HOBART WELDERS

OM-232 661C 2010–04

Processes

MIG (GMAW) Welding
Flux Cored (FCAW) Welding

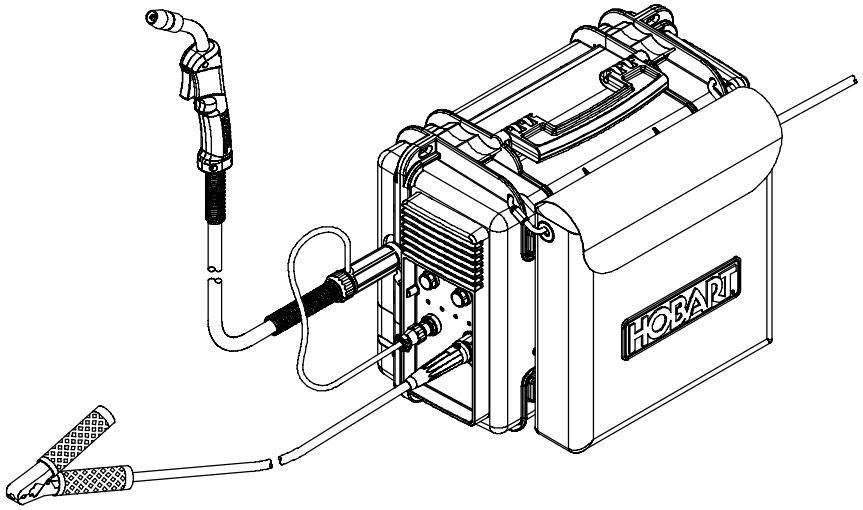
Description

CV DC 1 Phase

Battery Powered Arc Welding
Power Source And Wire Feeder

Trek™ 180

And H100L4-10 Gun



Weld Talk Online Forum

www.HobartWelders.com

OWNER'S MANUAL

From Hobart to You

Thank you and *congratulations* on choosing Hobart. 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.

This Owner's Manual is designed to help you get the most out of your Hobart 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 Hobart 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.

ISO 9001 REGISTERED QUALITY SYSTEM

Hobart is registered to the ISO 9001 Quality System Standard.

Hobart Welders manufactures a full line of welders and welding related equipment. For information on other quality Hobart products, contact your local Hobart distributor to receive the latest full line catalog or individual specification sheets. **To locate your nearest distributor or service agency call 1-877-Hobart1 or visit our website at www.HobartWelders.com.**

For Technical Help call 1-800-332-3281.

5/3/1 WARRANTY

Working as hard as you do – every power source from Hobart is backed by the best warranty in the business.

Protect Your Investment!

Register your product at:
HobartWelders.com

HOBART WELDERS

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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 inputpower.

- 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.

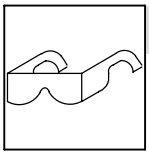
Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

- 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 by-pass them.
- Follow requirements in OSHA 1910.252 (a) (2) (iv) and NFPA 51B for hot work and have a fire watcher and extinguisher nearby.



FLYING METAL or DIRT can injure eyes.

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

BUILDUP OF GAS can injure or kill.

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

ELECTRIC AND MAGNETIC FIELDS (EMF) can affect ImplantedMedical Devices.

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

NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

- Wear approved ear protection if noise level is high.

CYLINDERS can explode if damaged.

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

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

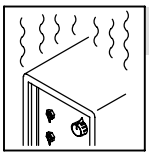
1-3. Additional Symbols For Installation, Operation, And Maintenance

FIRE OR EXPLOSION hazard.

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

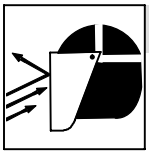
FALLING EQUIPMENT can injure.

- 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.



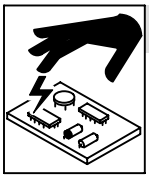
OVERUSE can cause OVERHEATING

- 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.

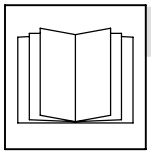
- Keep away from moving parts.
- Keep away from pinch points such as drive rolls.

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.

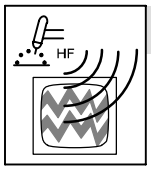
MOVING PARTS can injure.

- 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

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

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

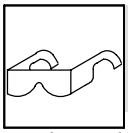
Le rayonnement de l'arc du procédé de soudag génère des rayons visibles et invisibles intense (ultraviolets et infrarouges) susceptibles de provoquer des brûlure dans les yeux et sur la peau. Des étincelles sont projetées pendant l soudage.

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

LE SOUDAGE peut provoquer un incendie ou une explosion.

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

- Déplacer toutes les substances inflammables à une distance de 10,7 m de l'arc de soudage. En cas d'impossibilité les recouvrir soigneusement avec des protections homologués.
- Ne pas souder dans un endroit là où des étincelles peuvent tomber sur des substances inflammables.
- Se protéger et d'autres personnes de la projection d'étincelles et de métal chaud.
- Des étincelles et des matériaux chauds du soudage peuvent facilement passer dans d'autres zones en traversant de petites fissures et des ouvertures.
- Surveiller tout déclenchement d'incendie et tenir un extincteur à proximité.
- Le soudage effectué sur un plafond, plancher, paroi ou séparation peut déclencher un incendie de l'autre côté.
- Ne pas effectuer le soudage sur des conteneurs fermés tels que des réservoirs, tambours, ou conduites, à moins qu'ils n'aient été préparés correctement conformément à AWS F4.1 (voir les normes de sécurité).
- Ne soudez pas si l'air ambiant est chargé de particules, gaz, ou vapeurs inflammables (vapeur d'essence, par exemple).
- Brancher le câble de masse sur la pièce le plus près possible de la zone de soudage pour éviter le transport du courant sur une longue distance par des chemins inconnus éventuels en provoquant des risques d'électrocution, d'étincelles et d'incendie.
- Ne pas utiliser le poste de soudage pour dégeler des conduites gelées.
- En cas de non utilisation, enlever la baguette d'électrode du porte-électrode ou couper le fil à la pointe de contact.
- Porter des vêtements de protection dépourvus d'huile tels que des gants en cuir, une chemise en matériau lourd, des pantalons sans revers, des chaussures hautes et un couvre chef.
- Avant de souder, retirer toute substance combustible de vos poches telles qu'un allumeur au butane ou des allumettes.
- Une fois le travail achevé, assurez–vous qu'il ne reste aucune trace d'étincelles incandescentes ni de flammes.
- Utiliser exclusivement des fusibles ou coupe–circuits appropriés. Ne pas augmenter leur puissance; ne pas les ponter.
- Une fois le travail achevé, assurez–vous qu'il ne reste aucune trace d'étincelles incandescentes ni de flammes.
- Utiliser exclusivement des fusibles ou coupe–circuits appropriés. Ne pas augmenter leur puissance; ne pas les ponter.
- Suivre les recommandations dans OSHA 1910.252(a)(2)(iv) et NFPA 51B pour les travaux à chaud et avoir de la surveillance et un extincteur à proximité.



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

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

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

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

Les CHAMPS 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.

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

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

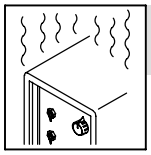
2-3. Dangers supplémentaires en relation avec l'installation, le fonctionnement et la maintenance

Risque D'INCENDIE OU D'EXPLOSION.

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

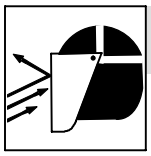
LA CHUTE DE L'ÉQUIPEMENT peut provoquer des blessures.

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



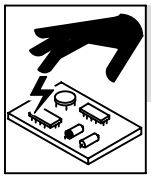
L'EMPLOI EXCESSIF peut SURCHAUFFER L'ÉQUIPEMENT.

- Prévoir une période de refroidissement ; respecter le cycle opératoire nominal.
- Réduire le courant ou le facteur de marche avant de poursuivre le soudage.
- Ne pas obstruer les passages d'air du poste.



LES ÉTINCELLES PROJETÉES peuvent provoquer des blessures.

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



LES CHARGES ÉLECTROSTATIQUES peuvent endommager les circuits imprimés.

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

Les PIÈCES MOBILES peuvent causer des blessures.

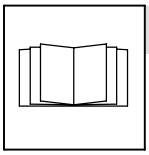
- Ne pas s'approcher des organes mobiles.
- Ne pas s'approcher des points de coincement tels que des rouleaux de commande.

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.

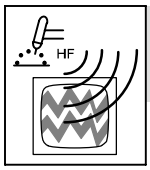
Les PIÈCES MOBILES peuvent causer des blessures.

- 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.



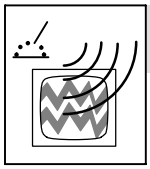
LIRE LES INSTRUCTIONS.

- 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.ihs.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.ihs.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 (télé[hone : 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.

SECTION 3 – BATTERY SAFETY PRECAUTIONS - READ BEFORE USING

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

3-1. 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.

3-2. Battery Hazards

The symbols shown 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.

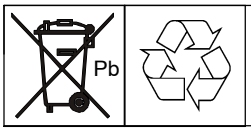
Only qualified persons should install, operate, maintain, and repair this unit.

During operation, keep everybody, especially children, away.

BATTERY EXPLOSION can injure.

- Always wear a face shield, rubber gloves, and protective clothing when working on a battery.
- Do not allow tools to cause sparks when working on a battery.
- Do not use welder to charge batteries or jump start vehicles.
- Disconnect negative (–) cable first and connect it last.

3-3. Recycling The Battery



Dispose of used battery at a designated recycling facility and according to local, state, and federal regulations.

SECTION 4 – DEFINITIONS

4-1. Symbols And Definitions

A	Amperage	V	Voltage	Hz	Hertz	—	Negative
+	Positive	⎓	Direct Current (DC)	1~	Single Phase		Input
	Output		Voltage Input		Off		On
	Do Not Switch While Welding		Gas Metal Arc Welding (GMAW)		Wire Feed		Battery
	Temperature		Trigger		Battery Charging		Work Connection

SECTION 5 – SPECIFICATIONS

5-1. Description

This unit is an all-in-one Mig (GMAW) welding system that operates on utility power or power from the rechargeable internal batteries. When the unit is connected to utility power for welding, the charger continues charging the batteries and the unit operates at a typical duty cycle. (The internal charger feeds current through the batteries even during the welding process.) When the unit operates from battery power only, welding continues until the batteries are nearly discharged (the Low Battery light goes on). The unit will not weld until the unit is reconnected to utility power and batteries are recharged.

☞ *Before first use, charge the batteries in this product for at least two hours (see Section 7-3). Product performance will improve when the batteries reach full capacity by being charged and discharged several times.*

☞ *To extend battery life, recharge batteries after each job and keep unit plugged in when not in use.*

5-2. Specifications

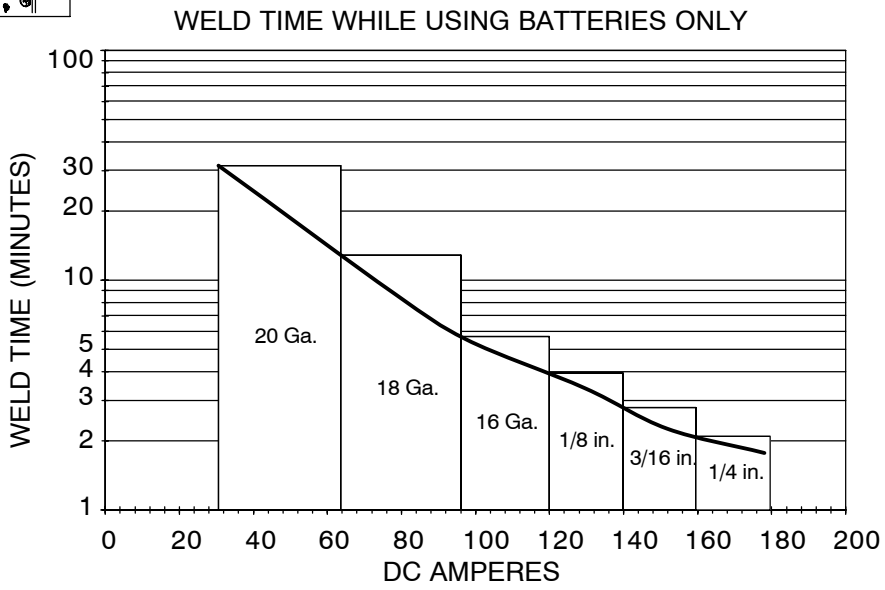
Rated Welding Output	**Amperage Range**	**Maximum Open-Circuit Voltage DC**	**Amperes Input While Charging Batteries 115 V, 60 Hz, Single-Phase**	**KVA**	**KW**	**Weight W/ Gun**	**Overall Dimensions (L x W x H)**
120 A @ 17 Volts DC, 20% Duty Cycle	25 – 180	30	12	1.38	0.75	51 lb (23 kg)	17 x 7-7/8 x 13-5/16 in. in. (432 x 203 x 338 mm)
Wire Type And Diameter	**Solid/ Stainless**	**Flux Cored**		**Wire Feed Speed Range**			
	.024 – .035 in (0.6 – 0.9 mm)	.030 – .035 in (0.8 – 0.9 mm)		102 – 445 IPM (2.6 – 11.3 m/min) At No Load 75 – 415 IPM (1.9 – 10.5 m/min) Feeding Wire			

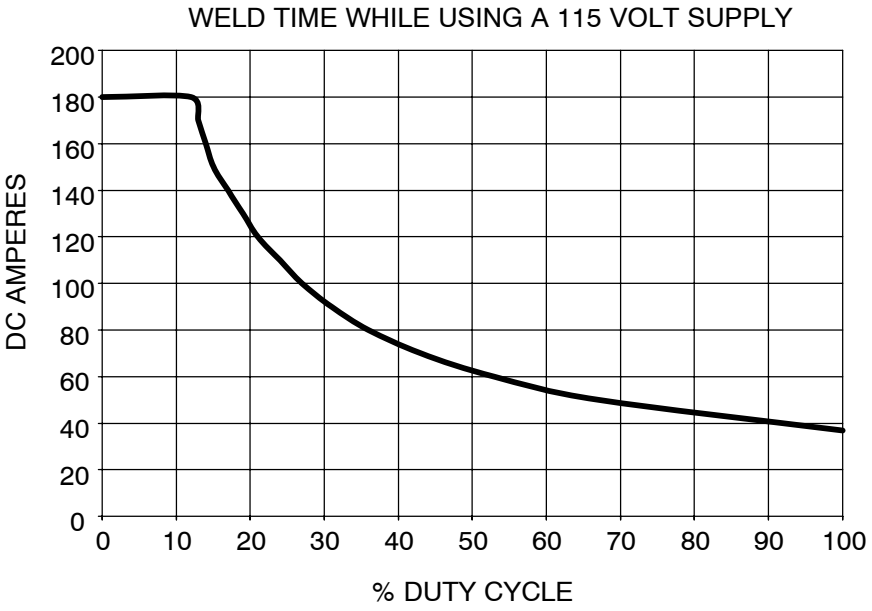
5-3. Duty Cycle And Overheating

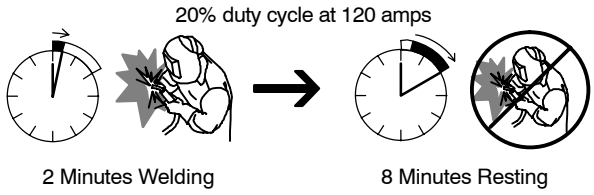
Duty Cycle is percentage of 10 minutes that unit can weld at rated load without overheating.

If unit overheats, thermostat(s) opens, output stops, and cooling fan runs. Let unit cool until Over Temperature light goes out. Reduce amperage or duty cycle before welding.

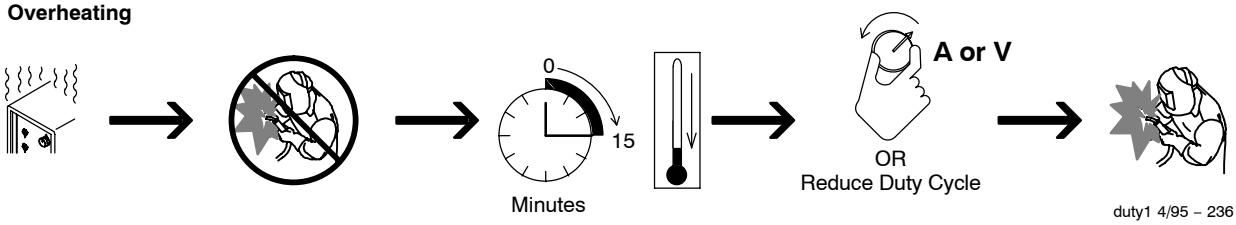
NOTICE – *Exceeding duty cycle can damage unit or gun and void warranty.*







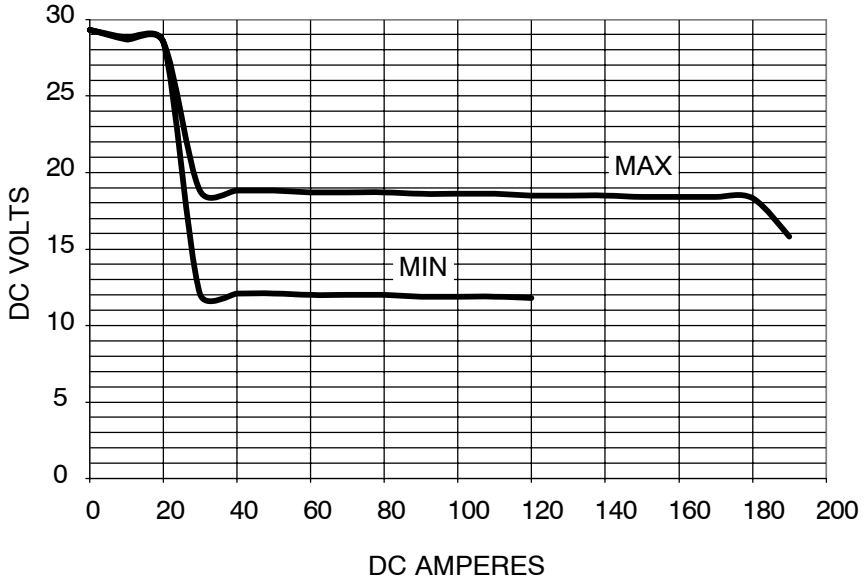
Overheating



duty1 4/95 – 236 785-A

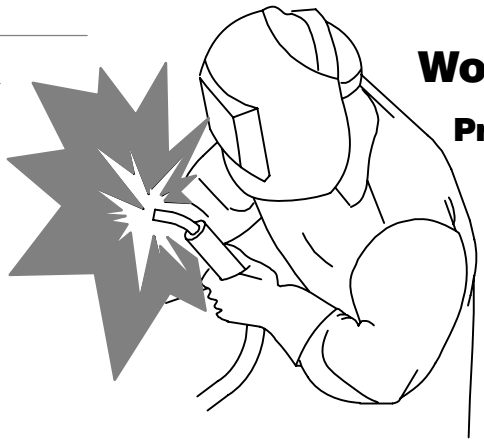
5-4. Volt-Ampere Curves

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



236 786-A

Notes



Work like a Pro!

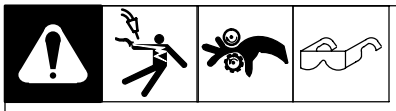
Pros weld and cut safely. Read the safety rules at the beginning of this manual.

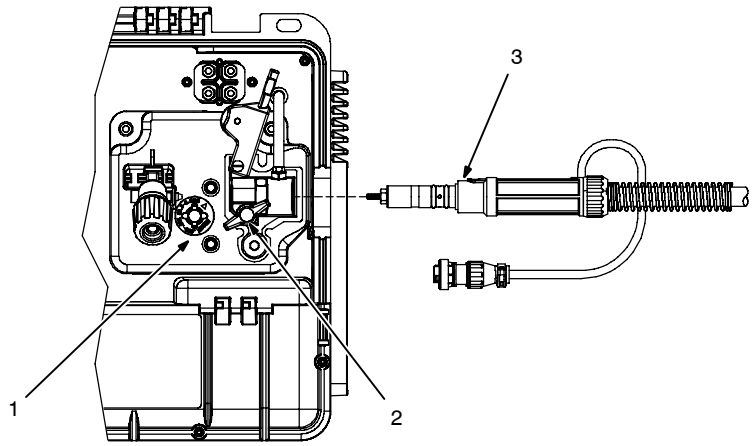
SECTION 6 – INSTALLATION

6-1. Serial Number And Rating Label Location

The serial number and rating information for this product is located on the back. Use rating label to determine input power requirements and/or rated output. For future reference, write serial number in space provided on back cover of this manual.

6-2. Installing Welding Gun





1 Drive Assembly

2 Gun Securing Knob

3 Gun End

Loosen knob. **Insert end of gun through opening in front panel until it bottoms against drive assembly.** Tighten knob.

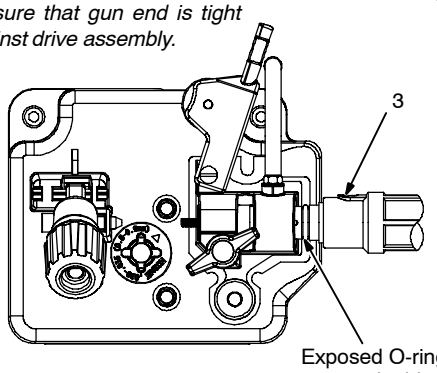
Welding gun must be fully inserted to prevent leakage of shielding gas.

4 Gun Trigger Plug

Insert plug into receptacle. Tighten threaded collar.

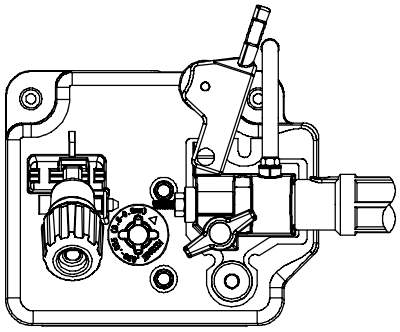
Close door.

☞ *Be sure that gun end is tight against drive assembly.*

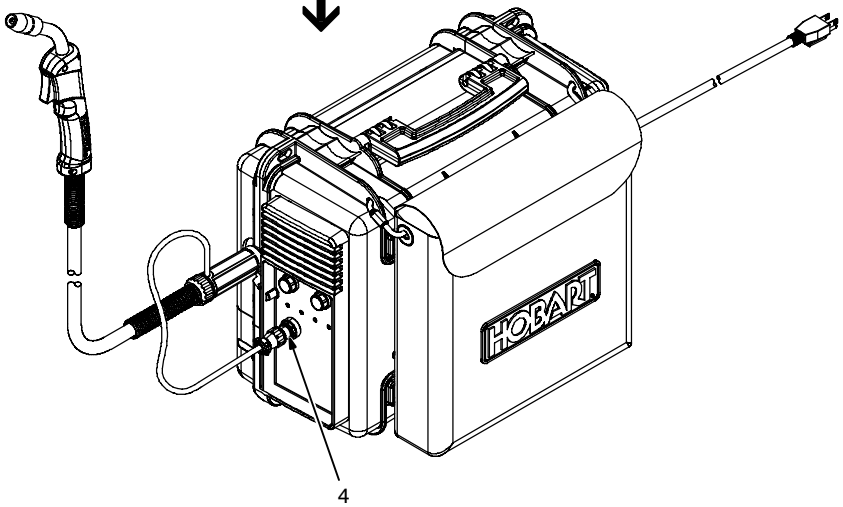


Exposed O-rings will cause shielding gas leakage.

Incorrect Installation – Gun Not Seated

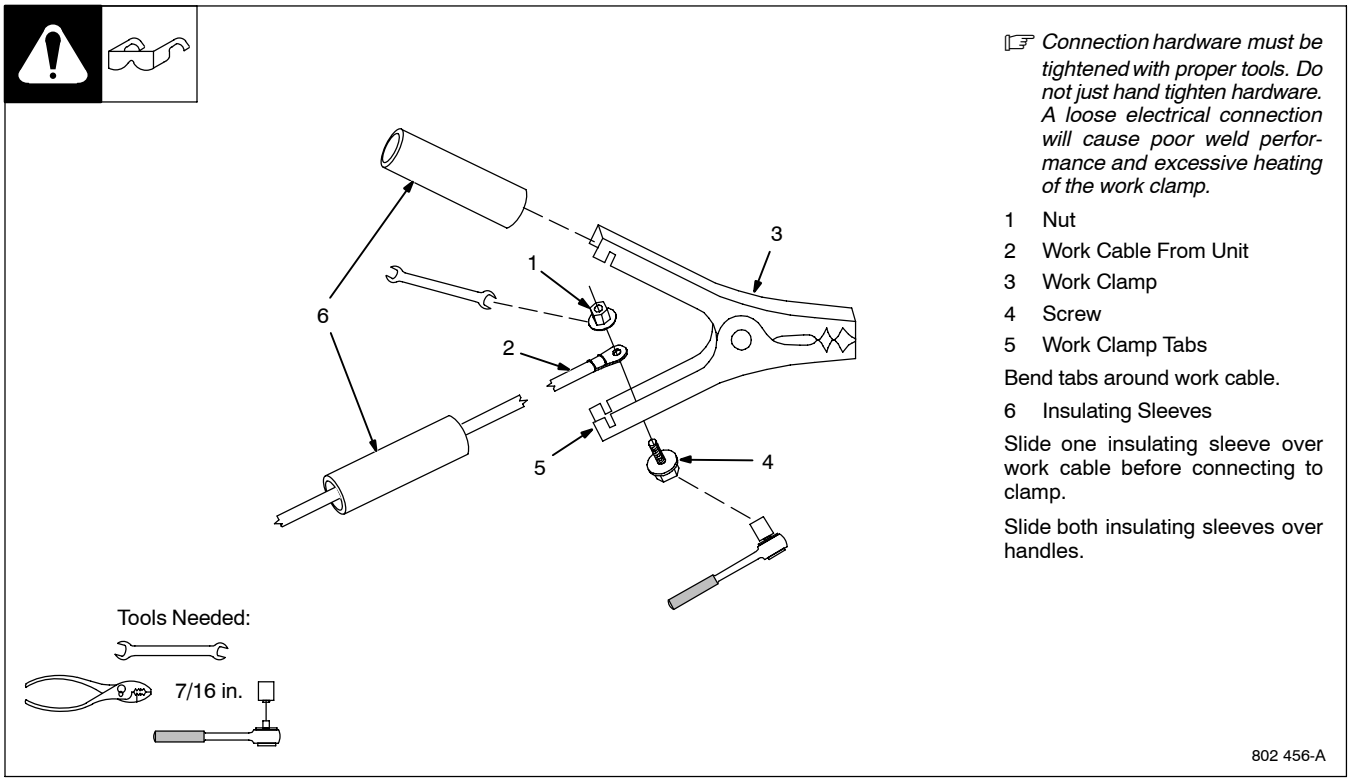


Correct Installation – Gun Fully Seated



244 704 / Ref. 244 703

6-3. Assembling Work Clamp



☞ *Connection hardware must be tightened with proper tools. Do not just hand tighten hardware. A loose electrical connection will cause poor weld performance and excessive heating of the work clamp.*

1 Nut

2 Work Cable From Unit

3 Work Clamp

4 Screw

5 Work Clamp Tabs

Bend tabs around work cable.

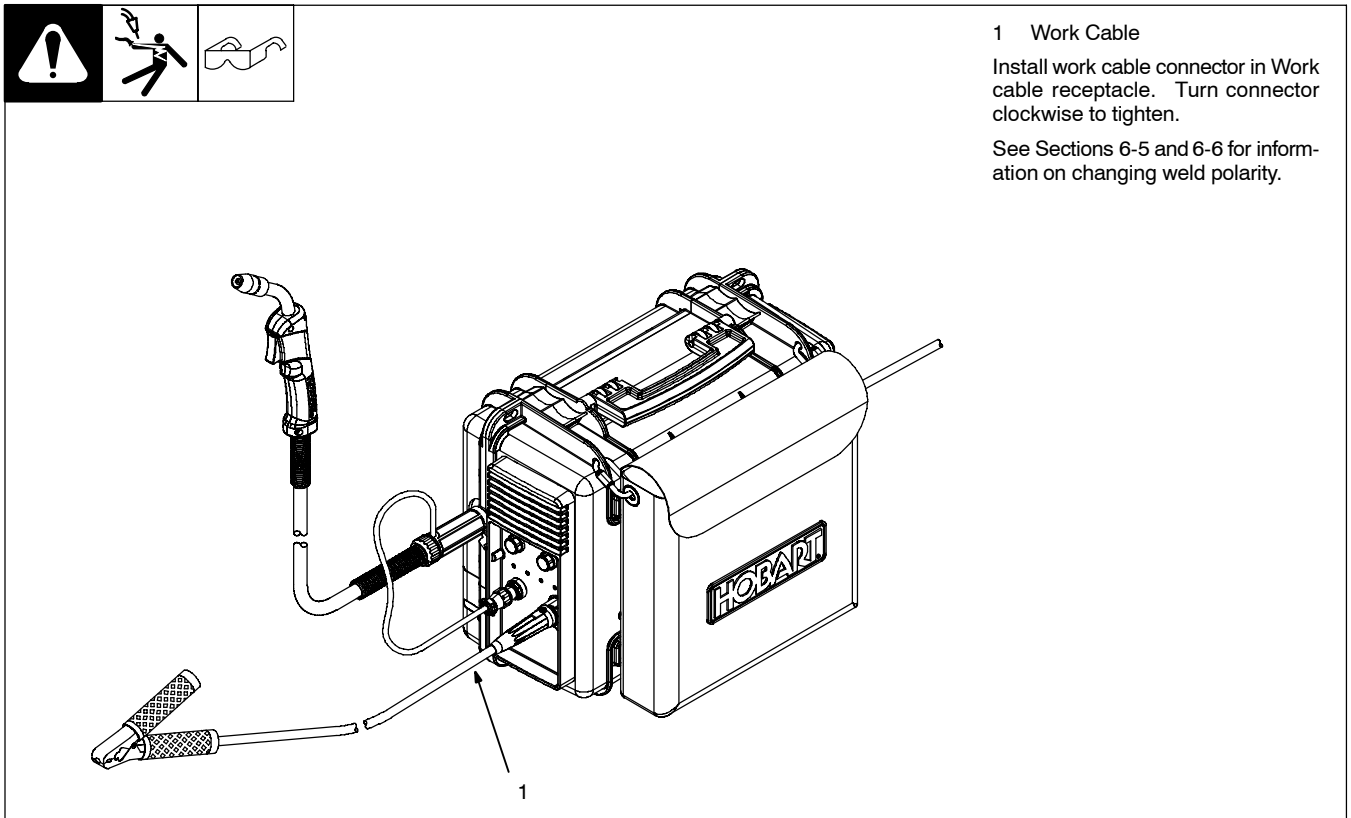
6 Insulating Sleeves

Slide one insulating sleeve over work cable before connecting to clamp.

Slide both insulating sleeves over handles.

802 456-A

6-4. Installing Work Cable



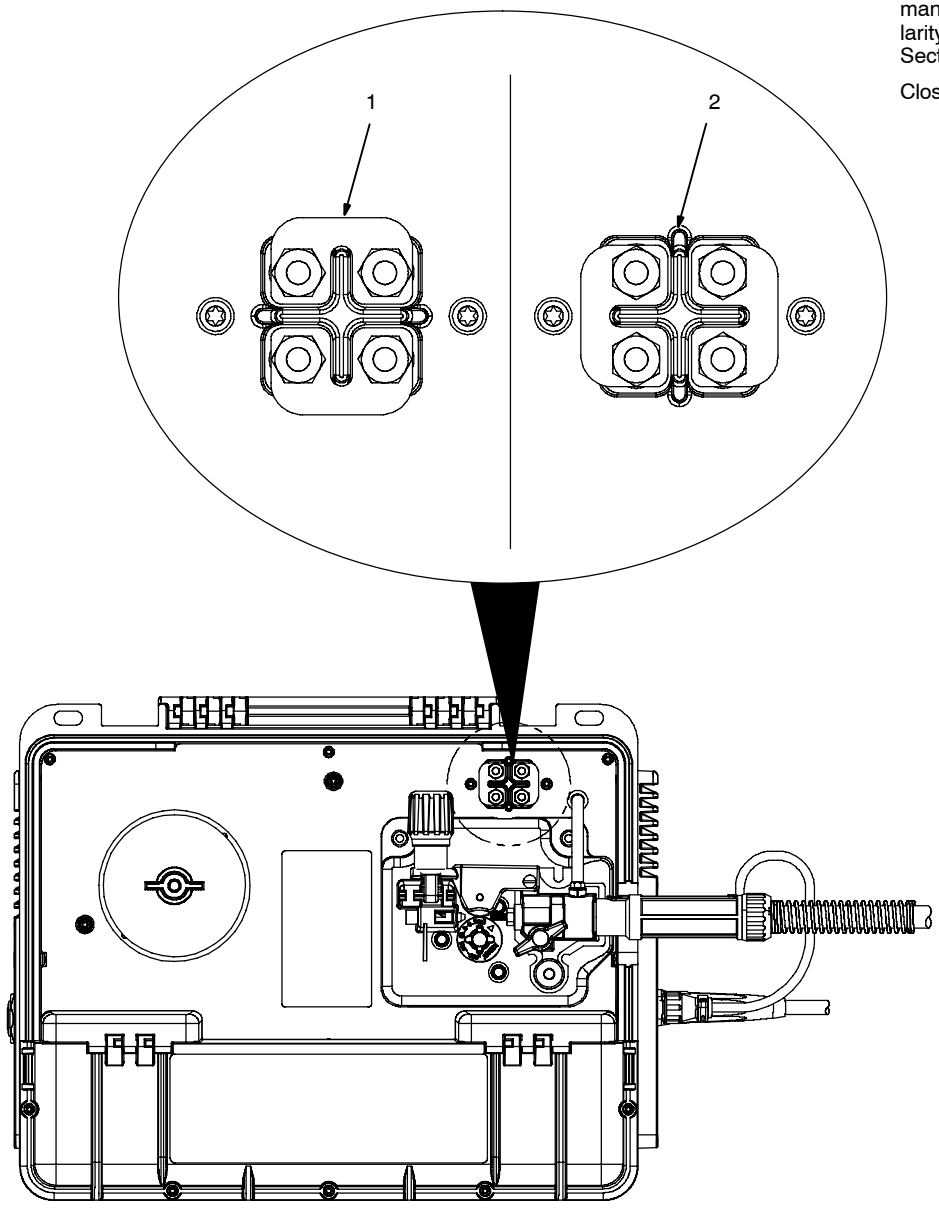
1 Work Cable

Install work cable connector in Work cable receptacle. Turn connector clockwise to tighten.

See Sections 6-5 and 6-6 for information on changing weld polarity.

Ref. 244 703

6-5. Changing Polarity



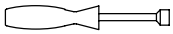
1 Jumper Link Connections For Direct Current Electrode Negative (DCEN)

2 Jumper Link Connections For Direct Current Electrode Positive (DCEP)

Always read and follow wire manufacturer's recommended polarity. See Process/Polarity Table in Section 6-6.

Close door.

Tools Needed:



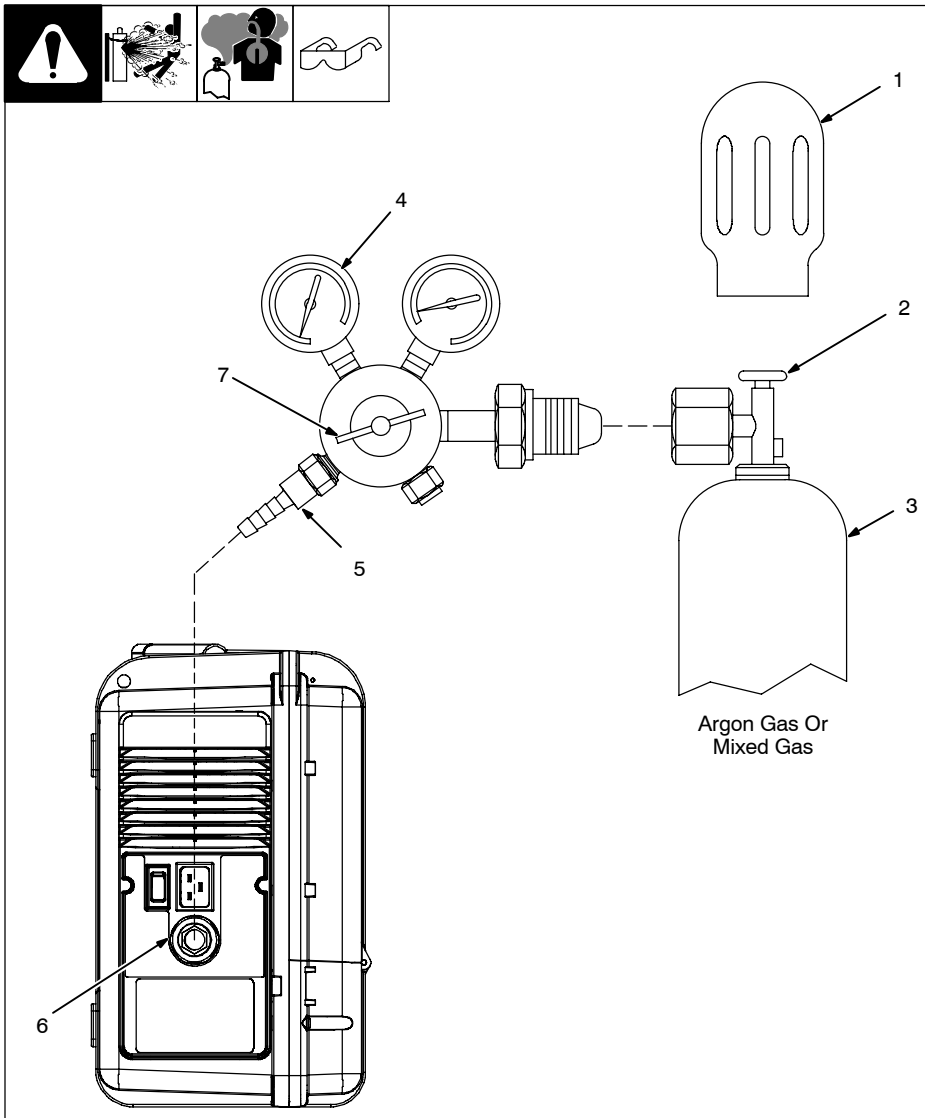
3/8 in.

244 705

6-6. Welding Process/Polarity Table

Welding Process	Polarity
GMAW – Solid wire with shielding gas	DCEP – Reverse polarity
FCAW – Self-shielding wire – no shielding gas	DCEN – Straight Polarity

6-7. Installing Gas Supply



Obtain gas cylinder and chain to running gear, wall, or other stationary support so cylinder cannot fall and break off valve.

1 Cap

2 Cylinder Valve

Remove cap, stand to side of valve, and open valve slightly. Gas flow blows dust and dirt from valve. Close valve.

3 Cylinder

4 Regulator/Flowmeter

Install so face is vertical.

5 Regulator/Flowmeter Gas Hose Connection

6 Welding Power Source Gas Hose Connection

Connect gas hose between regulator/flowmeter gas hose connection, and fitting on rear of welding power source.

7 Flow Adjust

Flow rate should be set when gas is flowing through welding power source and welding gun. Open feedhead pressure assembly so that wire will not feed. Press gun trigger to start gas flow.

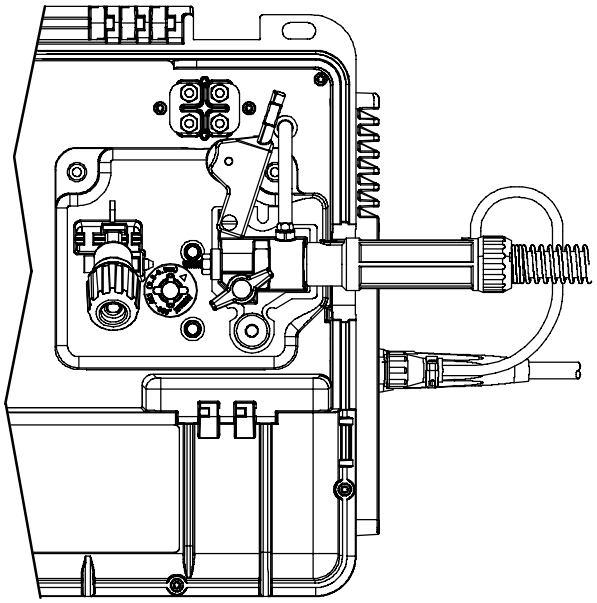
Typical flow rate is 20 cfh (cubic feet per hour). Check wire manufacturer's recommended flow rate.

After flow is set, close feedhead pressure assembly.

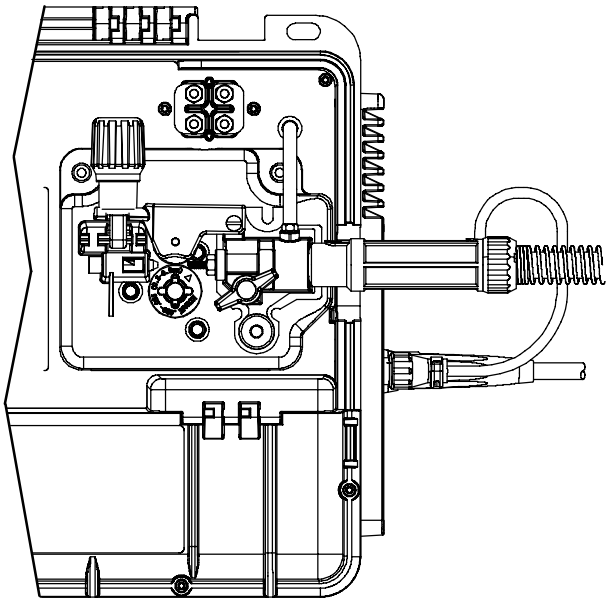
Tools Needed:

5/8, 1-1/8 in.

Feedhead Pressure Assembly Open

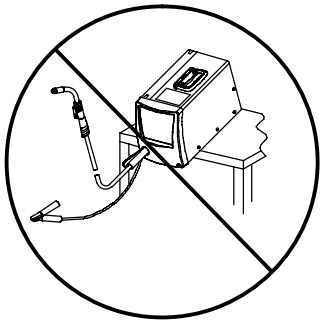


Feedhead Pressure Assembly Closed

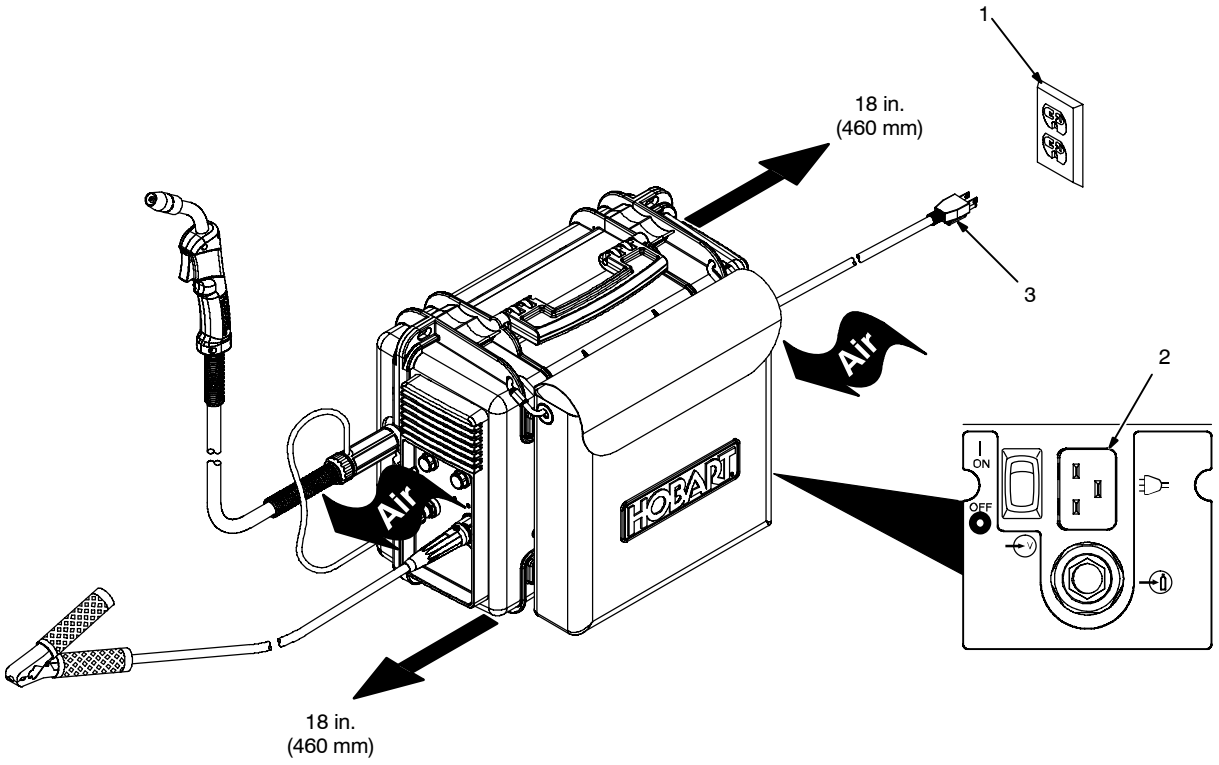


244 706

6-8. Selecting A Location And Connecting Input Power



Do not move or operate unit where it could tip.



244 703

1 115 V, 15 A Grounded Receptacle

This unit requires a 115 volt, 15 ampere individual branch circuit protected by time-delay fuses or circuit breaker.

2 115 V Input Receptacle

3 Power Cord

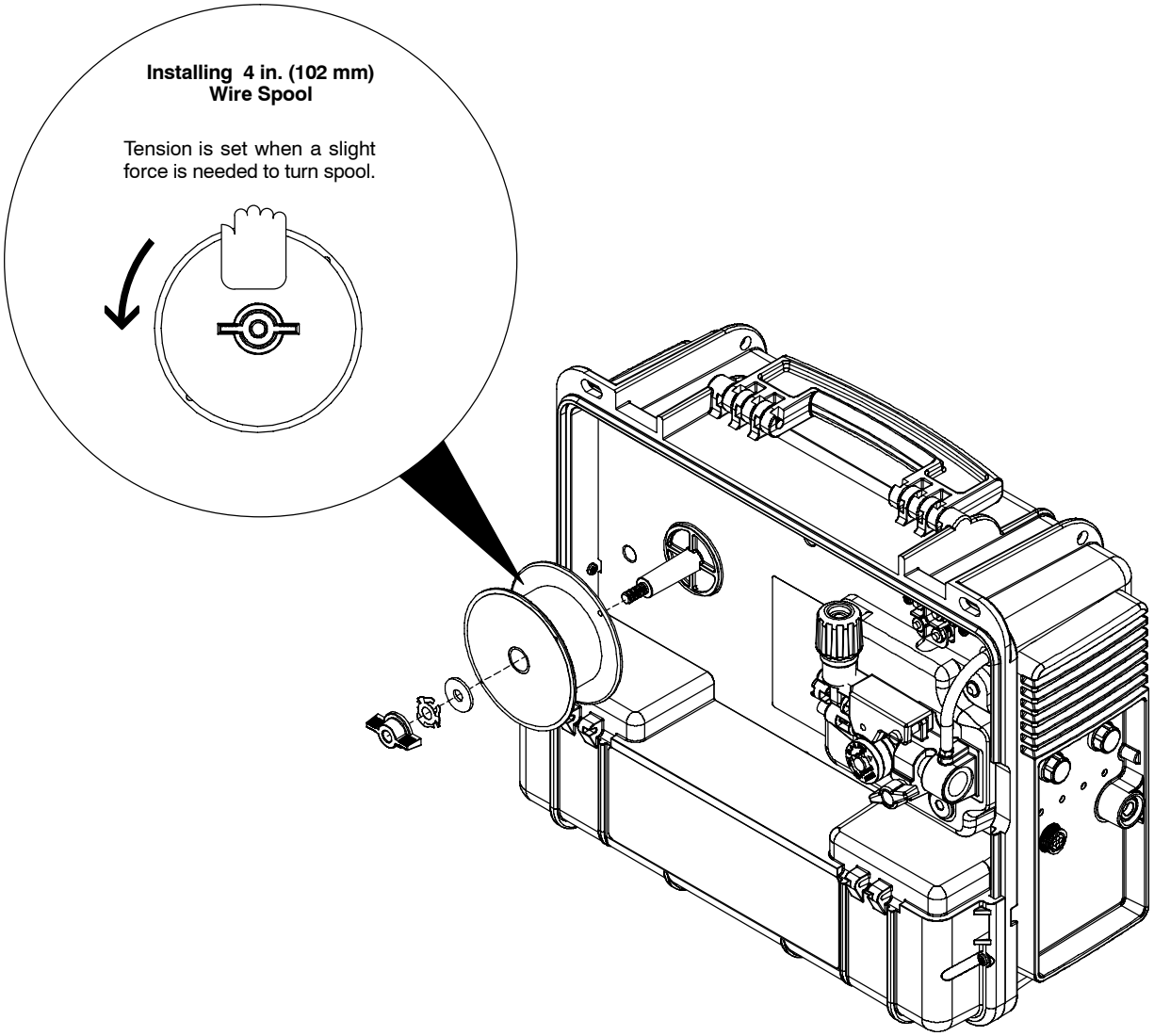
Connect power cord from 115 volt grounded receptacle to 115 volt input receptacle. Select 16 AWG extension cord for distances up to 50 ft (15 m) or 14 AWG extension cord for distances from 50 to 100 ft (30 m).

☞ *If an AC inverter is used for the 115 volt AC supply, use an inverter with a minimum power rating of at least 400 watts. Use an inverter with a power rating of 1000 – 2000 watts to greatly reduce charging time.*

See Section 7-1 and 7-3 for information on charging the internal batteries.

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

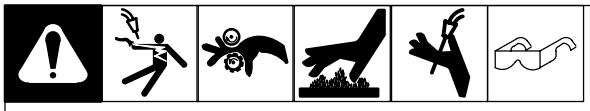
6-9. Installing Wire Spool And Adjusting Hub Tension

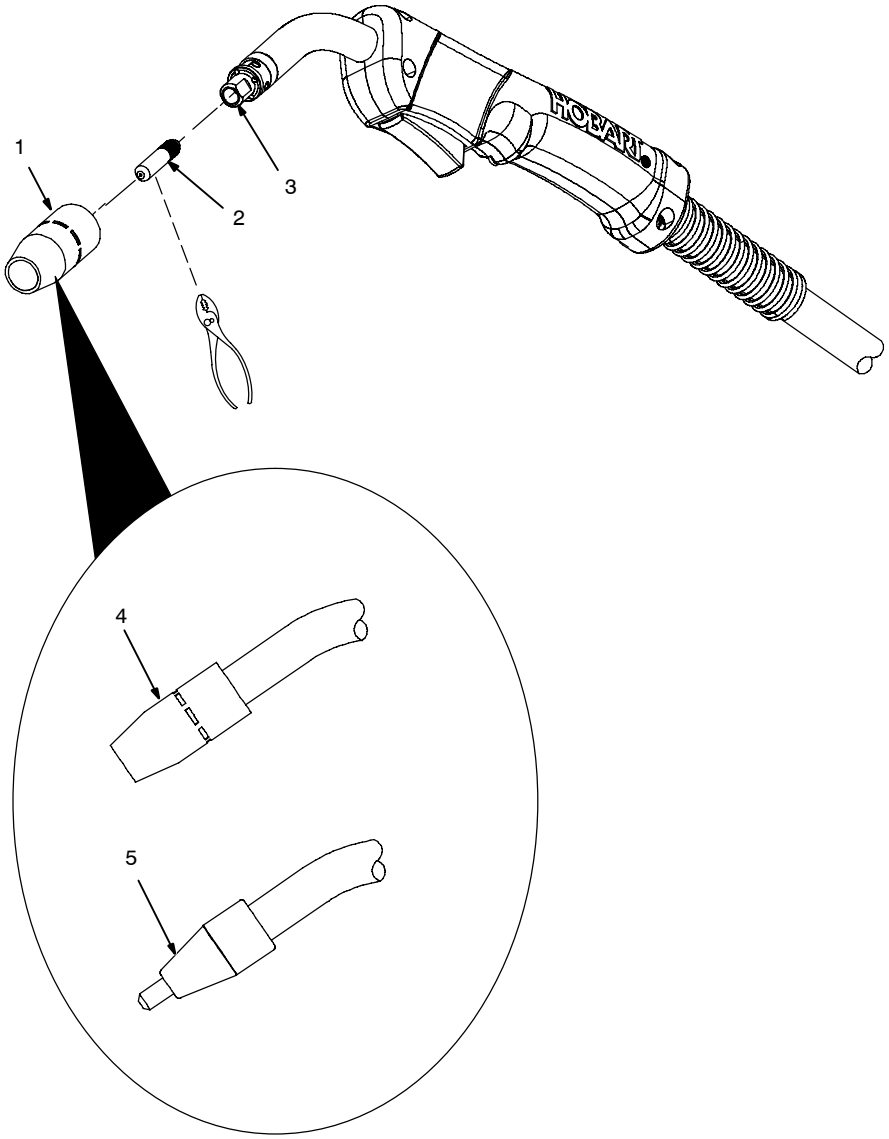


Tools Needed:

244 707

6-10. Installing Contact Tip And Nozzle





Turn off welding power source.

1 Nozzle (See Items 4 And 5 Below)

Remove nozzle.

2 Contact Tip

3 Tip Adapter

Thread welding wire through gun (see Section 6-11).

Slide contact tip over wire and tighten tip into tip adapter.

Install nozzle.

4 MIG Nozzle (Standard)

Use with solid or flux cored wire.

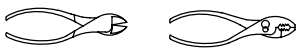
Push nozzle over contact tip and adapter until it is seated onto adapter. End of contact tip will be flush with end of nozzle when installed properly.

5 Flux Nozzle (Optional)

Use with flux cored wire only.

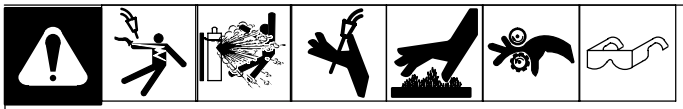
The narrow design allows access in tight spaces and provides better visibility of puddle during welding

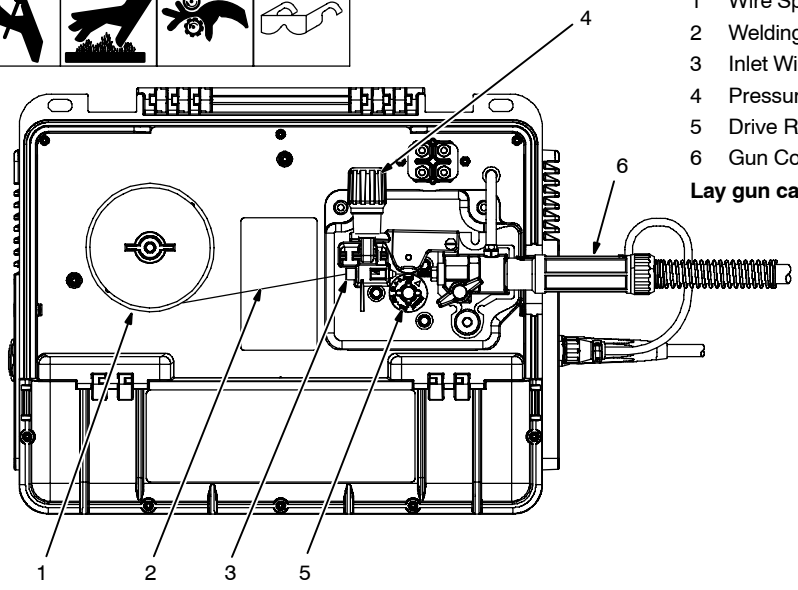
Tools Needed:



244 708

6-11. Threading Welding Wire

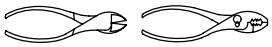




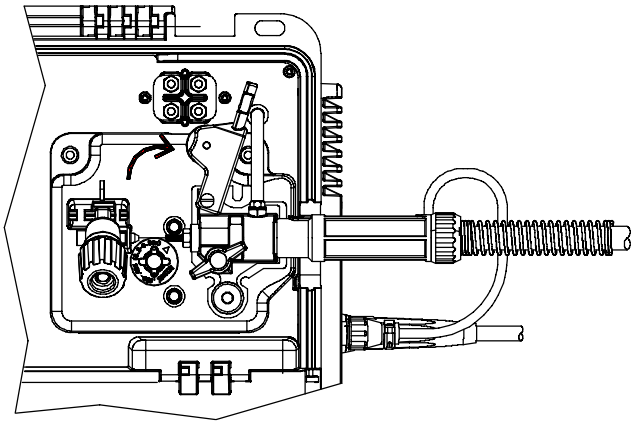
1 Wire Spool
2 Welding Wire
3 Inlet Wire Guide
4 Pressure Adjustment Knob
5 Drive Roll
6 Gun Conduit Cable

Lay gun cable out straight.

Tools Needed:



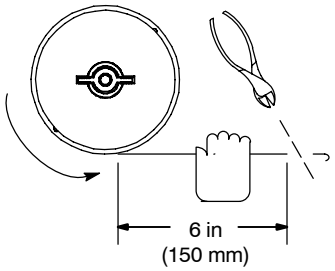
①



Open pressure assembly. Make sure feed roll is set to correct groove to match wire size (see Section 8-4).

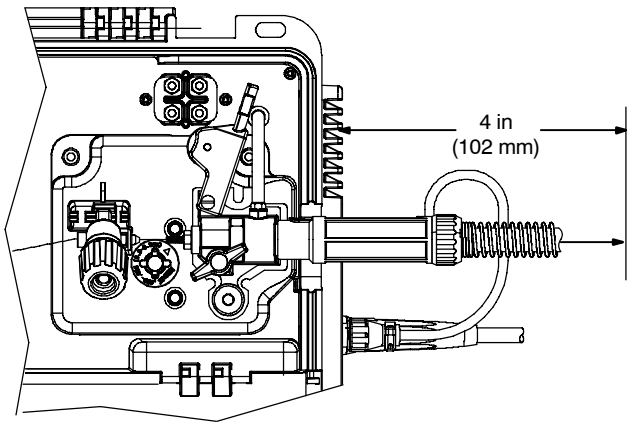
②

☞ *Hold wire tightly to keep it from unraveling.*



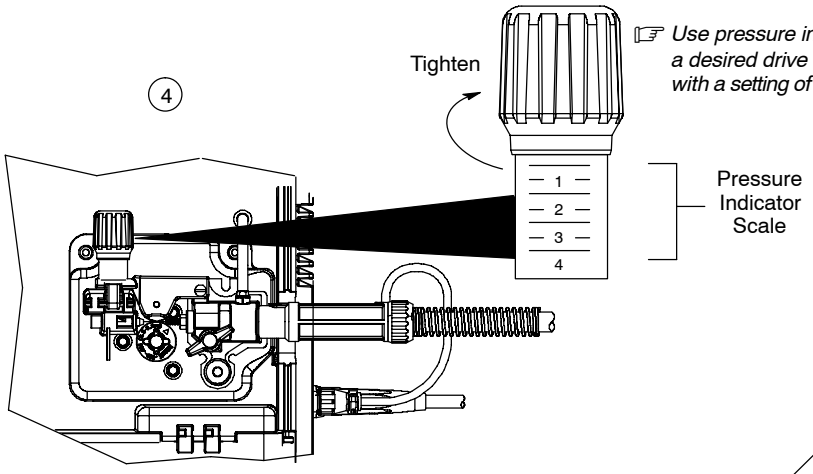
Pull and hold wire; cut off end.

③



Straighten approximately 3 or 4 in. (76 or 102 mm) of wire before inserting wire into guides. Push wire thru guides into gun; continue to hold wire.

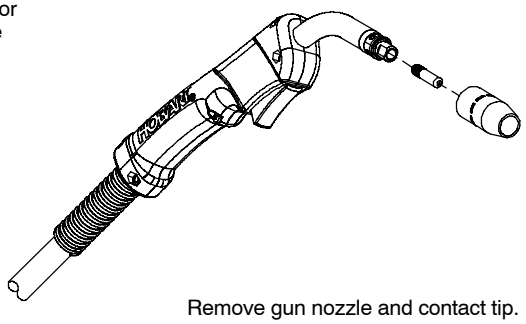
4



☞ *Use pressure indicator scale to set a desired drive roll pressure. (Start with a setting of 2 or 3 on the scale.)*

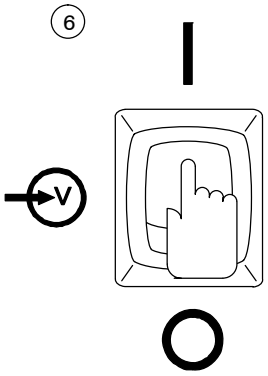
Be sure that wire is positioned in proper feed roll groove.
Close and tighten pressure assembly, and let go of wire.

5



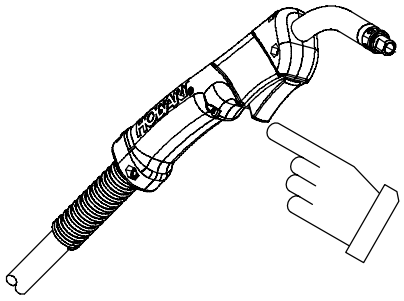
Remove gun nozzle and contact tip.

6



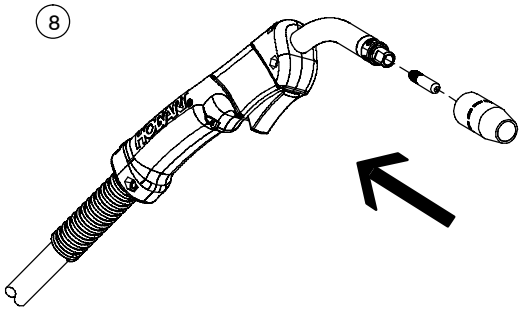
Turn power on.

7



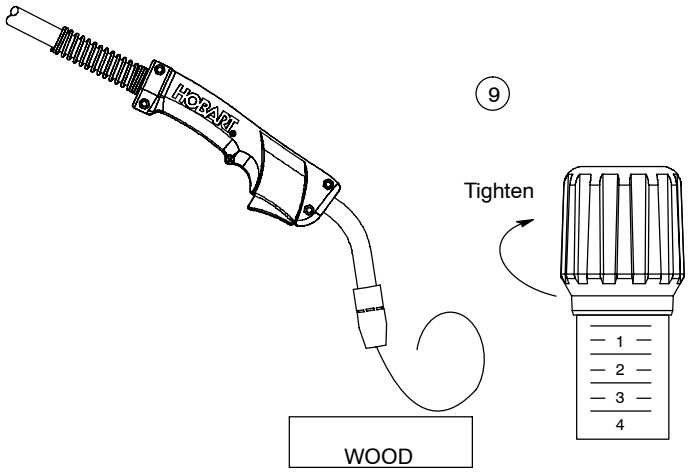
Press gun trigger until wire comes out of gun.
(Keep gun cable as straight as possible.)

8



Be sure that tip matches wire diameter.
Reinstall contact tip and nozzle.

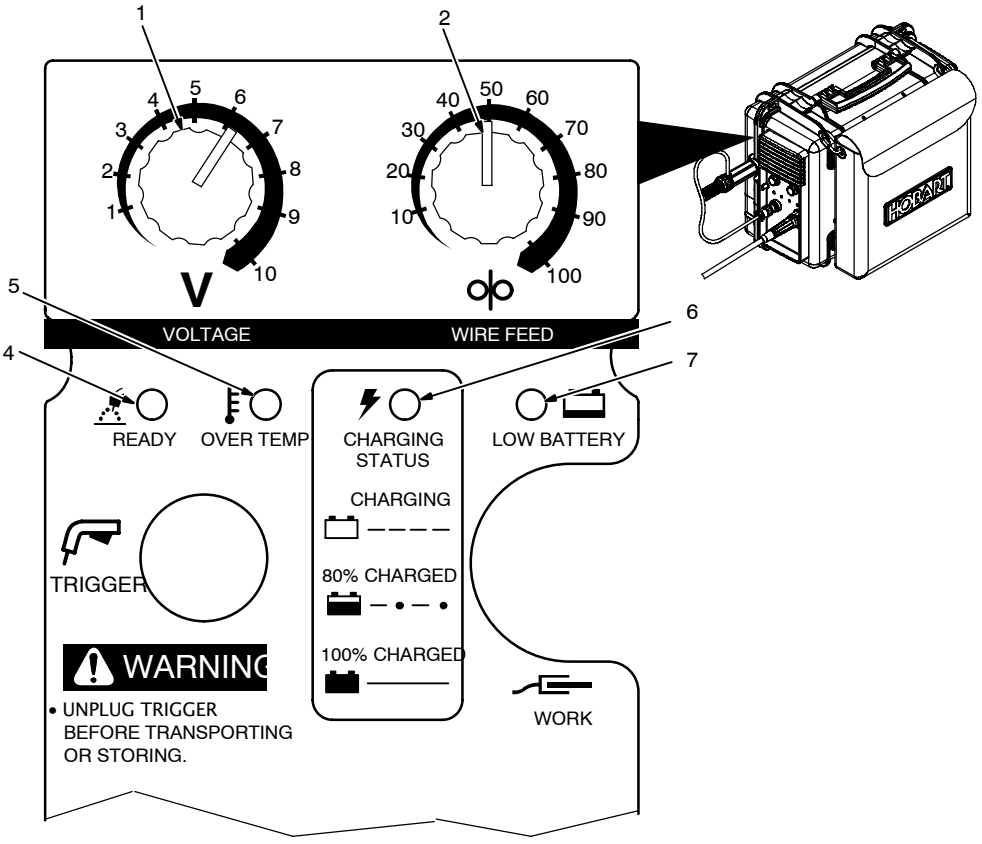
9

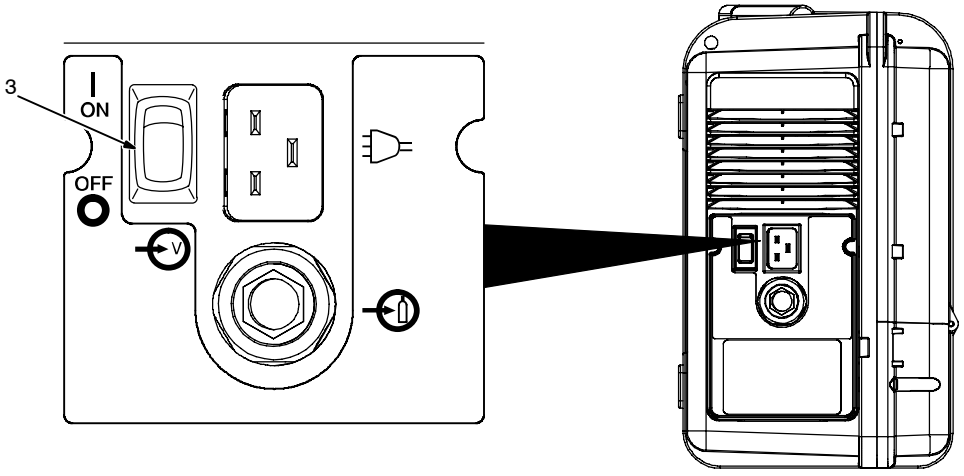


Feed wire to check drive roll pressure.
Tighten knob enough to prevent slipping.
Cut off wire. Close door.

244 709

7-1. Controls





Unplug trigger cable before transporting or storing unit.

Weld Controls

1 Voltage Control

Use control to select weld voltage. The higher the selected number, the thicker the material that can be welded. (See weld parameter label in welding power source or in Section 7-4).

2 Wire Speed Control

Use control to select a wire feed speed. See weld parameter label in welding power source or Section 7-4.

3 Power Switch

Use switch to turn unit on and off.

☞ *The unit will turn off after 15 minutes of inactivity. Reset unit by turning unit off and then on again.*

Status Lights

☞ *See Section 7-2 for additional information on status lights and related conditions.*

4 Ready Light

Light goes on when the power switch is on and the internal batteries have enough power to weld. The ready light will not turn on if the Power switch is off, even when still plugged in for charging.

5 Over Temperature Light

Light goes on when unit has stopped due to overheating. After unit has cooled the Over Temperature light goes out, the Ready Light goes on, and the unit operates again.

6 Charging Status Light

Light indicates status of the batteries during the charging cycle.

☞ *See Section 7-3 for information on charging the internal batteries.*

7 Low Battery Light

Light goes on when unit has stopped due to low battery output. Light goes out and unit is operational when batteries are charged enough to provide weld output.

232 627 / 232 655

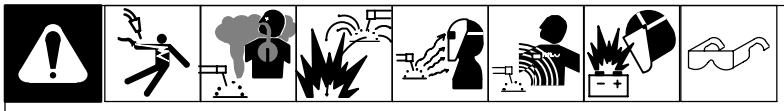
7-2. Status Light Explanations

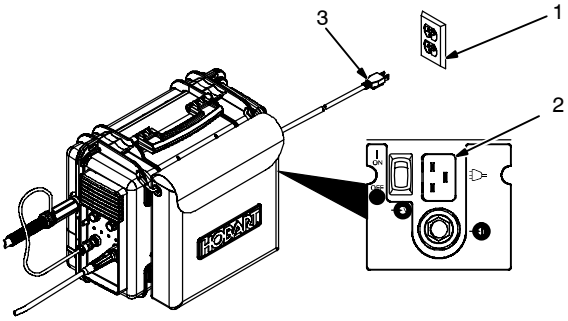
Status Light Condition				Explanation
Ready	Over Temp	Charge Status	Low Battery	
○	○	○	○	Unit was turned off or has automatically timed out and shut itself off to preserve batteries. The unit will shut off after 15 minutes of inactivity. Turn unit off and then on again to reset unit after automatic timeout.
● ———	○	○	○	Unit on and ready to weld (normal condition).
○	● ———	○	○	Unit has overheated or exceeded duty cycle. Weld output is disabled. Allow unit to cool. Over temp condition automatically clears and unit returns to normal condition.
○	○	○	● ———	Battery voltage is too low to weld. Weld output is disabled. Recharge batteries. If unit is already plugged in, allow sufficient time for batteries to recharge. Once batteries are recharged to a sufficient level the low battery condition clears and unit returns to normal condition. If unit is not plugged into utility power, indicator goes out off after 15 minutes to reduce drain on the batteries.
● ———	● ———	○	● ———	Indicates gun tip is shorted to work. Weld output is disabled to prevent damage to torch tip. Momentarily release gun trigger to clear condition and resume welding.
● – – – –	● – – – –	○	● – – – –	Indicates an internal fault. Contact a Factory Authorized Service Agent.
○	○	● – – – –	○	Indicates batteries are charging.
○	○	● – • – •	○	Indicates batteries are 80% charged. Unit can be unplugged and used for welding; leave connected to reach 100% charge.
○	○	● ———	○	Batteries are fully charged. Unit can be unplugged and used for welding; leave connected to keep batteries fully charged.
○	○	● •• ••	○	**Charger Fault** – Indicates an internal fault or battery charger is in over temp condition. To reset, unplug unit and allow to shut down. Plug unit back into 115 V AC receptacle. If light sequence does not change, contact a Factory Authorized Service Agent.

Symbol Key

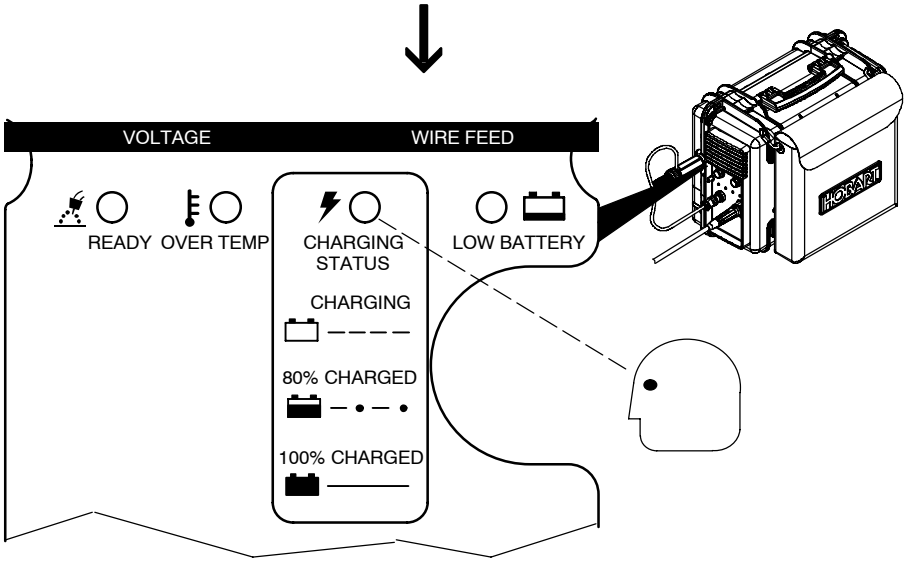
○	Light is off
● ———	Light is on continuously
● – – – –	Light is on for one second, off for one second
● – • – •	Light is one second, off for one second, on for 1/2 second, off for one second
● •• ••	Light is on for 1/10 second, off for 1/10 second, on for 1/10 second, off for two seconds

7-3. Charging The Internal Batteries



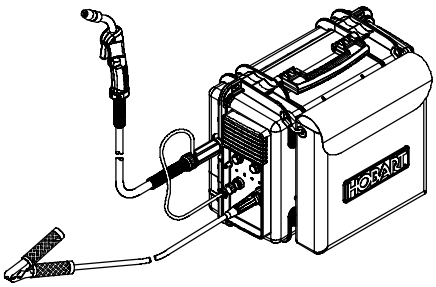


Stop welding. Connect unit to 115 V, 15 A grounded receptacle. (See Section 6-8).
Charging begins.



Check battery charging status.

To charge batteries to 80% capacity: 15 – 30 minutes (ready to weld again)
Complete battery recharge: 1-1/2 hours



Resume welding when charging is complete.

Unplug trigger cable before transporting or storing unit.

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

Do not charge internal batteries if batteries show signs of damage.

NOTICE *– To extend battery life, recharge batteries after each job and keep unit plugged in when not in use. Avoid storing unit in temperatures above 100 °F (38 °C).*

☞ *Before first use, charge the batteries in this product for at least two hours. Product performance will improve when the batteries reach full capacity by being charged and discharged several times.*

☞ *The Auto-Power feature monitors the 115 volt AC supply during the charging process to prevent overload. If the unit senses the 115 volt AC supply is being overloaded, charging amperage (current draw) is reduced to match the AC supply.*

☞ *If an AC inverter is used for the 115 volt AC supply, use an inverter with a minimum power rating of at least 400 watts. Use an inverter with a power rating of 1000 – 2000 watts to greatly reduce charging time.*

The internal batteries are being charged whenever the unit is plugged into a 115 volt AC receptacle (utility power). When operating on battery power only, charge the batteries when the Low Battery Light is on. Battery charging times are as follows:

- To charge batteries to 80% capacity: 15 – 30 minutes (ready to weld again)
- Complete battery recharge: 1-1/2 hours

1 115 V, 15 A Grounded Receptacle

This unit requires a 115 volt, 15 ampere individual branch circuit protected by time-delay fuses or circuit breaker.

2 115 V Input Receptacle

3 Power Cord

Connect power cord from 115 volt grounded receptacle to 115 volt input receptacle.

4 Charging Status Light

Observe Charging Status light during charging. Light indicates status of batteries during the charging cycle.

☞ *See Section 7-2 for additional information on status lights and related conditions.*

244 703 / 232 627 / 232 655

Notes

7-4. Weld Parameter Chart

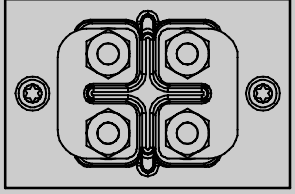
Selecting Wire, Gas and Control Settings

Settings are approximate. Adjust as required. Thicker materials can be welded using proper technique, joint preparation and multiple passes.

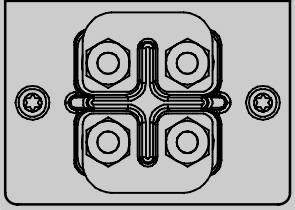
Material Being Welded	Wire Type, and Polarity Setting	Suggested Shielding Gases 20–30 cfh Flow Rate	Diameter of Wire Being Used
Steel	Flux Core E71T–GS (DCEN)	No Shielding Gas Required Good for Windy or Outdoor Applications	.030" (0.8 mm)
			.035" (0.9 mm)
	Solid Wire ER70S–6 (DCEP)	C_{25} Gas Mixture 75% Ar / 25% CO_2 Produces Less Spatter Better Appearance	.024" (0.6 mm)
			.030" (0.8 mm)
			.035" (0.9 mm)

Changing Polarity

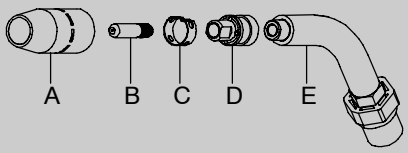
DCEP
Electrode Positive
For Solid Wire



DCEN
Electrode Negative
For Flux Cored Wire



Welding Gun Consumables



	Stock No.
A) Nozzles	
.500" orf flush	169715
Flux Cored	226190
B) Tips	
.023" (0.6mm)	087299
.030" (0.8mm)	000067
.035" (0.9mm)	000068
C) Retaining Ring	170470
D) Contact Tip Adaptor	169716
E) Head Tube	246373
Liners	
.023" / .025"	194010
.030" / .035"	194011

Selecting Wire, Gas and Control Settings

Recommended Voltage and Wire Speed Settings for Thickness of Metal Being Welded
Number on Left is Voltage Setting / Number on Right is Wire Feed Setting

24 gauge .024 inch (0.6 mm)	22 gauge .030 inch (0.8 mm)	20 gauge .036 inch (0.9 mm)	18 gauge .048 inch (1.2 mm)	16 gauge .060 inch (1.5 mm)	14 gauge .075 inch (1.9 mm)	12 gauge .105 inch (2.7 mm)	1/8 inch (3.2 mm)	3/16 inch (4.8 mm)	1/4 inch (6.4 mm)	5/16 inch (7.9 mm)
—	—	—	1 / 0	2 / 5	3 / 10	5 / 30	6 / 40	8 / 70	10 / 100	—
—	—	—	—	—	—	—	5 / 20	8 / 40	10 / 50	10 / 60
0 / 20	0 / 30	2 / 40	4 / 40	7 / 60	8 / 80	10 / 100	10 / 100	—	—	—
—	0 / 10	1 / 10	2 / 20	3 / 30	3 / 40	5 / 50	7 / 50	10 / 60	10 / 60	—
—	—	—	—	3 / 10	5 / 20	6 / 25	7 / 30	9 / 35	10 / 40	—

- Set Tension Knob Setting to 3 at start. Adjust tension per instructions in the manual.
- Wire Speed listed is a starting value only. Wire speed setting can be fine-tuned while welding. Wire speed also depends on other variables such as stick out, travel speed, weld angle, cleanliness of metal, etc.

Drive Rolls

See Owner's Manual
Match drive roll groove to diameter of wire being used.

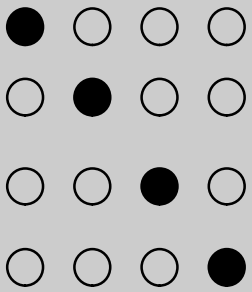
Dual Grooved Groove	Wire Size	Stock No.
V – Groove	.024" – .030" / .035" (0.6mm – 0.8mm / 0.9mm)	237338
V/VK – Groove	.030" / .035" (0.8mm / 0.9mm)	246565

Battery Must Be Recharged After Each Use.

For Maximum Battery Life, Unit Should Be Plugged In When Not In Use

USE ONLY FACTORY AUTHORIZED BATTERIES
Stock No. 232612

LED Status



Unit is charged, ready to weld

Over Temp has occurred, stop welding and allow unit to cool down

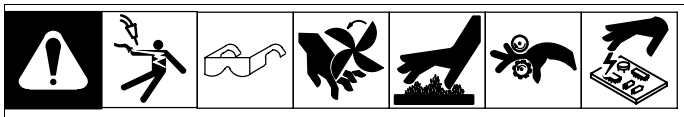
Batteries Charging
Batteries 80% Charged
Batteries Fully Charged

Low Battery, plug in welder to charge

See Owner's Manual for Other LED Combinations 232680-B

SECTION 8 – MAINTENANCE & TROUBLESHOOTING

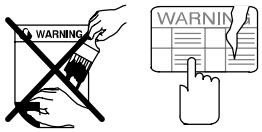
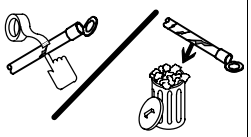
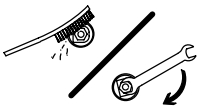
8-1. Routine Maintenance



Disconnect power before maintaining.

☞ *Maintain more often during severe conditions.*

✓ = Check ◇ = Change ◒ = Clean ☆ = Replace
* To be done by Factory Authorized Service Agent

				Reference
3 Months				
				
☆ Damaged Or Unreadable Labels	☆ Repair Or Replace Cracked Weld Cable	◒ Clean And Tighten Weld Terminals		
6 Months				
				
◒ Inside Unit				

8-2. Battery Overcurrent Protection

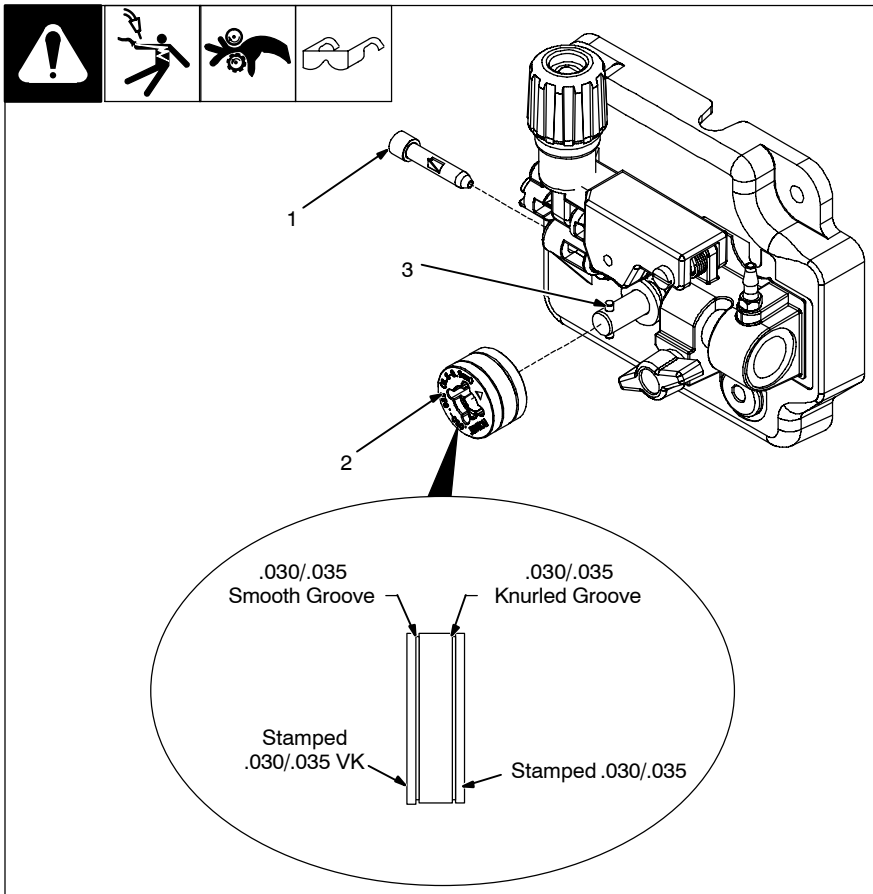
☞ *If a fuse opens, it usually indicates a more serious problem exists. Contact a Factory Authorized Service Agent.*

Fuse F3 protects the unit from a battery fault. If F3 opens while the batteries are being charged the charge Status light flashes on and off. If F3 opens while the unit is welding the Ready light goes out and the unit stops. Have a Factory Authorized Service Agent check F3.

8-3. Drive Motor Protection

The drive motor protection circuit protects the drive motor from overload. If the drive motor does not run, release gun trigger. Wait until protection circuit resets and allows drive motor to feed wire again.

8-4. Changing Drive Roll Or Wire Inlet Guide



1 Inlet Wire Guide

Remove guide by pressing on barbed area or by cutting off one end (near housing) and pulling it out of the hole. Push new guide into hole (from rear) until it snaps into place.

2 Drive Roll

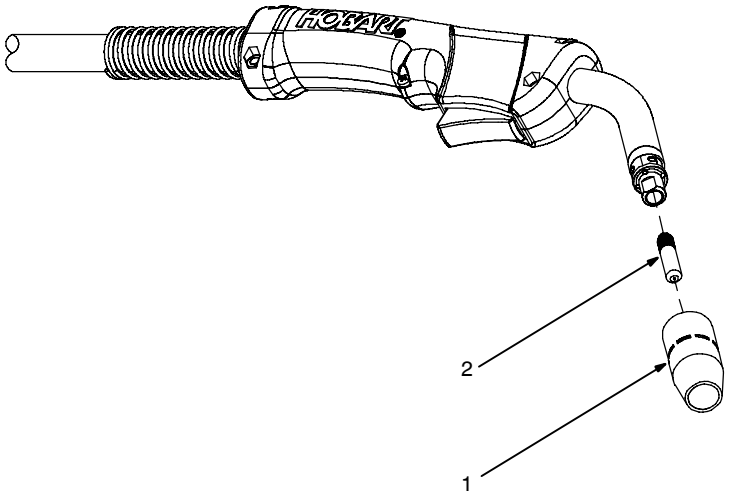
The drive roll consists of two different grooves. The stamped markings on the end surface of the drive roll refers to the groove on the opposite side of the drive roll. The groove closest to the motor shaft is the proper groove to thread (see Section 6-11).

3 Retaining Pin

To secure drive roll, locate open slot and push drive roll completely over retaining pin, then rotate drive roll (1/4 turn) to closed slot.

244 708

8-5. Replacing Gun Contact Tip



Turn Off power before replacing contact tip.

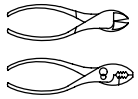
1 Nozzle

2 Contact Tip

Cut off welding wire at contact tip. Remove nozzle.

Remove contact tip and install new contact tip. Reinstall nozzle.

Tools Needed:



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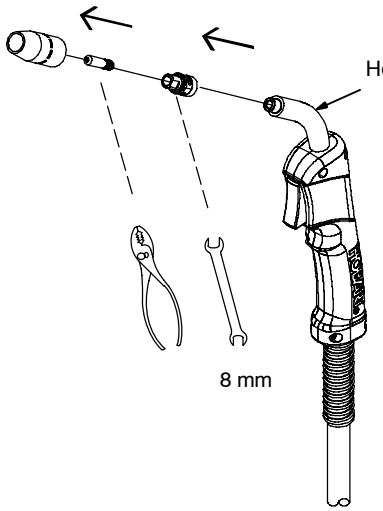
8-6. Cleaning Or Replacing Gun Liner

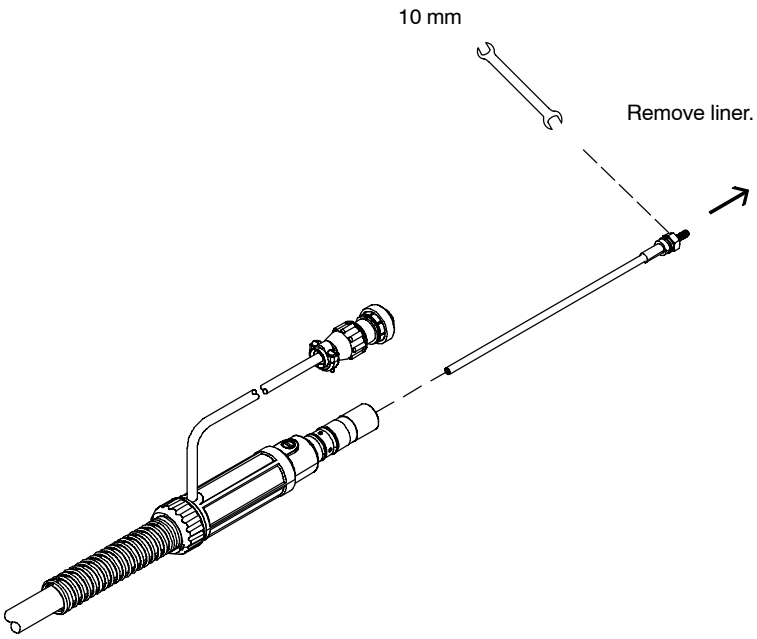
Disconnect gun from unit.

1

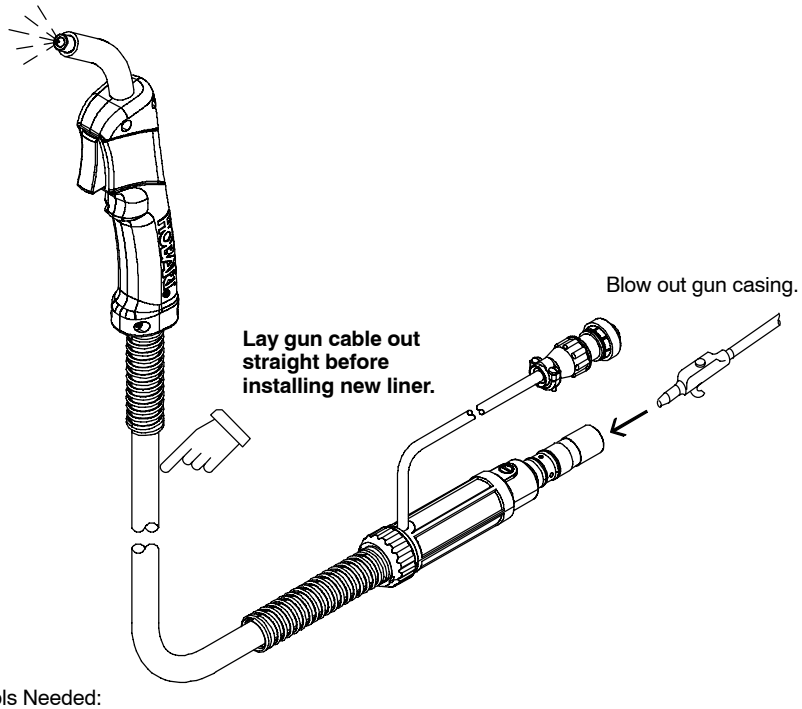


Remove nozzle, contact tip, adapter, gas diffuser, and wire outlet guide.

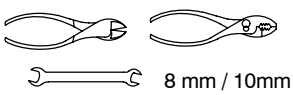
2



3



Tools Needed:



To Reassemble Gun:

Insert new liner.

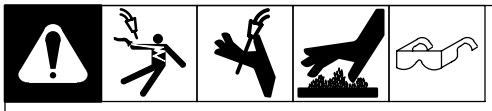
Install wire outlet guide so that 1/8 in. (3 mm) of liner sticks out. Hand tighten outlet guide, and then tighten two full turns more.

Cut liner off so that 3/4 in. (19 mm) sticks out of head tube.

Install gas diffuser, adapter, contact tip, and nozzle.

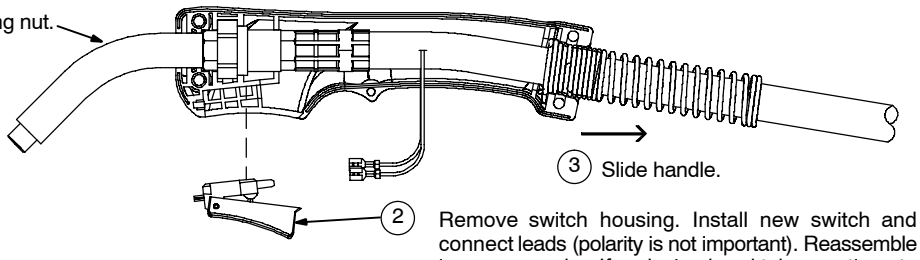
243 839

8-7. Replacing Switch And/Or Head Tube



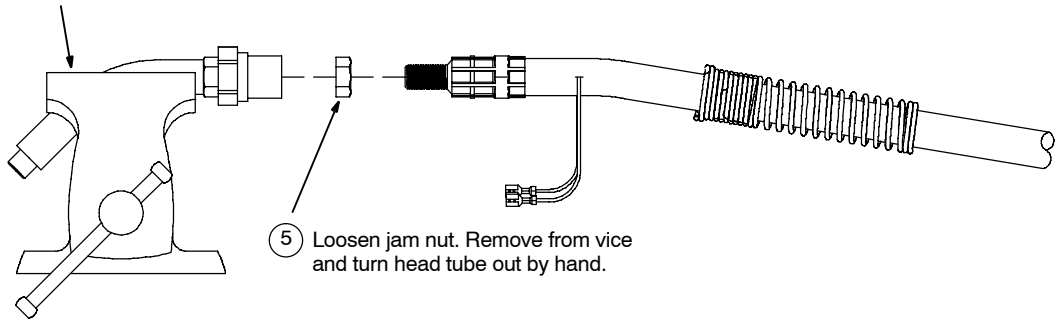
Turn Off welding power source /wire feeder and disconnect gun.

1 Remove handle locking nut.

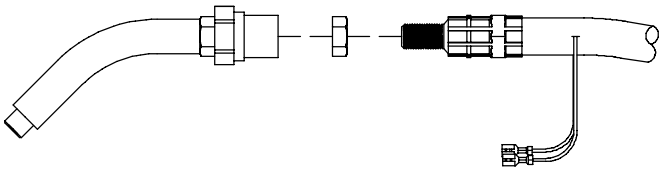


Remove switch housing. Install new switch and connect leads (polarity is not important). Reassemble in reverse order. If replacing head tube, continue to end of figure.

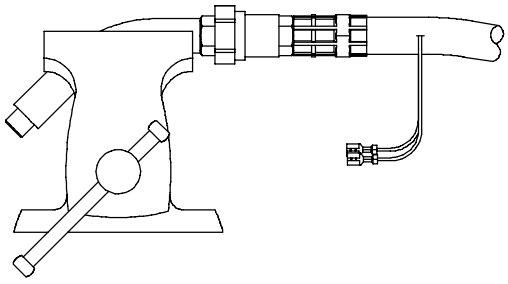
4 Secure head tube in vice.



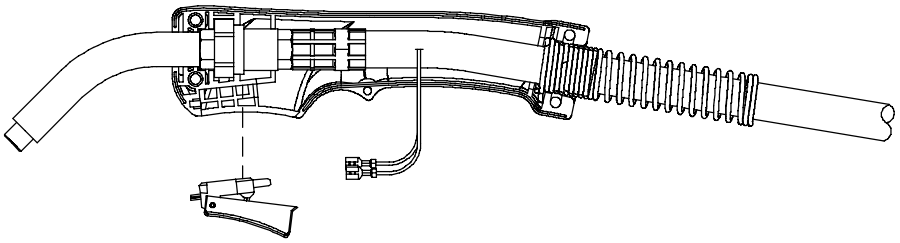
6 Hand-tighten head tube into cable connector.



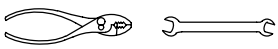
7 Place head tube in vice and tighten until nuts are tight.



8 Remove from vice. Reposition handle and install switch housing. Secure with handle locking nut.



Tools Needed:



19 mm

243 840

8-8. Troubleshooting Table

Trouble	Remedy
No weld output; wire does not feed; Ready light is off.	Place Power switch in On position (Section 7-1).
	Unit shuts down after 15 minutes of activity. Reset unit by turning unit off and then on again. (The Ready light goes on.)
	Have a Factory Authorized Service Agent check fuse F3.
No weld output; wire does not feed; Low Battery light is on.	Secure power cord in 115 V receptacle and allow batteries to charge (Section 6-8).
Batteries do not charge; Low Battery light goes on when the Power switch is turned on.	Secure power cord in 115 V receptacle and allow batteries to charge (Section 6-8).
	If unit is connected to a vehicle power inverter, verify power inverter can supply at least 400 watts (Section 7-3).
	If unit is connected to a vehicle power inverter, reset power inverter. (See power inverter Owner's Manual.)
	Replace fuse or reset circuit breaker in 115 V receptacle circuit.
Battery charging takes longer than specified.	If unit is connected to a vehicle power inverter, verify power inverter can supply at least 400 watts.
	Batteries may need replacement. Contact a Factory Authorized Service Agent.
No weld output; wire does not feed; Ready light is on.	Check the gun trigger connection (Section 6-2).
	Press gun trigger switch.
Cooling fan does not run.	Cooling fan runs only when unit needs to be cooled. Fan usually does not run at start-up.
No weld output; wire does not feed; Over Temp light is on.	Allow cooling fan to cool unit until Over Temp light goes out.
No weld output; wire feeds.	Connect work clamp to get good metal to metal contact.
	Verify the correct size contact tip is installed in gun (see Section 8-5).
	Check polarity connections (see Section 6-5).
	Verify gun is fully seated in drive assembly and securing knob is tight (Section 6-2).
Weld bead does not penetrate base metal; filler metal "piles up."	Set weld polarity to match the weld process (Sections 6-5 and 6-6).
Erratic welding arc when welding with flux cored wire.	Check size of contact tip in gun, and replace tip if size is incorrect (Section 8-5).
	Check wire spool hub tension, and adjust if necessary (see Section 6-9).
	Check gun contact tip, and replace if worn (Section 8-5).
	Set weld polarity to match the weld process (Sections 6-5 and 6-6).
Erratic welding arc when welding with solid wire and shielding gas.	Check gas supply, hose, regulator, and connections, and ensure gas is flowing (no leaks).
	Check wire spool hub tension, and adjust if necessary (see Section 6-9).
	Verify gun is fully seated in drive assembly and securing knob is tight (Section 6-2).
	Check gun o–rings, and replace if worn or damaged.

Trouble	Remedy
Erratic welding arc, discolored weld bead, and insufficient gas coverage when welding with solid wire and shielding gas.	Verify gun is fully seated in drive assembly and securing knob is tight (Section 6-2).
	Remove spatter from gun nozzle.
	Check gas supply, hose, regulator, and connections, and ensure gas is flowing (no leaks).
	If welding outdoors, shield weld area from wind.
Wire feeding is inconsistent and causes arc outages.	Adjust drive roll pressure (Section 6-11).
	Check wire spool hub tension, and adjust if necessary (see Section 6-9).
	Clean or replace wire inlet guide or liner if dirty or plugged (see Section 8-4 or Section 8-6).
	Change to proper drive roll groove (see Section 8-4).
	Straighten gun cable and/or replace damaged parts.
	Be sure that wire is positioned in proper drive roll groove and wire is laying in the groove.
	Straighten gun cable and/or replace damaged parts (Section 6-11).
	Check gun liner, and replace if damaged or kinked (Section 8-6).
Duration of weld output has decreased; unit needs charging more frequently.	Batteries may need replacement. Contact a Factory Authorized Service Agent. ☞ *To extend battery life, recharge batteries after each job and keep unit plugged in when not in use.*

SECTION 9 – ELECTRICAL DIAGRAM

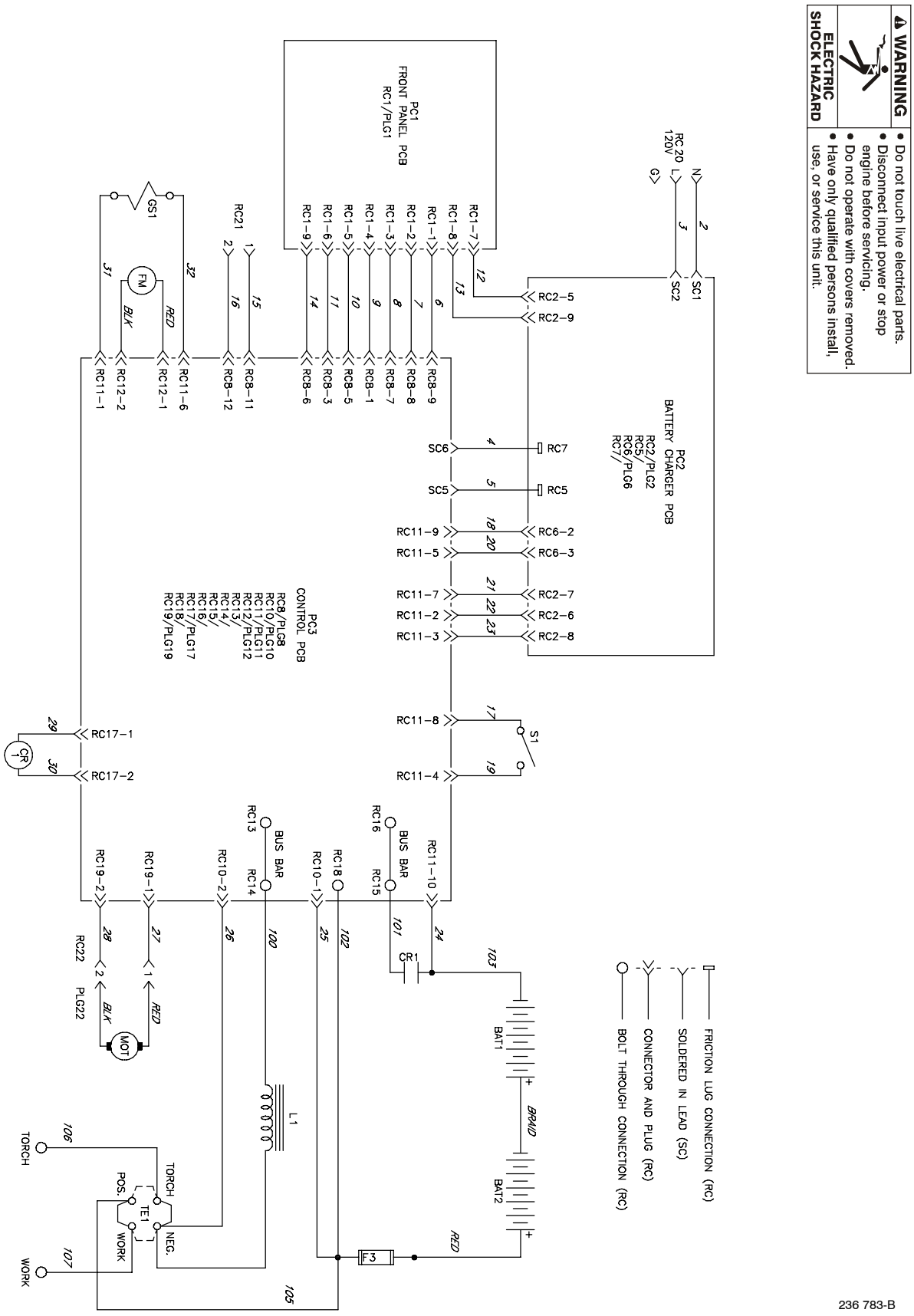
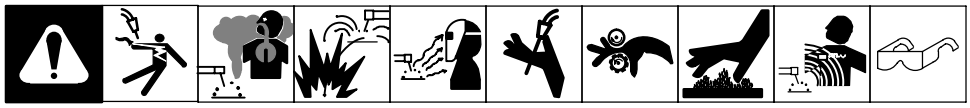


Figure 9-1. Circuit Diagram

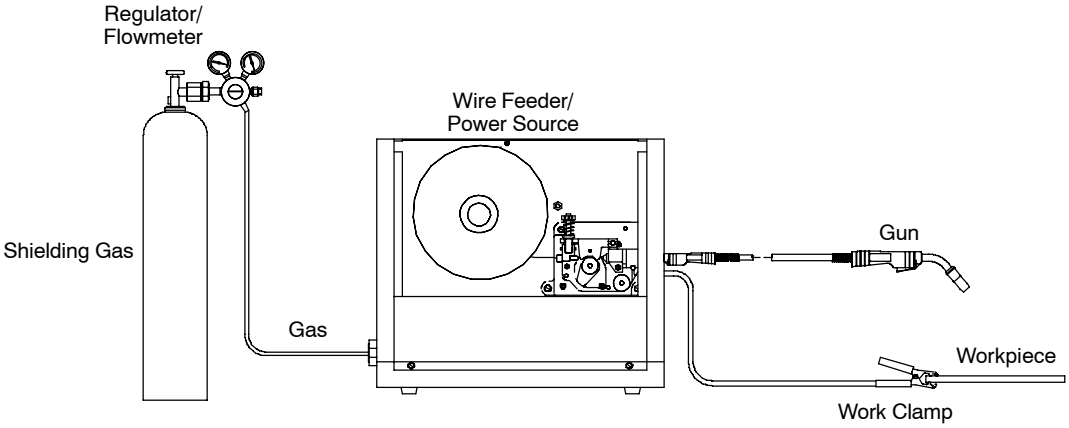
SECTION 10 – MIG WELDING (GMAW) GUIDELINES



mig1 2009–12

10-1. Typical MIG Process Connections

Weld current can damage electronic parts in vehicles. Disconnect both battery cables before welding on a vehicle. Place work clamp as close to the weld as possible.

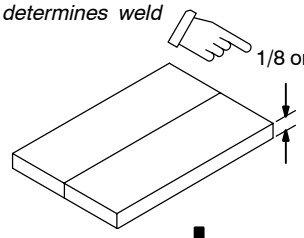


Ref. 801 909-A

10-2. Typical MIG Process Control Settings

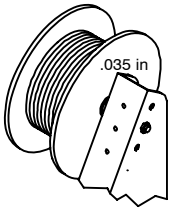
☞ *These settings are guidelines only. Material and wire type, joint design, fitup, position, shielding gas, etc. affect settings. Test welds to be sure they comply to specifications.*

Material thickness determines weld parameters.



Convert Material Thickness to Amperage (A)

(0.001 in. = 1 ampere)
0.125 in. = 125 A



Wire Size	Amperage Range
0.023 in.	30 – 90 A
0.030 in.	40 – 145 A
0.035 in.	50 – 180 A

Select Wire Size

Wire Size	Recommendation	Wire Speed (Approx.)
0.023 in.	3.5 in. per ampere	3.5 x 125 A = 437 ipm
0.030 in.	2 in. per ampere	2 x 125 A = 250 ipm
0.035 in.	1.6 in. per ampere	1.6 x 125 A = 200 ipm

Select Wire Speed (Amperage)

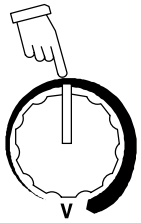
125 A based on 1/8 in. material thickness

ipm = inches per minute

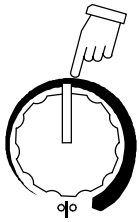
Low voltage: wire stubs into work
High voltage: arc is unstable (spatter)
Set voltage midway between high/low voltage

Select Voltage

Voltage controls height and width of weld bead.

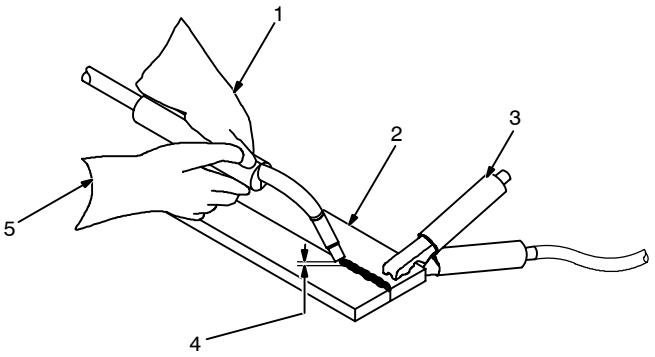


Wire speed (amperage) controls weld penetration (wire speed = burn-off rate)

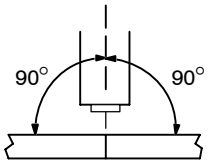


10-3. Holding And Positioning Welding Gun

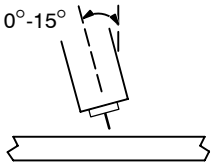
☞ *Welding wire is energized when gun trigger is pressed. Before lowering helmet and pressing trigger, be sure wire is no more than 1/2 in. (13 mm) past end of nozzle, and tip of wire is positioned correctly on seam.*



1 Hold Gun and Control Gun Trigger
2 Workpiece
3 Work Clamp
4 Electrode Extension (Stickout) 1/4 to 1/2 in. (6 To 13 mm)
5 Cradle Gun and Rest Hand on Workpiece

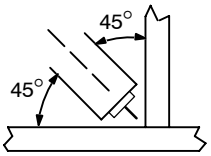


End View of Work Angle

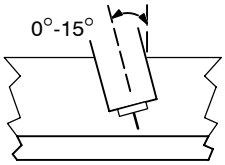


Side View of Gun Angle

GROOVE WELDS



End View of Work Angle



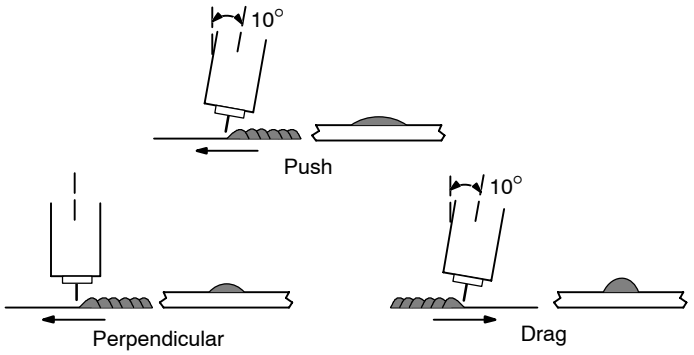
Side View of Gun Angle

FILLET WELDS

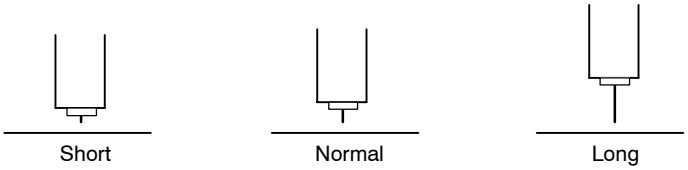
S-0421-A

10-4. Conditions That Affect Weld Bead Shape

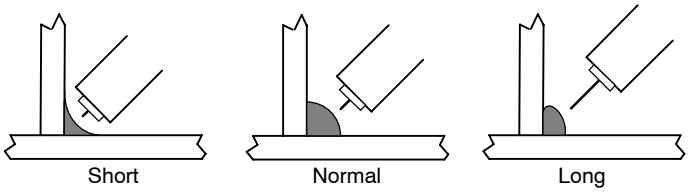
☞ *Weld bead shape depends on gun angle, direction of travel, electrode extension (stickout), travel speed, thickness of base metal, wire feed speed (weld current), and voltage.*



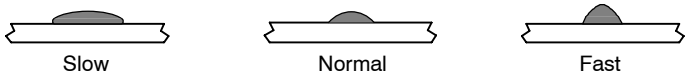
GUN ANGLES AND WELD BEAD PROFILES



ELECTRODE EXTENSIONS (STICKOUT)



FILLET WELD ELECTODE EXTENSIONS (STICKOUT)

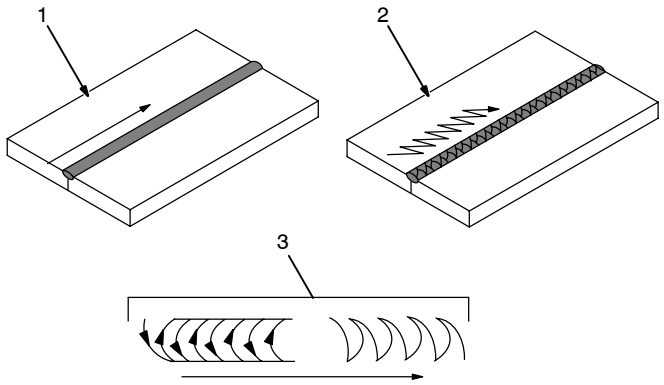


GUN TRAVEL SPEED

S-0634

10-5. Gun Movement During Welding

☞ *Normally, a single stringer bead is satisfactory for most narrow groove weld joints; however, for wide groove weld joints or bridging across gaps, a weave bead or multiple stringer beads works better.*



1 Stringer Bead – Steady Movement Along Seam

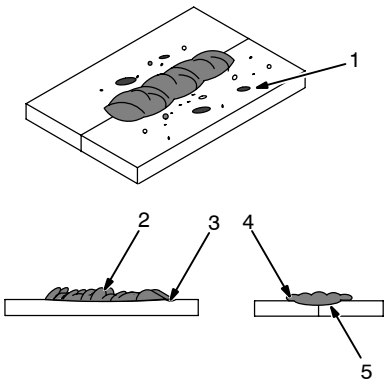
2 Weave Bead – Side To Side Movement Along Seam

3 Weave Patterns

Use weave patterns to cover a wide area in one pass of the electrode.

S-0054-A

10-6. Poor Weld Bead Characteristics



1 Large Spatter Deposits

2 Rough, Uneven Bead

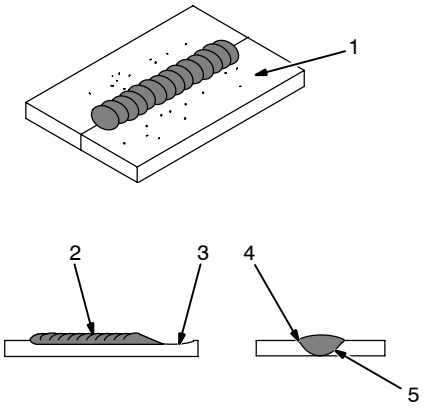
3 Slight Crater During Welding

4 Bad Overlap

5 Poor Penetration

S-0053-A

10-7. Good Weld Bead Characteristics



1 Fine Spatter

2 Uniform Bead

3 Moderate Crater During Welding

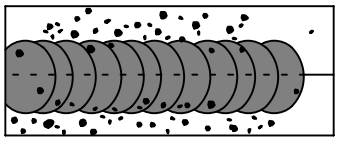
Weld a new bead or layer for each 1/8 in. (3.2 mm) thickness in metals being welded.

4 No Overlap

5 Good Penetration into Base Metal

S-0052-B

10-8. Troubleshooting – Excessive Spatter

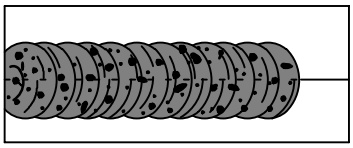


Excessive Spatter – scattering of molten metal particles that cool to solid form near weld bead.

S-0636

Possible Causes	Corrective Actions
Wire feed speed too high.	Select lower wire feed speed.
Voltage too high.	Select lower voltage range.
Electrode extension (stickout) too long.	Use shorter electrode extension (stickout).
Workpiece dirty.	Remove all grease, oil, moisture, rust, paint, undercoating, and dirt from work surface before welding.
Insufficient shielding gas at welding arc.	Increase flow of shielding gas at regulator/flowmeter and/or prevent drafts near welding arc.
Dirty welding wire.	Use clean, dry welding wire.
	Eliminate pickup of oil or lubricant on welding wire from feeder or liner.
Incorrect polarity.	Check polarity required by welding wire, and change to correct polarity at welding power source.

10-9. Troubleshooting – Porosity

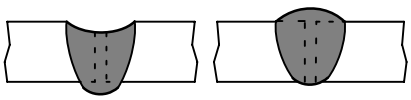


Porosity – small cavities or holes resulting from gas pockets in weld metal.

S-0635

Possible Causes	Corrective Actions
Insufficient shielding gas at welding arc.	Increase flow of shielding gas at regulator/flowmeter and/or prevent drafts near welding arc.
	Remove spatter from gun nozzle.
	Check gas hoses for leaks.
	Place nozzle 1/4 to 1/2 in. (6-13 mm) from workpiece.
	Hold gun near bead at end of weld until molten metal solidifies.
Wrong gas.	Use welding grade shielding gas; change to different gas.
Dirty welding wire.	Use clean, dry welding wire.
	Eliminate pick up of oil or lubricant on welding wire from feeder or liner.
Workpiece dirty.	Remove all grease, oil, moisture, rust, paint, coatings, and dirt from work surface before welding.
	Use a more highly deoxidizing welding wire (contact supplier).
Welding wire extends too far out of nozzle.	Be sure welding wire extends not more than 1/2 in. (13 mm) beyond nozzle.

10-10. Troubleshooting – Excessive Penetration



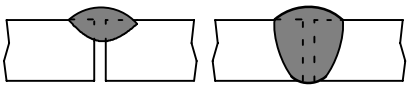
Excessive Penetration Good Penetration

Excessive Penetration – weld metal melting through base metal and hanging underneath weld.

S-0639

Possible Causes	Corrective Actions
Excessive heat input.	Select lower voltage range and reduce wire feed speed.
	Increase travel speed.

10-11. Troubleshooting – Lack Of Penetration

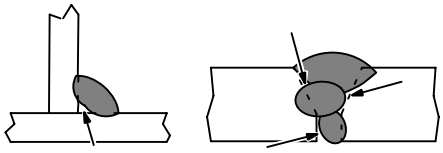


Lack Of Penetration – shallow fusion between weld metal and base metal.

S-0638

Possible Causes	Corrective Actions
Improper joint preparation.	Material too thick. Joint preparation and design must provide access to bottom of groove while maintaining proper welding wire extension and arc characteristics.
Improper weld technique.	Maintain normal gun angle of 0 to 15 degrees to achieve maximum penetration.
	Keep arc on leading edge of weld puddle.
	Be sure welding wire extends not more than 1/2 in. (13 mm) beyond nozzle.
Insufficient heat input.	Select higher wire feed speed and/or select higher voltage range.
	Reduce travel speed.
Incorrect polarity.	Check polarity required by welding wire, and change to correct polarity at welding power source.

10-12. Troubleshooting – Incomplete Fusion

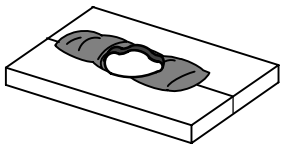


Incomplete Fusion – failure of weld metal to fuse completely with base metal or a preceeding weld bead.

S-0637

Possible Causes	Corrective Actions
Workpiece dirty.	Remove all grease, oil, moisture, rust, paint, undercoating, and dirt from work surface before welding.
Insufficient heat input.	Select higher voltage range and/or adjust wire feed speed.
Improper welding technique.	Place stringer bead in proper location(s) at joint during welding.
	Adjust work angle or widen groove to access bottom during welding.
	Momentarily hold arc on groove side walls when using weaving technique.
	Keep arc on leading edge of weld puddle.
	Use correct gun angle of 0 to 15 degrees.

10-13. Troubleshooting – Burn-Through

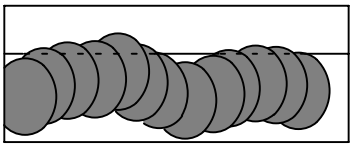


Burn-Through – weld metal melting completely through base metal resulting in holes where no metal remains.

S-0640

Possible Causes	Corrective Actions
Excessive heat input.	Select lower voltage range and reduce wire feed speed.
	Increase and/or maintain steady travel speed.

10-14. Troubleshooting – Waviness Of Bead

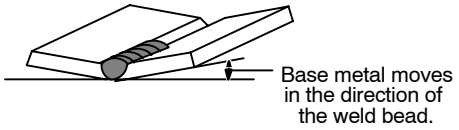


Waviness Of Bead – weld metal that is not parallel and does not cover joint formed by base metal.

S-0641

Possible Causes	Corrective Actions
Welding wire extends too far out of nozzle.	Be sure welding wire extends not more than 1/2 in. (13 mm) beyond nozzle.
Unsteady hand.	Support hand on solid surface or use two hands.

10-15. Troubleshooting – Distortion



Distortion – contraction of weld metal during welding that forces base metal to move.

S-0642

Possible Causes	Corrective Actions
Excessive heat input.	Use restraint (clamp) to hold base metal in position.
	Make tack welds along joint before starting welding operation.
	Select lower voltage range and/or reduce wire feed speed.
	Increase travel speed.
	Weld in small segments and allow cooling between welds.

10-16. Common MIG Shielding Gases

This is a general chart for common gases and where they are used. Many different combinations (mixtures) of shielding gases have been developed over the years. The most commonly used shielding gases are listed in the following table.

Gas	Application			
	Spray Arc Steel	**Short Circuiting Steel**	**Short Circuiting Stainless Steel**	**Aluminum**
Argon				X
Argon + 25% CO_2		X		
80% or greater Argon + balance CO_2 or Oxygen	X	X[1]		
100% CO_2		X		
Tri-Mix[2]			X	

1 Limited short circuiting use

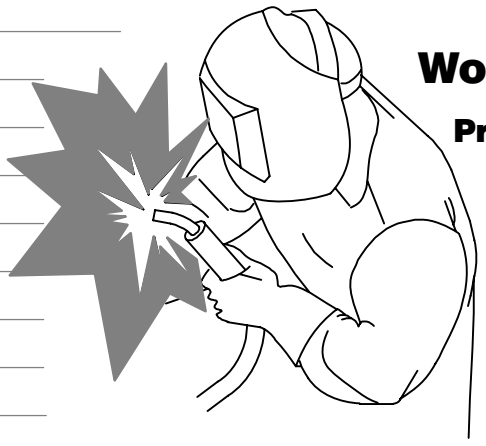
2 90% HE + 7-1/2% AR + 2-1/2% CO_2

10-17. Troubleshooting Guide For Semiautomatic Welding Equipment

Problem	Probable Cause	Remedy
Wire feed motor operates, but wire does not feed.	Too little pressure on wire feed rolls.	Increase pressure setting on wire feed rolls.
	Incorrect wire feed rolls.	Check size stamped on wire feed rolls, replace to match wire size and type if necessary.
	Wire spool brake pressure too high.	Decrease brake pressure on wire spool.
	Restriction in the gun and/or assembly.	Check and replace cable, gun, and contact tip if damaged. Check size of contact tip and cable liner, replace if necessary.
Wire curling up in front of the wire feed rolls (bird nesting).	Too much pressure on wire feed rolls.	Decrease pressure setting on wire feed rolls.
	Incorrect cable liner or gun contact tip size.	Check size of contact tip and check cable liner length and diameter, replace if necessary.
	Gun end not inserted into drive housing properly.	Loosen gun securing bolt in drive housing and push gun end into housing just enough so it does not touch wire feed rolls.
	Dirty or damaged (kinked) liner.	Replace liner.
Wire feeds, but no gas flows.	Gas cylinder empty.	Replace empty gas cylinder.
	Gas nozzle plugged.	Clean or replace gas nozzle.
	Gas cylinder valve not open or flowmeter not adjusted.	Open gas valve at cylinder and adjust flow rate.
	Restriction in gas line.	Check gas hose between flowmeter and wire feeder, and gas hose in gun and cable assembly.
	Loose or broken wires to gas solenoid.	Have Factory Authorized Service Agent repair wiring.
	Gas solenoid valve not operating.	Have Factory Authorized Service Agent replace gas solenoid valve.
	Incorrect primary voltage connected to welding power source.	Check primary voltage and relink welding power source for correct voltage.

Problem	Probable Cause	Remedy
Welding arc not stable.	Wire slipping in drive rolls.	Adjust pressure setting on wire feed rolls. Replace worn drive rolls if necessary.
	Wrong size gun liner or contact tip.	Match liner and contact tip to wire size and type.
	Incorrect voltage setting for selected wire feed speed on welding power source.	Readjust welding parameters.
	Loose connections at the gun weld cable or work cable.	Check and tighten all connections.
	Gun in poor shape or loose connection inside gun.	Repair or replace gun as necessary.

Notes



Work like a Pro!

Pros weld and cut safely. Read the safety rules at the beginning of this manual.

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

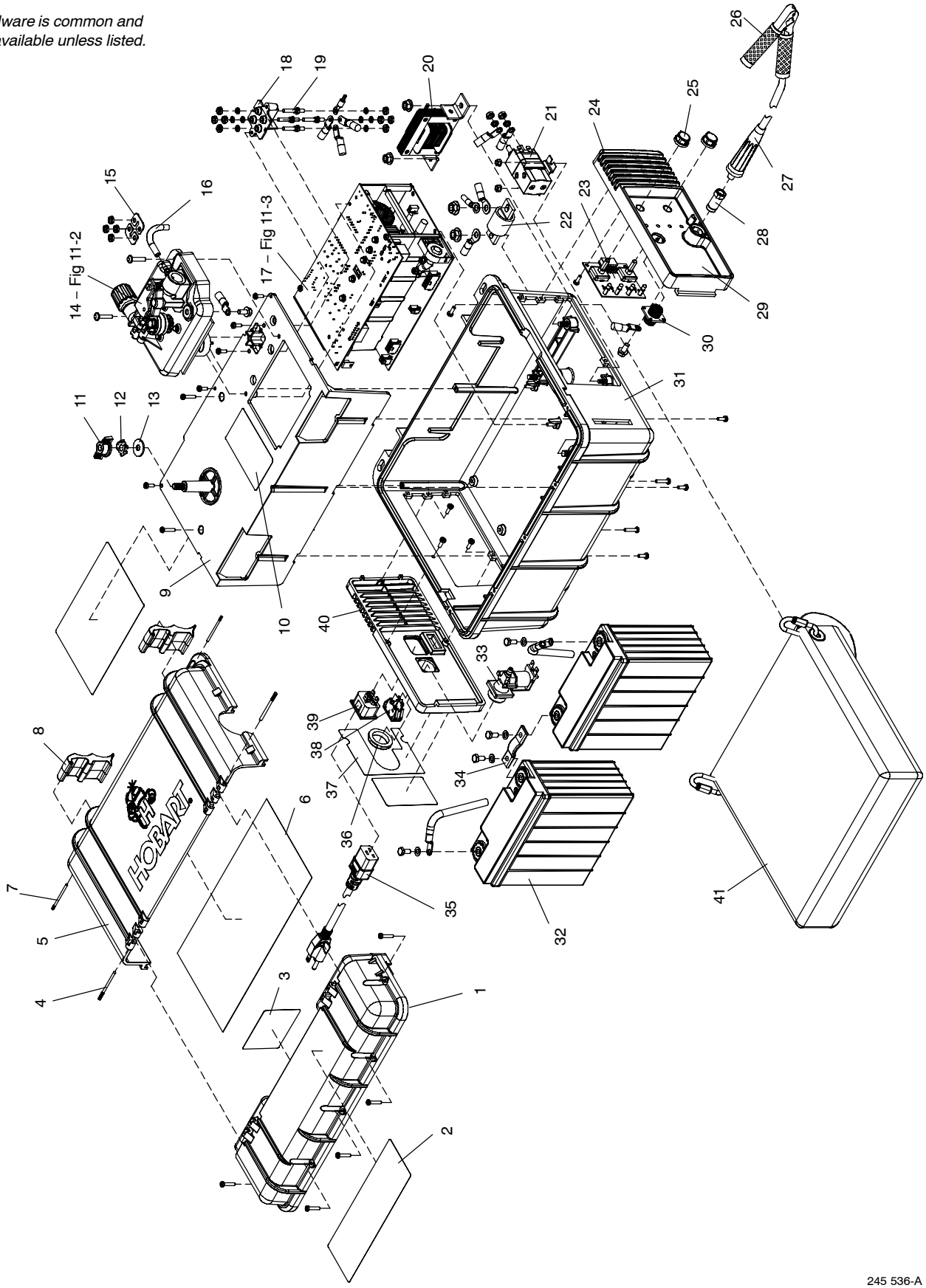


Figure 11-1. Main Assembly

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

Figure 11-1. Main Assembly

1		+232600	Cover, Battery Compartment	1
2		238031	Label, Warning General Precautionary	1
3		244562	Label, Warning Battery Explosion Can Blind	1
4		232602	Pin, Hinge	2
5		+232601	Cover, Wire Drive Compartment	1
6		232680	Label, Welding Guide	1
7		232966	Pin, Latch	2
8		232965	Latch, Case	2
9		+232656	Baffle, Center	1
10		216830	Label, Warning Electric Shock And Pinch (En/Fr)	1
11		236788	Nut, 312−18 Wing Locking Nylon	1
12		238807	Washer, Finger .344idx.915odx.010t Stl Pld	1
13		203072	Washer, Flat .331idx0.945odx.079t Stl Pld	1
14		Fig 11-2	Drive Assy, Wire	1
15		231490	Link, Jumper Terminal Board	2
16		245356	Tubing, PVC .187 Id X .312 OD X 20.500 Clear	1
17		Fig 11-3	Windtunnel, Assembly	1
18	TE1	237060	Terminal Bd, Chgov	1
19		038887	Stud, Primary Board Brs 10−32 X 1.375	4
20	L1	232615	Inductor, Output	1
21	CR1	233946	Contactor, 24VDC 1pst On−off DC Rated 80 A	1
22	F3	232629	Fuse, Crtg 200. Amp 150 V Semiconductor	1
23	PC1	232214	Circuit Card Assy, Operator Interface	1
24		232603	Panel, Front	1
25		174992	Knob, Pointer .840 Dia X .250 Id W/Spring Clip−.21	2
26		208820	Clamp, Work	1
27		232663	Cable, Work 10 Ft 6awg W/Male (Dinse Type) Conn	1
28		232628	Receptacle, Twist Lock Brass Power Female (Pos)	1
29			Label, Nameplate (Order By Model And Serial No.)	1
30		232675	Harness, Wrg Unit	1
31		232595	Base Assy, (Includes)	1
		232596	Base, Control Feeder Molded	1
		232597	Handle, Molded Plastic	1
		232598	Pin, Handle	2
32	BAT1, BAT2	232612	Battery, Stor 12V 16 Amp Hr Tppl Sealed Lead Acid	2
33	GS1	220011	Valve, 14VDC 2way Custom Port 1/8 Orf W/Frict	1
34		232685	Bus Bar, Flexible Braided	1
35	PLG20	232657	Cord Set, 125v 5−15p 14ga 3/C 4ft Sjt Jkt Iec−c19	1
36		137761	Nut, 750 Npt 1.31hex .27h Nyl Blk	1
37			Label, Rear Panel (Order By Model And Serial No.)	1
38	S1	196575	Switch, Rocker Spst 10a 250 VAC On−none−off .250 QC	1
39	RC20	232654	Conn, Inlet AC Power Iec 320−c20 1.5mm Thk Panel	1
40		232604	Panel, Rear	1
41		232658	Pouch, Cable & Accessories	1

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

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

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

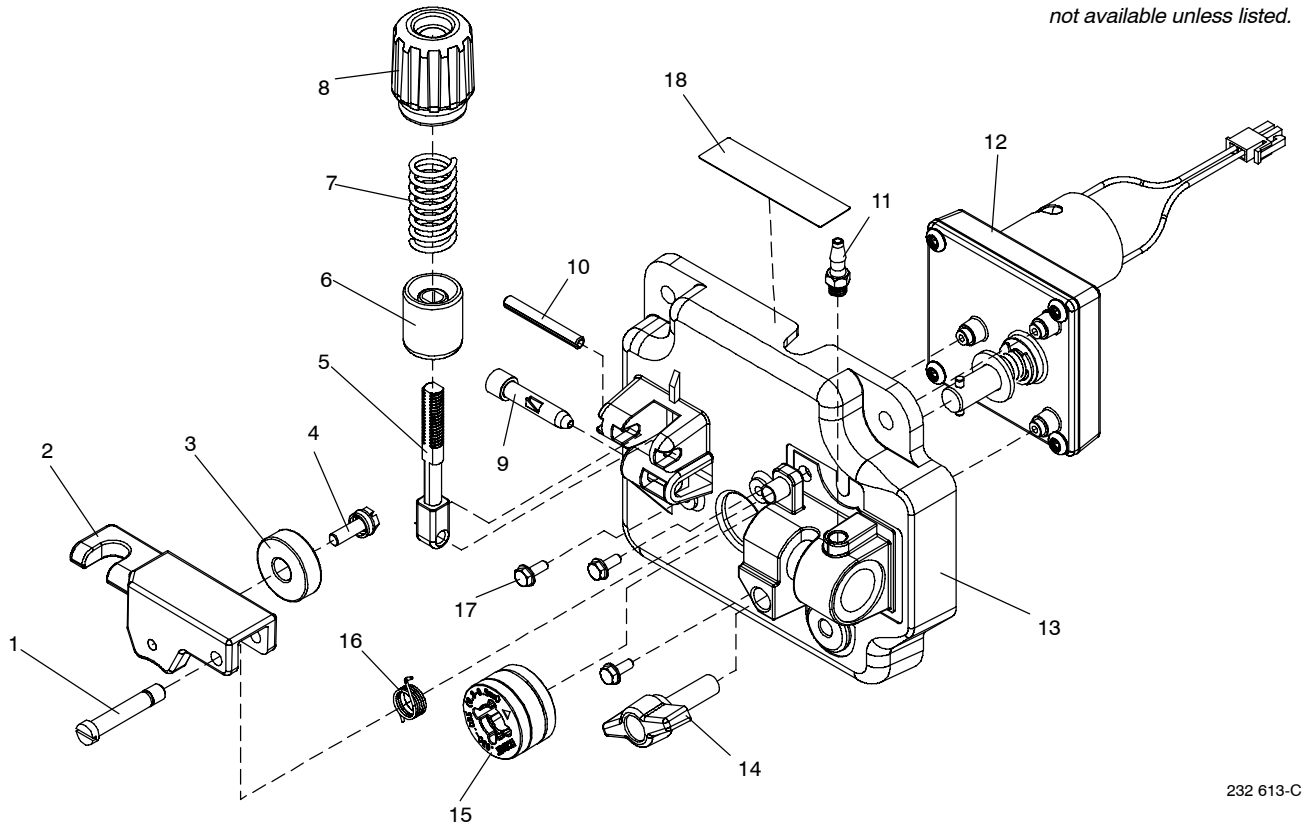


Figure 11-2. Wire Drive Assembly

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
			Figure 11-2. Wire Drive Assembly (Fig 11-1 Item 14)	
1		203567	Screw, Shld Stl Pan .250−28 X .310 X 1.120 Shld	1
2		203301	Lever, Pressure Roll	1
3		189915	Bearing, Ball Rdl Sgl Row 9mm X 26mm X 8mm Wide Sh	1
4		176869	Screw, 010−32x .62 Hex Hd−slt Stl Pld Sq Cone Sems	1
5		225718	Fastener, Pinned	1
6		198080	Cup, Spring 185	1
7		234200	Spring, Cprsn .696 Od X .086 Wire X 1.500	1
8		196895	Knob, Tension	1
9		058549	Guide, Wire Inlet 1/16	1
10		203424	Pin, Spring Cs .187 X 1.500	1
11		230012	Ftg, Hose Nyl Barbed Adapter M 5/32 Tbg X 1/4−28	1
12	MOT	238818	Motor, Gear 16vdc W/Leads	1
13		202500	Housing, Drive Motor	1
14		222035	Knob, T 1.562 Bar W/.312−18 Stud 1.000 Lg Plstc	1
15		246565	Roll, Drive V Groove, .030−.035 Wire	1
16		203418	Spring, Torsion	1
17		197172	Screw, 006−32x .37 Hexwhd−pln Silver Tri−lobe	3
18		246710	Label, Feedhead Hole Cover	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.

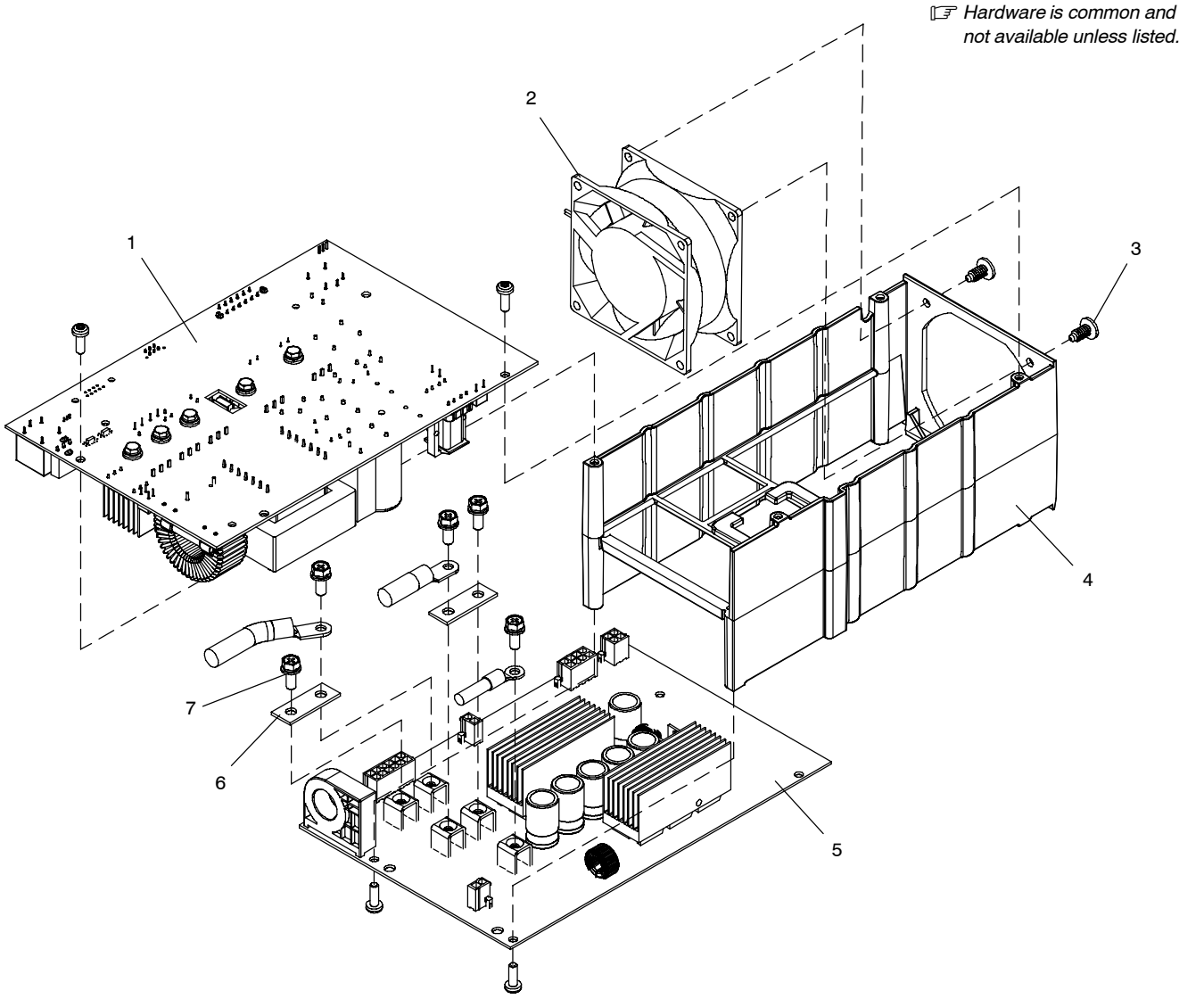
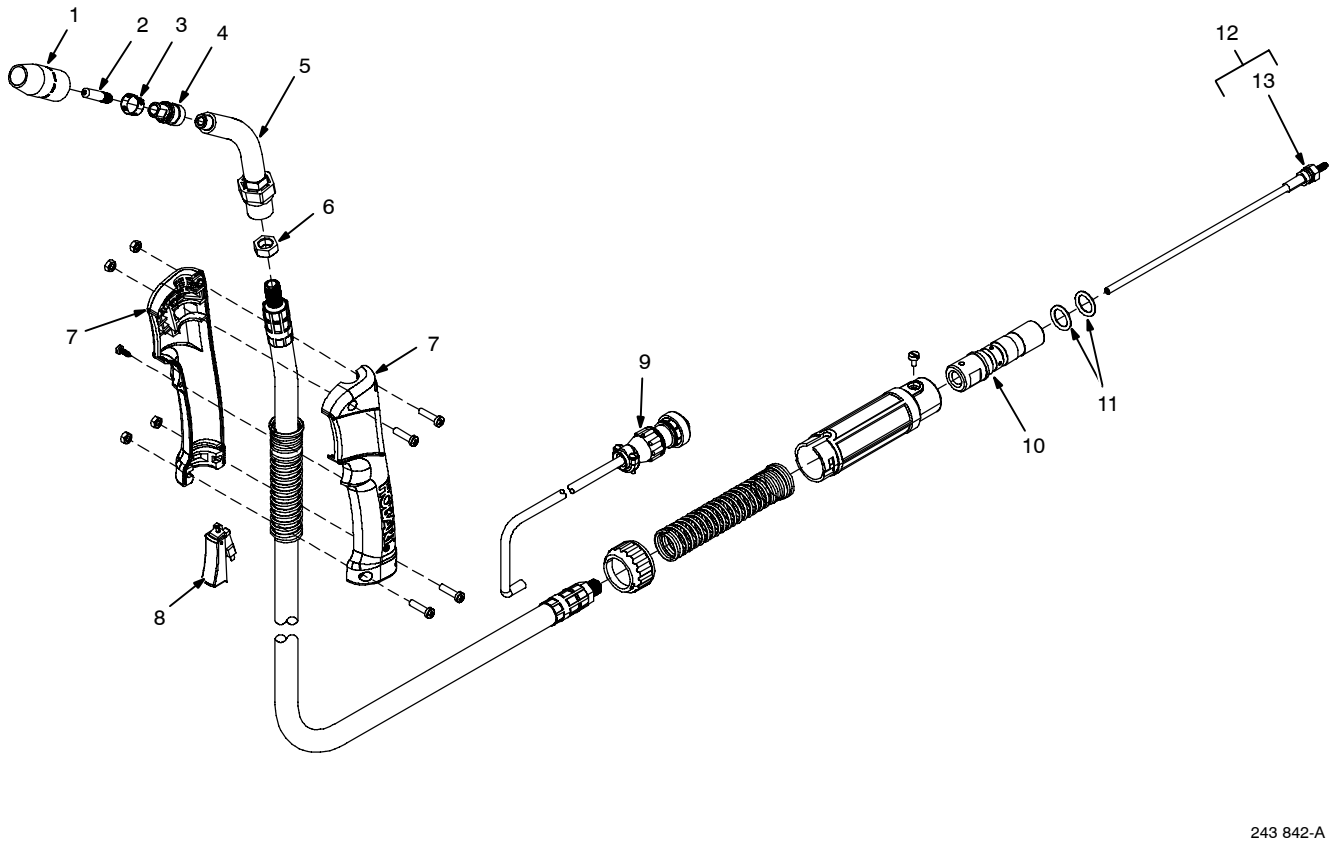


Figure 11-3. Wind Tunnel Assembly

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
			Figure 11-3. Wind Tunnel Assembly (Fig 11-1 Item 17)	
1	PC2	240939	Circuit Card Assy, Battery Charger w/Program	1
2	FM	232673	Fan, Muffin 12VDC 5000 RPM 70 CFM 2.815 Mtg Holes	1
3		244824	Clip, Snap In .187 Hole .030–.312 Thk	2
4		232672	Windtunnel,	1
5	PC3	240943	Circuit Card Assy, Welder w/Program	1
6		235750	Link, Terminal Connecting	2
7		229327	Screw, M 5– .8X 12 Hex Hd–Phl 8.8 Pld Sems Clr	5

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.



243 842-A

Figure 11-4. H100L4-10 Gun

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
		243 864	**Figure 11-4. H100L4-10 Gun**	
1		169 715	NOZZLE, slip type .500 orf flush	1
1		♦226 190	NOZZLE, flux cored slip type	1
2		♦087 299	TIP, contact scr .023 wire x 1.125	1
2		♦000 067	TIP, contact scr .030 wire x 1.125	1
2		♦000 068	TIP, contact scr .035 wire x 1.125	1
2		♦000 069	TIP, contact scr .045 wire x 1.125	1
3		170 470	RING, retaining	1
4		169 716	ADAPTER, contact tip	1
5		246 373	TUBE, head	1
6		243 865	NUT, jam	1
7		242 832	HANDLE	1
8		225 410	SWITCH, trigger	1
9		079 878	HOUSING PLUG & PINS	1
10		242 833	CONNECTOR, feeder	1
11		079 974	O-RING, .500 ID x .103CS rbr	2
12		♦194 010	LINER, monocoil .023/.025 wire x 15ft (consisting of)	1
12		♦194 011	LINER, monocoil .030/.035 wire x 15ft (consisting of)	1
12		♦194 012	LINER, monocoil .035/.045 wire x 15ft (consisting of)	1
13		079 975	.... O-RING, .187 ID x .103CS rbr	1

♦OPTIONAL

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

SECTION 12 – ACCESSORIES/CONSUMABLES

12-1. Accessories

PART NO.	DESCRIPTION	REMARKS
770 187	Running Gear/Cylinder Rack	For One Small Gas Cylinder, 100 lb (45 kg) max.
194 776	Small Running Gear/Cylinder Rack	For One Small Gas Cylinder, 75 lb (34 kg) max.

12-2. Consumables

Item	Hobart Package Part No.*	Miller Package Part No. **
Contact Tips		
.023/.025 in (0.6 mm)	770 174 (5 per package)	087 299 (10 per package)
.030 in (0.8 mm)	770 177 (5 per package)	000 067 (10 per package)
.035 in (0.9 mm)	770 180 (5 per package)	000 068 (10 per package)
MIG Nozzle (Standard)	770 404	169 715
Gasless Flux Cored Nozzle	770 487	226 190
Tip Adapter	770 402	169 716
Wire Inlet Guide	—	058 549
Replacement Liners		
.023/.025 in (0.6 mm)	196 139	194 010
.030/.035 in (0.8/0.9 mm)	196 139	194 011
.035/.045 in (0.9/1.2 mm)	196 140	194 012

*Available at farm and tool supply retailers.
** Available at Hobart/Miller welding distributors.

12-3. Replacement Drive Rolls

For All Feed Head Assemblies	
PART NO.	**WIRE DIAMETER INCHES (mm)**
237 338	.024 (.6) and .030/.035 (.8 and .9)
246 565	.030/.035 (.8 and .9) V and VK Groove

12-4. Regulator/Flowmeter

PART NO.	REMARKS
221 037** 770 198*	For Argon and Argon mixed shielding gas. Use with replacement hose 222 874.

*Available at farm and tool supply retailers.
**Available at Hobart/Miller welding distributors.

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

Warranty Questions?

Call
1-800-332-3281
7 AM – 5 PM EST

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 or call 1-800-332-3281. The expertise of the distributor and Hobart is there to help you, every step of the way.

Assistance
Visit the Hobart website: www.HobartWelders.com

HOBART WELDERS

HOBART 5/3/1 WARRANTY

Effective January 1, 2010

5/3/1 WARRANTY applies to all Hobart welding equipment, plasma cutters and spot welders with a serial number preface of MA or newer.

This limited warranty supersedes all previous Hobart warranties and is exclusive with no other guarantees or warranties expressed or implied.
Hobart products are serviced by Hobart or Miller Authorized Service Agencies.

LIMITED WARRANTY – Subject to the terms and conditions below, Hobart/Miller Electric Mfg. Co., Appleton, Wisconsin, warrants to its original retail purchaser that new Hobart 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 Hobart. 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, Hobart/Miller will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. Hobart/Miller must be notified in writing within thirty (30) days of such defect or failure, at which time Hobart/Miller will provide instructions on the warranty claim procedures to be followed.

Hobart/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 retail purchaser, and not to exceed one year after the equipment is shipped to a North American distributor or eighteen months after the equipment is shipped to an International distributor.

1. 5 Years — Parts and Labor
   * Original Main Power Rectifiers only to include SCRs, diodes, and discrete rectifier modules
   * Reactors
   * Stabilizers
   * Transformers
2. 3 Years — Parts and Labor
   * Drive Systems
   * Idle Module
   * PC Boards
   * Rotors, Stators and Brushes
   * Solenoid Valves
   * Spot Welder Transformer
   * Switches and Controls
3. 1 Year — Parts and Labor Unless Specified (90 days for industrial use)
   * Accessories
   * Batteries (Trek 180 Only)
   * Contactors
   * 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)
   * HF Units
   * MIG Guns/TIG Torches
   * Motor-Driven Guns
   * Plasma Cutting Torches
   * Regulators
   * Relays
   * Remote Controls
   * Replacement Parts (No labor) – 90 days
   * Running Gear/Trailers
   * Water Coolant Systems
4. Engines, batteries (except Trek 180) and tires are warranted separately by the manufacturer.

Hobart's 5/3/1 Limited Warranty shall not apply to:

1. **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.)**
2. Items furnished by Hobart/Miller, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer's warranty, if any.
3. Equipment that has been modified by any party other than Hobart/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.

HOBART 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 Hobart's/Miller's option: (1) repair; or (2) replacement; or, where authorized in writing by Hobart/Miller in appropriate cases, (3) the reasonable cost of repair or replacement at an authorized Hobart/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. Hobart's/Miller's option of repair or replacement will be F.O.B., Factory at Appleton, Wisconsin, or F.O.B. at a Hobart/Miller authorized service facility as determined by Hobart/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 HOBART/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 HOBART/MILLER IS EXCLUDED AND DISCLAIMED BY Hobart/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

Resources Available

Always provide Model Name and Serial/Style Number.

To locate a Distributor, retail or service location:

Call 1-877-Hobart1 or visit our website at www.HobartWelders.com

For technical assistance:

Call 1-800-332-3281

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

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.

Protect Your Investment!

Register your product at:
HobartWelders.com

Hobart Welding Products
An Illinois Tool Works Company
600 West Main Street
Troy, OH 45373 USA

For Technical Assistance:
Call1-800-332-3281
For Literature Or Nearest Dealer:
Call 1-877-Hobart1

HOBART WELDERS