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Processes



Shielded Metal Arc
(Stick) Welding



DC-Gas Tungsten Arc
(DC-TIG) Welding



Flux Cored Arc Welding and
Gas Metal Arc Welding (MIG)
Spray Transfer with Voltage-
Sensing Feeder



Air Plasma Cutting
and Gouging with Spectrum®
Plus

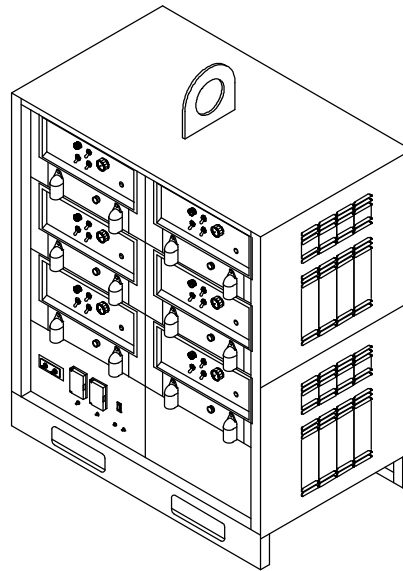
Air Carbon Arc Cutting and
Gouging

Description



Multiple Operator Arc Welding Power
Source

Mark VITM



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www.MillerWelds.com

OWNER'S MANUAL

From Miller to You

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

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

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

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

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



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

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



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



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SECTION 1 – SAFETY PRECAUTIONS - READ BEFORE USING

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 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 welding power sources AFTER removal of input power.

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



HOT PARTS can burn.

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



FUMES AND GASES can be hazardous.

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

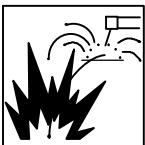
- Keep your head out of the fumes. Do not breathe the fumes.
- If inside, ventilate the area and/or use local forced ventilation at the arc to remove welding fumes and gases.
- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Material Safety Data Sheets (MSDSs)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



ARC RAYS can burn eyes and skin.

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

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

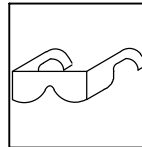


WELDING can cause fire or explosion.

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

- Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
- Do not weld where flying sparks can strike flammable material.
- Protect yourself and others from flying sparks and hot metal.
- Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
- Watch for fire, and keep a fire extinguisher nearby.
- Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
- Do not weld on closed containers such as tanks, drums, or pipes, unless they are properly prepared according to AWS F4.1 (see Safety Standards).
- Do not weld where the atmosphere may contain flammable dust, gas, or liquid vapors (such as gasoline).
- Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock, sparks, and fire hazards.
- Do not use welder to thaw frozen pipes.

- Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
- Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.
- Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding.
- After completion of work, inspect area to ensure it is free of sparks, glowing embers, and flames.
- Use only correct fuses or circuit breakers. Do not oversize or bypass them.
- Follow requirements in OSHA 1910.252 (a) (2) (iv) and NFPA 51B for hot work and have a fire watcher and extinguisher nearby.



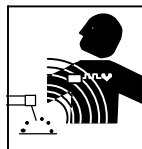
FLYING METAL or DIRT can injure eyes.

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



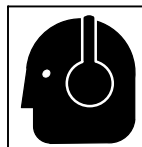
BUILDUP OF GAS can injure or kill.

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



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

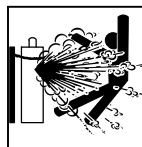
- Wearers of Pacemakers and other Implanted Medical Devices should keep away.
- Implanted Medical Device wearers should consult their doctor and the device manufacturer before going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating operations.



NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

- Wear approved ear protection if noise level is high.



CYLINDERS can explode if damaged.

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

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

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



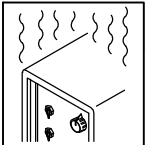
FIRE OR EXPLOSION hazard.

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



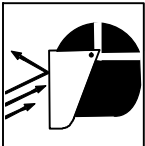
FALLING EQUIPMENT can injure.

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



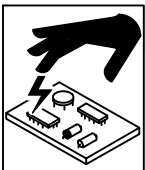
OVERUSE can cause OVERHEATING

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



FLYING SPARKS can injure.

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



STATIC (ESD) can damage PC boards.

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



MOVING PARTS can injure.

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



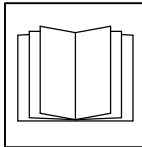
WELDING WIRE can injure.

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



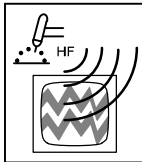
MOVING PARTS can injure.

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



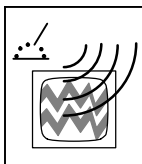
READ INSTRUCTIONS.

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



H.F. RADIATION can cause interference.




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




ARC WELDING can cause interference.

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


1-4. California Proposition 65 Warnings

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

For Gasoline Engines:

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

For Diesel Engines:

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

1-5. Principal Safety Standards

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

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

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Quincy, MA 02269 (phone: 1-800-344-3555, 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).

Safety in Welding, Cutting, and Allied Processes, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 5060 Spectrum Way, Suite 100, Ontario, Canada L4W 5NS (phone: 800-463-6727, website: www.csa-international.org).

Safe Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute,

25 West 43rd Street, New York, NY 10036 (phone: 212-642-4900, website: www.ansi.org).

Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B, from National Fire Protection Association, Quincy, MA 02269 (phone: 1-800-344-3555, website: www.nfpa.org).

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910, Subpart Q, and Part 1926, Subpart J, from U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 (phone: 1-866-512-1800) (there are 10 OSHA Regional Offices—phone for Region 5, Chicago, is 312-353-2220, website: www.osha.gov).

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

Applications Manual for the Revised NIOSH Lifting Equation, The National Institute for Occupational Safety and Health (NIOSH), 1600 Clifton Rd, Atlanta, GA 30333 (phone: 1-800-232-4636, website: www.cdc.gov/NIOSH).

1-6. EMF Information

Electric current flowing through any conductor causes localized electric and magnetic fields (EMF). Welding current creates an EMF field around the welding circuit and welding equipment. EMF fields may interfere with some medical implants, e.g. pacemakers. Protective measures for persons wearing medical implants have to be taken. For example, access restrictions for passers-by or individual risk assessment for welders. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

1. Keep cables close together by twisting or taping them, or using a cable cover.
2. Do not place your body between welding cables. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.

4. Keep head and trunk as far away from the equipment in the welding circuit as possible.
5. Connect work clamp to workpiece as close to the weld as possible.
6. Do not work next to, sit or lean on the welding power source.
7. Do not weld whilst carrying the welding power source or wire feeder.

About Implanted Medical Devices:

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

SECTION 2 – CONSIGNES DE SÉCURITÉ – LIRE AVANT UTILISATION

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! 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 UNE FOIS l'alimentation coupée.

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



LES PIÈCES CHAUDES peuvent provoquer des brûlures.

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



LES FUMÉES ET LES GAZ peuvent être dangereux.

Le soudage génère des fumées et des gaz. Leur inhalation peut être 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 dégraissants.
- Travailler dans un espace fermé seulement s'il est bien ventilé ou en portant un respirateur à alimentation d'air. Demander toujours à un surveillant dûment formé de se tenir à proximité. Des fumées et des gaz de soudage peuvent déplacer l'air et abaisser le niveau d'oxygène provoquant des blessures ou des accidents mortels. S'assurer que l'air de respiration ne présente aucun danger.
- Ne pas souder dans des endroits situés à proximité d'opérations de dégraissage, de nettoyage ou de pulvérisation. La chaleur et les rayons de l'arc peuvent réagir en présence de vapeurs et former des gaz hautement toxiques et irritants.
- Ne pas souder des métaux munis d'un revêtement, tels que l'acier galvanisé, plaqué en plomb ou au cadmium à moins que le revêtement n'ait été enlevé dans la zone de soudure, que l'endroit soit bien ventilé, et en portant un respirateur à alimentation d'air. Les revêtements et tous les métaux renfermant ces éléments peuvent dégager des fumées toxiques en cas de soudage.



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

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

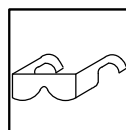
- Porter un casque de soudage approuvé muni de verres filtrants appropriés pour protéger visage et yeux pour protéger votre visage et vos yeux pendant le soudage ou pour regarder (voir ANSI Z49.1 et Z87.1 énuméré dans les normes de sécurité).
- Porter des lunettes de sécurité avec écrans latéraux même sous votre casque.
- Avoir recours à des écrans protecteurs ou à des rideaux pour protéger les autres contre les rayonnements les éblouissements et les étincelles ; prévenir toute personne sur les lieux de ne pas regarder l'arc.
- Porter des vêtements confectionnés avec des matières résistantes et ignifuges (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 soudage. 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 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 la plus près possible de la zone de soudage pour éviter le transport du courant sur une longue distance par des chemins inconnus éventuels en provoquant des risques d'électrocution, d'étincelles et d'incendie.
- Ne pas utiliser le poste de soudage pour dégeler des conduites gelées.
- En cas de non utilisation, enlever la baguette d'électrode du porte-électrode ou couper le fil à la pointe de contact.
- Porter des vêtements de protection 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 PIÈCES DE METAL ou DES SALETES peuvent provoquer des blessures dans les yeux.

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



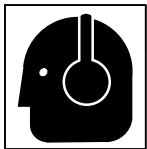
LES ACCUMULATIONS DE GAZ risquent de provoquer des blessures ou même la mort.

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



Les CHAMPS ÉLECTROMAGNÉTIQUES (CEM) peuvent affecter les implants médicaux.

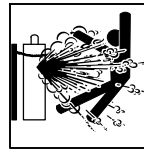
- Les porteurs de stimulateurs cardiaques et autres implants médicaux doivent rester à distance.
- Les porteurs d'implants médicaux doivent consulter leur médecin et le fabricant du dispositif avant de s'approcher de la zone où se déroule du soudage à l'arc, du soudage par points, du gougeage, de la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



LE BRUIT peut endommager l'ouïe.

Le bruit des processus et des équipements peut affecter l'ouïe.

- Porter des protections approuvées pour les oreilles si le niveau sonore est trop élevé.



LES BOUTEILLES peuvent exploser si elles sont endommagées.

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

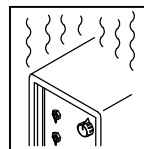
- Protéger les bouteilles de gaz comprimé d'une chaleur excessive, des chocs mécaniques, des dommages physiques, du laitier, des flammes ouvertes, des étincelles et des arcs.
- Placer les bouteilles debout en les fixant dans un support stationnaire ou dans un porte-bouteilles pour les empêcher de tomber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

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.



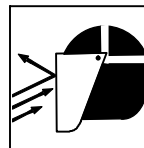
L'EMPLOI EXCESSIF peut SURCHAUFFER L'ÉQUIPEMENT.

- 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.



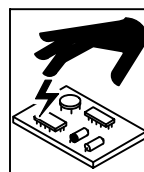
LA CHUTE DE L'ÉQUIPEMENT peut provoquer des blessures.

- Utiliser l'anneau de levage uniquement pour soulever l'appareil, NON PAS les chariots, les bouteilles de gaz ou tout autre accessoire.
- Utiliser un équipement de levage de capacité suffisante pour lever l'appareil.
- En utilisant des fourches de levage pour déplacer l'unité, s'assurer que les fourches sont suffisamment longues pour dépasser du côté opposé de l'appareil.
- Tenir l'équipement (câbles et cordons) à distance des véhicules mobiles lors de toute opération en hauteur.
- Suivre les consignes du Manuel des applications pour l'équation de levage NIOSH révisée (Publication N°94-110) lors du levage manuel de pièces ou équipements lourds.



LES ÉTINCELLES PROJETÉES peuvent provoquer des blessures.

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



LES CHARGES ÉLECTROSTATIQUES peuvent endommager les circuits imprimés.

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



Les PIÈCES MOBILES peuvent causer des blessures.

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



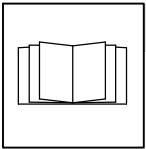
LES FILS DE SOUDAGE peuvent provoquer des blessures.

- Ne pas appuyer sur la gâchette avant d'en avoir reçu l'instruction.
- Ne pas diriger le pistolet vers soi, d'autres personnes ou toute pièce mécanique en engageant le fil de soudage.



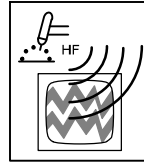
Les PIÈCES MOBILES peuvent causer des blessures.

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



LIRE LES INSTRUCTIONS.

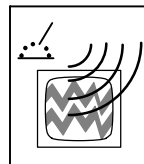
- Lire et appliquer les instructions sur les étiquettes et le Mode d'emploi avant l'installation, l'utilisation ou l'entretien de l'appareil. Lire les informations de sécurité au début du manuel et dans chaque section.
- N'utiliser que les pièces de rechange recommandées par le constructeur.
- Effectuer l'entretien en respectant les manuels d'utilisation, les normes industrielles et les codes nationaux, d'état et locaux.



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.
- Effectuer régulièrement le contrôle et l'entretien de l'installation.
- Maintenir soigneusement fermés les portes et les panneaux des sources de haute fréquence, maintenir les éclateurs à une distance correcte et utiliser une terre et un blindage pour réduire les interférences éventuelles.



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

- L'énergie électromagnétique 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.
- ⚠ Ce produit contient des produits chimiques, notamment du plomb, dont l'État de Californie reconnaît qu'ils provoquent

des cancers, des malformations congénitales ou d'autres problèmes de procréation. *Se laver les mains après utilisation.*

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.ihc.com).

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

National Electrical Code, NFPA Standard 70, de National Fire Protection Association, Quincy, MA 02269 (téléphone : 800-344-3555, site Internet : www.nfpa.org et www.sparky.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).

Safety in Welding, Cutting, and Allied Processes, CSA Standard W117.2, de Canadian Standards Association, Standards Sales, 5060 Spectrum Way, Suite 100, Ontario, Canada L4W 5NS (téléphone : 800-463-6727, 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,

25 West 43rd Street, New York, NY 10036 (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).

U.S. Consumer Product Safety Commission (CPSC), 4330 East West Highway, Bethesda, MD 20814 (téléphone : 301-504-7923, site internet : www.cpsc.gov).

Applications Manual for the Revised NIOSH Lifting Equation, The National Institute for Occupational Safety and Health (NIOSH), 1600 Clifton Rd, Atlanta, GA 30333 (téléphone : 1-800-232-4636, site internet : www.cdc.gov/NIOSH).

2-6. Informations relatives aux CEM

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

1. Rassembler les câbles en les torsadant ou en les attachant avec du ruban adhésif ou avec une housse.
2. Ne pas se tenir au milieu des câbles de soudage. Disposer les câbles d'un côté et à distance de l'opérateur.
3. Ne pas courber et ne pas entourer les câbles autour de votre corps.

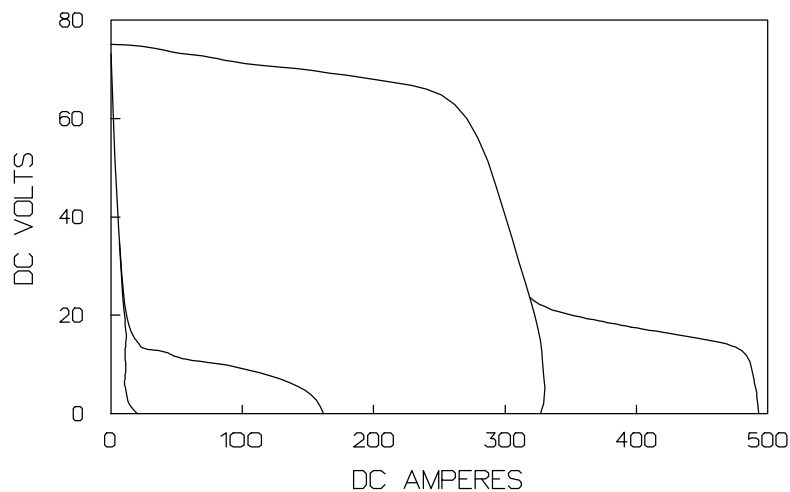
4. Maintenir la tête et le torse aussi loin que possible du matériel du circuit de soudage.
5. Connecter la pince sur la pièce aussi près que possible de la soudure.
6. Ne pas travailler à proximité d'une source de soudage, ni s'asseoir ou se pencher dessus.
7. Ne pas souder tout en portant la source de soudage ou le dévidoir.

En ce qui concerne les implants médicaux :

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

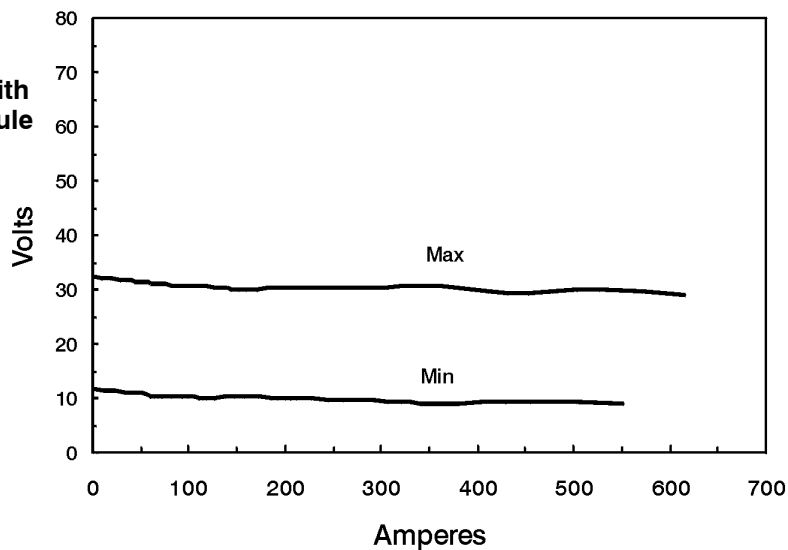
3-3. Volt-Ampere Curves

CC Mode



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

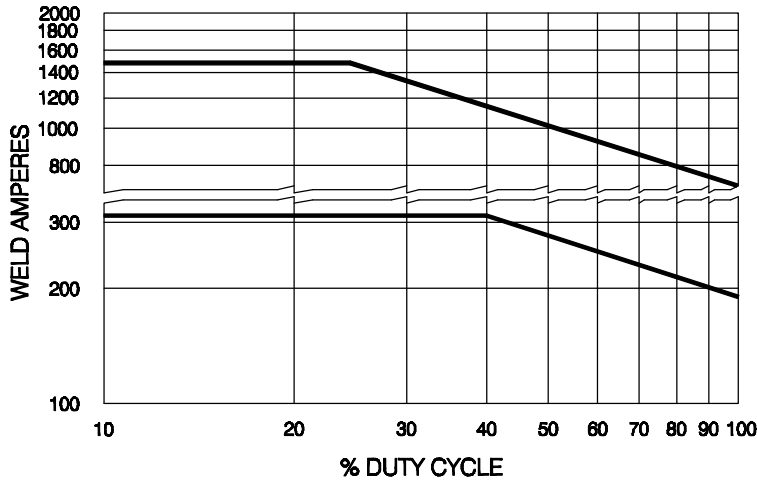
**CV Mode With
CC/CV Module**



184 158 / 190 886

Notes

3-4. 60 Hz Duty Cycle And Overheating



TOTAL MACHINE OUTPUT
750A@ 100%

EACH MODULE OUTPUT
194A@ 100%

Duty Cycle is percentage of 10 minutes that unit can weld at rated load without overheating.

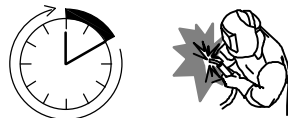
If unit overheats, thermostat(s) opens, output stops, and cooling fan runs. Wait fifteen minutes for unit to cool. Reduce amperage or voltage, or duty cycle before welding.

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

The main transformer of the polyweld system has dual duty cycle ratings, each for a specific amperage output range. If the unit is operated in the 750 ampere range, the unit is rated at 100% duty cycle. This means the polyweld system can be operated at 750 amperes continuously. When the unit is operated in the 1500 ampere range, it is rated at 25% duty cycle.

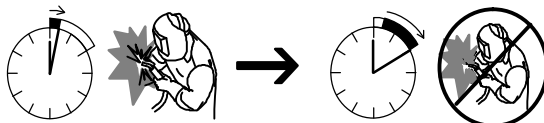
The sum of the outputs of each module should not exceed the rated duty cycle of the main transformer. For example, the polyweld system can be safely operated at a load of 800 amperes at 80 percent duty cycle. This value could be obtained by operating four modules at a load of 200 amperes at 80 percent duty cycle, or by operating six modules at a load of 135 amperes at 80 percent duty cycle.

Main Transformer – 100% Duty Cycle at 750 Amperes



Continuous Welding

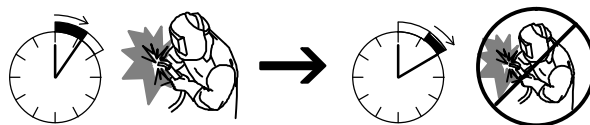
Main Transformer – 25% Duty Cycle at 1500 Amperes



2-1/2 Minutes Welding

7-1/2 Minutes Resting

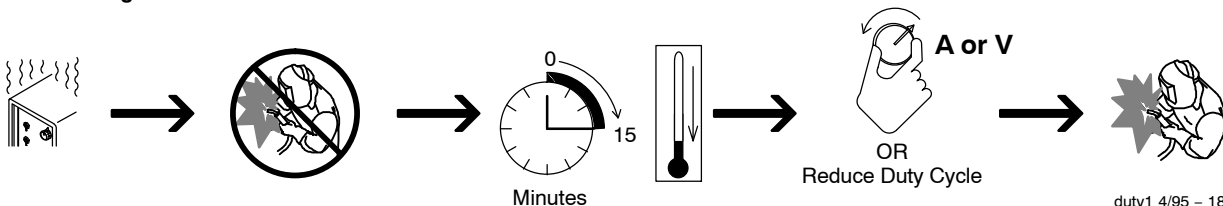
Single Module – 60% Duty Cycle at 250 Amperes



6 Minutes Welding

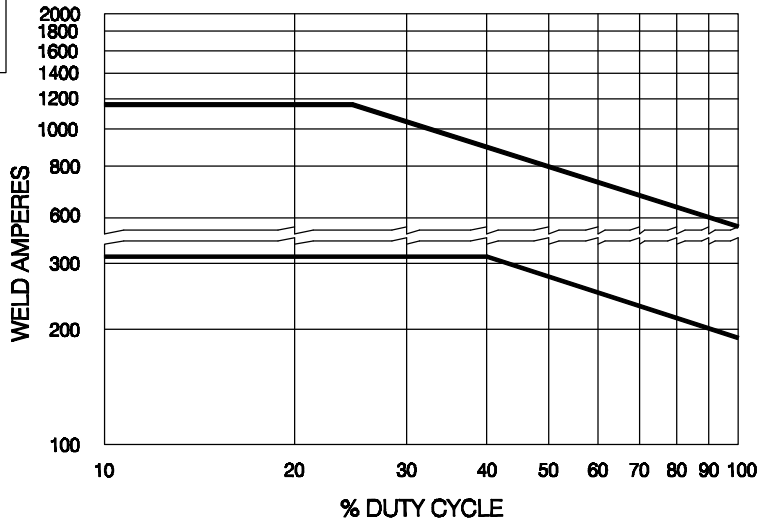
4 Minutes Resting

Overheating



duty1 4/95 - 184 107-C

3-5. 50 Hz Duty Cycle And Overheating



TOTAL MACHINE OUTPUT
750A@ 60%

EACH MODULE OUTPUT
194A@ 100%

Duty Cycle is percentage of 10 minutes that unit can weld at rated load without overheating.

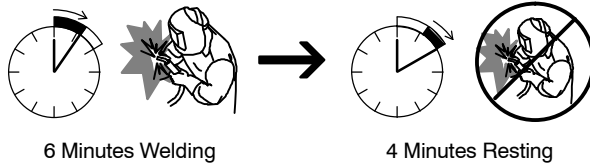
If unit overheats, thermostat(s) opens, output stops, and cooling fan runs. Wait fifteen minutes for unit to cool. Reduce amperage or voltage, or duty cycle before welding.

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

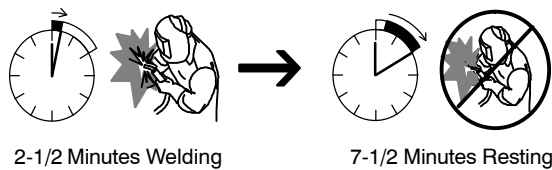
The main transformer of the polyweld system has dual duty cycle ratings, each for a specific amperage output range. If the unit is operated in the 750 ampere range, the unit is rated at 60% duty cycle. This means the polyweld system can be operated at 750 amperes for six out of every ten minutes. When the unit is operated in the 1160 ampere range, it is rated at 25% duty cycle.

The sum of the outputs of each module should not exceed the rated duty cycle of the main transformer. For example, the polyweld system can be safely operated at a load of 650 amperes at 80 percent duty cycle. This value could be obtained by operating four modules at a load of 165 amperes at 80 percent duty cycle, or by operating six modules at a load of 110 amperes at 80 percent duty cycle.

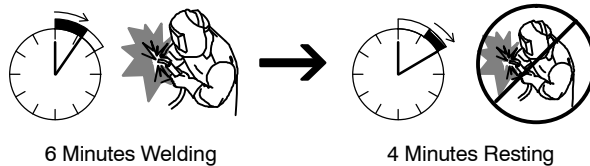
Main Transformer – 60% Duty Cycle at 750 Amperes



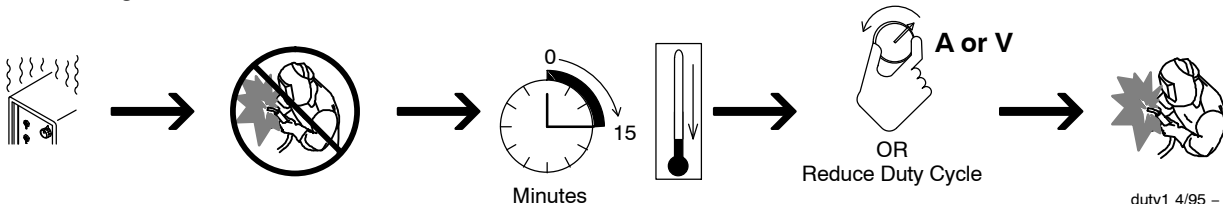
Main Transformer – 25% Duty Cycle at 1160 Amperes



Single Module – 60% Duty Cycle at 250 Amperes



Overheating

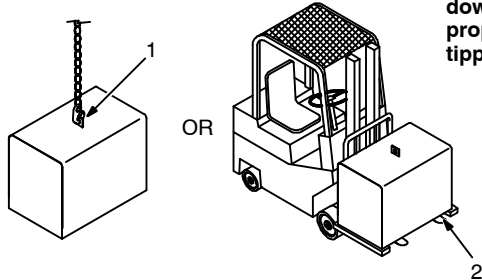


duty1 4/95 - 193 918

3-6. Selecting A Location



Movement



⚠ High center of gravity – always securely tie down unit with adequate chains or other proper restraints when moving to prevent tipping. Do not place unit where it could tip.

- 1 Lifting Eye
- 2 Lifting Forks

Use lifting eye or lifting forks to move unit.

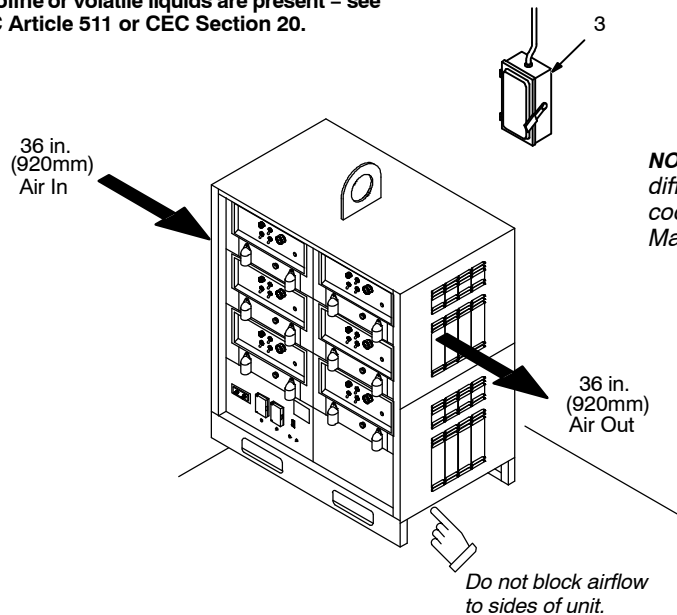
If using lifting forks, extend forks beyond opposite side of unit.

- 3 Line Disconnect Device

Locate unit near correct input power supply.

Location

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

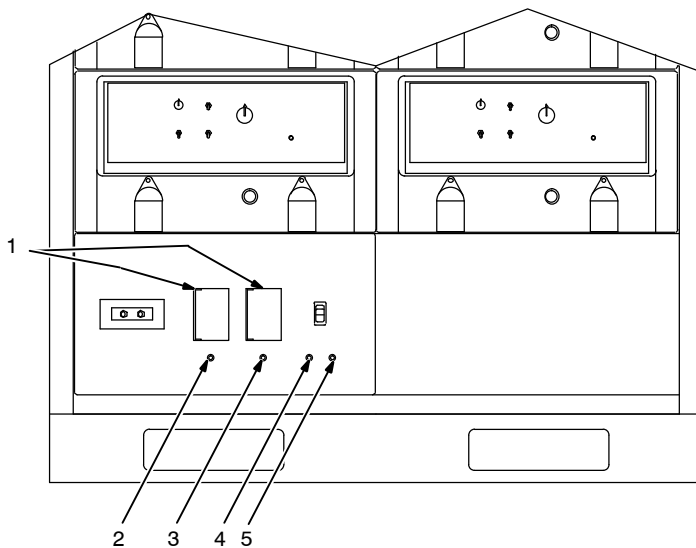


NOTICE – This unit contains fan blades with different airflow directions to provide proper cooling of components. Consult Owner's Manual for correct Part No. and location.

3-7. Dimensions And Weights

Dimensions		
Height*	65 in. (1651 mm)	
Width	56-3/4 in. (1442 mm)	
Depth	34-1/4 in. (870 mm)	
*72 in. (1829 mm) with lifting eye		
Weight		
Each Module	Four Unit Module	Six Module Unit
125 lb (57 kg)	1575 lb (718 kg)	60 Hz – 1825 lb (828 kg) 50 Hz – 1870 lb (848 kg)

3-8. 115 Volts AC GFCI Receptacles And Supplementary Protectors



- 115 V 15 A AC GFCI Receptacles RC9 And RC10

These receptacles supply up to 15 amperes of 115 volts AC power. In 50 Hz models, RC9 is 220 volts, 15 amps AC.

If a ground fault is detected, the GFCI Reset button pops out and the circuit opens to disconnect the faulty equipment. Check for damaged tools, cords, plugs, etc. connected to the receptacle. Press button to reset receptacle and resume operation.


☞ At least once a month, test button to verify GFCI is working properly.

- Supplementary Protector CB1
CB1 protects RC9 from overload. If CB1 opens, no output is available from RC9.
- Supplementary Protector CB2
CB2 protects RC10 from overload. If CB2 opens, no output is available from RC10.
- Supplementary Protector CB3
CB3 protects the 115 volts AC portion of Remote 14 receptacle RC8 from overload.
- Supplementary Protector CB4
CB4 protects the 24 volts AC portion of Remote 14 receptacle RC8 from overload.

Press button to reset protector.

3-9. Weld Output Terminals And Selecting Cable Sizes*

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

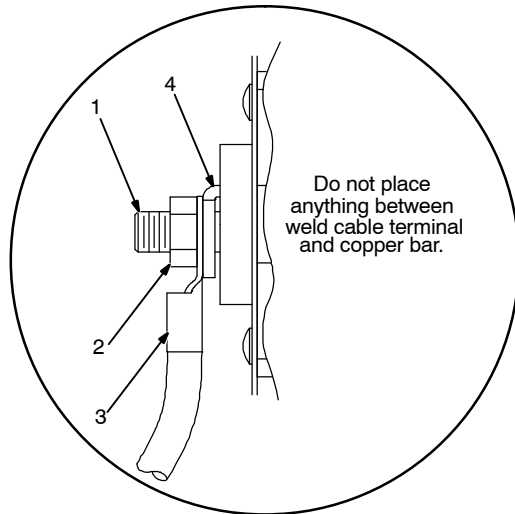
 <p>Weld Output Terminals</p> <p>⚠ Turn off power before connecting to weld output terminals.</p> <p>⚠ Do not use worn, damaged, undersized, or poorly spliced cables.</p>	Weld Cable Size** and Total Cable (Copper) Length in Weld Circuit Not Exceeding***									
	Welding Amperes	100 ft (30 m) or Less	150 ft (45 m)	200 ft (60 m)	250 ft (70 m)	300 ft (90 m)	350 ft (105 m)	400 ft (120 m)		
		10 – 60% Duty Cycle AWG (mm²)	60 – 100% Duty Cycle AWG (mm²)	10 – 100% Duty Cycle AWG (mm²)						
100	4 (20)	4 (20)	4 (20)	3 (30)	2 (35)	1 (50)	1/0 (60)	1/0 (60)	1/0 (60)	
150	3 (30)	3 (30)	2 (35)	1 (50)	1/0 (60)	2/0 (70)	3/0 (95)	3/0 (95)	3/0 (95)	
200	3 (30)	2 (35)	1 (50)	1/0 (60)	2/0 (70)	3/0 (95)	4/0 (120)	4/0 (120)	4/0 (120)	
250	2 (35)	1 (50)	1/0 (60)	2/0 (70)	3/0 (95)	4/0 (120)	2x2/0 (2x70)	2x2/0 (2x70)	2x2/0 (2x70)	
300	1 (50)	1/0 (60)	2/0 (70)	3/0 (95)	4/0 (120)	2x2/0 (2x70)	2x3/0 (2x95)	2x3/0 (2x95)	2x3/0 (2x95)	
350	1/0 (60)	2/0 (70)	3/0 (95)	4/0 (120)	2x2/0 (2x70)	2x3/0 (2x95)	2x3/0 (2x95)	2x4/0 (2x120)	2x4/0 (2x120)	
400	1/0 (60)	2/0 (70)	3/0 (95)	4/0 (120)	2x2/0 (2x70)	2x3/0 (2x95)	2x4/0 (2x120)	2x4/0 (2x120)	2x4/0 (2x120)	
500	2/0 (70)	3/0 (95)	4/0 (120)	2x2/0 (2x70)	2x3/0 (2x95)	2x4/0 (2x120)	3x3/0 (3x95)	3x3/0 (3x95)	3x3/0 (3x95)	
600	3/0 (85)	4/0 (120)	2x2/0 (2x70)	2x3/0 (2x95)	2x4/0 (2x120)	3x3/0 (3x95)	3x4/0 (3x120)	3x4/0 (3x120)	3x4/0 (3x120)	
700	4/0 (110)	2x2/0 (2x70)	2x3/0 (2x95)	2x4/0 (2x120)	3x3/0 (3x95)	3x4/0 (3x120)	3x4/0 (3x120)	4x4/0 (4x120)	4x4/0 (4x120)	
800	4/0 (110)	2x2/0 (2x70)	2x3/0 (2x95)	2x4/0 (2x120)	3x4/0 (3x120)	3x4/0 (3x120)	4x4/0 (4x120)	4x4/0 (4x120)	4x4/0 (4x120)	
900	2x2/0 (2x70)	2x3/0 (2x95)	2x4/0 (2x120)	3x3/0 (3x95)						
1000	2x2/0 (2x70)	2x3/0 (2x95)	2x4/0 (2x120)	3x3/0 (3x95)						
1250	2x3/0 (2x95)	2x4/0 (2x120)	3x3/0 (3x95)	4x3/0 (4x95)						
1500	600 (310)	750 (380)	1000 (510)	2x750 (2x380)						
1750	750 (380)	1000 (510)	2x750 (2x380)	2x1000 (2x510)						

* This chart is a general guideline and may not suit all applications. If cable overheats, use next size larger cable.
 **Weld cable size (AWG) is based on either a 4 volts or less drop or a current density of at least 300 circular mils per ampere.
 () = mm² for metric use
 ***For distances longer than those shown in this guide, call a factory applications rep. at 920-735-4505 (Miller) or 1-800-332-3281 (Hobart).

3-10. Common Work Cable Sizes

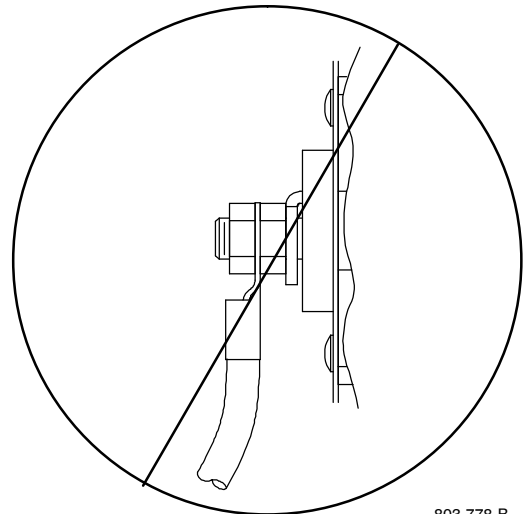
Common Work Cable Sizes At Main Transformer Rated Welding Current	
Cable Length	Cable Size
50 ft (15 m)	2 No. 3/0
100 ft (30.5 m)	2 No. 4/0
150 ft (46 m)	3 No. 3/0
200 ft (61 m)	3 No. 4/0

3-11. Connecting Weld Output Cables



Do not place anything between weld cable terminal and copper bar.

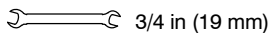
Correct Installation



Incorrect Installation

803 778-B

Tools Needed:



- Turn off power before connecting to weld output terminals.
- Failure to properly connect weld cables may cause excessive heat and start a fire, or damage your machine.

- 1 Weld Output Terminal
 - 2 Supplied Weld Output Terminal Nut
 - 3 Weld Cable Terminal
 - 4 Copper Bar
- Remove supplied nut from weld output terminal. Slide weld cable terminal onto weld

output terminal and secure with nut so that weld cable terminal is tight against copper bar. **Do not place anything between weld cable terminal and copper bar. Make sure that the surfaces of the weld cable terminal and copper bar are clean.**

3-12. Safety Information For Connecting To Weld Output Terminals



ELECTRIC SHOCK can kill; ARCING can burn skin or damage electrical connections.

Turn Off welding power source before making any weld output connections.

Do not connect welding output of different polarities to the same structure.

See ANSI Z49.1 and OSHA Title 29, Chapter XVII, Part 1910, Subpart Q (addresses at beginning of manual).

When using Common Work terminal, all connections to the Common Work terminal must be of the same polarity. Also, when welding on the same work piece, all connections to the work piece must be of the same polarity.

Remove jumper link from any module where work and electrode connections are made directly to the Positive and Negative output terminals.

Do not handle or come in contact with two live electrodes at the same time.

Connect all paralleled modules for the same polarity.

ELECTRIC SHOCK can kill; TWO TIMES NORMAL OPEN-CIRCUIT VOLTS exist between electrode holders of opposite polarity.

Do not touch electrode holders of opposite polarity at the same time.

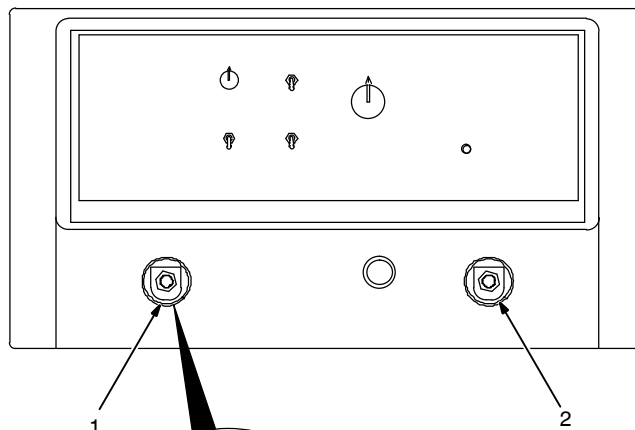
Separate electrode holders of opposite polarity to prevent contact.

Consult ANSI Z49.1 for common grounding safe practices.

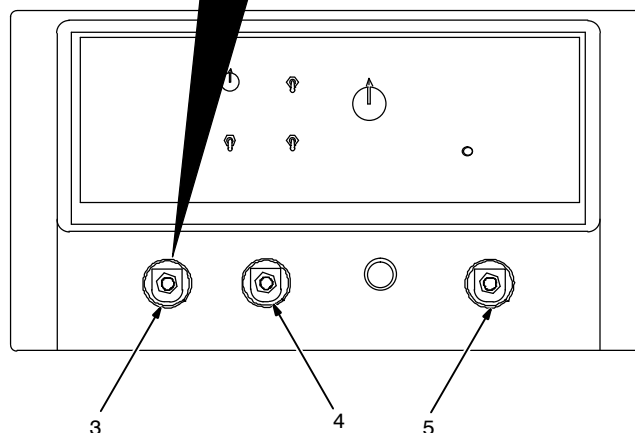
3-13. Weld Output Terminals



CC Module



CC/CV Module



Read and understand safety information in Section 3-12 before proceeding.

- 1 Positive (+) Weld Output Terminal
- 2 Negative (-) Weld Output Terminal
- 3 Positive (+) High Inductance Weld Output Terminal For CC SMAW And GTAW Welding Processes
- 4 Positive (+) Low Inductance Weld Output Terminal For The CV FCAW Welding Process
- 5 Negative (-) Weld Output Terminal
- 6 Weld Output Terminal Cover (Typical For All Weld Output Terminals)

Cover all weld output terminals with weld output terminal covers.

Go to Section 3-14 and/or 3-15 for standard module weld output connections, or Section 3-16 and/or 3-17 for parallel module weld output connections. Go to Section 3-18 and/or 3-19 for CV FCAW weld output connections.

Ref. 801 627-A

3-14. Standard Module Weld Output Connections For CC SMAW And GTAW Welding Processes Without A Common Work Terminal



⚠ Read and understand safety information in Section 3-12 before proceeding.

See Section 3-9 for proper cable size.

- 1 Electrode Holder Cable
- 2 Work Cable

For Electrode Positive (Reverse Polarity/DCEP), connect work cable to Negative (-) terminal and electrode holder cable to Positive (+) terminal (see Section 3-13).

For Electrode Negative (Straight Polarity/DCEN), reverse cable connections.

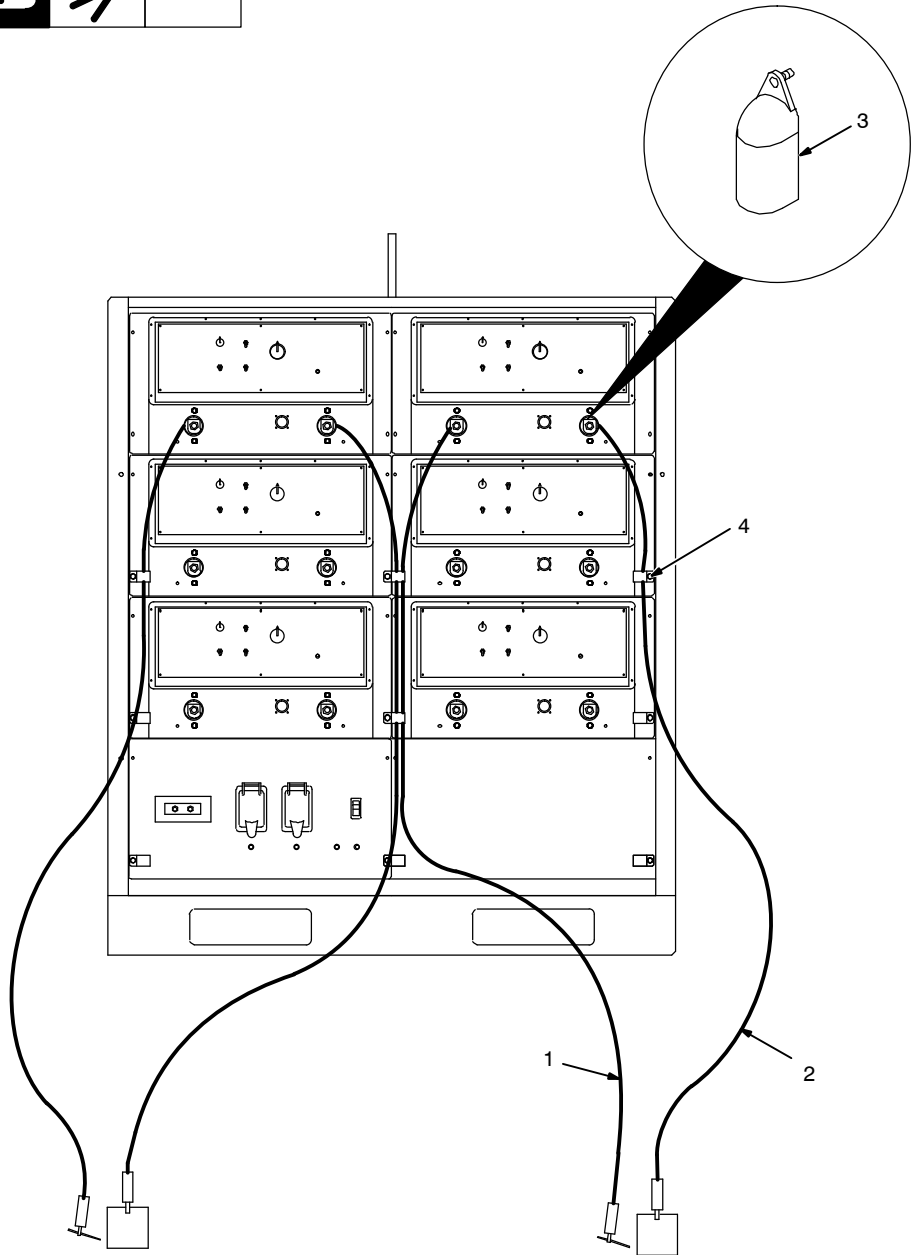
- 3 Weld Output Terminal Cover (Typical For All Weld Output Terminals)

Cover all weld output terminals with weld output terminal covers.

- 4 Cable Restraint

Route cables through restraints as shown.

ℹ When using a CC/CV module (not shown) for CC operation, use Positive (+) High Inductance weld output terminal (see Section 3-13). Process Selector switch (see Section 4-2) must be in SMAW Hot Start On, or SMAW Hot Start Off position.



Tools Needed:



3-15. Standard Module Weld Output Connections For CC Smaw And GTAW Welding Processes With A Common Work Terminal



⚠ **INADEQUATE WORK CABLE CONNECTIONS** can cause serious damage to input power service and create a hazardous condition.

Connect a weld cable of adequate size between the Common Work Connection and the workpiece whenever any module(s) is connected to use the Common Work terminal.

When using Common Work terminal, all connections to the Common Work terminal must be of the same polarity.

Do not exceed duty cycle of machine.

⚠ **Read and understand safety information in Section 3-12 before proceeding.**

See Section 3-9 for proper cable size.

- 1 Electrode Holder Cable
- 2 Work Jumper Cable
- 3 Common Work Terminal
- 4 Common Work Cable

For Electrode Positive (Reverse Polarity/DCEP), connect work jumper cables from Negative (-) terminals to Common Work terminal, and connect electrode holder cables to Positive (+) terminals (see Section 3-13).

For Electrode Negative (Straight Polarity/DCEN), connect work jumper cables from Positive (+) terminals to Common Work terminal, and connect electrode holder cables to Negative (-) terminals (see Section 3-13).

Connect as many modules as required. Do not exceed duty cycle of machine.

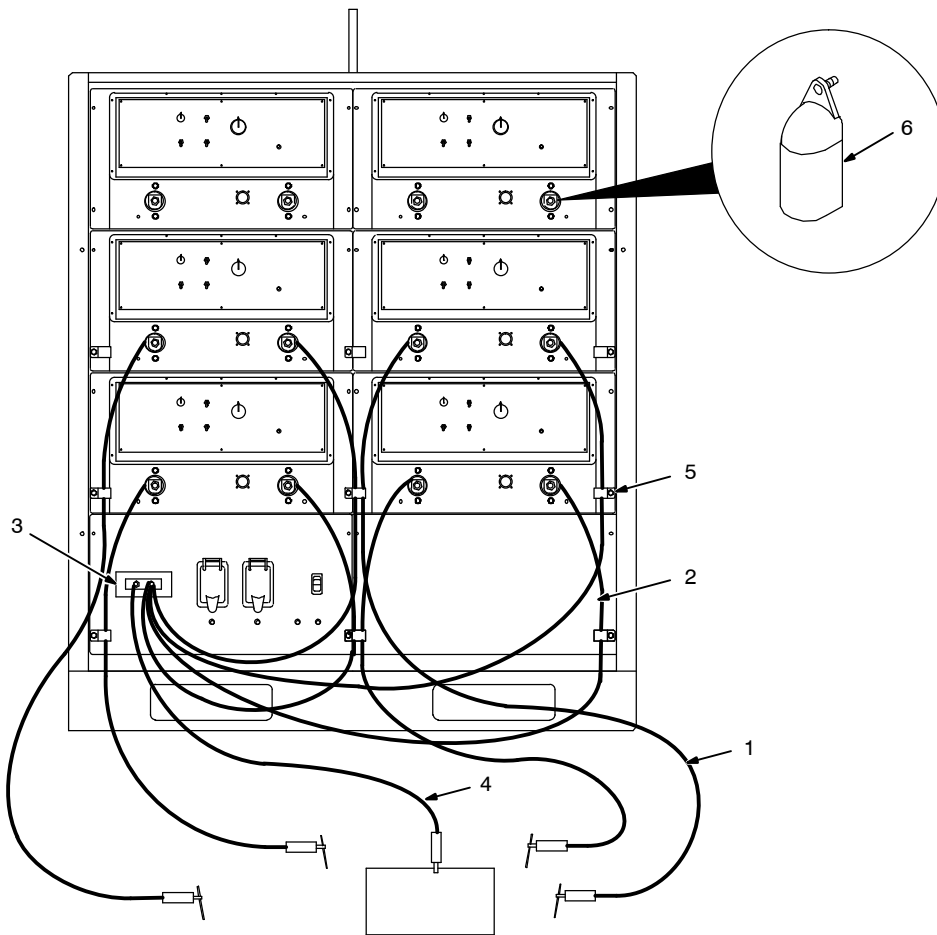
5 Cable Restraint

Route cables through restraints as shown.

6 Weld Output Terminal Cover (Typical For All Weld Output Terminals)

Cover all weld output terminals with weld output terminal covers.

ℹ *When using a CC/CV module (not shown) for CC operation, use Positive (+) High Inductance weld output terminal (see Section 3-13). Process Selector switch (see Section 4-2) must be in SMAW Hot Start On, or SMAW Hot Start Off position.*



Tools Needed:



ℹ *For common work connection, work cable must be able to carry combined weld output of all modules using the Common Work Terminal (see Section 3-10 for proper cable size). The Common Work Terminal is isolated from the unit frame.*

Ref. 801 641-A

3-16. Parallel Module Weld Output Connections For CC SMAW Welding Process Without A Common Work Terminal



⚠️ UNDERSIZED WELD CABLES can cause fire.

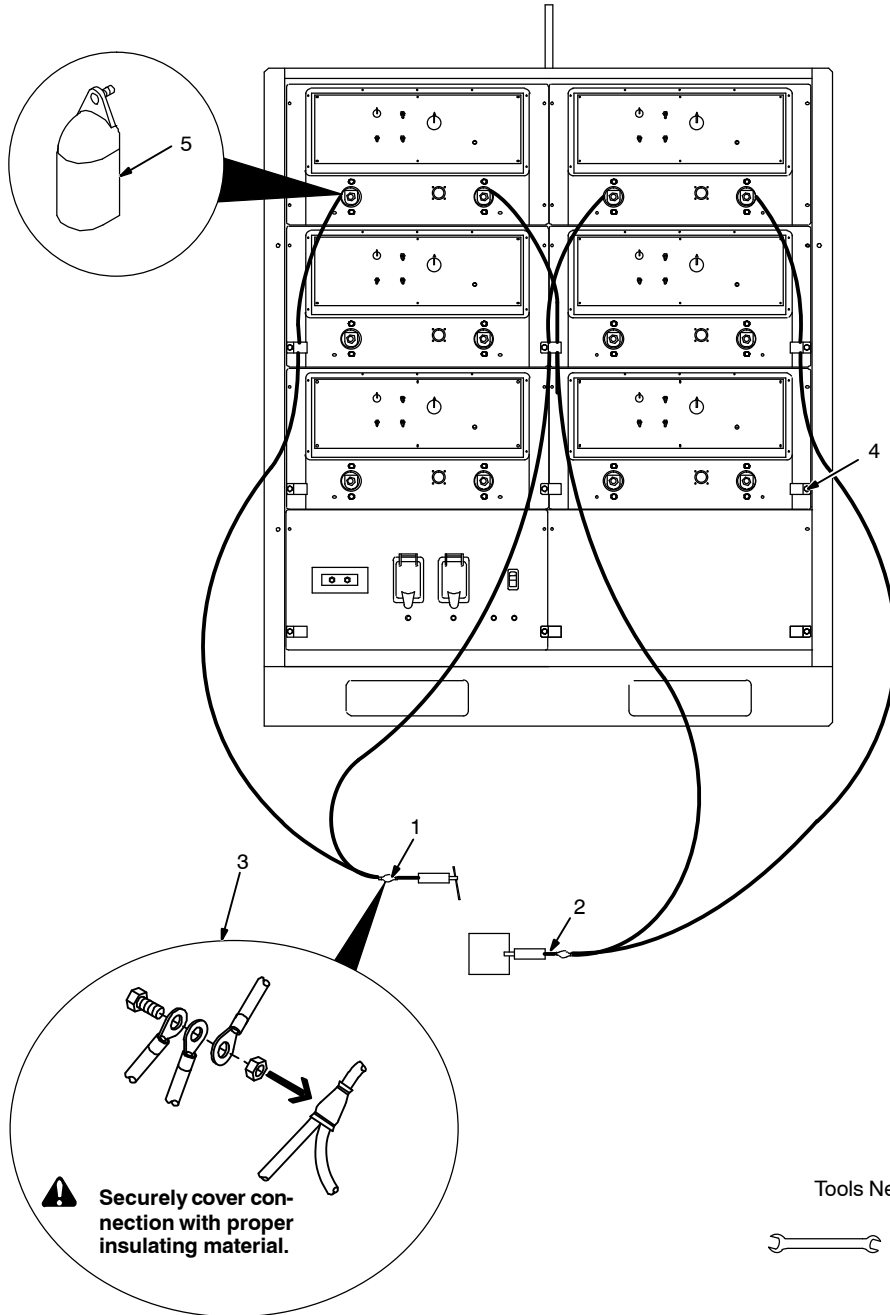
Use single cable of adequate capacity to carry the total combined amperage of the paralleled modules.

Securely cover common connections with proper insulating material.

Do not exceed duty cycle of machine.

☞ *Single work cable or electrode holder cable must be able to carry combined weld output of all modules connected in parallel (see Section 3-9).*

Set Amperage/Voltage Adjustment controls on all paralleled modules for the same output.



⚠️ Read and understand safety information in Section 3-12 before proceeding.

See Section 3-9 for proper cable size.

- 1 Electrode Holder Cable
- 2 Work Cable
- 3 Connection Point

For Electrode Positive (Reverse Polarity/DCEP), connect separate cables of same size and length from Positive (+) terminals (see Section 3-13) to a suitable connection point connecting to a single electrode cable. Connect separate cables of same size and length from Negative (-) terminals to a suitable connection point connecting to a single work cable.

For Electrode Negative (Straight Polarity/DCEN), reverse cable connections.

Connect as many modules as required. Do not exceed duty cycle of machine.

- 4 Cable Restraint

Route cables through restraints as shown.

- 5 Weld Output Terminal Cover (Typical For All Weld Output Terminals)

Cover all weld output terminals with weld output terminal covers.

☞ *When using a CC/CV module (not shown) for CC operation, use Positive (+) High Inductance weld output terminal (see Section 3-13). Process Selector switch (see Section 4-2) must be in SMAW Hot Start On, or SMAW Hot Start Off position.*

Tools Needed:



3-17. Parallel Module Weld Output Connections For CC SMAW Welding Process With A Common Work Terminal



⚠️ UNDERSIZED WELD CABLES can cause fire.

Use single cable of adequate capacity to carry the total combined amperage of the paralleled modules.

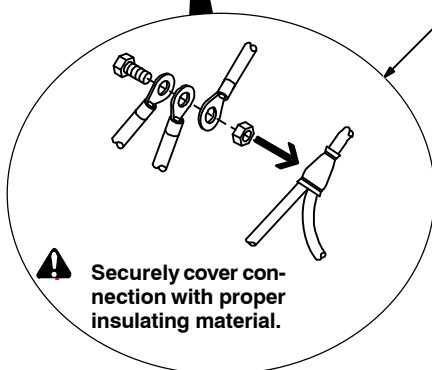
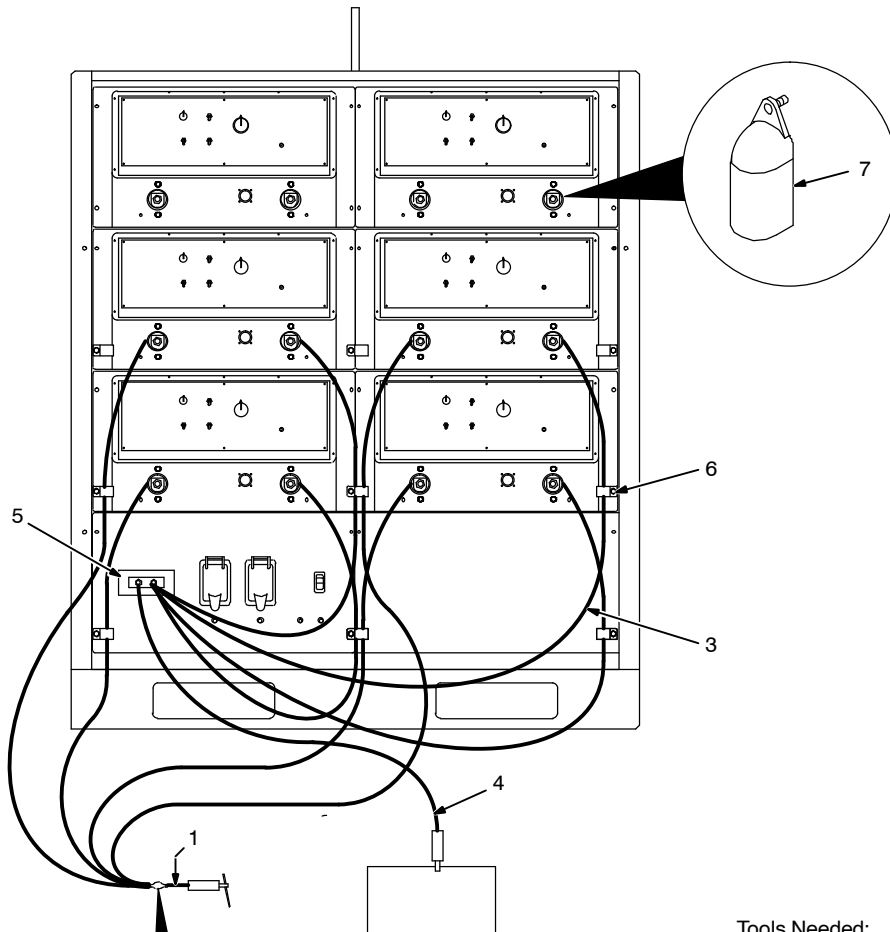
Securely cover common connections with proper insulating material.

Do not exceed duty cycle of machine.

☞ *Single work cable or electrode holder cable must be able to carry combined weld output of all modules connected in parallel (see Section 3-9).*

Set Amperage/Voltage Adjustment controls on all paralleled modules for the same output.

When using Common Work terminal, all connections to the Common Work terminal must be of the same polarity.



☞ *For common work connection, work cable must be able to carry combined weld output of all modules using the Common Work Terminal (see Section 3-10 for proper cable size).*

The Common Work Connection panel is isolated from the unit frame.

⚠️ Read and understand safety information in Section 3-12 before proceeding.

See Section 3-9 for proper size cable.

- 1 Electrode Holder Cable
- 2 Connection Point
- 3 Work Jumper Cable
- 4 Common Work Cable
- 5 Common Work Terminal

For Electrode Positive (Reverse Polarity/DCEP), connect work jumper cable across Negative (-) terminal and Common Work terminal for each paralleled module. Connect separate cables of same size and length from Positive (+) terminals (see Section 3-13) to a suitable connection point connecting to a single electrode holder cable.

For Electrode Negative (Straight Polarity/DCEN), connect work jumper cable across Positive (+) terminal (see Section 3-13) and Common Work terminal for each paralleled module. Connect separate cables of same size and length from Negative (-) terminals to a suitable connection point connecting to a single electrode holder cable.

Connect as many modules as required. Do not exceed duty cycle of machine.

6 Cable Restraint

Route cables through restraints as shown.

7 Weld Output Terminal Cover (Typical For All Weld Output Terminals)

Cover all weld output terminals with weld output terminal covers.

☞ *When using a CC/CV module (not shown) for CC operation, use Positive (+) High Inductance weld output terminal (see Section 3-13). Process Selector switch (see Section 4-2) must be in SMAW Hot Start On, or SMAW Hot Start Off position.*

Tools Needed:



3-18. CC/CV Module Weld Output Connections For CV FCAW Welding Process Without A Common Work Terminal



⚠ Read and understand safety information in Section 3-12 before proceeding.

See Section 3-9 for proper cable size.

- 1 Wire Feeder Connection Cable
- 2 Work Cable

For Flux Cored Arc Welding (FCAW), Electrode Negative (DCEN/Straight Polarity) is typically used. Connect work cable to Positive (+) Low Inductance terminal. Connect wirefeeder connection cable to Negative (-) weld terminal and wire feeder. (see Section 3-13).

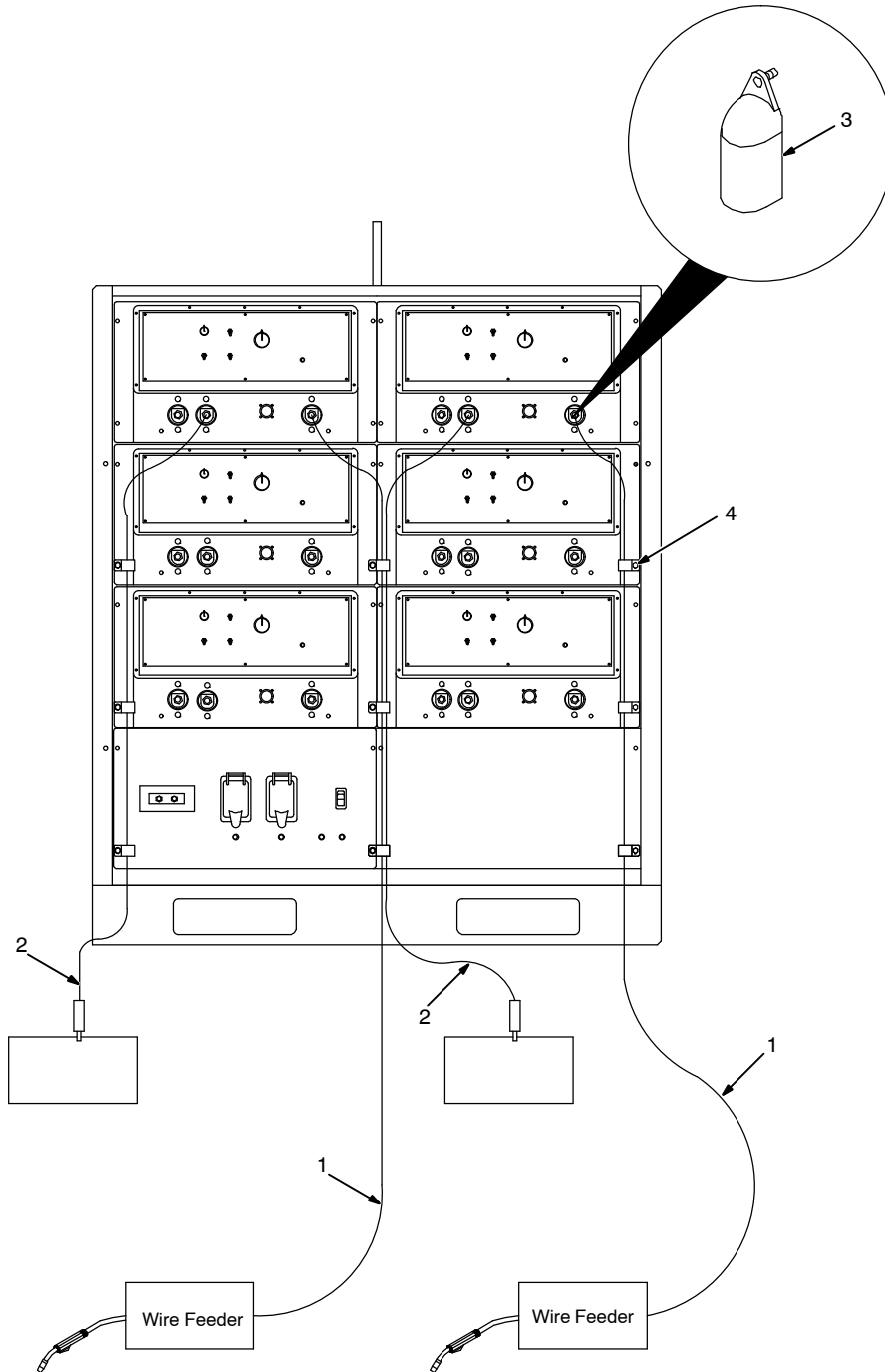
For Electrode Positive (Reverse Polarity/DCEP), reverse cable connections.

- 3 Weld Output Terminal Cover (Typical For All Weld Output Terminals)

Cover all weld output terminals with weld output terminal covers.

- 4 Cable Restraint

Route cables through restraints as shown.



Tools Needed:



Ref. 802 199

3-19. CC/CV Module Weld Output Connections For CV FCAW Welding Process With A Common Work Terminal



⚠ INADEQUATE WORK CABLE CONNECTIONS can cause serious damage to input power service and create a hazardous condition.

Connect a weld cable of adequate size between the Common Work Connection and the workpiece whenever any module(s) is connected to use the Common Work terminal.

When using Common Work terminal, all connections to the Common Work terminal must be of the same polarity.

Do not exceed duty cycle of machine.

⚠ Read and understand safety information in Section 3-12 before proceeding.

See Section 3-9 for proper cable size.

- 1 Wire Feeder Connection Cable
- 2 Work Jumper Cable
- 3 Common Work Terminal
- 4 Common Work Cable
- 5 Cable Restraint

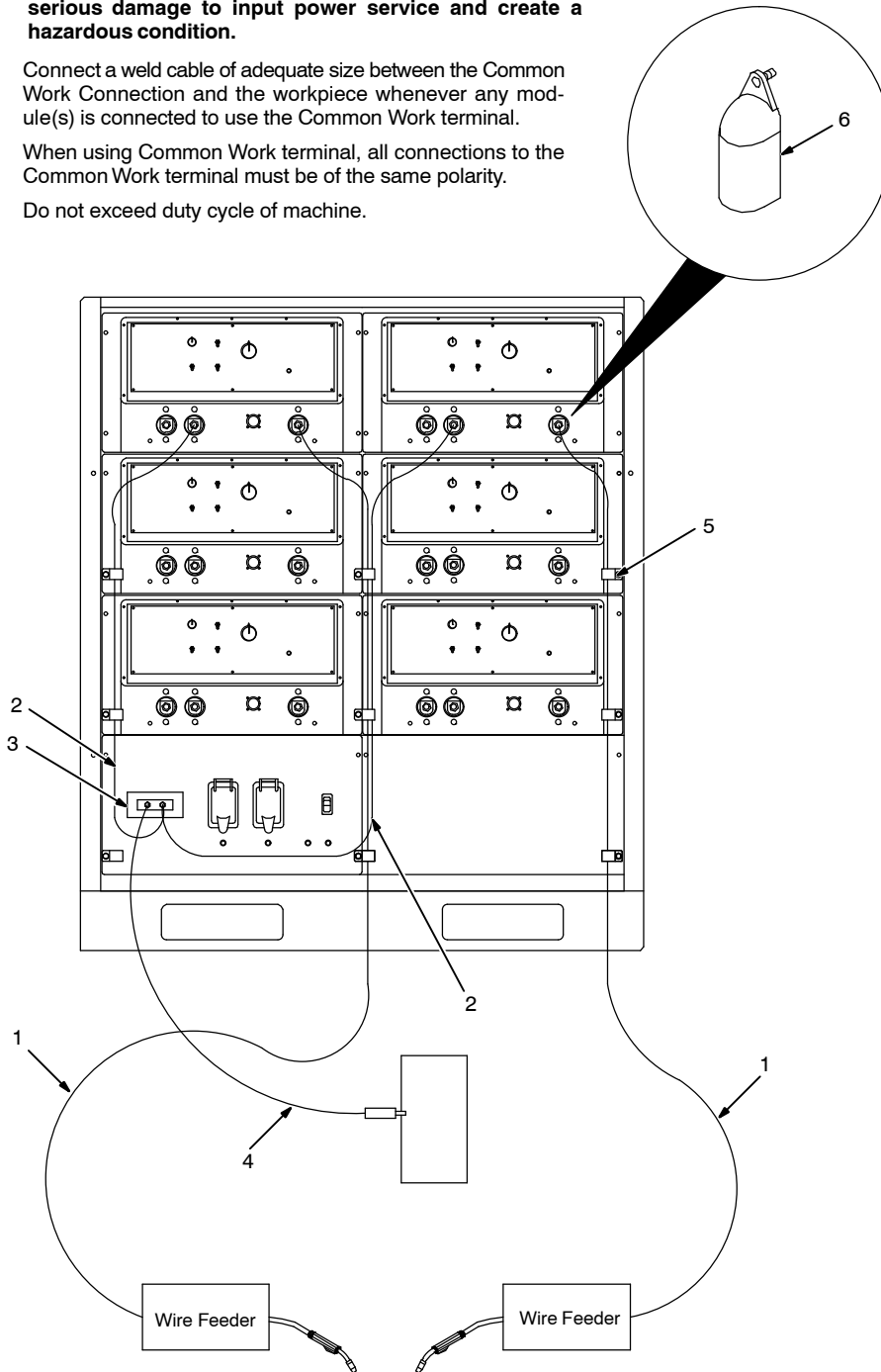
Route cables through restraints as shown.

For Flux Cored Arc Welding (FCAW), Electrode Negative (DCEN/Straight Polarity) is typically used. Connect work jumper cable from Positive (+) Low Inductance terminals to Common Work terminal. Connect wirefeeder connection cables from Negative (-) terminals to wire feeders. (see Section 3-13).

For Electrode Positive (Reverse Polarity/DCEP), connect work jumper cables from Negative (-) terminals to Common Work terminal. Connect wire feeder connection cables from Positive (+) Low Inductance terminals to wire feeders. (see Section 3-13).

- 6 Weld Output Terminal Cover (Typical For All Weld Output Terminals)

Cover all weld output terminals with weld output terminal covers.



Tools Needed:



3-20. Remote 14 Receptacle Information

<p>Ref. ST-801 627-A</p>	REMOTE 14	Socket*	Socket Information
	24 VOLTS AC OUTPUT (CONTACTOR)	A	24 volts AC. Protected by supplementary protector CB4.
	24 VOLTS AC OUTPUT (CONTACTOR)	B	Contact closure to A completes 24 volts AC contactor control circuit.
	REMOTE OUTPUT CONTROL	C	Output to remote control; +10 volts DC in CV, 0 to +10 volts DC in CC.
	REMOTE OUTPUT CONTROL	D	Remote control circuit common.
		E	0 to +10 volts DC input command signal from remote control.
	A/V AMPERAGE VOLTAGE	F	Current feedback; 0 to +10 volts DC, 1 volt per 100 amperes.
		H	Voltage feedback; +1 volts DC per 10 arc volts.
	115 VOLTS AC OUTPUT (CONTACTOR)	I	115 volts, 15 amperes, 60 Hz AC. Protected by supplementary protector CB3.
	115 VOLTS AC OUTPUT (CONTACTOR)	J	Contact closure to I completes 115 volts AC contactor control circuit.
GND	K	Chassis common.	
GND	G	Circuit common for 24 and 115 volts AC circuits.	
*The remaining sockets are not used.			

3-21. Electrical Service Guide

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

	60 Hz Three Phase			50 Hz tHREE Phase			
	230	460	575	380	400	415	440
Input Voltage (V)	230	460	575	380	400	415	440
Input Amperes (A) At Rated Output	164	82	66	97	92	91	84
Max Recommended Standard Fuse Rating In Amperes¹							
Time-Delay Fuse²	200	100	80	110	110	110	100
Normal Operating Fuse³	250	125	100	150	150	125	125
Min Input Conductor Size In AWG⁴	1/0	4	4	3	3	3	3
Max Recommended Input Conductor Length In Feet (Meters)	163 (50)	346 (106)	541 (165)	280 (85)	310 (94)	310 (94)	375 (114)
Min Grounding Conductor Size In AWG⁴	4	6	8	6	6	6	6

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

1 If a circuit breaker is used in place of a fuse, choose a circuit breaker with time-current curves comparable to the recommended fuse.

2 "Time-Delay" fuses are UL class "RK5". See UL 248.

3 "Normal Operating" (general purpose - no intentional delay) fuses are UL class "K5" (up to and including 60 amps), and UL class "H" (65 amps and above).

4 Conductor data in this section specifies conductor size (excluding flexible cord or cable) between the panelboard and the equipment per NEC Table 310.15(B)(16). If a flexible cord or cable is used, minimum conductor size may increase. See NEC Table 400.5(A) for flexible cord and cable requirements.

3-22. Placing Jumper Links



⚠ Disconnect and lockout/tag-out input power before installing or moving jumper links.

Check input voltage available at site.

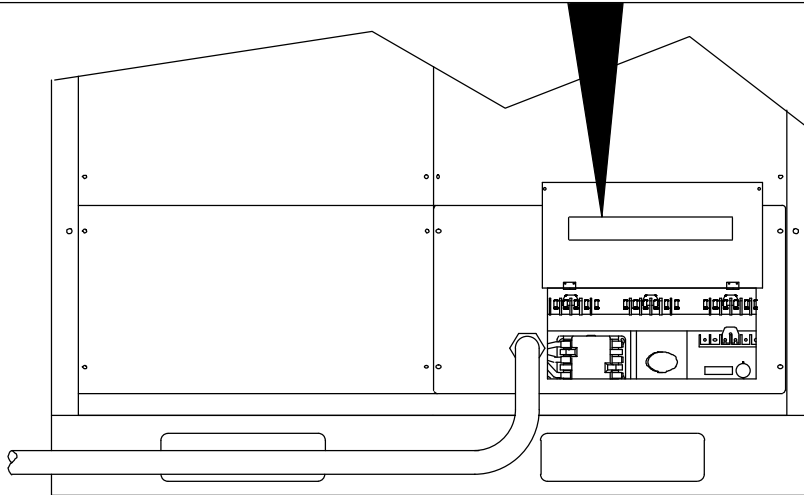
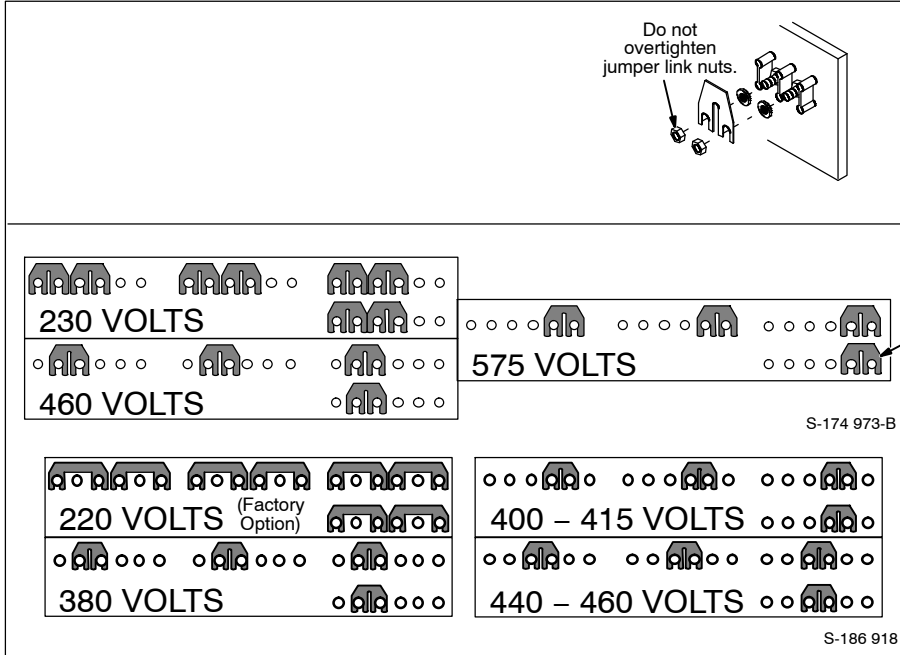
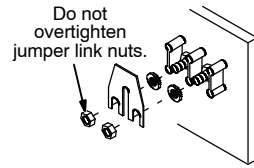
1 Jumper Link Label

Check label – only one is on unit.

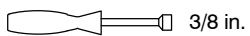
2 Jumper Links

Move jumper links to match input voltage.

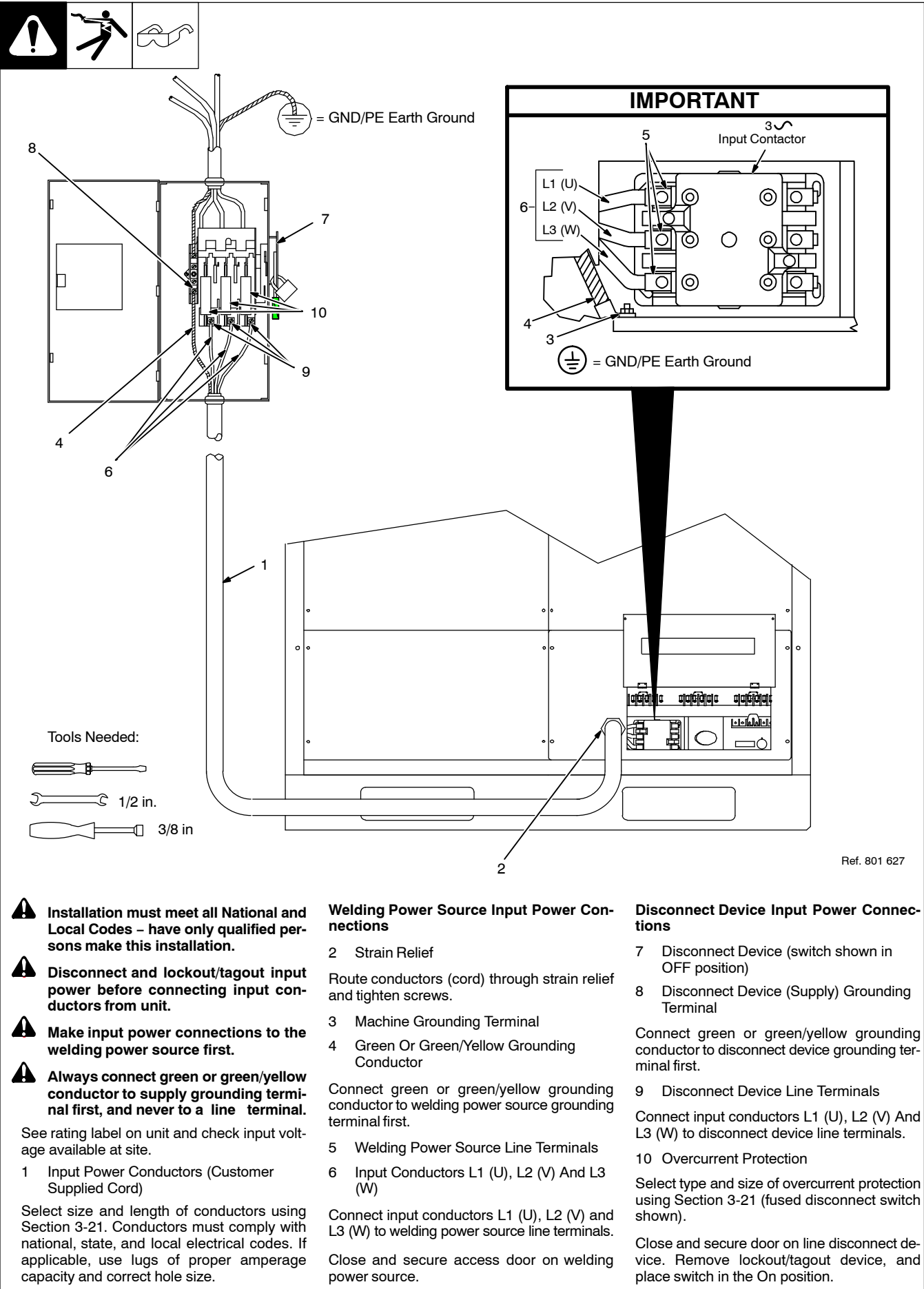
Close access door, or go on to Section 3-23.





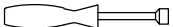
Tools Needed:







3-23. Connecting Input Power



Tools Needed:

-  Screwdriver
-  1/2 in. Wrench
-  3/8 in. Screwdriver

-  **Installation must meet all National and Local Codes – have only qualified persons make this installation.**
-  **Disconnect and lockout/tagout input power before connecting input conductors from unit.**
-  **Make input power connections to the welding power source first.**
-  **Always connect green or green/yellow conductor to supply grounding terminal first, and never to a line terminal.**

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

- 1 Input Power Conductors (Customer Supplied Cord)

Select size and length of conductors using Section 3-21. Conductors must comply with national, state, and local electrical codes. If applicable, use lugs of proper amperage capacity and correct hole size.

Welding Power Source Input Power Connections

- 2 Strain Relief
Route conductors (cord) through strain relief and tighten screws.
- 3 Machine Grounding Terminal
- 4 Green Or Green/Yellow Grounding Conductor
Connect green or green/yellow grounding conductor to welding power source grounding terminal first.
- 5 Welding Power Source Line Terminals
- 6 Input Conductors L1 (U), L2 (V) And L3 (W)
Connect input conductors L1 (U), L2 (V) and L3 (W) to welding power source line terminals.

Close and secure access door on welding power source.

Disconnect Device Input Power Connections

- 7 Disconnect Device (switch shown in OFF position)
- 8 Disconnect Device (Supply) Grounding Terminal
Connect green or green/yellow grounding conductor to disconnect device grounding terminal first.
- 9 Disconnect Device Line Terminals
Connect input conductors L1 (U), L2 (V) And L3 (W) to disconnect device line terminals.
- 10 Overcurrent Protection
Select type and size of overcurrent protection using Section 3-21 (fused disconnect switch shown).

Close and secure door on line disconnect device. Remove lockout/tagout device, and place switch in the On position.

Ref. 801 627

SECTION 4 – OPERATION

4-1. CC Module Controls

The diagram illustrates the control panel for the CC Module. At the top, a row of safety icons includes a warning symbol, a person using a tool, a person wearing a mask, a person using a torch, a person using a power tool, a person using a power tool, a person wearing a mask, and a person wearing safety glasses. Below these are seven numbered callouts pointing to specific controls:

- 1:** Arc Force (Dig) Control: A rotary dial labeled 'SMAW DIG' with a scale from 0 to 100. Below it is a 'GTAW' label with an arrow pointing to 0.
- 2:** Hot Start Switch: A toggle switch labeled 'SMAW' with 'ON' and 'OFF' positions.
- 3:** Amperage Adjustment Control: A large rotary dial labeled 'A' with a scale from 25 to 300.
- 4:** High Temperature Shutdown Light: A circular indicator light labeled 'High Temp Shutdown'.
- 5:** Remote Amperage Control Switch: A toggle switch labeled 'PANEL' and 'REMOTE'.
- 6:** Output Switch (Contactor): A toggle switch labeled 'REMOTE'.
- 7:** Power Switch: A power switch labeled 'POWER' with 'ON' and 'OFF' positions.

Technical specifications are provided in a box:

RATED OUTPUT
SINGLE MODULE
 VOLTS 30
 AMPERES 250
 DUTY CYCLE 60%
 MAX OCV 78 VDC

TOTAL MACHINE
 60Hz - 760 Amps @ 100% Duty Cycle
 60Hz - 750 Amps @ 60% Duty Cycle

NEUTRAL BONDED TO FRAME
 NEUTRE RACCORDÉ AU BÂTI

CB2 15A CB3 15A CB4 15A

Ref. 181 356-B / Ref. 189 724-B

1 Arc Force (Dig) Control

Control increases SMAW short-circuit amperage from 0–160 amps which allows the operator to use a very short arc length without sticking the electrode.

2 Hot Start Switch

Turn switch Off for GTAW and SMAW normal operation. Turn switch On for SMAW to provide additional starting amperage for hard to start electrodes.

3 Amperage Adjustment Control

High Temperature Shutdown Light

Remote Amperage Control Switch

For front panel control, place switch in Panel position. For remote control, place switch in Remote position, and connect remote device (see Section 3-20).

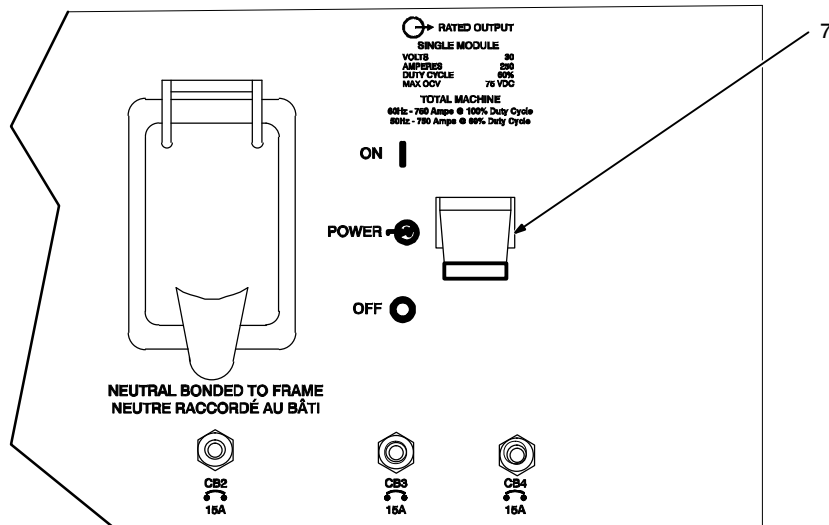
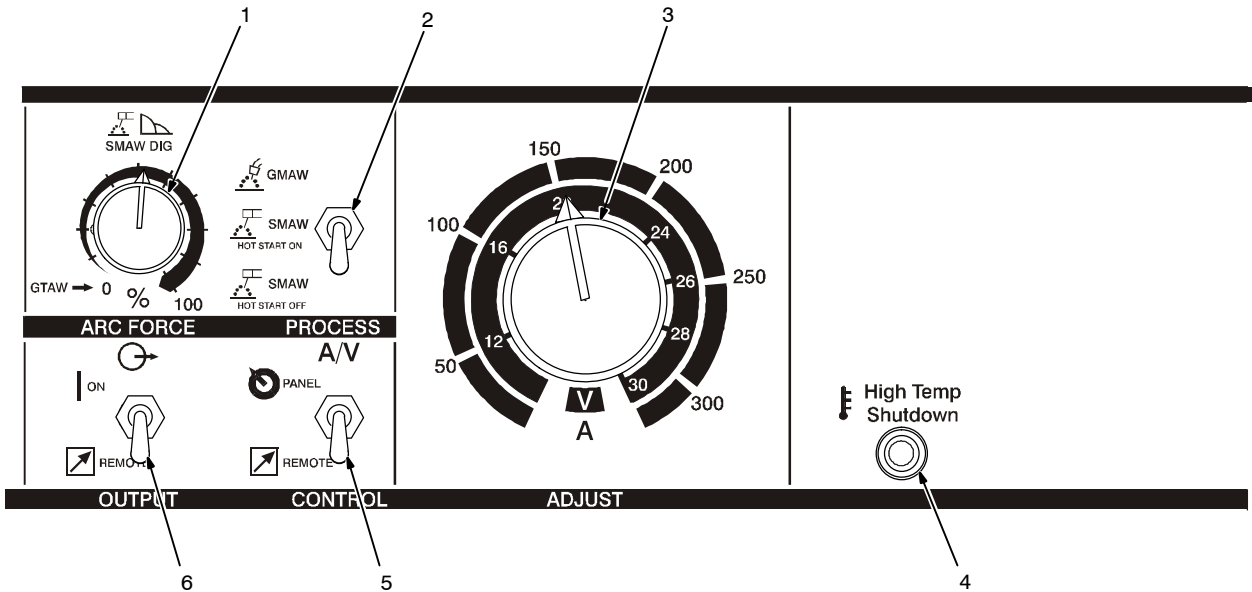
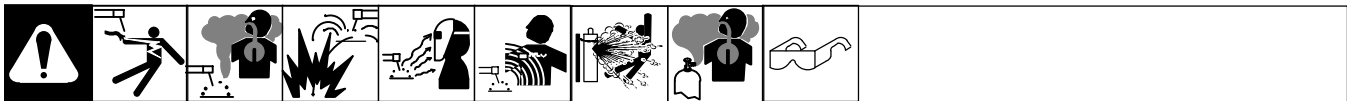
Remote position, and connect remote device (see Section 3-20).

6 Output Switch (Contactor)

For front panel control, place switch in Panel position. For remote control, place switch in Remote position, and connect remote device (see Section 3-20).

7 Power Switch

4-2. CC/CV Module Controls



1 Arc Force (Dig) Control

Control increases SMAW short-circuit amperage from 0–160 amps which allows the operator to use a very short arc length without sticking the electrode.

2 Process Selector Switch

Place switch in (down) Off position for GTAW and SMAW normal operation. Place switch in (center) On position for SMAW to provide additional starting amperage for hard to start electrodes. Place switch in up position for

GMAW.

3 Amperage/Voltage Adjustment Control

When Process selector switch is in either SMAW position, turn control clockwise to increase amperage (read amperage from outside scale). When Process selector switch is in GMAW position, turn control clockwise to increase voltage (read voltage from inside scale).

4 High Temperature Shutdown Light

5 Remote Amperage Control Switch

For front panel control, place switch in Panel position. For remote control, place switch in Remote position, and connect remote device (see Section 3-20).

6 Output Switch (Contactor)

For front panel control, place switch in Panel position. For remote control, place switch in Remote position, and connect remote device (see Section 3-20).

7 Power Switch

SECTION 5 – MAINTENANCE AND TROUBLESHOOTING

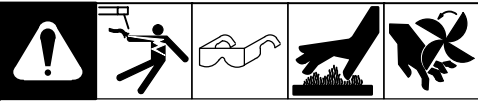
5-1. Routine Maintenance

				<p>⚠ Disconnect power before maintaining.</p> <p> <i>Maintain more often during severe conditions.</i></p>
--	--	--	--	--

	3 Months								
Replace unreadable labels.			Clean and tighten weld terminals.		Repair or replace cracked weld cable and cords				
	6 Months								
Blow out or vacuum inside.		Or							

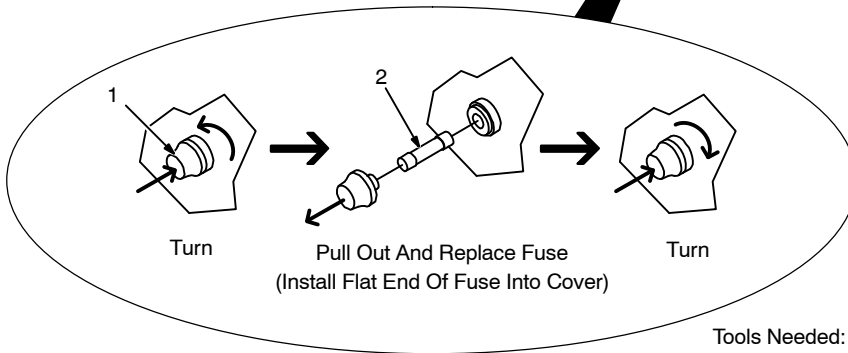
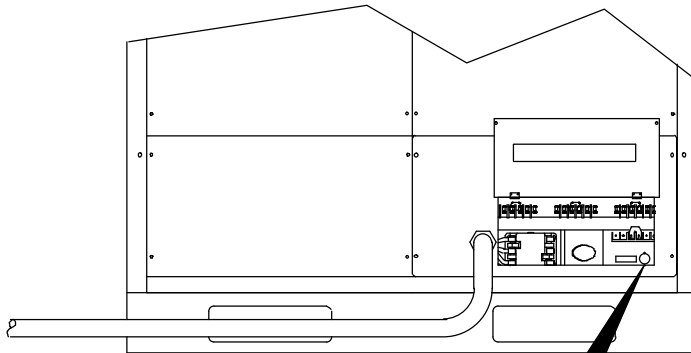
Notes

5-2. Overload Protection

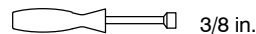


⚠ Turn Off unit, and disconnect input power.

Fuse F1



Tools Needed:



Fuse F1

Fuses F1 protects the control transformer from overload. If F1 opens, weld output and fan motors stop. To replace fuse, proceed as shown:

- 1 Fuse Holder Cover
- 2 Fuse (See Parts List)

☞ If fuse continues to open, contact Factory Authorized Service Agent.

Fuse Links

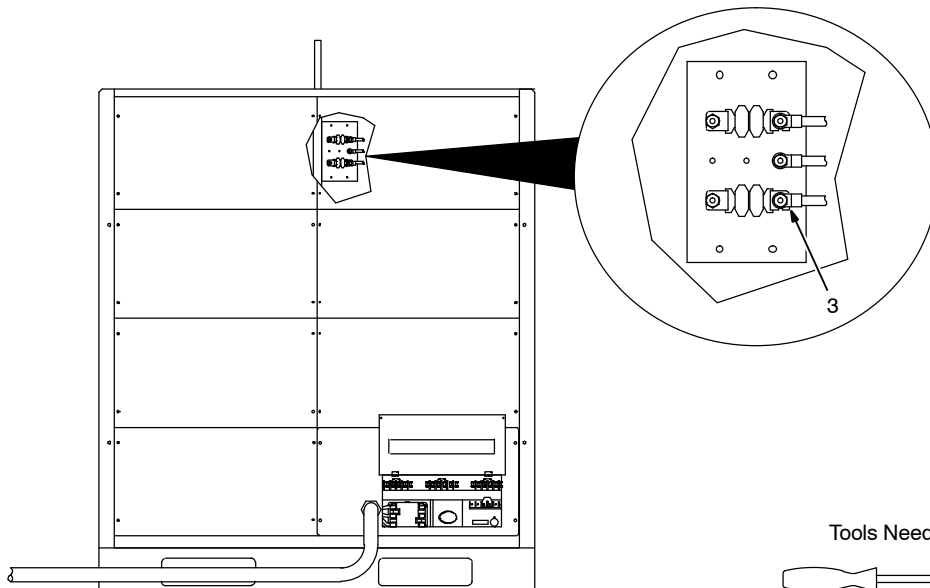
- 3 Fuse Links

A pair of fuse links protects each module from overload. If a fuse link opens, low weld output is available at the applicable module. If both fuse links open, no weld output is available at the affected module.

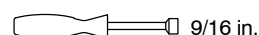
To replace fuse(s), remove appropriate rear panel, check fuse(s), and replace if needed. Reinstall panel.

☞ If fuse(s) continues to open, contact Factory Authorized Service Agent.

Fuse Links



Tools Needed:



Ref. 801 627

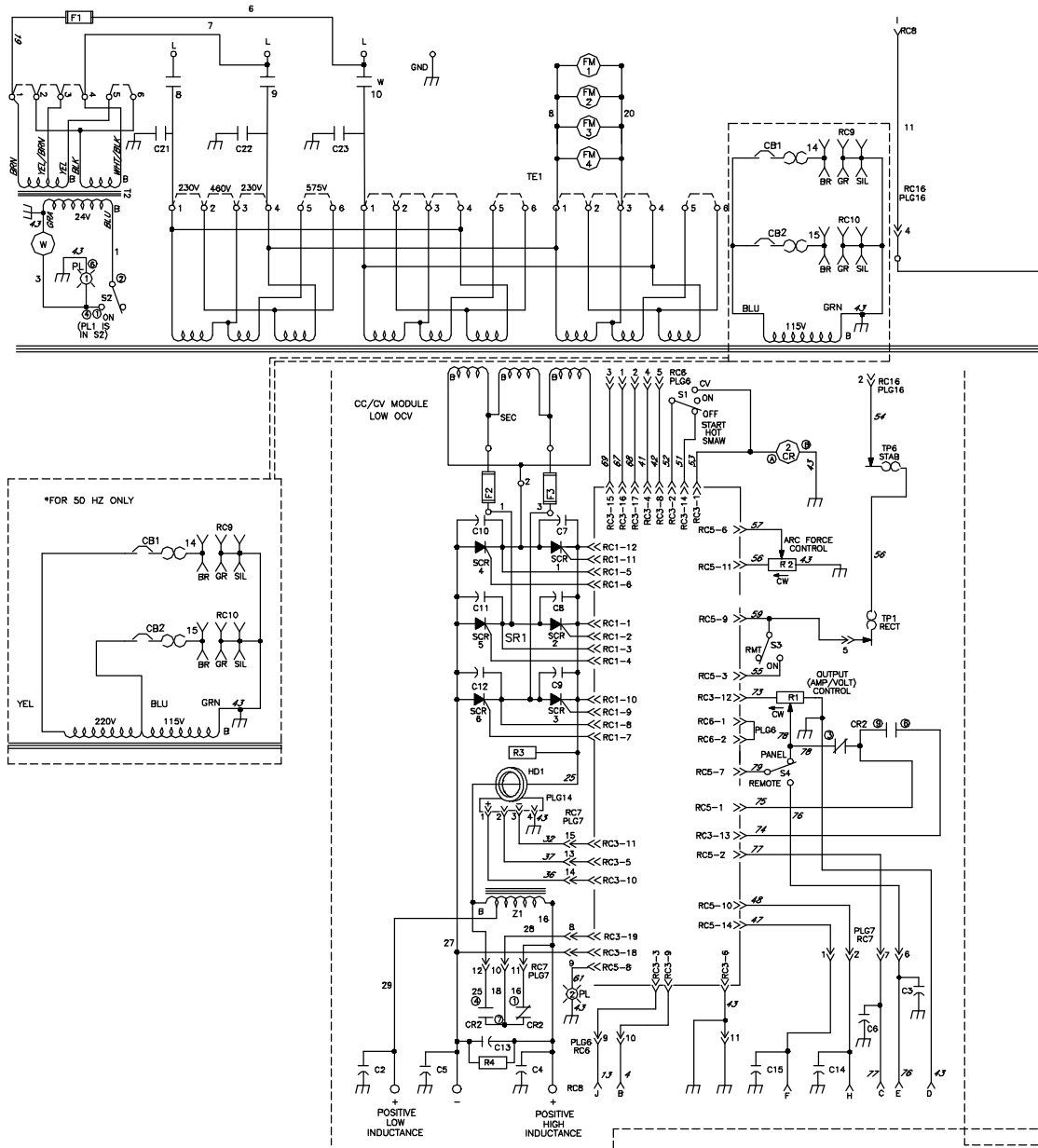
5-3. Troubleshooting



Trouble	Remedy
No weld output from any module; fan motors off; pilot light off.	Be sure Power switch is On (see Section 4-1 or 4-2).
	Place line disconnect device in On position (see Section 3-23).
	Check line fuse(s), and replace if necessary, or reset circuit breakers (see Section 3-23).
	Check for proper input power connections (see Sections 3-23).
	Check for proper jumper link position (see Sections 3-22).
	Check fuse F1, and replace if necessary (see Section 5-2).
	Have Factory Authorized Service Agent check Power switch and replace if necessary.
No weld output from any module; fan motors on; pilot light on.	Have Factory Authorized Service Agent check contactor and replace if necessary.
Limited output and low open circuit voltage from all modules.	Check incoming power for correct voltage. Replace line fuse if open or reset circuit breaker.
	Check for proper jumper link position (see Section 3-22)
No weld output from one module only.	Check module fuse links, and replace if necessary (see Section 5-2).
Low weld output from one module only. No amperage control.	Place Remote Amperage control switch in Off position or connect remote amperage control to Remote Amperage Control receptacle (see Section 4-1 or 4-2).
	Check module fuse links, and replace if necessary (see Section 5-2).
	Module thermostat open (overheating). Allow module to cool down; thermostat closes when module has cooled (see Section 3-4 or 3-5).
Erratic weld output.	Clean and tighten all weld cable connections.
	Check for proper size and type of weld cable (see Section 3-9).
	Check for proper input power connections (see Sections 3-23).
	Use dry, properly stored electrodes.
Erratic weld output (CV mode).	Check wire feeder installation according Owner's Manual.
	Check position of Process Selector switch (see Section 4-2).
	Check for proper connections to weld output terminals (see Section 3-18 and/or 3-19).
No weld output at 115 volts AC duplex receptacles.	Check supplementary protector CB1 and/or CB2, and reset if necessary (see Section 3-8)
Fan motor(s) does not run when Power switch is On.	Check fuse F1, and replace if necessary (see Section 5-2).
	Check for and remove anything blocking fan movement.
	Have Factory Authorized Service Agent check fan motors.
For GTAW, wandering arc – poor control of direction of arc.	Select proper size tungsten.
	Properly prepare tungsten.
Tungsten electrode oxidizing and not remaining bright after conclusion of weld.	Shield weld zone of drafts.
	Properly prepare tungsten.
	Replace torch parts if water has leaked into torch.
No 115 volts AC output at Remote 14 receptacle.	Reset supplementary protector CB3 (see Section 3-8).
No 24 volts AC output at Remote 14 receptacle.	Reset supplementary protector CB4 (see Section 3-8).
No weld output from any module. All six overtemp lights on.	Transformer thermostat(s) open (overheating). Allow transformer to cool; thermostat(s) close when transformer has cooled (see Section 3-4).

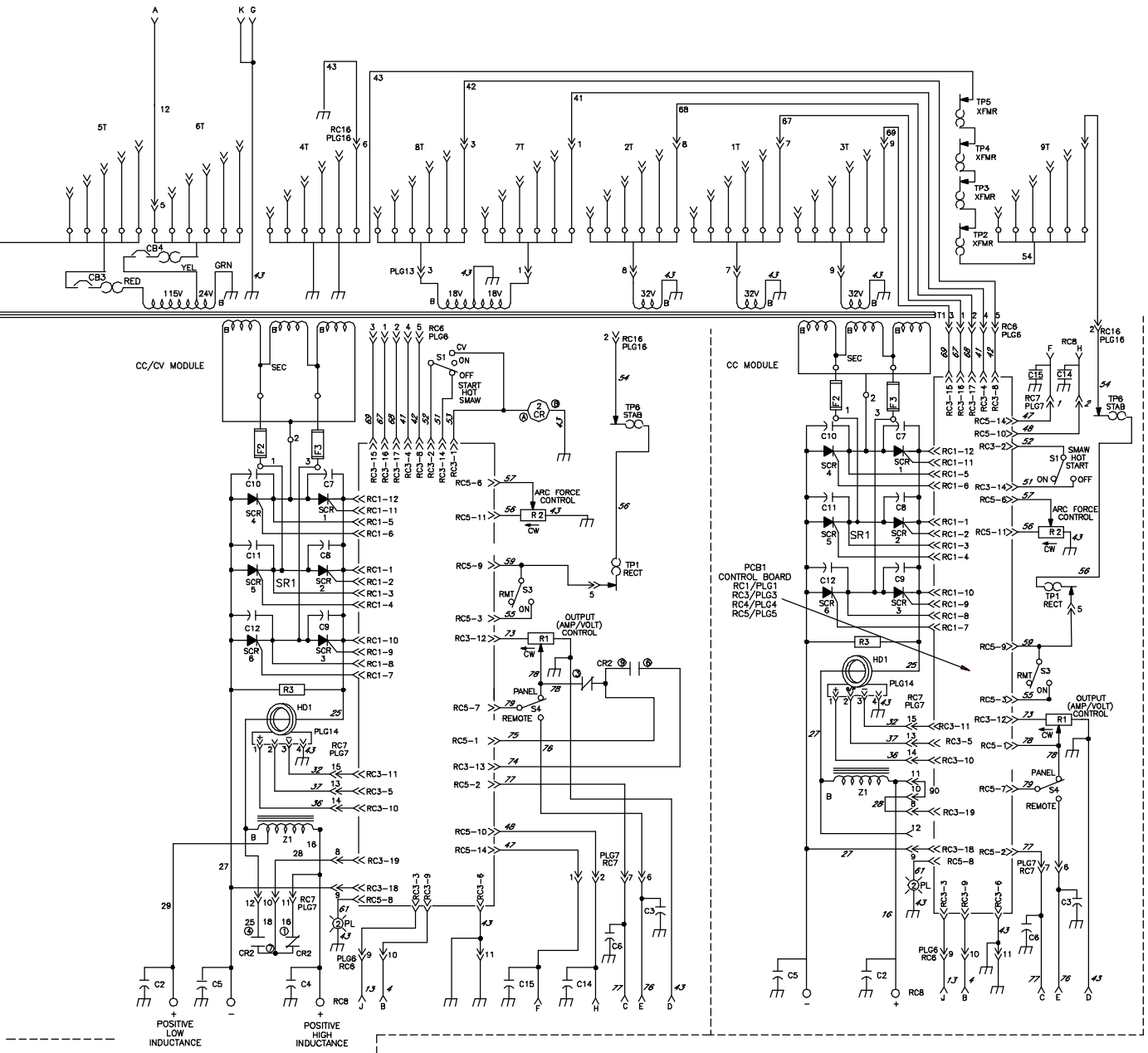
SECTION 6 – ELECTRICAL DIAGRAM

For Primary Circuit Diagram Portion, refer to Circuit Diagram located inside wrapper of welding power source.




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

Figure 6-1. Circuit Diagram



SECTION 7 – PARTS LIST

 Hardware is common and not available unless listed.

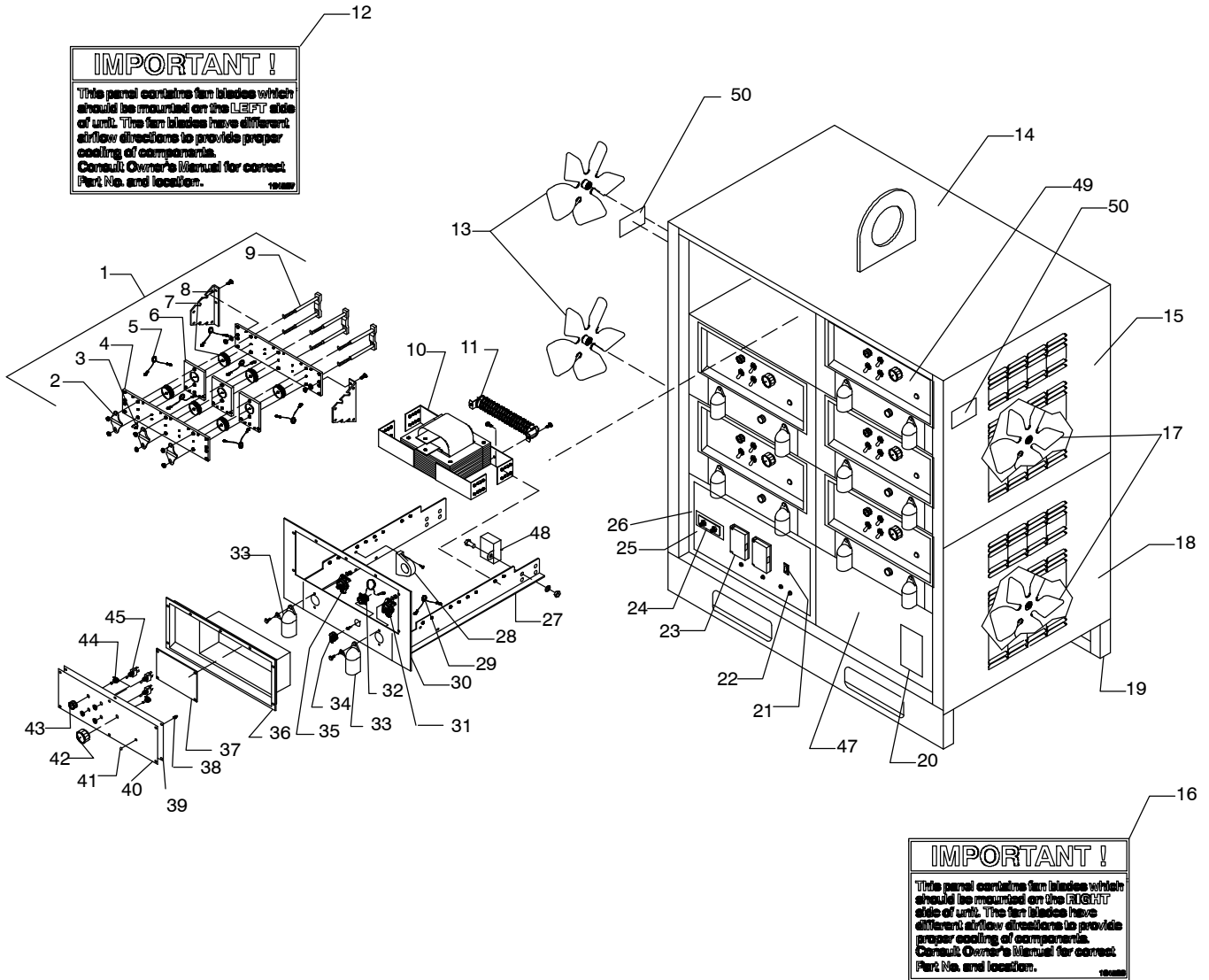


Figure 7-1. Main Assembly

801 629-G

Item No.	Dia. Mkgs.	Part No.	Description	Quantity	
				CC	CC/CV
Figure 7-1. Main Assembly					
1		182 497	RECTIFIER, si diode	1	1
2		166 667	CLAMP, spring thyristor	3	3
3	TP1	242 651	THERMOSTAT, NC open 211F close 186F flange faston	1	1
	RC16	233 303	HOUSING PLUG & SOCKETS (Service Kit)	1	1
4		162 825	HEAT SINK, rectifier	2	2
5	C7-12	048 420	CAPACITOR, cer disc	6	6
6		162 826	HEAT SINK, rectifier	3	3
7	SCR1-6	161 668	THYRISTOR, SCR 300A 300V	6	6
8		161 294	BRACKET, mtg rectifier	2	2
9		188 692	CLAMP, thyristor rectifier	3	3
10	Z1	193 485	STABILIZER	1	
	TP6	175 405	THERMOSTAT, (included with Z1)	1	
10	Z1	193 517	STABILIZER		1
	TP6	175 405	THERMOSTAT, (included with Z1)		1
11	R3	097 459	RESISTOR, WW fxd 375W	1	1
12		194 597	LABEL, left	2	2
13		183 168	BLADE, fan 14.00 3wg 28D CW	2	2
14		182 322	COVER, top	1	1
15		182 318	PANEL, side upper	2	2
16		194 596	LABEL, right	2	2
17		180 165	BLADE, fan 14.00 3wg 28D CCW	2	2
		124 275	CHAMBER, plenum 14 in	4	4
	FM1-4	237 398	MOTOR, 1/12HP 230V 1550 RPM 50/60 Hz .83A	4	4
18		183 004	PANEL, side lower	2	2
19		182 317	BASE	1	1
20		217 136	LABEL, electric shock	1	1
		182 396	STRIP, mtg term strip	1	1
		072 253	STUD, connect single	9	9
21	S2	159 039	SWITCH, SPDT 15A 125VAC	1	1
22	CB3,4,1,2	093 995	SUPPLEMENTARY PROTECTORS	4	4
		026 758	BOOT, circuit breaker	4	4
23		154 022	COVER, receptacle duplex	2	2
	RC9,10	147 939	RECEPTACLE, str dx grd 2P3W 15A (60 Hz)	2	2
	RC9	604 103	RECEPTACLE, str dx grd 2P3W 15A 250V (50 Hz)	2	2
24		182 496	TERMINAL ASSEMBLY, pwr output	1	1
		601 840	NUT, 500-13 .88hex .32H	4	4
		601 839	NUT, 500-13 .75hex 44H	2	2
		193 368	TRANSFORMER, baffle air	1	1
		176 632	BAFFLE, air	2	2
	PLG7	152 249	CONNECTOR & PINS	1	1
	RC1	168 845	CONNECTOR & SOCKETS	1	1
	RC7	168 846	CONNECTOR & SOCKETS	1	1
	RC3	169 240	CONNECTOR & SOCKETS	1	1
	PLG14	182 363	CONNECTOR & SOCKETS	1	1
	RC5	152 249	CONNECTOR & SOCKETS	1	1
	PLG6	168 847	CONNECTOR & SOCKETS	1	1
	PLG16	169 242	CONNECTOR & SOCKETS	1	1
25			NAMEPLATE, lower Mark VI (order by model and serial number)	1	1
26		189 723	PANEL, power/duplex	1	1
27		190 669	ANGLE, module	1	1
28	HD1	168 829	TRANSDUCER, current 1000A	1	1
29	C2, 4, 5	128 750	CAPACITOR, cer disc (C4 used on cc/cv module only)	2	3
30		190 671	PANEL, front	1	
30		190 915	PANEL, front		1
31		181 246	TERMINAL, pwr output black	1	1

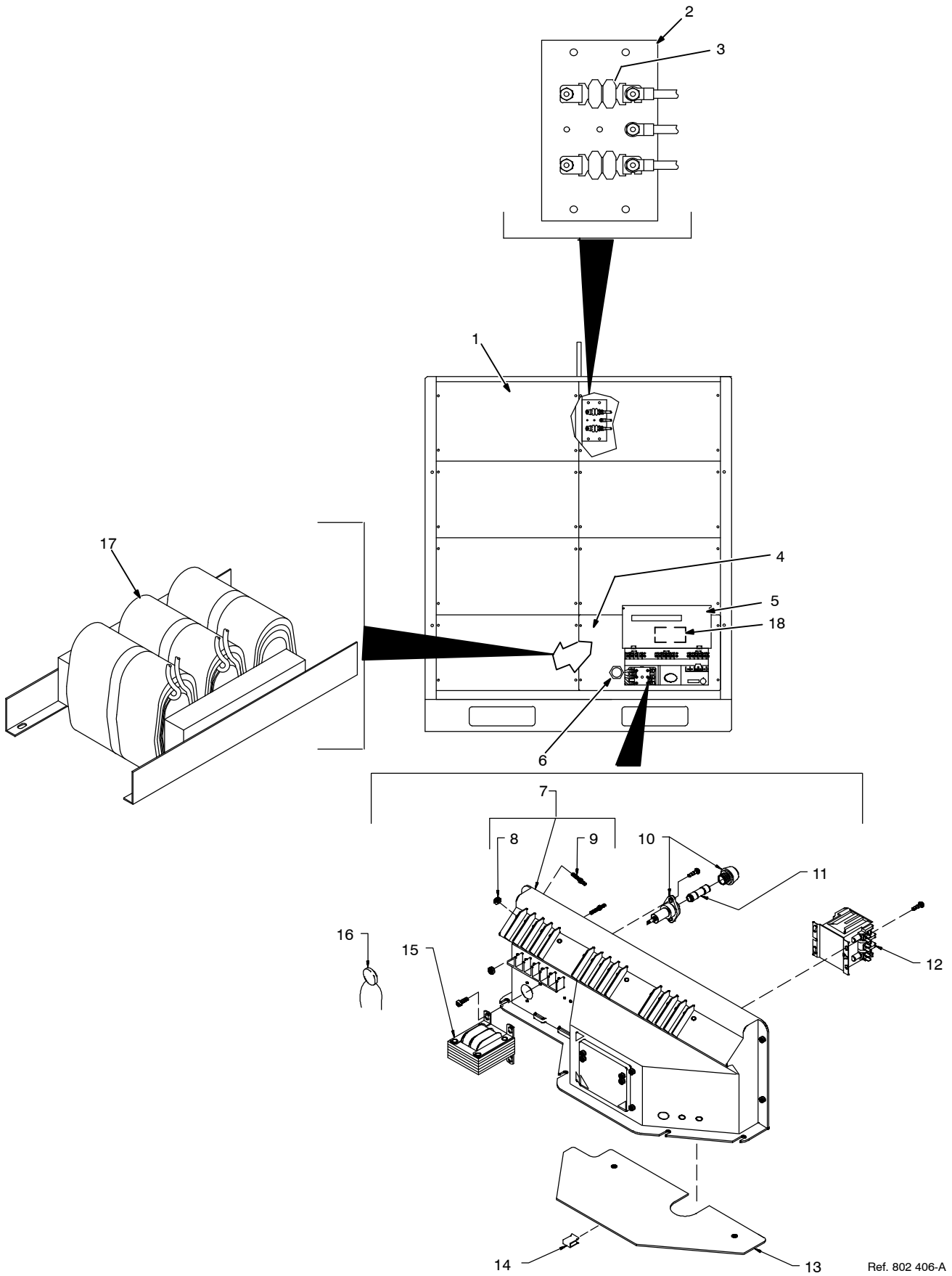
Item No.	Dia. Mkgs.	Part No.	Description	Quantity	
				CC	CC/CV
Figure 7-1. Main Assembly (Continued)					
31		◆218 183	RCPT ASSY, tw lk insul fem(TWECO type) (includes)	1	
		209 473	RECEPTACLE, twist lock TWECO style(female)power	1	
		185 712	INSULATOR, bulkhead front	1	
		185 713	INSULATOR, bulkhead rear	1	
		185 714	WASHER, tooth 22mmid x 31.5mmod 1.310-1mmt intern	1	
		185 717	NUT, M20-1.5 1.00 hex .19H brs locking	1	
		185 718	O-RING, 0.989 ID X 0.070 H	1	
		186 228	O-RING, 0.739 ID X 0.070 H	1	
		◆221 482	PLATE, adapter	1	
		◆178 548	TERMINAL, connector friction	1	
31		◆◆221 985	ASSY, plate adapter (includes)	1	
		221 983	PLATE, adapter	1	
		039 628	RCPT, tw lk insul fem(CAM-LOC type)	1	
		131 605	TERMINAL, connector friction	1	
		601 871	NUT, 375-16 .68hex .25H stl pld	1	
32	RC8	143 976	RECEPTACLE W/ SKTS (consisting of)	1	1
		079 534	CONNECTOR, circ skt push-in 14-18 ga	14	14
	C3	182 358	LEAD ASSEMBLY, elect	1	1
	C6	182 356	LEAD ASSEMBLY, elect	1	1
	C14	184 373	LEAD ASSEMBLY, elect	1	1
	C15	182 372	LEAD ASSEMBLY, elect	1	1
33		186 621	BOOT, generic output stud	2	3
34		170 391	CONNECTOR, circ MS protective	1	1
35		181 245	TERMINAL, pwr output red	1	2
		180 735	WASHER, output stud	2	3
		181 169	SPACER, output stud	2	3
35		◆218 183	RCPT ASSY, tw lk insul fem(TWECO type) (includes)	1	
		209 473	RECEPTACLE, twist lock TWECO style(female)power	1	
		185 712	INSULATOR, bulkhead front	1	
		185 713	INSULATOR, bulkhead rear	1	
		185 714	WASHER, tooth 22mmid x 31.5mmod 1.310-1mmt intern	1	
		185 717	NUT, M20-1.5 1.00 hex .19H brs locking	1	
		185 718	O-RING, 0.989 ID X 0.070 H	1	
		186 228	O-RING, 0.739 ID X 0.070 H	1	
		◆221 482	PLATE, adapter	1	
		◆178 548	TERMINAL, connector friction	1	
35		◆◆221 985	ASSY, plate adapter (includes)	2	
		221 983	PLATE, adapter	1	
		039 628	RCPT, tw lk insul fem(CAM-LOC type)	1	
		131 605	TERMINAL, connector friction	1	
		601 871	NUT, 375-16 .68hex .25H stl pld	1	
36		159 863	ELECTRONICS BOX	1	1
37	PC1	187 982	CIRCUIT CARD ASSEMBLY, control (60Hz models)	1	
37	PC1	199 778	CIRCUIT CARD ASSEMBLY, control (60Hz models w/low OCV)	1	
37	PC1	207 049	CIRCUIT CARD ASSEMBLY, control (60Hz models)	1	
37	PC1	191 293	CIRCUIT CARD ASSEMBLY, control (50Hz models)	1	
37	PC1	207 050	CIRCUIT CARD ASSEMBLY, control (50Hz models)	1	
		116 592	RELAY, encl 24 VDC 3PDT (not shown)	1	
		176 167	NUT, 250-20	1	1
38	PL1	159 522	LED, yellow 2.1V 20MA 45MCD	1	1
39		191 143	PANEL, front upper	1	1
40		181 356	NAMEPLATE (60Hz)	1	
40		190 033	NAMEPLATE (50Hz)	1	
40		182 454	NAMEPLATE, cc/cv (60Hz)	1	1
40		191 566	NAMEPLATE, cc/cv (50Hz)	1	1
		190 916	LABEL, warning high/low inductance	1	
		190 668	LABEL, remote 14 control	1	1
41		159 036	LENS, LED clear panel mtg	1	1
42		171 007	KNOB, pointer 1.670 dia x .250 id w/set screwsplstc	1	1

Item No.	Dia. Mkgs.	Part No.	Description	Quantity	
Figure 7-1. Main Assembly (Continued)				CC	CC/CV
... 43		193 920	.. KNOB, pointer .840 dia x .250 id w/one set screw	1	1
... 44	R1,2	198 087	.. POTENTIOMETER, slot 1T 2W 1K linear w/friction tabs	2	2
... 45	S1,3,4	011 609	.. SWITCH, tgl SPDT 15A 125VAC	3	2
... 45	S1	011 610	.. SWITCH, tgl SPDT 15A 125VAC on-off-on	1	
... 47		Figure 7-2	.. PANEL, blank	9	9
... 48		200 595	.. MODULE, capacitor/resistor 10 mfd 250 vac (models with low OCV)	1	1
... 49		903 646	.. CC/CV MODULE, (complete) (60 Hz)	1	
... 49		903 659	.. CC/CV MODULE, (complete) (50 Hz)	1	
... 49		903 899	.. CC/CV MODULE, (low OCV complete) (60 Hz)	1	
... 49		903 661	.. CC MODULE, (complete) (50 Hz)	1	
... 49		903 594	.. CC MODULE, (complete) (60 Hz)	1	
... 50		174 499	.. LABEL, caution top heavy high center of gravity	2	2

◆Part of Tweco option (option does not include items 24 and 33).

◆◆Part of low OCV and Cam-Loc option.

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.



Ref. 802 406-A

Figure 7-2.Rear View

Item No.	Dia. Mkgs.	Part No.	Description	Quantity	
				CC	CC/CV

Figure 7-2. Rear View

...	1	182 321	.. PANEL, blank	9	9
...	2	249 863	.. FUSE PANEL, module	6	6
...	3	249 864	... FUSE, link 250 amp 80 volt	2	2
...	4	182 320	.. PANEL, primary access	1	1
...	5	182 706	.. DOOR, primary access	1	1
...		168 343	.. HINGE, cont polyolefin	2	2
...	6	183 167	.. CONNECTOR, clamp cable 2.000	1	1
...	7	159 244	.. PRIMARY BOX	1	1
...	8	183 658	... NUT, 10-32 brs	As Req'd	
...	9	038 887	... STUD, pri bd brs 10-32 x 1.375	As Req'd	
...		177 225	.. JUMPER LINK, kit	1	1
...	10	159 034	.. HOLDER, fuse mintr 10.3mm	1	1
...	11	F1	.. FUSE, crtg .5A 600V	1	1
...	12	W	.. CONTACTOR, DEF PRP 90A 3P	1	1
...	13	195 915	.. BASE, false primary box	1	1
...	14	195 916	.. U-CLIP, with barbs	1	1
...	15	T2	.. TRANSFORMER, control (60Hz models)	1	1
...	15	T2	.. TRANSFORMER, control (50Hz models)	1	1
...	16	C21-23	.. CAPACITOR	3	3
...	17	T1	.. TRANSFORMER, pwr main 230/460/575 (60Hz)	1	1
...	17	T1	.. TRANSFORMER, pwr main 380/400 - 415/440 - 460 (50Hz)	1	1
...		TP4, 5	.. THERMOSTAT, NC, open 135c (included w/T1)	2	2
...		TP2, 3	.. THERMOSTAT, NC, open 80c (included w/T1)	2	2
...	18	217 733	.. LABEL, warning electric shock & input power (EN/FR)	1	1

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

TRUE BLUE[®]

WARRANTY

Effective January 1, 2011

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

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

Warranty Questions?

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

Your distributor also gives
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Service

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

Support

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

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

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

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

- 5 Years Parts — 3 Years Labor
 - * Original main power rectifiers only to include SCRs, diodes, and discrete rectifier modules
- 3 Years — Parts and Labor
 - * Engine Driven Welding Generators
(NOTE: Engines are warranted separately by the engine manufacturer.)
 - * Inverter Power Sources (Unless Otherwise Stated)
 - * Plasma Arc Cutting Power Sources
 - * Process Controllers
 - * Semi-Automatic and Automatic Wire Feeders
 - * Smith 30 Series Flowgauge and Flowmeter Regulators (No Labor)
 - * Transformer/Rectifier Power Sources
 - * Water Coolant Systems (Integrated)
- 2 Years — Parts
 - * Auto-Darkening Helmet Lenses (No Labor)
- 1 Year — Parts and Labor Unless Specified
 - * Automatic Motion Devices
 - * CoolBelt and CoolBand Blower Unit (No Labor)
 - * External Monitoring Equipment and Sensors
 - * Field Options
(NOTE: Field options are covered for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)
 - * Flowgauge and Flowmeter Regulators (No Labor)
 - * RFCS Foot Controls (Except RFCS-RJ45)
 - * Fume Extractors
 - * HF Units
 - * ICE Plasma Cutting Torches (No Labor)
 - * Induction Heating Power Sources, Coolers, and Electronic Controls/Recorders
 - * Load Banks
 - * Motor Driven Guns (w/exception of Spoolmate Spoolguns)
 - * PAPR Blower Unit (No Labor)
 - * Positioners and Controllers
 - * Racks
 - * Running Gear/Trailers
 - * Spot Welders
 - * Subarc Wire Drive Assemblies
 - * Water Coolant Systems (Non-Integrated)
 - * Weldcraft-Branded TIG Torches (No Labor)
 - * Wireless Remote Foot/Hand Controls and Receivers
 - * Work Stations/Weld Tables (No Labor)

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

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

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

- Consumable components; such as contact tips, cutting nozzles, contactors, brushes, relays, work station table tops and welding curtains, or parts that fail due to normal wear. (Exception: brushes and relays are covered on all engine-driven products.)**
- 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.
- Equipment that has been modified by any party other than Miller, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

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

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

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

ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY OR REPRESENTATION AS TO PERFORMANCE, AND ANY REMEDY FOR BREACH OF CONTRACT TORT OR ANY OTHER LEGAL THEORY WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE OR COURSE OF DEALING, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, WITH RESPECT TO ANY AND ALL EQUIPMENT FURNISHED BY MILLER IS EXCLUDED AND DISCLAIMED BY MILLER.

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

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





Owner's Record

Please complete and retain with your personal records.

Model Name

Serial/Style Number

Purchase Date

(Date which equipment was delivered to original customer.)

Distributor

Address

City

State

Zip



For Service

Contact a DISTRIBUTOR or SERVICE AGENCY near you.

Always provide Model Name and Serial/Style Number.

Contact your Distributor for:

Welding Supplies and Consumables

Options and Accessories

Personal Safety Equipment

Service and Repair

Replacement Parts

Training (Schools, Videos, Books)

Technical Manuals (Servicing Information and Parts)

Circuit Diagrams

Welding Process Handbooks

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

Contact the Delivering Carrier to:

File a claim for loss or damage during shipment.

For assistance in filing or settling claims, contact your distributor and/or equipment manufacturer's Transportation Department.

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An Illinois Tool Works Company
1635 West Spencer Street
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International Headquarters—USA

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