatic DC constant voltage (wire) welder, 2) a DC manual (stick) welder, or 3) an AC welder with reduced open-circuit voltage. In most situations, use of a DC, constant voltage wire welder is recommended. And, do not work alone!
- Disconnect input power or stop engine before installing or servicing this equipment. Lockout/tagout input power according to OSHA 29 CFR 1910.147 (see Safety Standards).
- Properly install 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.
- Keep cords dry, free of oil and grease, and protected from hot metal and sparks.
- Frequently inspect input power cord for damage or bare wiring – replace cord immediately if damaged – bare wiring can kill.
- Turn off all equipment when not in use.
- Do not use worn, damaged, undersized, or poorly spliced cables.
- Do not drape cables over your body.
- If earth grounding of the workpiece is required, ground it directly with a separate cable.
- Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.
- Do not touch electrode holders connected to two welding machines at the same time since double open-circuit voltage will be present.
- Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.
- Wear a safety harness if working above floor level.
- Keep all panels and covers securely in place.
- Clamp work cable with good metal-to-metal contact to workpiece or worktable as near the weld as practical.
- Insulate work clamp when not connected to workpiece to prevent contact with any metal object.
- Do not connect more than one electrode or work cable to any single weld output terminal.

SIGNIFICANT DC VOLTAGE exists in inverter-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.

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.

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.

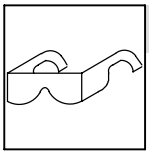
Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

- 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).
- Do not weld where the atmosphere may contain flammable dust, gas, or liquid vapors (such as gasoline).
- Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock, sparks, and fire hazards.
- Do not use welder to thaw frozen pipes.
- Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
- Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.
- Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding.
- After completion of work, inspect area to ensure it is free of sparks, glowing embers, and flames.
- Use only correct fuses or circuit breakers. Do not oversize or bypass them.
- Follow requirements in OSHA 1910.252 (a) (2) (iv) and NFPA 51B for hot work and have a fire watcher and extinguisher nearby.



FLYING METAL or DIRT can injure eyes.

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

BUILDUP OF GAS can injure or kill.

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

MAGNETIC FIELDS can affect Implanted Medical Devices.

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

NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

- Wear approved ear protection if noise level is high.

CYLINDERS can explode if damaged.

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

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

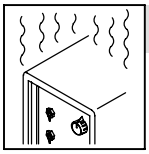
1-3. Additional Symbols For Installation, Operation, And Maintenance

FIRE OR EXPLOSION hazard.

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

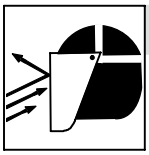
FALLING UNIT can cause injury.

- 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.



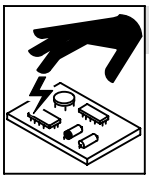
OVERUSE can cause OVERHEATING

- 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.



FLYING SPARKS can cause injury.

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



STATIC (ESD) can damage PC boards.

- Put on grounded wrist strap BEFORE handling boards or parts.
- Use proper static-proof bags and boxes to store, move, or ship PC boards.

MOVING PARTS can cause injury.

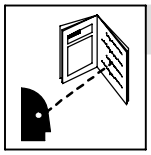
- Keep away from moving parts.
- Keep away from pinch points such as drive rolls.

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.

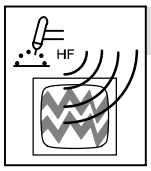
MOVING PARTS can cause injury.

- 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 reconnecting input power.



READ INSTRUCTIONS.

- Read Owner's Manual before using or servicing unit.
- Use only genuine replacement parts from the manufacturer.



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, Quincy, MA 02269-9101 (phone: 617-770-3000, website: www.nfpa.org and www. sparky.org).

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

Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 5060 Mississauga, Ontario, Canada L4W 5NS (phone: 800-463-6727 or in Toronto 416-747-4044, website: www.csa-international.org).

Safe Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 25 West 43rd Street, New York, NY 10036–8002 (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, 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 15250-7954 (phone: 1-866-512-1800) (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, or using a cable cover.
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 Implanted Medical Devices:

Implanted Medical Device wearers should consult their doctor and the device manufacturer before performing or going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating operations. If cleared by your doctor, then following the above procedures is recommended.

SECTION 2 – CONSIGNES DE SÉCURITÉ – LIRE AVANT UTILISATION

Se protéger et protéger les autres contre le risque de blessure — lire et respecter ces consignes.

2-1. Symboles utilisés

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

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

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

☞ *Indique des instructions spécifiques.*

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

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

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

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.
- Les câbles doivent être exempts d'humidité, d'huile et de graisse; protégez–les contre les étincelles et les pièces métalliques chaudes.
- Vérifier fréquemment le cordon d'alimentation afin de s'assurer qu'il n'est pas altéré ou à nu, le remplacer immédiatement s'il l'est. 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 épissés.
- Ne pas enrouler les câbles autour du corps.
- Si la pièce soudée doit être mise à la terre, le faire directement avec un câble distinct.
- Ne pas toucher l'électrode quand on est en contact avec la pièce, la terre ou une 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. Entretenir l'appareil conformément à ce manuel.
- Porter un harnais de sécurité si l'on doit travailler au-dessus du sol.
- S'assurer que tous les panneaux et couvercles sont correctement en place.
- Fixer le câble de retour de façon à obtenir un bon contact métal-métal avec la pièce à souder ou la table de travail, le plus près possible de la soudure.
- Isoler la pince de masse quand pas mis à la pièce pour éviter le contact avec tout objet métallique.
- Ne pas raccorder plus d'une électrode ou plus d'un câble de masse à une même borne de sortie de soudage.

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.

DES PIÈCES CHAUDES peuvent provoquer des brûlures graves.

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

LES FUMÉES ET LES GAZ peuvent être dangereux.

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

- Eloigner votre tête des fumées. Ne pas respirer les fumées.
- À l'intérieur, ventiler la zone et/ou utiliser une ventilation forcée au niveau de l'arc pour l'évacuation des fumées et des gaz de soudage.
- Si la ventilation est médiocre, porter un respirateur anti-vapeurs approuvé.
- Lire et comprendre les spécifications de sécurité des matériaux (MSDS) et les instructions du fabricant concernant les métaux, les consommables, les revêtements, les nettoyants et les 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 DE L'ARC peuvent provoquer des brûlures dans les yeux et sur la peau.

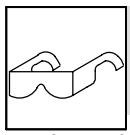
Le rayonnement de l'arc du procédé de soudage génère des rayons visibles et invisibles intenses (ultraviolets et infrarouges) susceptibles de provoquer des brûlures dans les yeux et sur la peau. Des étincelles sont projetées pendant le soudage.

- Porter un casque de soudage approuvé muni de verres filtrants approprié pour protéger visage et yeux pendant le soudage (voir ANSI Z49.1 et Z87.1 énuméré dans les normes de sécurité).
- Porter des lunettes de sécurité avec écrans latéraux même sous votre casque.
- Avoir recours à des écrans protecteurs ou à des rideaux pour protéger les autres contre les rayonnements les éblouissements et les étincelles ; prévenir toute personne sur les lieux de ne pas regarder l'arc.
- Porter des vêtements confectionnés avec des matières résistantes et ignifuges (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 peut provoquer des incendies et des brûlures. Le contact accidentel de l'électrode avec des objets métalliques peut provoquer des étincelles, une explosion, un surchauffement 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 homologués.
- Ne pas souder dans un endroit là où des étincelles peuvent tomber sur des substances inflammables.
- Se protéger et d'autres personnes de la projection d'étincelles et de 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.
- Surveiller tout déclenchement d'incendie et tenir un extincteur à proximité.
- 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).
- Ne soudez pas si l'air ambiant est chargé de particules, gaz, ou vapeurs inflammables (vapeur d'essence, par exemple).
- Brancher le câble de masse sur la pièce le 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 dépourvus d'huile tels que des gants en cuir, une chemise en matériau lourd, des pantalons sans revers, des chaussures hautes et un couvre chef.
- Avant de souder, retirer toute substance combustible de vos poches telles qu'un allumeur au butane ou des allumettes.
- Une fois le travail achevé, assurez–vous qu'il ne reste aucune trace d'étincelles incandescentes ni de flammes.
- Utiliser exclusivement des fusibles ou coupe–circuits appropriés. Ne pas augmenter leur puissance; ne pas les ponter.
- Une fois le travail achevé, assurez–vous qu'il ne reste aucune trace d'étincelles incandescentes ni de flammes.
- Utiliser exclusivement des fusibles ou coupe–circuits appropriés. Ne pas augmenter leur puissance; ne pas les ponter.
- Suivre les recommandations dans OSHA 1910.252(a)(2)(iv) et NFPA 51B pour les travaux à chaud et avoir de la surveillance et un extincteur à proximité.



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

- Le soudage, l'écaillement, 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.

LES CHAMPS MAGNETIQUES peuvent affecter des implants médicaux.

- Porteur de simulateur cardiaque ou autre implants médicaux, rester à distance.
- Les porteurs d'implants doivent d'abord consulter leur médecin avant de s'approcher des opérations de soudage à l'arc, de soudage par points, de gougeage, du coupage plasma ou de chauffage par induction.

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.

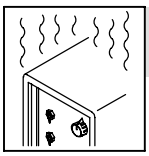
2-3. Dangers supplémentaires en relation avec l'installation, le fonctionnement et la maintenance

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.

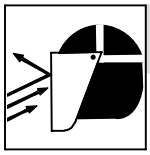
LA CHUTE DE L'APPAREIL peut blesser.

- 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.



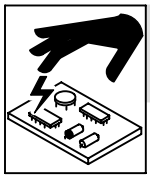
L'EMPLOI EXCESSIF peut SURCHAUFFER L'ÉQUIPEMENT.

- 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 ÉTINCELLES VOLANTES risquent de provoquer des blessures.

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



LES CHARGES ÉLECTROSTATIQUES peuvent endommager les circuits imprimés.

- Établir la connexion avec la barrette de terre avant de manipuler des cartes ou des pièces.
- Utiliser des pochettes et des boîtes antistatiques pour stocker, déplacer ou expédier des cartes de circuits imprimes.

DES ORGANES MOBILES peuvent provoquer des blessures.

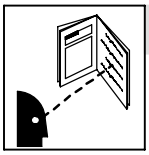
- Ne pas s'approcher des organes mobiles.
- Ne pas s'approcher des points de coincement tels que des rouleaux de commande.

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.

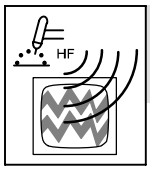
DES ORGANES MOBILES peuvent provoquer des blessures.

- 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.

- Lisez le manuel d'instructions avant l'utilisation ou la maintenance de l'appareil.
- N'utiliser que les pièces de rechange recommandées par le constructeur.
- 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 RAYONNEMENT HAUTE FRÉQUENCE (H.F.) risque de provoquer des interférences.

- Le rayonnement haute fréquence (H.F.) 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.

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

- L'énergie électromagnétique risque de provoquer des interférences pour l'équipement électronique sensible tel que les ordinateurs et l'équipement commandé par ordinateur tel que les 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, 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, 4221 Walney Road, 5th Floor, Chantilly, VA 20151 (téléphone : 703-788-2700, site Internet : www.cganet.com).

Code for Safety in Welding and Cutting, CSA Standard W117.2, de Canadian Standards Association, 5060 Mississauga, Ontario, Canada L4W 5NS (téléphone : 800-463-6727 ou à Toronto 416-747-4044, site Internet : www.csa-international.org).

Safe Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, de American National Standards Institute, 11 West 43rd 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, 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 15250-7954 (téléphone : 1-866-512-1800) (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. Garder les câbles ensemble, les torsader, les scotcher, ou les recouvrir d'une housse.
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 soudure.

En ce qui concerne les implants médicaux :

Les porteurs d'implants doivent d'abord consulter leur médecin avant de s'approcher des opérations de soudage à l'arc, de soudage par points, de gougeage, du coupage plasma ou de chauffage par induction. Si le médecin approuve, il est recommandé de suivre les procédures précédentes.

SECTION 3 – DEFINITIONS

3-1. Warning Label Definitions

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

B. Drive rolls can injure fingers.

C. Welding wire and drive parts are at welding voltage during operation – keep hands and metal objects clear.

1 Electric shock can kill.

1.1 Wear dry insulating gloves. Do not touch electrode with bare hand. Do not wear wet or damaged gloves.

1.2 Protect yourself from electric shock by insulating yourself from work and ground.

1.3 Disconnect input plug or power before working on machine.

2 Breathing welding fumes can be hazardous to your health.

2.1 Keep your head out of the fumes.

2.2 Use forced ventilation or local exhaust to remove the fumes.

2.3 Use ventilating fan to remove fumes.

3 Welding sparks can cause explosion or fire.

3.1 Keep flammables away from welding. Don't weld near flammables.

3.2 Welding sparks can cause fires. Have a fire extinguisher nearby and have a watch person ready to use it.

3.3 Do not weld on drums or any closed containers.

4 Arc rays can burn eyes and injure skin.

4.1 Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection.

5 Become trained and read the instructions before working on the machine or welding.

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

3-2. Symbols And Definitions

☞ *Some symbols are found only on CE products.*

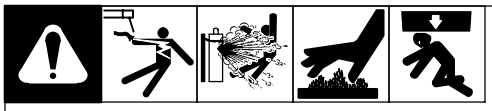
A	Amperes	V	Volts		Alternating Current	X	Duty Cycle
IP	Degree Of Protection	Hz	Hertz		Program		Wire Feed
	Jog		Output		Trigger		Line Connection
	Set Up		Sequence		Trigger Hold On		Trigger Hold Off
	Purge		Press To Set		Start		Crater
t	Time	t_1	Preflow Time	t_2	Postflow Time		Read Instructions
	Increase	I_1	Primary Current	I_2	Rated Current	U_2	Load Voltage
U_1	Primary Voltage	A B	Dual Schedule				

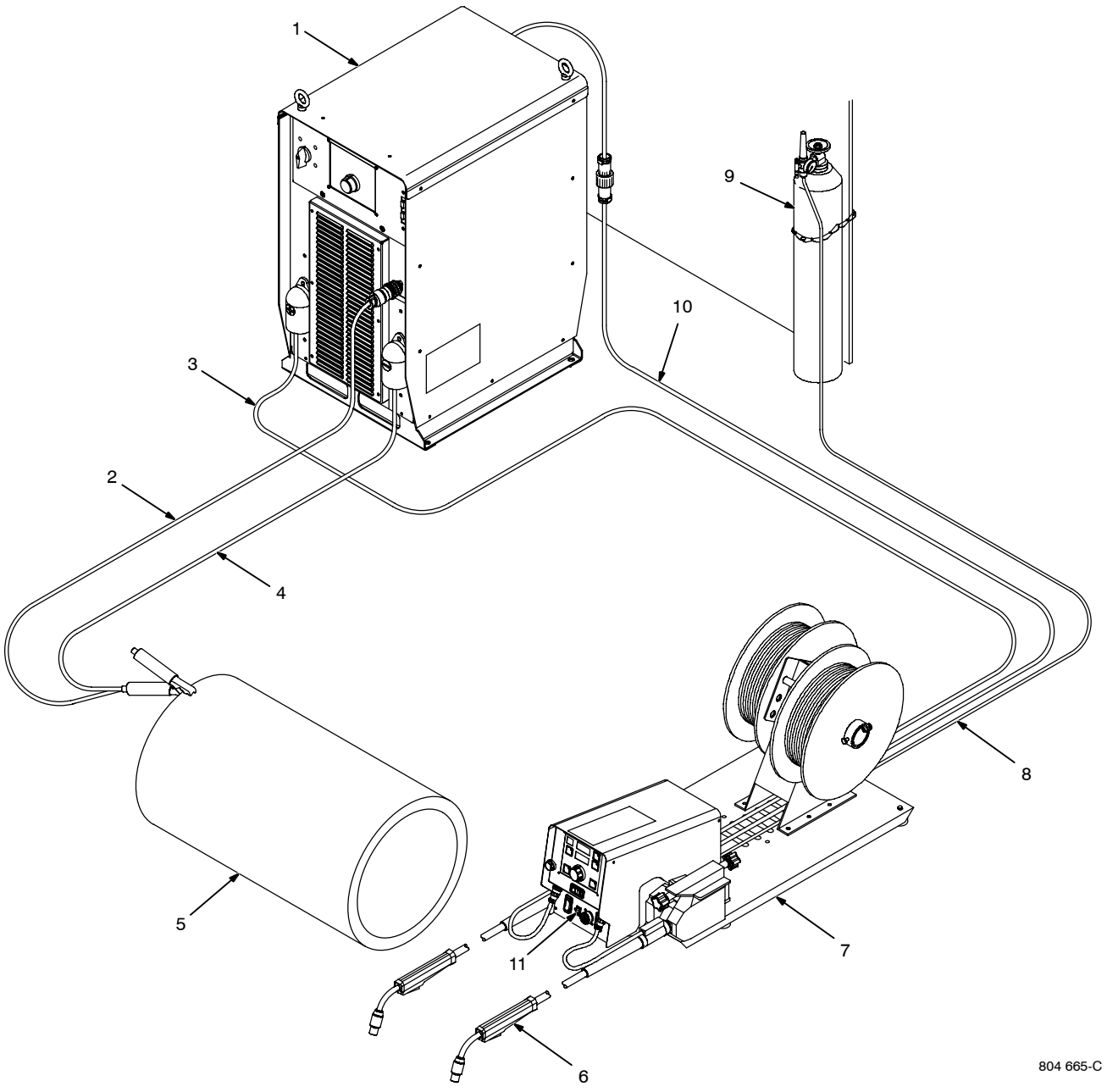
SECTION 4 – INTRODUCTION

4-1. Specifications

Type of Input Power	Welding Power Source Type	Wire Feed Speed Range	Wire Diameter Range	Welding Circuit Rating	IP Rating	Overall Dimensions	Weight
40 Volts DC 10 Amperes	PipePro 450 RFC with 14-Pin And Contactor Control	50 To 780 ipm (1.3 To 19.8 mpm)	.023 To 1/8 in (0.6 To 3.2 mm) Max Spool Weight: 60 lb (27 kg)	100 Volts, 750 Amperes, 100% Duty Cycle	IP 21	Length: 35 in (889 mm) Width: 12-1/2 in (318 mm) Height: 14 in (356 mm)	87 lb (39.5 kg)

5-1. Typical Connection Diagram For MIG Equipment





Do not mount feeder on top of power source.

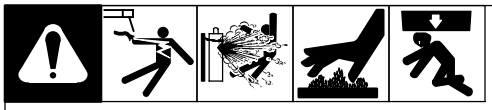
Do not put feeder where welding wire hits cylinder.

Do not move or operate equipment when it could tip.

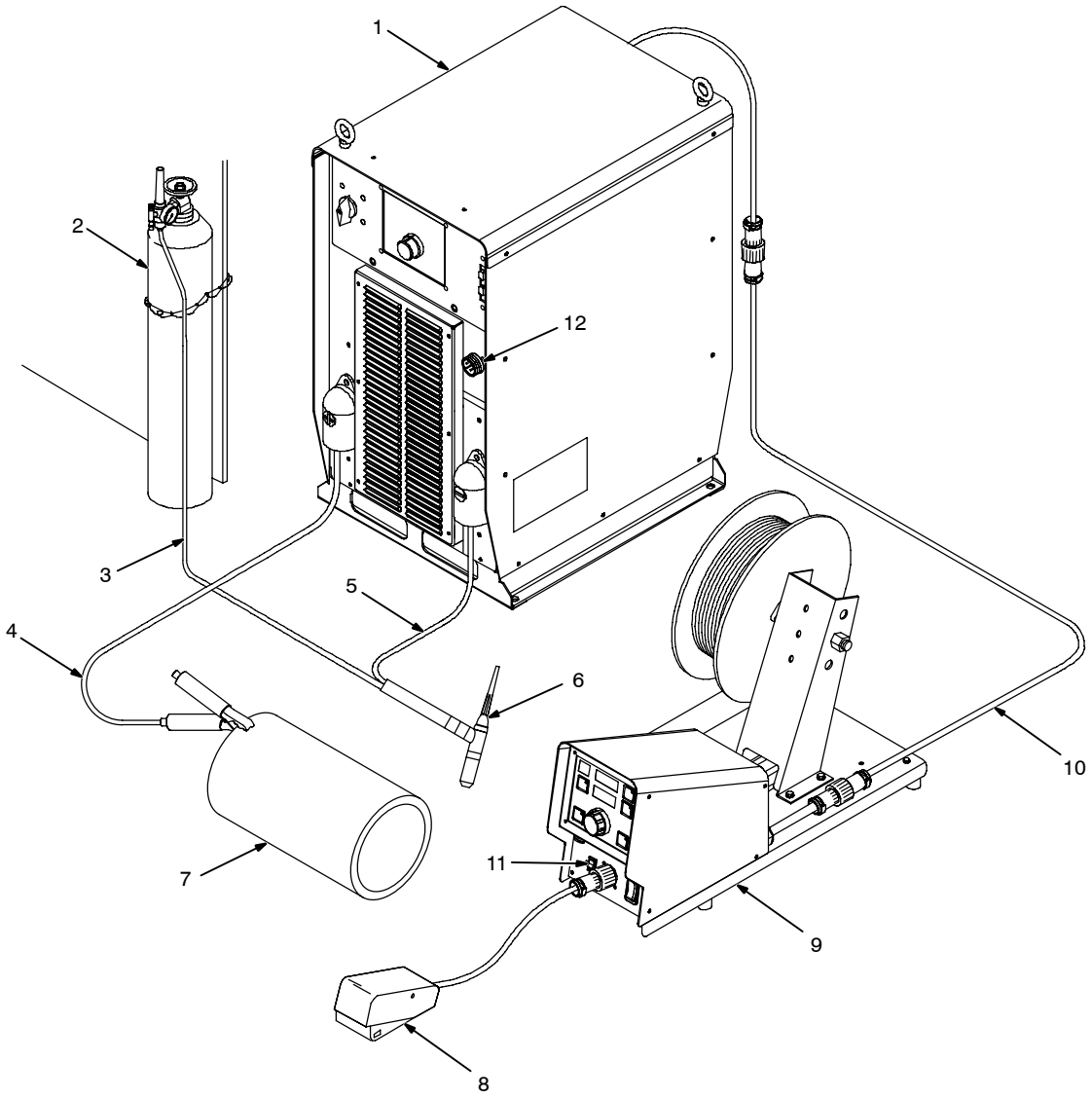
1 Welding Power Source
2 Negative Volt Sense Cable
3 Positive (+) Weld Cable
4 Negative (–) Weld Cable
5 Workpiece
6 Welding Gun
7 Wire Feeder
8 Gas Hose
9 Gas Cylinder
10 14-Pin Feeder Control Cable
11 Remote Switch To MIG

☞ *Maximum cable length not to exceed 150 feet.*

5-2. Typical Connection Diagram For TIG Equipment



☞ *The illustration shows remote control connected through the wirefeeder. The wirefeeder is not connected to the power source output..*



⚠ **Do not mount feeder on top of power source.**

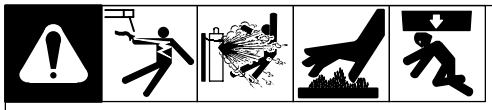
⚠ **Do not put feeder where welding wire hits cylinder.**

⚠ **Do not move or operate equipment when it could tip.**

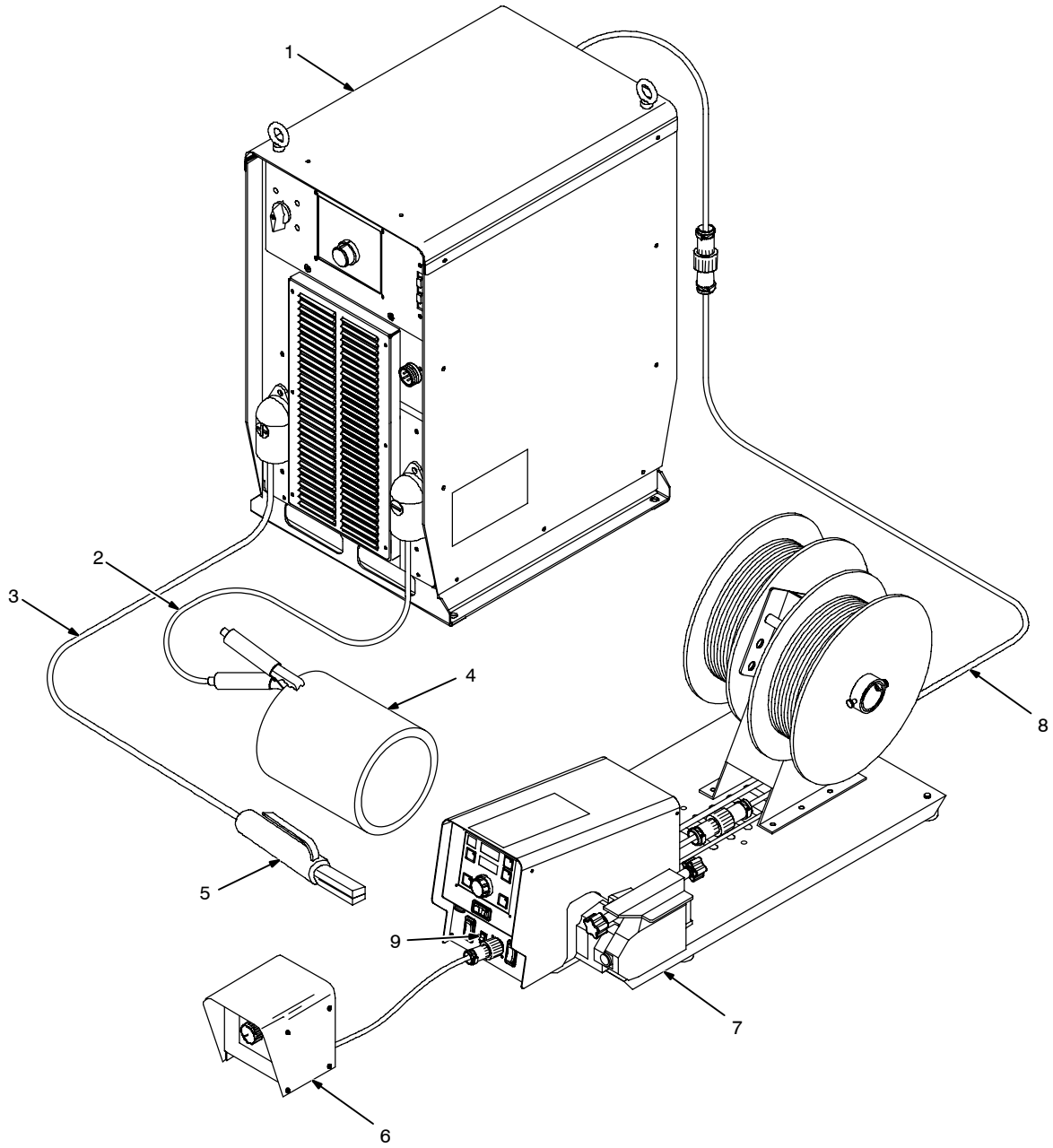
1 Welding Power Source
2 Gas Cylinder
3 Gas Hose
4 Positive (+) Weld Cable
5 Negative (–) Weld Cable
6 Torch
7 Workpiece
8 Foot Control
9 Wire Feeder
10 14-Pin Feeder Control Cable
11 Remote Switch To STICK/TIG
12 Volt Sense Receptacle (Cable Disconnected)

☞ *Maximum cable length not to exceed 150 feet.*

5-3. Typical Connection Diagram For Stick Equipment



☞ *The illustration shows remote control connected through the wirefeeder. The wirefeeder is not connected to the power source output..*



⚠ **Do not mount feeder on top of power source.**

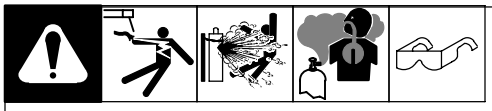
⚠ **Do not put feeder where welding wire hits cylinder.**

⚠ **Do not move or operate equipment when it could tip.**

1 Welding Power Source
2 Negative (–) Weld Cable
3 Positive (+) Weld Cable
4 Workpiece
5 Electrode Holder
6 Hand Control
7 Wire Feeder
8 14-Pin Feeder Control Cable
9 Remote Switch To STICK/TIG

☞ *Maximum cable length not to exceed 150 feet.*

5-4. Rear Panel Connections And Rotating Drive Assembly



1 14-Pin Control Cable

2 Shielding Gas Valve Fittings

Requires fitting with 5/8-18 right-hand threads. Connect customer-supplied gas hose.

3 Weld Cable Terminal

4 Jumper Weld Cable

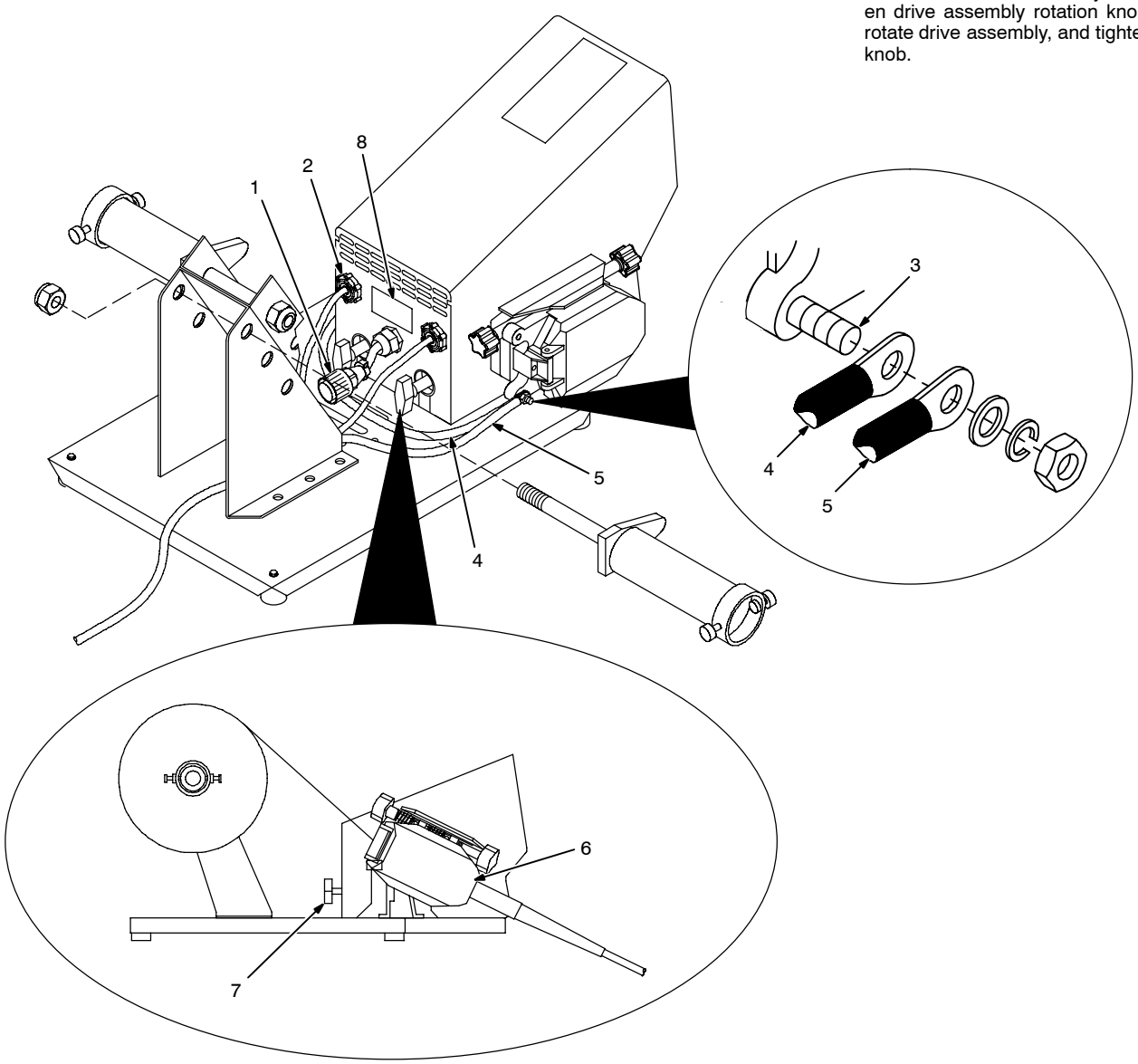
5 Weld Cable

6 Drive Assembly

7 Drive Assembly Rotation Knob

8 Rating Label Location

To rotate the drive assembly, loosen drive assembly rotation knob, rotate drive assembly, and tighten knob.



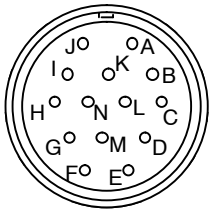
Tools Needed:

9/16, 5/8 in

3/16 in

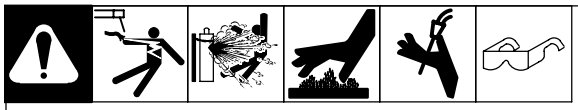
Ref. 804 766-A / 803 067 / 802 825-A

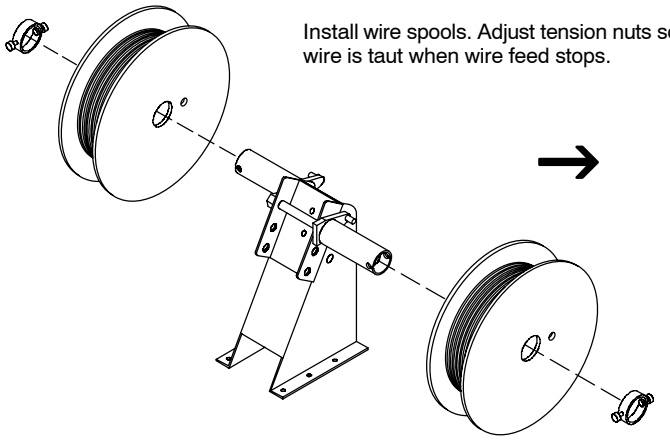
5-5. 14-Pin Plug Information

REMOTE 14	Pin*	Pin Information
	A	40 volts dc with respect to socket G.
	G	Circuit common for 40 volts dc circuit.
	B	Contact closure to K completes contactor control circuit.
	K	Contact closure to B completes contactor control circuit.
	C	+10 volts dc input from power source to wire feeder with respect to socket D.
	D	Remote volt control circuit common.
	E	0 to +10 volts dc remote volt/trim signal from wire feeder to power source with respect to socket D.
	H	Voltage feedback; 0 to +10 volts dc, 1 volt per 10 arc volts.
	F	Current feedback; 0 to +10 volts dc, 1 volt per 100 amperes.
	M	0 to +10 volts dc remote WFS signal from wire feeder to power source with respect to socket N.
	N	Remote WFS control circuit common.
	L	Electrode sense.
	I	Remote Program Select A
	J	Remote Program Select B

Notes

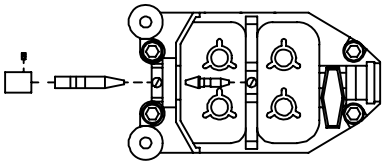
5-6. Installing And Threading Welding Wire



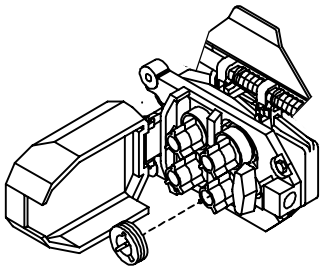


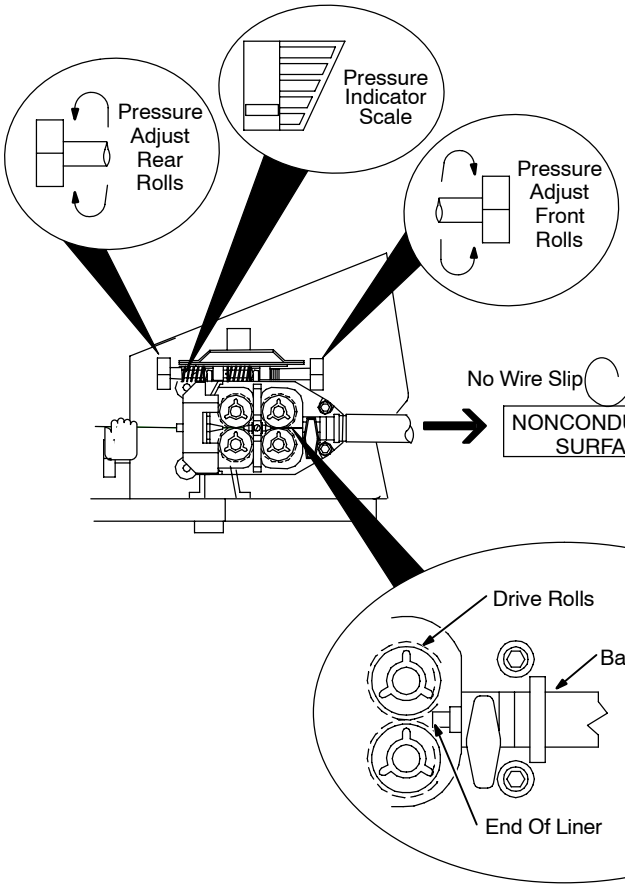
Install wire spools. Adjust tension nuts so wire is taut when wire feed stops.

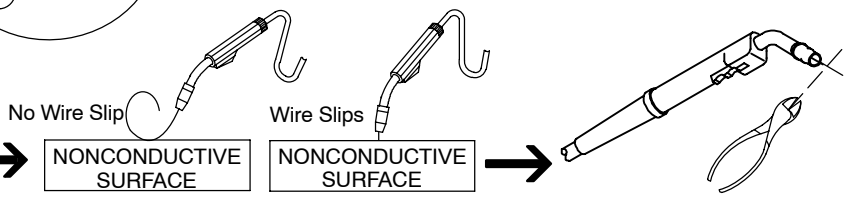
Install wire guides and anti-wear guide.

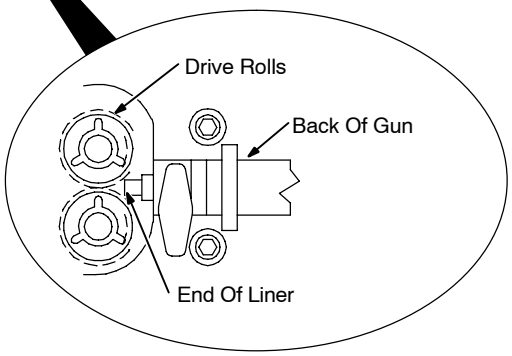


Install drive rolls.

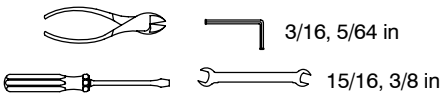








Tools Needed:



☞ *For best wire feeding performance, be sure that the outlet cable has the proper size liner for the welding wire size being used. Also, when the gun is installed, the liner extending from the back of the gun should be as close to the drive rolls as possible, without touching.*

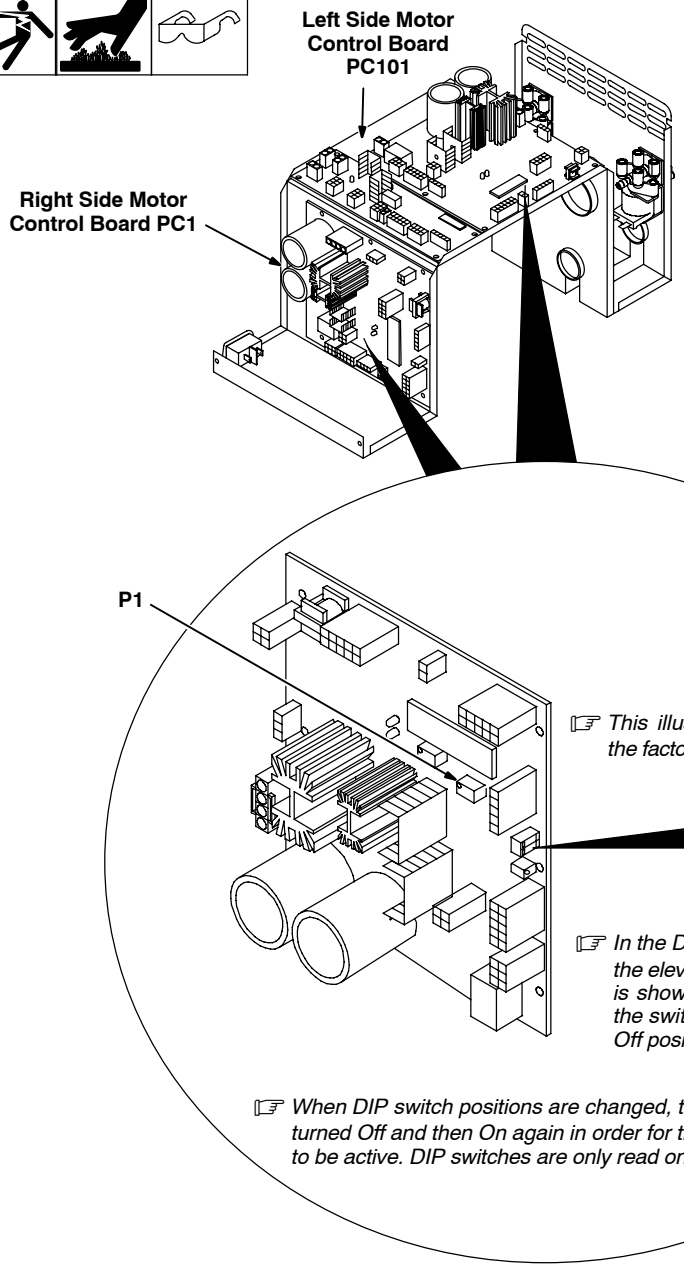
Install gun. Lay gun cable out straight. Cut off end of wire. Push wire through guides up to drive rolls; continue to hold wire. Press Jog button to feed wire out gun.

☞ *For soft wire or small diameter stainless steel wire, reduce drive roll pressure on the rear roll to half that of the front rolls.*

☞ To adjust drive roll pressure, hold nozzle about 2 in (51 mm) from nonconductive surface and press gun trigger to feed wire against surface. Tighten knob so wire does not slip. Do not overtighten. If contact tip is completely blocked, wire should slip at the feeder (see pressure adjustment above).Cut wire off. Close cover.

Ref. 156 929-A / Ref. 150 922 / Ref. 156 930 / 804 743-A

5-7. Setting Internal DIP Switches



Remove wrapper.

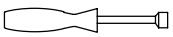
1 DIP Switch S1 On Motor Board PC1

- **Setting Current Detect Override (S1-1)**

Current detect override is used to disable run-in when a welding power source is used that doesn't provide current feedback through the 14-pin receptacle.

Install wrapper when finished.

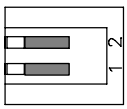
Tools Needed:



1/4 in

Position Settings And Results For DIP Switch S1 On PC1 And PC101

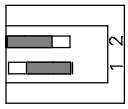
Automatic Run-In (ON) (Factory Default)



S1-1 And S1-2

On = Run-In speed is approximately 1/2 weld wire feed speed.

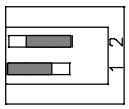
Automatic Run-In (OFF)



S1-1 And S1-2

Off = Run-In speed is set using potentiometer P1 located on Motor Board PC1.

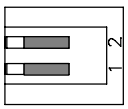
Current Detect Override (ON)



S1-1 And S1-2

On = Current detect override. For welding power sources that don't provide current feedback through the 14-pin receptacle. Run-in is inactive.

Current Detect Override (OFF) (Factory Default)

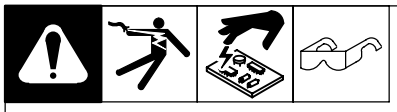


S1-1 And S1-2

Off = Current must be detected from power sources that provide current feedback through the 14-pin receptacle to go from run-in to welding condition. Run-in is active.

804 804-A / Ref. 802 944

5-8. Display Board DIP Switch Settings

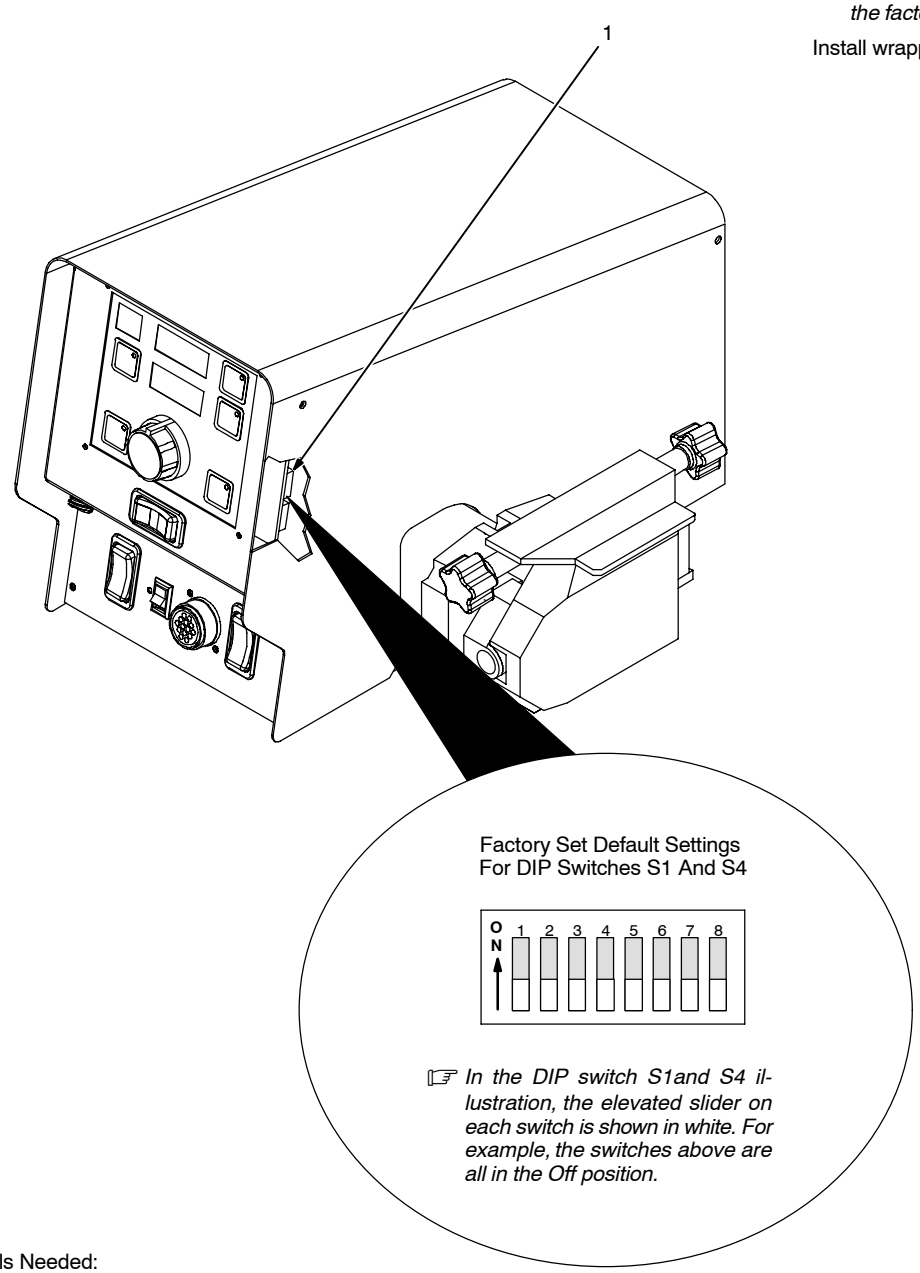


Remove wrapper.

1 DIP Switch S1 And S4

☞ *DIP switches S1 and S4 should remain in the factory default settings.*

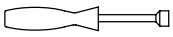
Install wrapper when finished.



Factory Set Default Settings
For DIP Switches S1 And S4

☞ *In the DIP switch S1and S4 illustration, the elevated slider on each switch is shown in white. For example, the switches above are all in the Off position.*

Tools Needed:



1/4 in

804 666-B / 803 063

SECTION 6 – OPERATION

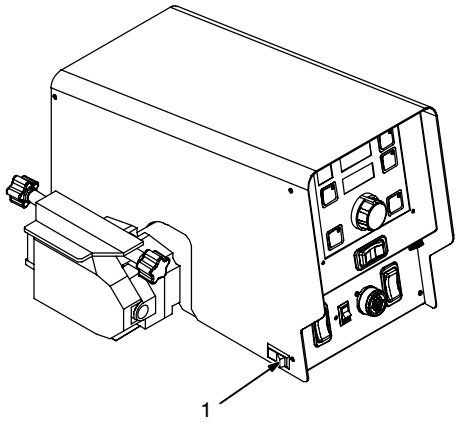
6-1. Operational Terms

The following is a list of terms and their definitions as they apply to this wire feeder:

General Terms:	
Cold Wire Jog	Feeding wire without contactor or gas valve being energized.
Sequence	A portion of the weld program, such as preflow, run-in, start, weld, crater, burnback, and postflow.
Weld Program	A group of sequences that make up a weld cycle.

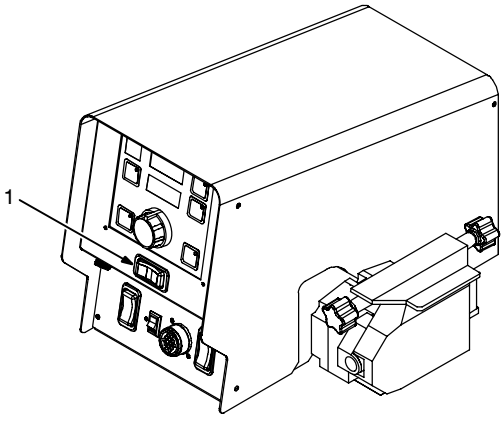
6-2. Power Switch

1 Power Switch



804 667-B

6-3. Left/Right Select Switch



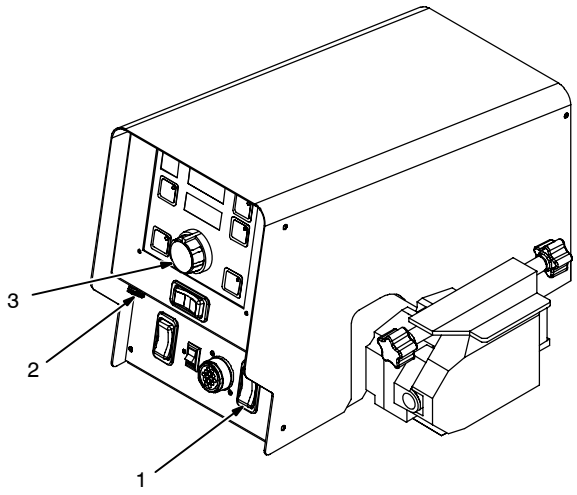
1 Left/Right Select Switch

Pressing the Left/Right Select switch allows the operator to choose which side of the units' controls will operate.

☞ *Depressing the Left or Right Gun Trigger also allows the operator to enable the controls on that side of the unit.*

804 668-B

6-4. Jog/Purge Switch



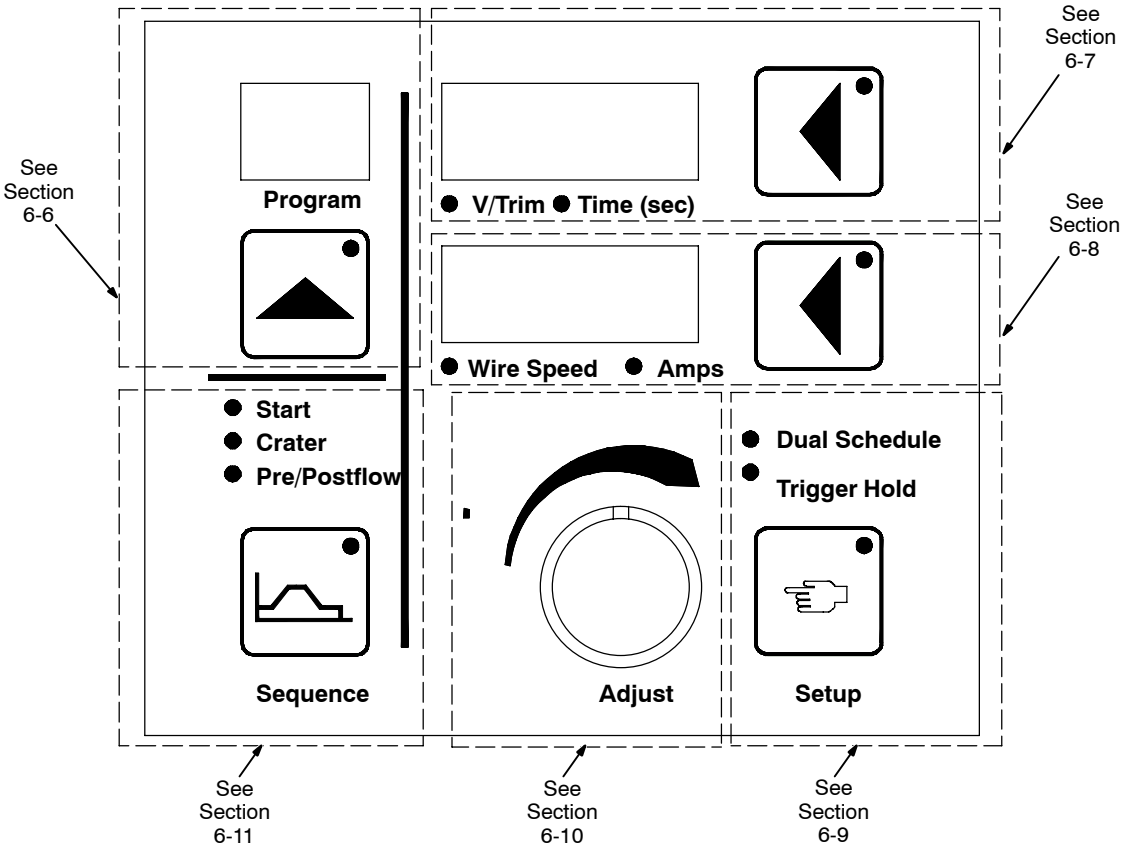
1 Jog/Purge Switch
2 Gun Trigger Receptacle
3 Adjust Control

Pressing the Jog/Purge switch allows the operator to jog wire without energizing the weld power or gas valve circuit.

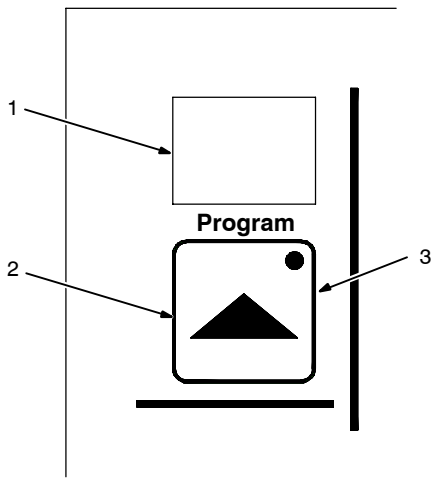
- Jog speed can be adjusted by the Adjust control when the unit is jogging wire. The unit displays jog speed when the unit is being jogged.
- Pressing the Jog/Purge button also allows the operator to purge gas lines before welding and to preset gas pressure at the regulator.

804 668-B

6-5. Front Panel Controls



6-6. Program Push Button



1 Program Display

The number of the active program is displayed.

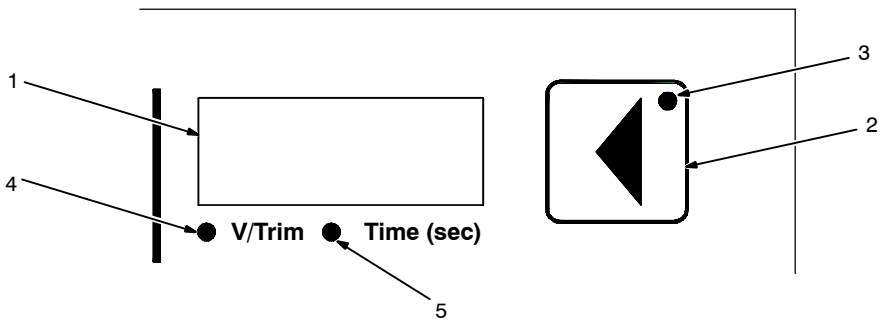
2 Program Push Button

Press button to activate program select feature. To change the program number, press the Program push button and rotate the Adjust control.

3 Program Push Button LED

The LED lights to indicate the Program push button is active.

6-7. Upper Display



1 Upper Display

The upper display shows voltage/trim or time. The unit displays both preset and actual arc voltage. When the unit is in a welding state, actual arc voltage is displayed. The upper display shows welding sequence time when the Time LED is illuminated.

2 Upper Display Push Button

Press and hold button to adjust or display weld time. Release button to display voltage/trim.

3 Upper Display Push Button LED

The upper display push button LED illuminates to indicate that information displayed can be changed by the Adjust control.

4 Volts/Trim LED

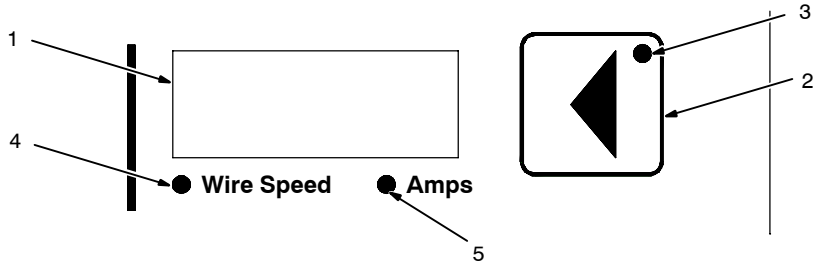
5 Time LED

The LEDs below the display illuminate to indicate which value is being shown.

At any time while welding, the unit permits the adjustment of the weld sequence voltage/trim while continuing to display actual arc voltage.

- If the unit is displaying a welding sequence that can be timed, the welding time display mode is entered by pressing the upper display push button repeatedly until welding time is the active parameter in the upper display. At idle, the upper display toggles between showing weld voltage/trim or weld time, with subsequent presses of the upper display push button.
- The unit defaults to displaying welding voltage/trim when a welding sequence display mode is first entered.
- If the weld sequence has a time set (as in spot time) and the trigger is held, after the weld program is completed, ERR TRG 1 will be displayed to indicate the weld program is complete. Release trigger to clear error.

6-8. Lower Display



1 Lower Display

The lower display shows wire speed or amperage.

2 Lower Display Push Button

Press button to choose between wire speed or amperage functions.

3 Lower Display Push Button LED

The lower display push button LED illuminates to indicate that wire feed speed can be adjusted with the Adjust control.

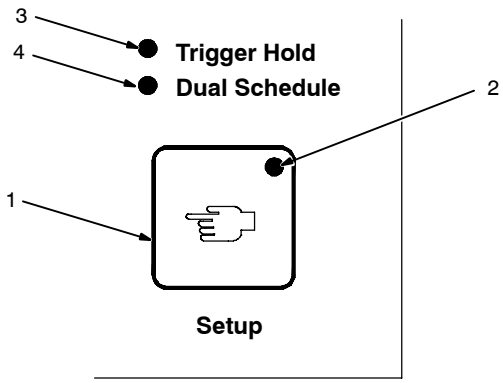
4 Wire Speed LED

5 Amps LED

The LEDs below the display illuminate to indicate which value is being shown.

- At idle, the wire speed for the active welding sequence may be adjusted or the amperage of the previous weld may be displayed.
- If the unit is in a welding state that does not involve feeding wire, such as pre−flow or post−flow, the unit displays the weld sequence wire speed; otherwise, the wire speed of the active sequence segment of the weld program (run−in, start, weld, crater, etc.), is displayed.
- Adjusting wire speed while in a welding state will modify the weld segment of the weld program. Wire speed for other segments of the weld program can only be modified via the Sequence menu.
- When the unit is displaying amperage, the Amps LED illuminates. While in a welding state, the actual weld current is shown. While idle, the amperage at the end of the previous welding state is shown.
- Amperage values of less than 5 Amps are displayed as "−−−−".

6-9. Setup Push Button



1 Setup Push Button

Press button to choose between trigger hold or dual schedule functions.

2 Setup Push Button LED

3 Trigger Hold LED

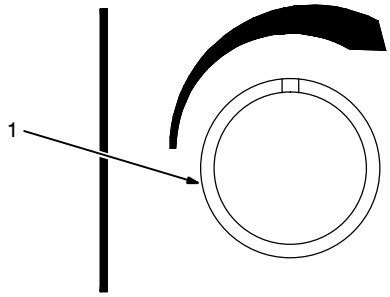
4 Dual Schedule LED

- When the Setup button is pressed, the Setup push button LED flashes and the Trigger Hold LED flashes.
- Trigger hold is a per program setting.
- The flashing LED indicates that the unit is in the trigger hold display mode. In this mode the upper display indicates HOLD and the lower display indicates the trigger hold status On/Off. Use the Adjust control to change the trigger hold status or press the lower display push button. If trigger hold is turned On, the trigger hold LED illuminates and stays On.
- When trigger hold is On, the user must press and hold the trigger for a predefined amount of time (the trigger hold delay time−see Section 6-12), then release it for the trigger hold function to be active. To shut off the weld when trigger hold is On, the user must press and release the trigger.
- If a weld time is programmed, trigger hold is disabled.
- Dual Schedule is a per program pair setting (1,2) (3,4) (5,6) (7,8).
- When the Setup button is pressed a second time, the dual schedule LED flashes. In this mode the upper display indicates DUAL and the lower display indicates dual schedule status On/Off. Use the Adjust control to change the dual schedule status if desired.
- Pressing the Setup button again exits the Setup mode. The dual schedule LED stops flashing to indicate the dual schedule status is Off, or remains on if dual schedule was enabled.
- While in the Setup mode, if the trigger is activated, Setup mode is terminated.
- Dual schedule and trigger select cannot be used concurrently. See Section 6-12 for Trigger Program Select.

6-10. Adjust Control

1 Adjust Control

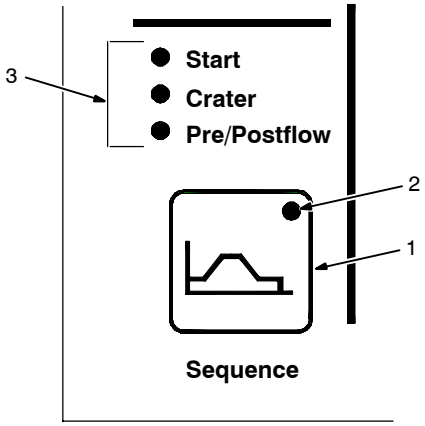
The Adjust control is used to change various parameters.



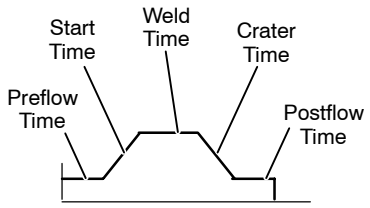
Adjust

6-11. Sequence Push Button

1 Sequence Push Button
2 Sequence Push Button LED
3 Welding Sequence LEDs



Sequence



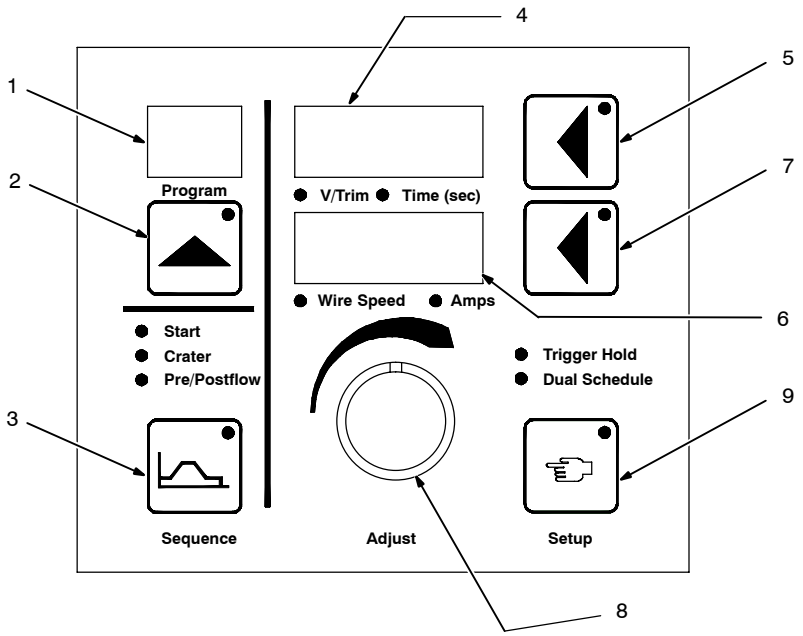
Welding Sequence Diagram

☞ *For more information on Setting Sequence Parameters see Section 7-1.*

- The Sequence push button allows the selection of welding sequences. Five welding sequences are available. The default sequence is the Weld sequence. The Weld sequence is active on power up. Three welding sequence LEDs are located above the Sequence push button: Start, Crater, and Preflow/Postflow. The applicable LED illuminates to indicate which welding sequence is active.
- The LED illuminates to indicate that a welding sequence display mode other than Weld is active. Welding sequences other than Weld must be set prior to initiating the arc. When the unit enters a welding state, all sequence display modes are terminated and the weld display mode is activated.

  If zero time is programmed for a timed sequence except for Weld, that sequence will be skipped.
- In the weld sequence display mode, the Sequence push button LED is Off. When the Sequence push button is pressed, the Sequence push button flashes and the Start LEDs flash. In this condition, the unit is in the Start sequence display mode, and Start sequence parameters are displayed (see Section 7-1).
- When the Sequence push button is pressed a second time, the Crater sequence LED flashes. The Sequence push button LED remains flashing. In this condition, the unit is in the Crater sequence display mode, and Crater sequence parameters are displayed.
- When the Sequence push button is pressed a third time, the Preflow/Postflow sequence LED flashes. The Sequence push button LED remains flashing. In the Preflow display mode the upper display shows the preflow time and the lower display indicates the abbreviation PRE, to inform the operator that preflow time is displayed. If the upper display push button is pressed, the Adjust control can be used to adjust preflow.
- If the lower display push button is pressed, the Adjust control can be used to select between preflow (PRE) and postflow (POST). When POST is selected, the upper display can be used to specify postflow time.
- When the Sequence push button is pressed a fourth time, the unit returns to the welding sequence display mode.

6-12. Auxiliary Menus



1 Program Display
2 Program Push Button
3 Sequence Push Button
4 Upper Display
5 Upper Display Push Button
6 Lower Display
7 Lower Display Push Button
8 Adjust Control
9 Setup Push Button

Reset To Factory Settings

A reset menu is displayed if the following four push buttons are pressed simultaneously: Program, Sequence, upper display, and Setup. The upper display indicates “WIPE” . The lower display indicates “OFF”. The lower push button is active indicating that the Adjust control can be used to change the unit to “WIPE ON”. When “WIPE ON” is set, if the original four push buttons are simultaneously pressed a second time, the unit will reset all settings to factory default except the arc time and arc cycle counts. If a reset is not desired, set the display to “WIPE OFF” and simultaneously press the Program, Sequence, upper display, and Setup push buttons to exit the reset menu.

Auxiliary Menu

- An auxiliary menu is provided if both the Sequence and Setup push buttons are pressed simultaneously. The Setup push button and sequence push button LEDS flash when the auxiliary menu is displayed.

Pushing the Setup push button will step through the menu. Pushing the sequence push button will step through the menu in reverse.

☞ *The auxiliary menu may be exited at any time by pressing both the Sequence and Setup push buttons simultaneously.*

Run-In

- The run-in modes are program specific (i.e. each program may be set to its own run-in mode).

The upper display indicates “RUNI”. The lower display indicates “AUTO”, meaning the factory set automatic run-in speed is selected.

Pressing the lower display button allows manual setting of the run-in wire speed. Speed may be adjusted from 10% to 100% of weld wire speed.

Pressing the lower display button again allows disabling of the run-in feature. When the lower display indicates “OFF”, run-in is disabled.

Burnback

Burnback time and voltage can be specified when the lower display indicates “BURN” and the upper display indicates the burnback time or voltage. The Adjust control is used to set the desired burnback time or voltage. Burnback settings are program specific. The active program is displayed in the Program display and can be adjusted (see Section 6-6).

Trigger Hold Setup

Trigger hold delay time is indicated by ”HOLD” in the lower display and the hold delay time in the upper display. The adjust control can be used to specify a new delay time for trigger hold. Trigger hold delay time is the minimum amount of time the trigger must be held for trigger hold to work when the trigger is released (the trigger hold function must be on). For example, if a trigger hold delay time of 2.0 seconds is defined, the operator must hold the trigger for at least 2 seconds before releasing it in order for the trigger hold function to work. Once the trigger hold function is in effect, the wire feeder will stay On until the trigger is pressed and released again.

- There is an additional function built in called ”maximum trigger hold time” which is the maximum length of time the trigger can be held and the trigger hold function still work when the trigger is released (the trigger hold function must be on). The maximum trigger hold time is set at 4.0 seconds after the trigger hold delay time. For example, if a trigger hold delay time of 2.0 seconds is defined, and the operator held the trigger in for more than 6.0 seconds, the trigger hold function would not be in effect and the wire feeder would stop when the trigger is released.

Trigger Program Select

The upper display shows “TSEL”. Lower display shows “On” or “Off”. The Adjust control is used to select either “On” or “Off”.

Trigger Program Select allows the operator to select programs by clicking the trigger (pulling and releasing the trigger in a maximum of 0.2 seconds). The feeder will switch between any programs that have a minimum of 0.2 seconds of preflow time set in the weld sequence.

- Any combination of programs may be used.
- If only programs 1 and 3 have a minimum of 0.2 seconds of preflow time, clicking the trigger will toggle between programs 1 and 3.
- If only programs 1, 2, and 4 have a minimum of 0.2 seconds of preflow time, clicking the trigger will switch from 1 to 2 to 4 to 1 to 2.
- Trigger Program Select cannot be used while welding or with Dual Schedule.

Range Locks

Range locks are indicated by “LOCK” in the upper display for wire speed or “LOCK” in the lower display for voltage range.

In a MIG program, the voltage range lock ranges from +/– 0 to 10 volts.

In a pulse program, the trim range lock ranges from +/– 0 to 100.

The wire speed range lock ranges from +/– 0 to 195 IPM.

Locks are program dependent and wire speed locks are independent from voltage/ trim command locks (i.e. you can have a wire speed lock with or without locking the voltage/trim command and vice versa).

Press the Upper Display Pushbutton to select Voltage/Trim Command Range Locks.

Press the Lower Display Pushbutton to select Wire Speed Range Locks.

To set a Voltage/Trim Command Range Lock, you must choose the type of command being locked, voltage or trim based on the type of weld process selected at the power source. This is done by repeatedly pressing the Upper Display Pushbutton to cycle between OFF, T (trim) or V (voltage), as indicated on the Upper Display.

Use the adjust knob to set the range value.

Once any program has a lock enabled, the remaining programs with all locks “OFF” will not be accessible. To enable additional programs, set the lock values for one or more Voltage/Trim Command or Wire Speed to appropriate ranges for each program.

Only one of the values needs to be set to enable the program. For example, setting a Trim of 100 and leaving the Wire Speed at OFF will allow the welder to adjust the Wire Speed to full range

Wire Feed Speed Units

Wire feed speed setting indicated by “WFS” in the upper display is set to “IPM” inches–per–minute or ”MPM” meters–per–minute. This setting is independent of the program selected.

Software Revision Level

- The unit displays the software version being used by the interface PCB (PC20).
- When the Setup button is pressed again, the menu repeats.

Code

Upon leaving the auxiliary menu, the user is asked if a password code, indicated by “CODE” in the top display should be activated.

By default the code is “OFF” in the lower display. The user may enter a numerical password between 0 and 999 by turning the Adjust control.

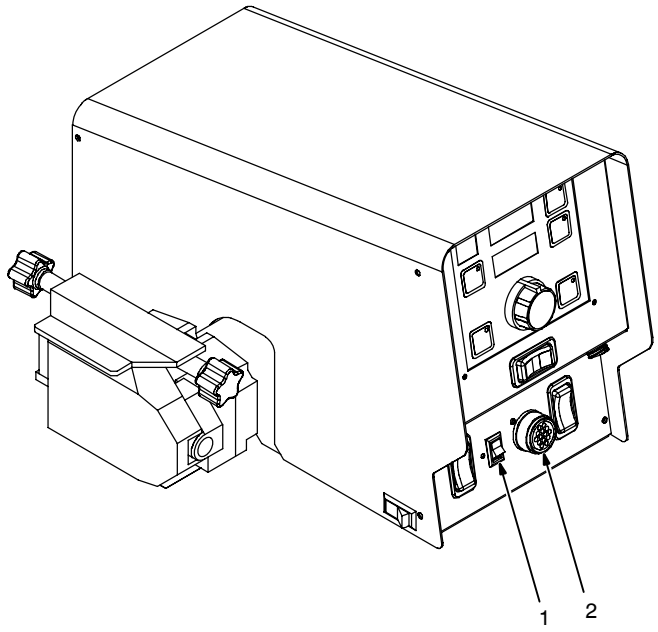
If a code is set, when the user re-enters the auxiliary menu, the password code must be selected to gain access to the auxiliary menu. Press Setup and Sequence buttons simultaneously to enter the auxillary menu. A failed attempt returns the user to the weld screen and a counter is incremented. A counter in the program display shows the number of incorrect attempts. The user has five attempts to enter the correct password code before being locked out of the auxiliary menu, indicated by “LOCK” in the lower display.

The power may be cycled to continue welding, but the user will remained locked out of the auxiliary menu.

The counter can be reset in the weld screen by pressing the Program, Sequence, upper display, and Set-up push buttons simultaneously. Resetting the counter is indicated by “CODE” in the upper display and “RSET” in the lower display. Pressing the Program, Sequence, upper display, and Set-up push buttons simultaneously again resets the counter to 0.

To reset the password, follow the directions under Reset To Factory Settings at the beginning of this section. Note: this will reset all settings and programs to the factory defaults.

6-13. Remote-14 Receptacle Information



1 Remote Switch

2 Remote-14 Receptacle

If the remote switch is set to MIG, the feeder operates normally. A remote control may be left attached while the remote switch is in the MIG mode, as the remote has no affect on the operation of the wire feeder.

If the remote switch is set to Stick/TIG, the feeder controls and meter displays are disabled, allowing control from a standard remote control. When a remote control is connected to the remote-14 receptacle, the PipePro 450 RFC will automatically adjust output control in a primary/secondary configuration, but the power source must be set for remote operation (see the PipePro 450 RFC Owner's Manual for information).

In this configuration, the Amp Adjust control on the PipePro 450 RFC power source becomes the primary, and sets the maximum amperage output of the unit. The remote control becomes the secondary, and provides an amperage range adjustment of 0 to 100% of what is set on the Amp Adjust control on the power source.

☞ *When in Stick/Tig mode, remote program select is still functional from the feeder.*

Do not connect a Stick electrode holder and a MIG gun to the same output terminal at the same time, as both will be live when the contactor is on. An external polarity reversing isolation control should be used to isolate the outputs.

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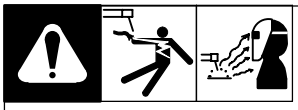
SECTION 7 – SETTING SEQUENCE PARAMETERS

7-1. Sequence Parameters In A Program



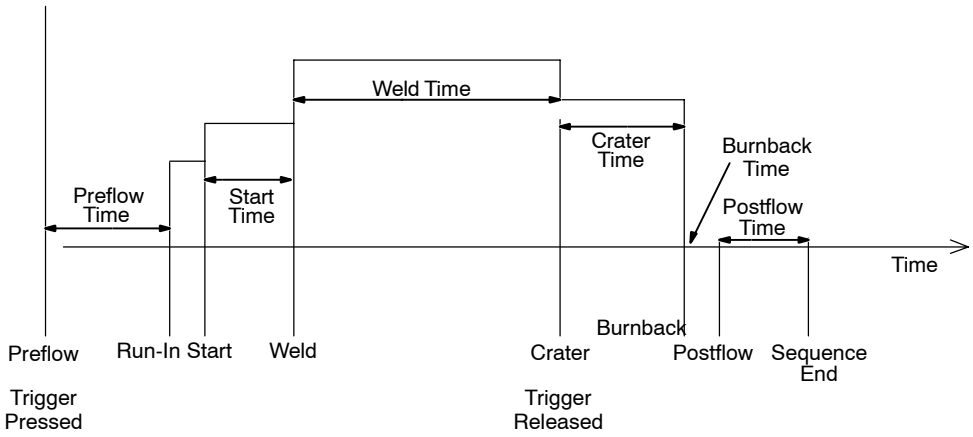
☞ *For more information on Sequence Push Button see Section 6-11.*

If time is set to zero in Weld sequence, welding continues until gun trigger is released.

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

Sequence	Parameters		
	Volts	IPM	Seconds
1. Preflow			0-9.9
2. Run-In		X	
3. Start	X	X	0.00-5.00
4. Weld	X	X	0-100.0
5. Crater	X	X	0-5.00
6. Burnback	X		0-0.25
7. Postflow			0-9.9

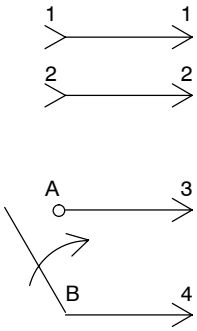
X = Setting available.



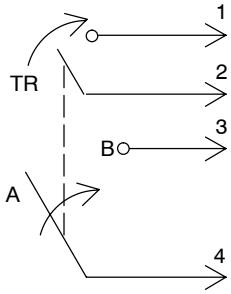
SECTION 8 – SETTING DUAL SCHEDULE PARAMETERS

8-1. Optional Dual Schedule Switch Diagrams

Dual Schedule With DSS-9
(Maintained Contact)

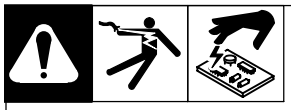


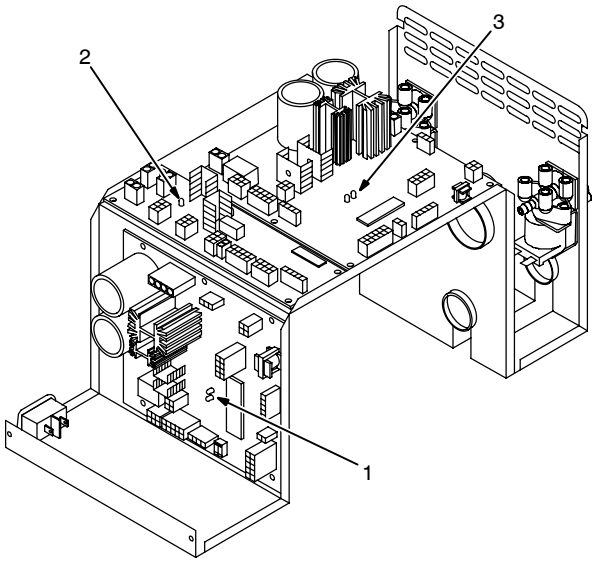
Dual Schedule With DSS-8
(Maintained Contact)



☞ *A DSS-8 will not function with trigger hold and dual schedule. A DSS-9 is recommended for this application.*

8-2. Diagnostics





1 LED3 On Right Side Motor Control Board PC101
2 LED4 On Dual Board PC70
3 LED3 On Left Side Motor Control Board PC1

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

Left Side Motor Control Board PC1

ERR / COM1	ERR / TRG1	ERR / TCH1	ERR / MTR1
Indicates a communication error.	Indicates a trigger error.	Indicates a tachometer error.	Indicates a motor error.

Right Side Motor Control Board PC101

ERR / COM2	ERR / TRG2	ERR / TCH2	ERR / MTR2
Indicates a communication error.	Indicates a trigger error.	Indicates a tachometer error.	Indicates a motor error.

Dual Board PC70

ERR / COM3
Indicates a communication error.

LED3-Related Error Indications

Error conditions are indicated by LED3 on PC1, PC101, and LED4 on PC70. To view LED3, 4 turn Off unit, remove wrapper, and turn unit On.

The LED blinks in a 2.5 second cycle. The number of blinks in this period indicates the type of error.

The priority of the errors is related to the number of blinks indicating the error. The more blinks, the more severe the error (motor error is top priority). A higher priority error overrides a lower one (if a motor error and a communication error existed, the light would blink four times for the motor error).

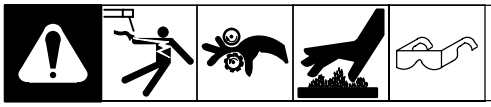
Since blink On time and blink Off time are equal in a four-blink cycle, the four−blink sequence appears as a constant blink.

1 blink = Communication Error
2 blinks = Trigger Error
3 blinks = Tach Error
4 blinks = Motor Error

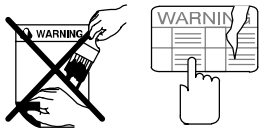
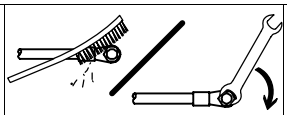
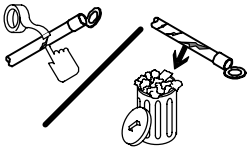
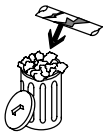
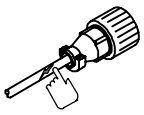
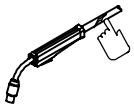
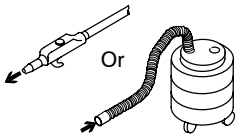
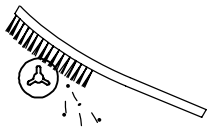
- **The communication error** occurs 2.5 seconds after a loss of communication between the motor and the Front Panel board or Dual board. The user may continue to weld with this error.
- **The trigger error** occurs if the user has the trigger held for more than two minutes without striking an arc (providing current override is not enabled), or if the user holds the trigger past the postflow phase in a timed weld. This error also occurs if the trigger is held when the feeder is powered up. The error may be cleared by releasing the trigger.
- **The tach error** occurs 2 seconds after the loss of tachometer feedback. The user may continue to weld with this error. The motor speed is regulated through the monitoring of voltage and current.
- **The motor error** indicates that the motor has been drawing too much current for too long.

SECTION 9 – MAINTENANCE & TROUBLESHOOTING

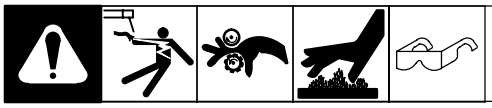
9-1. Routine Maintenance



Disconnect power before maintaining.

	✓ = Check ◯ = Clean ☆ = Replace				Reference
Every 3 Months	 ☆ Unreadable Labels	 ◯ Weld Terminals	 ✓☆ Weld Cable	 ☆ Cracked Parts	Section 5-4
	 ✓ 14-Pin Cord	 ✓ Gas Hose and Fittings	 ✓ Gun Cable		Section 5-4
Every 6 Months	 ◯ Inside Unit	 ◯ Drive Rolls			

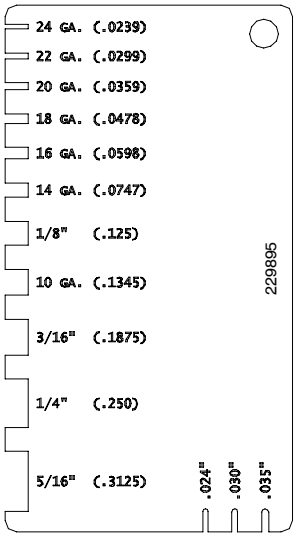
9-2. Troubleshooting



Disconnect power before troubleshooting.

Trouble	Remedy
Wire feeds, shielding gas flows, but electrode wire is not energized.	Check cable connections. Check cables for continuity, and repair or replace cables if necessary (see Section 5-4).
Wire feeder is on, display does not light up, motor does not run, gas valve and welding power source contactor do not pull in.	Check and reset circuit breaker at welding power source.
Electrode wire feeding stops, or feeds erratically during welding.	Check gun trigger connection. See gun Owner's Manual.
	Check gun trigger. See gun Owner's Manual.
	Readjust hub tension and drive roll pressure (see Section 5-6).
	Change to correct size drive roll (see Table 9-1).
	Clean or replace dirty or worn drive roll.
	Incorrect size or worn wire guides.
	Replace contact tip or liner. See gun Owner's Manual.
	Remove weld spatter or foreign matter from around nozzle opening.
	Have Factory Authorized Service Agency check drive motor or motor control board PC1.
Motor runs slowly.	Check for correct input voltage.
Wire feeder power is on, displays light up, feeder jogs, purges, but unit is in-operative.	Check welding gun trigger leads for continuity, and repair leads or replace gun.
When triggered, wire feeds but no gas, no contactor.	If the welding arc does not establish in 3 seconds after the gun trigger is activated the unit will feed wire, but turns off contactor and gas valve. If the gun trigger is still activated after two minutes, the wire will stop feeding.
When triggered, wire feeds, but no contactor.	If the gun trigger does not enable output, make sure remote switch is in the correct position (see Section 6-12).

Notes



MATERIAL THICKNESS GAUGE

SECTION 10 – ELECTRICAL DIAGRAM

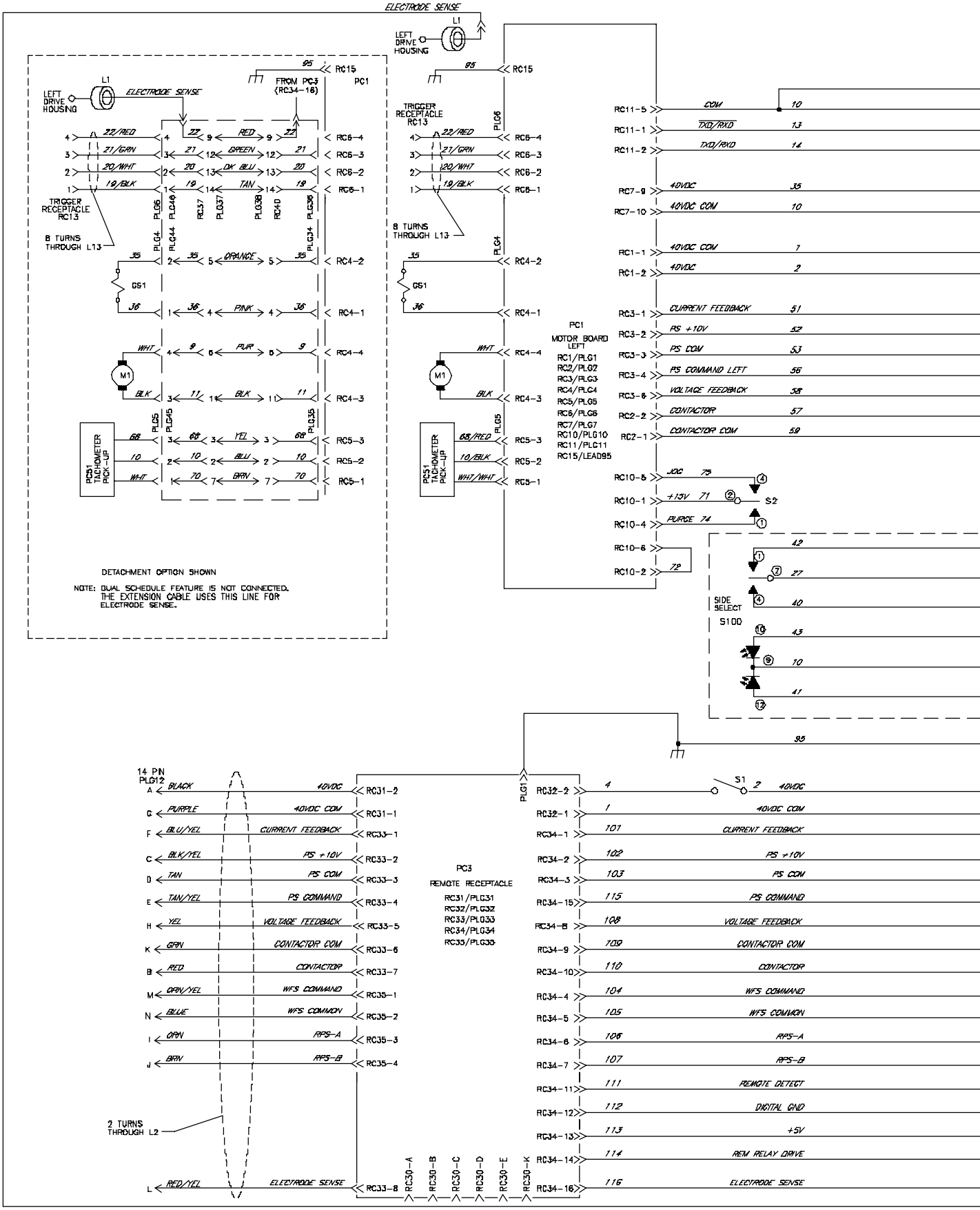
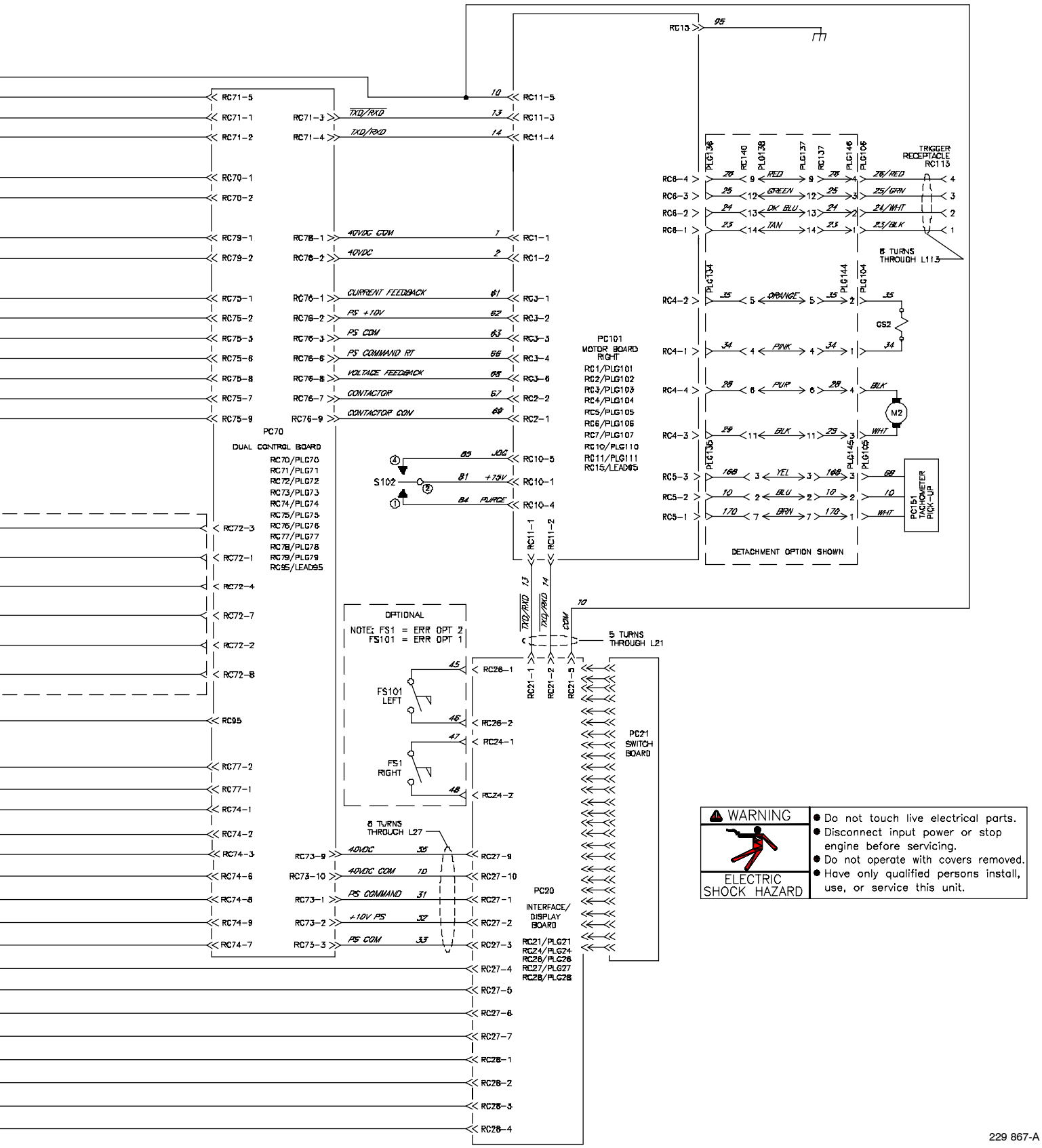


Figure 10-1. Circuit Diagram



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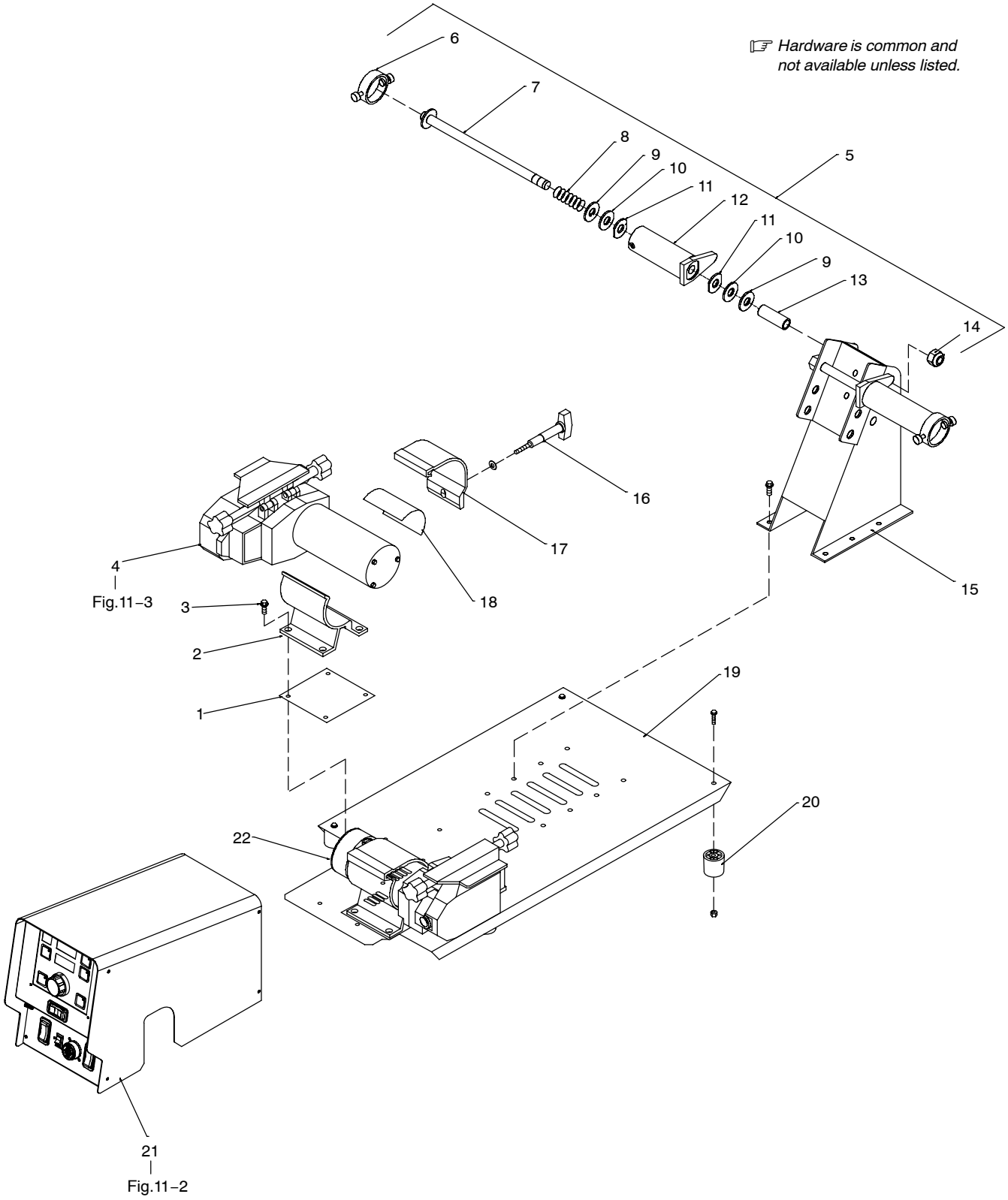

Figure 11-1. Main Assembly

Item No.	Part No.	Description	Quantity

Figure 11-1. Main Assembly

1	159 647	.. Insulator, Motor Clamp	2
2	159 646	.. Clamp, Motor Base	2
3	159 360	.. Insulator, Screw Machine	8
4	201 762	.. Drive Assy, Wire S/L 4 Roll W/Tach	1
5	143 160	.. Hub+Spindle Assy, (Includes)	2
6	058 427	.... Ring, Retaining Spool	1
7	180 576	.... Shaft, Support Spool	1
8	010 233	.... Spring, Cprsn .970 Od X .120 Wire X 1.250pld	1
9	057 971	.... Washer, Flat Stl Keyed 1.500 dia X .125thk	2
10	010 191	.... Washer, Fbr .656 Id X 1.500 Od X .125thk	2
11	058 628	.... Washer, Brake Stl	2
12	058 428	.... Hub, Spool	1
13	071 730	.... Tubing, STL .875 Od X 12Ga Wall X 2.500	2
14	135 205	.... Nut, Stl Slflkg Hex Reg .625-11 W/Nylon Insert	1
15	141 411	.. Support, Spool	1
16	208 339	.. Extension, Dual Clamp L.H.	1
16	208 338	.. Extension, Dual Clamp R.H.	1
17	156 243	.. Clamp, Motor Top	2
18	145 639	.. Strip, Buna−n .062 X 3.000 X 4.000 Compressed Sht	2
19	139 226	.. Base	1
20	134 306	.. Foot, Rubber 1.250 Dia X 1.375 High No 10 Screw	4
21		Control Box (Refer to Figure 11-2)	1
22	201 768	.. Drive Assy, Wire R 4 Roll W/Tach	1
	164 059	.. Hose, Gas	1

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

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

☞ *Hardware is common and not available unless listed.*

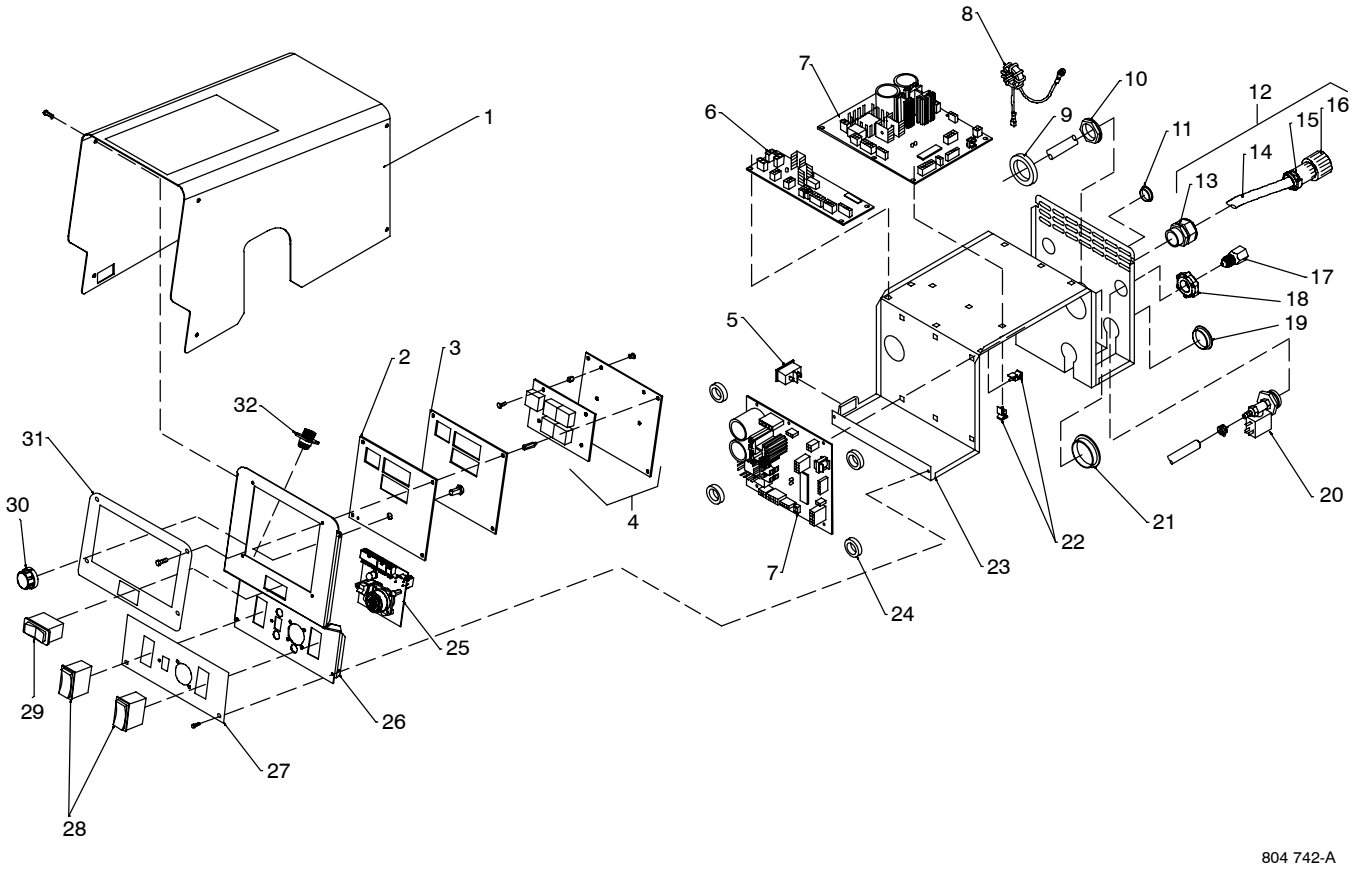

Figure 11-2. Control Box

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

Figure 11-2. Control Box (Figure 11-1 Item 21)

1		204 722	Wrapper, Feeder	1
2			Nameplate, Upper (Order By Model Or Serial Number)	1
3	PC21	230 877	Circuit Card Assy, Switches	1
4	PC20	229 459	Circuit Card Assy, Display/U W/Program	1
5	S1	111 997	Switch, Rocker Spst 10A 250VAC On-Off Visi Red Rock	1
6	PC70	221 836	Circuit Card Assy, W/Program	1
7	PC1,101	232 642	Circuit Card Assy, Motor Ctrl W/Program	2
8		221 791	Choke, Common Mode W/Leads	1
9	L2	131 447	Core, Toroidal 1.332 Id X 1.932 Od X .625 Thk	1
10		139 091	Contactor	1
11		000 527	Blank, Snap−In Nyl .875 Mtg Hole Black	1
12		229 863	Cable, Power (Includes)	1
13		139 041	Bushing, Strain Relief .450/.709 Id X1.115 Mtg Hole	1
14		236 551	Cable, Port No 18−14 14/C Type Tpe 2−14 12−18 Cndct	2.583 Ft
15		200 545	Conn, Circ 97/Met Clamp Str Size 20	1
16	PLG31	202 592	Housing Plug+Skts, (Service Kit)	1
	PLG12	215 031	Conn, Circ 97/Met 14 Pin Size 20 Plug	1
	PLG35	115 094	Housing Plug+Skts, (Service Kit)	1
	PLG33	115 092	Housing Plug+Skts, (Service Kit)	1
17		211 989	Fitting, W/Screen	2
18		605 227	Nut, 750−14 Knurled1.68Dia .41H Nyl	2
19		030 170	Bushing, Snap−In Nyl .750 Id X 1.000 Mtg Hole	3

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

Figure 11-2. Control Box (Continued)

20	GS1,101	219 047	Valve, 40VDC 2Way Custom Port 1/8 Orf W/Frict	2
21		010 494	Bushing, Snap−In Nyl 1.375 Id X 1.750 Mtg Hole	2
22		134 201	Stand−Off Support, Pc Card .312/.375W/Post&lock .43	17
23		204 721	Enclosure, Control	1
24	L13,21,27,113	213 030	Core, Toroidal 19.00mm Id X 29.01mm Od X 7.62mm Th	4
25	PC3	229 724	Circuit Card Assy, Remote Control	1
26		229 745	Panel, Front	1
27			Nameplate, Lower (Order By Model Or Serial Number)	1
28	S2,102	200 295	Switch, Rocker Spdt 15A 12V (On)−Off−(On)	2
29	S100	201 641	Switch, Rocker Spdt 15A 12V (On)−Off−(On) W/Leds	1
30		213 134	Knob, Encoder 1.670 Dia X .250 Id Push On W/Spring	1
31			Nameplate, Upper (Order By Model Or Serial Number)	1
32	RC13,113	048 282	RCPT W/SKTS, (Service Kit)	2
		134 464	Label, Warning General Precautionary Static&Wire Fe	1
	PLG6,28	115 094	Housing Plug+Skts, (Service Kit)	1
	PLG1,32,78, 79,101	202 592	Housing Plug+Skts, (Service Kit)	1
	PLG4	136 810	Housing Plug+Skts, (Service Kit)	1
	PLG7,27,74, 75,76	115 091	Housing Plug+Skts, (Service Kit)	1
	PLG3	115 093	Housing Plug+Skts, (Service Kit)	1
	PLG5	131 204	Housing Plug+Skts, (Service Kit)	1
	PLG11,21,71,111	131 055	Housing Rcpt+Skts, (Service Kit)	1
	PLG10,110	130 203	Housing Plug+Skts, (Service Kit)	1
	PLG2	164 899	Housing Plug Pins+Skts, (Service Kit)	1
	PLG34	131 052	Housing Rcpt+Skts, (Service Kit)	1
	PLG72	115 092	Housing Plug+Skts, (Service Kit)	1
	PLG73	148 439	Housing Plug Pins+Skts, (Service Kit)	1
	PLG70	150 319	Conn, Rect Univ 039 2P/S 1Row Plug Cable	1

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

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

☞ *Hardware is common and not available unless listed.*

See Table 11-1 For Drive Roll & Wire Guide Kits

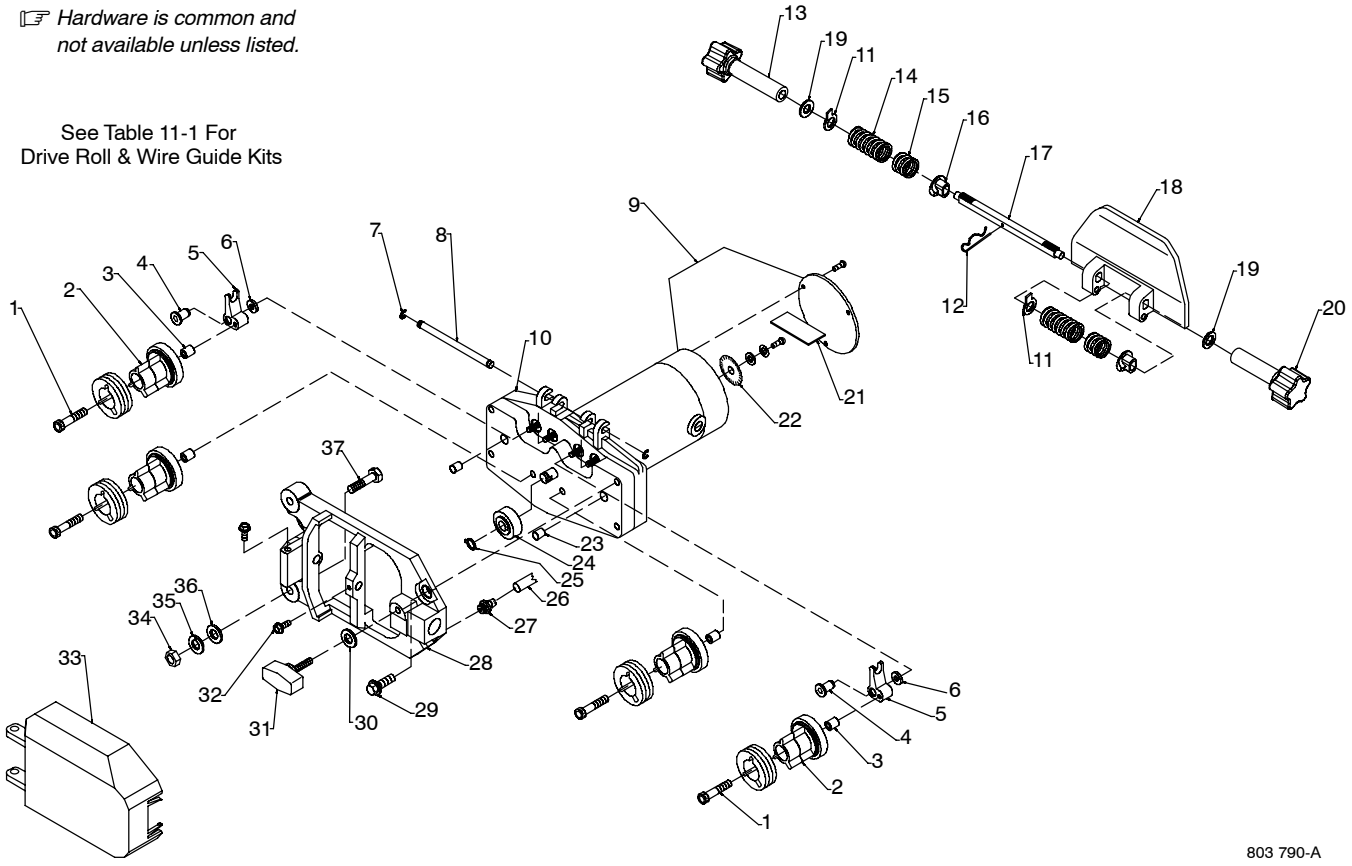

Figure 11-3. Drive Assembly, Wire

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
			Figure 11-3. Drive Assembly, Wire (Figure 11-1 Item 4)	
1		010 668	.. Screw, Cap Stl Sch .250-20 X 1.500	4
2		172 075	.. Carrier, Drive Roll W/Components	4
3		149 962	.. Spacer, Carrier Drive Roll	4
4		149 486	.. Pin, Rotation Arm Rocker	2
5		132 750	.. Arm, Pressure	2
6		150 520	.. Spacer, Flat Stl .257 Id X .619 Od X .105	2
7		133 493	.. Ring, Retaining Ext .250 Shaft X .025Thk	2
8		133 350	.. Pin, Hinge	1
9	M1,101	201 230	.. Motor, Gear 1/8hp 24VDC Standard Speed	1
		153 491	.... Kit, Brush Replacement (Includes)	1
		153 492	..... Cap, Brush	2
		*153 493	..... Brush, Carbon	2
		184 136	.... Kit, Brush Holder Replacement	1
10		155 098	.. Kit, Cover Motor Gearbox (Includes)	1
		153 550	.... Cover, Motor Gearbox (Includes)	1
		155 099	..... Gasket, Cover	1
		155 100	..... Screw, Cover	5
		154 031	.... Spacer, Locating	2
		133 493	.... Ring, Rtng Ext .250 Shaft Grv X .025Thk	1

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

Figure 11-3. Drive Assembly, Wire (Continued)

		203 642	. . Pressure Arm, R & Vert L 4 Roll (Includes)	1
		203 631	. . Pressure Arm, S/L & Vert S/R 4 Roll (Includes)	1
11		203 641	. . . . Washer, Flat Indicator Spring Tension	2
12		182 415	. . . . Pin, Cotter Hair	1
13		203 640	. . . . Knob, W/Extension Short Pressure Arm	1
14		182 156	. . . . Spring, Cprsn	2
15		182 155	. . . . Spring	2
16		132 746	. . . . Bushing, Spring	2
17		203 633	. . . . Shaft, Spring	1
18		203 632	. . . . Carrier, Shaft	1
19		133 739	. . . . Washer, Flat Buna .375 Id X .625 Od X .062Thk	2
20		203 637	. . . . Knob, W/Extension Long Pressure Arm	1
21	PC51,151	201 225	. . Circuit Card, Digital Tach (Includes)	2
	PLG5	131 204	. . . . Connector & Sockets	1
		604 311	. . . . Grommet, Rbr .250 Id X .375Mtg Hole .062 Groove	1
22		132 611	. . Optical Encoder Disc	1
		603 115	. . Weather Stripping, Adh .125 X .375	1
23		167 387	. . Spacer, Locating	2
24		168 825	. . Drive, Pinion	1
25		133 308	. . Ring, Retaining Ext .375 Shaft X .025Thk	1
26		134 834	. . Hose, Sae .187 Id X .410 Od (order by ft)	2 Ft (0.6 m)
27		149 959	. . Fitting, Brs Barbed M 3/16Tbg X .312-24	1
28		179 265	. . Adapter, Gun/Feeder LH	1
28		179 264	. . Adapter, Gun/Feeder RH	1
29		108 940	. . Screw, Cap Stl Hexhd .250-20 X .750	4
30		604 538	. . Washer, Flat Stl Sae .312	1
31		151 437	. . Knob, Plstc T 1.125 Lg X .312-18 X 1.500	1
32		151 290	. . Screw, Mach Stl Hexwhd 10-32 X .500	2
33		179 277	. . Cover, Drive Roll (Includes)	1
		178 937	. . . . Label, Warning Electric Shock	1
34		601 872	. . Nut, Stl Hex Full Fnsh .375-16	1
35		602 213	. . Washer, Lock Stl Split .375	1
36		602 243	. . Washer, Flat Stl Std .375	1
37		601 966	. . Screw, Cap Stl Hexhd .375-16 X 1.250	1

*Recommended Spare Parts.

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

Table 11-1. Drive Roll And Wire Guide Kits

Wire Size		Inlet Guide	Intermediate Guide	V-GROOVE		U-GROOVE		VK-GROOVE		UC-GROOVE	
Fraction	Metric			4 Roll Kit	Drive Roll	4 Roll Kit	Drive Roll	4 Roll Kit	Drive Roll	4 Roll Kit	Drive Roll
.023-.025 in.	0.6 mm	150 993	149 518	151 024	087 130						
.030 in.	0.8 mm	150 993	149 518	151 025	053 695						
.035 in.	0.9 mm	150 993	149 518	151 026	053 700	151 036	072 000	151 052	132 958		
.040 in.	1.0 mm	150 993	149 518	161 190							
.045 in.	1.1/1.2 mm	150 994	149 519	151 027	053 697	151 037	053 701	151 053	132 957	151 070	083 489
.052 in.	1.3/1.4 mm	150 994	149 519	151 028	053 698	151 038	053 702	151 054	132 956	151 071	083 490
1/16 in. (.062 in.)	1.6 mm	150 995	149 520	151 029	053 699	151 039	053 706	151 055	132 955	151 072	053 708
.068-.072 in.	1.8 mm	150 995	149 520					151 056	132 959		
5/64 in. (.079 in.)	2.0 mm	150 995	149 520			151 040	053 704	151 057	132 960	151 073	053 710
3/32 in. (.094 in.)	2.4 mm	150 996	149 521			151 041	053 703	151 058	132 961	151 074	053 709
7/64 in. (.110 in.)	2.8 mm	150 996	149 521			151 042	053 705	151 059	132 962	151 075	053 711
1/8 in. (.125 in.)	3.2 mm	150 997	149 522			151 043	053 707	151 060	132 963	151 076	053 712

Each Kit Contains An Inlet Guide, Intermediate Guide, And 045 233 Antiwear Guide w/604 612 Setscrew 8-32 x .125, along with 4 Drive Rolls.

Ref. S-0527-C

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Effective January 1, 2008
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Miller shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on the delivery date of the equipment to the original end-user purchaser, and not to exceed one year after the equipment is shipped to a North American distributor or eighteen months after the equipment is shipped to an International distributor.

1. 5 Years Parts — 3 Years Labor
   * Original main power rectifiers only to include SCRs, diodes, and discrete rectifier modules
2. 3 Years — Parts and Labor
   * 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 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:

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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.

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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

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Contact a DISTRIBUTOR or SERVICE AGENCY near you.

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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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