



OM-291596A

2023-03

Processes



MIG (GMAW) Welding



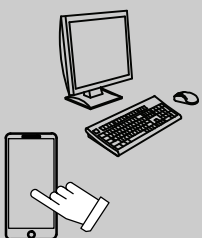
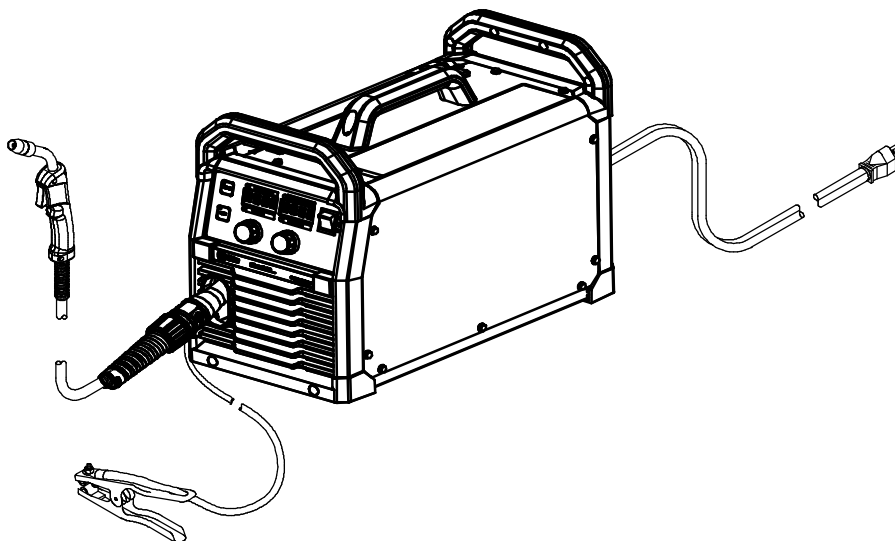
Flux Cored (FCAW) Welding

Description



Arc Welding Power Source And Wire Feeder

Millermatic® 142



For product information,
Owner's Manual translations,
and more, visit

www.MillerWelds.com

OWNER'S MANUAL

From Miller to You

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

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

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

This Owner's Manual is designed to help you get the most out of your Miller products. Please take time to read the Safety Precautions. They will help you protect yourself against potential hazards on the worksite. We've made installation and operation quick and easy. With Miller, you can count on years of reliable service with proper maintenance. And if for some reason the unit needs repair, there's a Troubleshooting section that will help you figure out what the problem is, and our extensive service network is there to help fix the problem. Warranty and maintenance information for your particular model are also provided.

Miller Electric manufactures a full line of welders and welding-related equipment. For information on other quality Miller products, contact your local Miller distributor to receive the latest full line catalog or individual specification sheets. **To locate your nearest distributor or service agency call**

1-800-4-A-Miller, or visit us at www.MillerWelds.com on the web.



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



**ISO 9001
Quality**

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



TABLE OF CONTENTS

SECTION 1 – SAFETY PRECAUTIONS – READ BEFORE USING	1
1-1 Symbol Usage	1
1-2 Arc Welding Hazards	1
1-3 Additional Hazards For Installation, Operation, And Maintenance	3
1-4 California Proposition 65 Warnings	4
1-5 Principal Safety Standards	4
1-6 EMF Information	4
SECTION 2 – CONSIGNES DE SÉCURITÉ - LIRE AVANT UTILISATION	5
2-1 Symboles utilisés	5
2-2 Dangers relatifs au soudage à l'arc	5
2-3 Symboles de dangers supplémentaires en relation avec l'installation, le fonctionnement et la maintenance	7
2-4 Proposition californienne 65 Avertissements	9
2-5 Principales normes de sécurité	9
2-6 Informations relatives aux CEM	9
SECTION 3 – DEFINITIONS	10
3-1 Miscellaneous Symbols And Definitions	10
SECTION 4 – SPECIFICATIONS	11
4-1 Serial Number And Rating Label Location	11
4-2 Software Licensing Agreement	11
4-3 Information About Default Weld Parameters And Settings	11
4-4 Unit Specifications	11
4-5 Environmental Specifications	11
4-6 Duty Cycle And Overheating	12
4-7 Static Characteristics	12
SECTION 5 – INSTALLATION	13
5-1 Selecting A Location	13
5-2 Connecting 120 Volt Input Power	14
5-3 Electrical Service Guide	14
5-4 Installing Work Clamp	15
5-5 Work Cable Routing Inside Unit	16
5-6 Process/Polarity Table	16
5-7 Changing Polarity	17
5-8 Installing Welding Gun Or Spool Gun	18
5-9 Changing Drive Roll Or Wire Inlet Guide	19
5-10 Installing Wire Spool And Adjusting Hub Tension	20
5-11 Threading Welding Wire	21
5-12 Installing Gas Supply	22
SECTION 6 – OPERATION	23
6-1 Manual Setup	23
6-2 Special Features	23
6-3 Using Auto-Set	24
6-4 Using Manual Mode	25
6-5 Menu Controls	26
6-6 Run In	26
6-7 Preflow Time	27
6-8 Postflow Time	27
6-9 Drive Calibration, Low	28
6-10 Drive Calibration, High	29
6-11 Factory Reset	30
6-12 Jog Mode	30
6-13 Welding Parameter Chart	31
SECTION 7 – MAINTENANCE AND TROUBLESHOOTING	32
7-1 Routine Maintenance	32
7-2 Troubleshooting Table	32
7-3 Error Messages	33
SECTION 8 – ELECTRICAL DIAGRAMS	35
SECTION 9 – GMAW WELDING (MIG) GUIDELINES	36
9-17 Troubleshooting Guide For Semiautomatic Welding Equipment	43

SECTION 1 – SAFETY PRECAUTIONS – READ BEFORE USING

 Protect yourself and others from injury—read, follow, and save these important safety precautions and operating instructions.

1-1. Symbol Usage

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

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

NOTICE – Indicates statements not related to personal injury.

 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 these 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 Principal Safety Standards. Read and follow all Safety Standards.

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

 During operation, keep everybody, especially children, away.



ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on.

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

- Do not touch live electrical parts.
- Wear dry, hole-free insulating gloves and body protection.
- Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.
- Do not use AC weld output in damp, wet, or confined spaces, or if there is a danger of 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

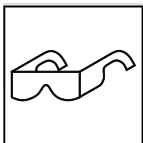
(stick) welder, or 3) an AC welder with reduced open-circuit voltage. In most situations, use of a DC, constant voltage wire welder is recommended. And, do not work alone!

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



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.



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.



FUMES AND GASES can be hazardous.

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

- Keep your head out of the fumes. Do not breathe the fumes.
- Ventilate the work area and/or use local forced ventilation at the arc to remove welding fumes and gases. The recommended way to determine adequate ventilation is to sample for the composition and quantity of fumes and gases to which personnel are exposed.
- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watchperson 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.



BUILDUP OF GAS can injure or kill.

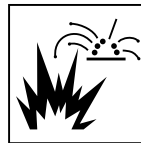
- Shut off compressed gas supply when not in use.
- Always ventilate confined spaces or use approved air-supplied respirator.



ARC RAYS can burn eyes and skin.

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

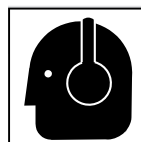
- Wear an approved welding helmet fitted with a proper shade of filter lenses to protect your face and eyes from arc rays and sparks when welding or watching (see ANSI Z49.1 and Z87.1 listed in Safety Standards).
- Wear approved safety glasses with side shields under your helmet.
- Use protective screens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



WELDING can cause fire or explosion.

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

- Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
- Do not weld where flying sparks can strike flammable material.
- Protect yourself and others from flying sparks and hot metal.
- Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
- Watch for fire, and keep a fire extinguisher nearby.
- Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
- Do not cut or weld on tire rims or wheels. Tires can explode if heated. Repaired rims and wheels can fail. See OSHA 29 CFR 1910.177 listed in Safety Standards.
- Do not weld on containers that have held combustibles, or on closed containers such as tanks, drums, or pipes unless they are properly prepared according to AWS F4.1 (see Safety Standards).
- Do not weld where the atmosphere can contain flammable dust, gas, or liquid vapors (such as gasoline).
- Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock, sparks, and fire hazards.
- Do not use welder to thaw frozen pipes.
- Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
- Wear body protection made from leather or flame-resistant clothing (FRC). Body protection includes oil-free clothing such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.
- Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding.
- After completion of work, inspect area to ensure it is free of sparks, glowing embers, and flames.
- Use only correct fuses or circuit breakers. Do not oversize or bypass them.
- Follow requirements in OSHA 1910.252 (a) (2) (iv) and NFPA 51B for hot work and have a fire watcher and extinguisher nearby.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.



NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

- Wear approved ear protection if noise level is high.



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

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



CYLINDERS can explode if damaged.

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

- Protect compressed gas cylinders from excessive heat, mechanical shocks, physical damage, slag, open flames, sparks, and arcs.
- Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping.
- Keep cylinders away from any welding or other electrical circuits.
- Never drape a welding torch over a gas cylinder.
- Never allow a welding electrode to touch any cylinder.

- Never weld on a pressurized cylinder—explosion will result.
- Use only correct compressed gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
- Turn face away from valve outlet when opening cylinder valve. Do not stand in front of or behind the regulator when opening the valve.
- Keep protective cap in place over valve except when cylinder is in use or connected for use.
- Use the proper equipment, correct procedures, and sufficient number of persons to lift, move, and transport cylinders.
- Read and follow instructions on compressed gas cylinders, associated equipment, and Compressed Gas Association (CGA) publication P-1 listed in Safety Standards.

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



FIRE OR EXPLOSION hazard.

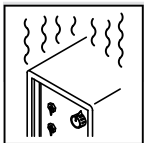
- Do not install or place unit on, over, or near combustible surfaces.
- Do not install unit near flammables.
- Do not overload building wiring—be sure power supply system is properly sized, rated, and protected to handle this unit.



FALLING EQUIPMENT can injure.

- Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories.
- Use correct procedures and equipment of adequate capacity to lift and support unit.

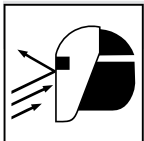
- If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.
- Keep equipment (cables and cords) away from moving vehicles when working from an aerial location.
- Follow the guidelines in the Applications Manual for the Revised NIOSH Lifting Equation (Publication No. 94-110) when manually lifting heavy parts or equipment.



OVERUSE can cause OVERHEATING.

- Allow cooling period; follow rated duty cycle.
- Reduce current or reduce duty cycle before starting to weld again.

- Do not block or filter airflow to unit.



FLYING SPARKS can injure.

- Wear a face shield to protect eyes and face.
- Shape tungsten electrode only on grinder with proper guards in a safe location wearing proper face, hand, and body protection.

- Sparks can cause fires—keep flammables away.



STATIC (ESD) can damage PC boards.

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



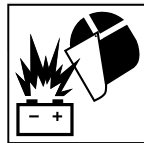
MOVING PARTS can injure.

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



WELDING 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.



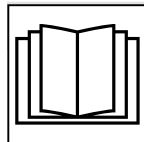
BATTERY EXPLOSION can injure.

- Do not use welder to charge batteries or jump start vehicles unless it has a battery charging feature designed for this purpose.



MOVING PARTS can injure.

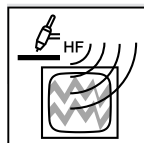
- Keep away from moving parts such as fans.
- Keep all doors, panels, covers, and guards closed and securely in place.
- Have only qualified persons remove doors, panels, covers, or guards for maintenance and troubleshooting as necessary.
- Reinstall doors, panels, covers, or guards when maintenance 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 installation, 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 microprocessors, computers, and computer-driven equipment such as robots.
- Be sure all equipment in the welding area is electromagnetically compatible.

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

1-4. California Proposition 65 Warnings



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

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

1-5. Principal Safety Standards

Safety in Welding, Cutting, and Allied Processes, American Welding Society standard ANSI Standard Z49.1. Website: <http://www.aws.org>.

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

Safe Practices for the Preparation of Containers and Piping for Welding and Cutting, American Welding Society Standard AWS F4.1. Website: <http://www.aws.org>.

National Electrical Code, NFPA Standard 70 from National Fire Protection Association. Website: www.nfpa.org.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1 from Compressed Gas Association. Website: www.cganet.com.

Safety in Welding, Cutting, and Allied Processes, CSA Standard W117.2 from Canadian Standards Association. Website: www.csagroup.org.

Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B from National Fire Protection Association. Website: www.nfpa.org.

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910.177 Subpart N, Part 1910 Subpart Q, and Part 1926, Subpart J. Website: www.osha.gov.

OSHA Important Note Regarding the ACGIH TLV, Policy Statement on the Uses of TLVs and BEIs. Website: www.osha.gov.

Applications Manual for the Revised NIOSH Lifting Equation from the National Institute for Occupational Safety and Health (NIOSH). Website: www.cdc.gov/NIOSH.

SOM 2022-01

1-6. EMF Information

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

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

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

About Implanted Medical Devices:

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

SECTION 2 – CONSIGNES DE SÉCURITÉ - LIRE AVANT UTILISATION

 Pour écarter les risques de blessure pour vous-même et pour autrui — lire, appliquer et ranger en lieu sûr ces consignes relatives aux précautions de sécurité et au mode opératoire.

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.

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

 Indique des instructions spécifiques.



Ce groupe de symboles veut dire Avertissement! Attention! DANGER DE CHOC ELECTRIQUE, PIECES EN MOUVEMENT, et PIECES CHAUDES. Reportez-vous aux symboles et aux directives ci-dessous afin de connaître les mesures à prendre pour éviter tout 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 ce symbole, prendre garde et suivre les instructions afférentes pour éviter tout risque. Les consignes de sécurité présentées ci-après ne font que résumer l'information contenue dans les Normes de sécurité principales. Lire et suivre toutes les Normes de sécurité.

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

 Au cours de l'utilisation, tenir toute personne à l'écart et plus particulièrement les enfants.



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 utiliser de sortie de soudage CA dans des zones humides ou confinées ou s'il y a un risque de chute.
- Se servir d'une source électrique à courant électrique UNIQUEMENT si le procédé de soudage le demande.
- Si l'utilisation d'une source électrique à courant électrique s'avère nécessaire, se servir de la fonction de télécommande si l'appareil en est équipé.
- D'autres consignes de sécurité sont nécessaires dans les conditions suivantes : risques électriques dans un environnement humide ou 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 !

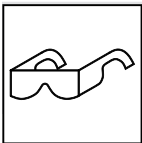
- Couper l'alimentation ou arrêter le moteur avant de procéder à l'installation, à la réparation ou à l'entretien de l'appareil. Déverrouiller l'alimentation selon la norme OSHA 29 CFR 1910.147 (voir normes de sécurité).
- Brancher correctement la mise à la terre et utiliser cet appareil conformément à son manuel d'utilisateur et aux codes nationaux, provinciaux et municipaux.
- Toujours vérifier la mise à la terre — vérifier et assurez-vous que le conducteur de mise à la terre du cordon d'alimentation est bien raccordé à la borne de mise à la terre dans le boîtier de déconnexion 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 et le conducteur de mise à la terre afin de s'assurer qu'il n'est pas altéré ou dénudé -, le remplacer immédiatement s'il l'est -. Un fil dénudé peut entraîner la mort.
- L'équipement doit être hors tension lorsqu'il n'est pas utilisé.
- Ne pas utiliser des câbles usés, endommagés, de grosseur insuffisante ou mal épissés.
- Ne pas enrouler les câbles autour du corps.
- Si la pièce 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. Débrancher le câble pour le procédé non utilisé.
- Utiliser une protection différentielle lors de l'utilisation d'un équipement auxiliaire dans des endroits humides ou mouillés.



LES PIÈCES CHAUDES peuvent provoquer des brûlures.

- Ne pas toucher des parties chaudes à mains nues.
- 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.



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

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



LES FUMÉES ET LES GAZ peuvent être dangereux.

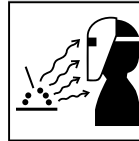
Le soudage génère des fumées et des gaz. Leur inhalation peut être dangereux pour votre santé.

- 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. Pour déterminer la bonne ventilation, il est recommandé de procéder à un prélèvement pour la composition et la quantité de fumées et de gaz auxquelles est exposé le personnel.
- Si la ventilation est médiocre, porter un respirateur anti-vapeurs approuvé.
- Lire et comprendre les fiches de données de sécurité et les instructions du fabricant concernant les adhésifs, les revêtements, les nettoyants, les consommables, les produits de refroidissement, les dégraissants, les flux et les métaux.
- Travailler dans un espace fermé seulement s'il est bien ventilé ou en portant un respirateur à alimentation d'air. Demander toujours à un surveillant dûment formé de se tenir à proximité. Des fumées et des gaz de soudage peuvent 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 ACCUMULATIONS DE GAZ risquent de provoquer des blessures ou même la mort.

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



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

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

- Porter un casque de soudage approuvé muni de verres filtrants approprié pour protéger visage et yeux pendant le soudage (voir ANSI Z49.1 et Z87.1 énuméré dans les normes de sécurité).
- Porter des lunettes de sécurité avec écrans latéraux même sous votre casque.
- Avoir recours à des écrans protecteurs ou à des rideaux pour protéger les autres contre les rayonnements les éblouissements et les étincelles ; prévenir toute personne sur les lieux de ne pas regarder l'arc.
- Porter une protection corporelle en cuir ou des vêtements ignifuges (FRC). La protection du corps comporte des vêtements sans huile, comme des gants de cuir, une chemise solide, des pantalons sans revers, des chaussures hautes et une casquette.

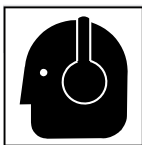


LE SOUDAGE peut provoquer un incendie ou une explosion.

Le soudage effectué sur des conteneurs fermés tels que des réservoirs, tambours ou 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 homologuées.
- Ne pas souder dans un endroit où des étincelles peuvent tomber sur des substances inflammables.
- Se protéger et d'autres personnes de la projection d'étincelles et de métal chaud.
- Des étincelles et des matériaux chauds du soudage peuvent facilement passer dans d'autres zones en traversant de petites fissures et des ouvertures.
- Surveiller tout déclenchement d'incendie et tenir un extincteur à proximité.
- Le soudage effectué sur un plafond, plancher, paroi ou séparation peut déclencher un incendie de l'autre côté.
- Ne pas couper ou souder des jantes ou des roues. Les pneus peuvent exploser s'ils sont chauffés. Les jantes et les roues réparées peuvent défailir. Voir OSHA 29 CFR 1910.177 énuméré dans les normes de sécurité.
- Ne pas effectuer le soudage sur des conteneurs fermés tels que des réservoirs, tambours, ou conduites, à moins qu'ils n'aient été préparés correctement conformément à AWS F4.1 (voir les Normes de Sécurité).
- Ne pas souder là où l'air ambiant pourrait contenir des poussières, gaz ou émanations 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 une protection corporelle en cuir ou des vêtements ignifuges (FRC). La protection du corps comporte des vêtements sans huile, comme des gants de cuir, une chemise solide, des pantalons sans revers, des chaussures hautes et une casquette.
- Avant de souder, retirer toute substance combustible de vos poches telles qu'un allumeur au butane ou des allumettes.
- Une fois le travail achevé, assurez-vous qu'il ne reste aucune trace d'étincelles incandescentes ni de flammes.
- Utiliser exclusivement des fusibles ou coupe-circuits appropriés. Ne pas augmenter leur puissance; ne pas les 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.
- Lire et comprendre les fiches de données de sécurité et les instructions du fabricant concernant les adhésifs, les revêtements, les nettoyeurs, les consommables, les produits de refroidissement, les dégraisseurs, les flux et les métaux.



Le BRUIT peut endommager l'ouïe.

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

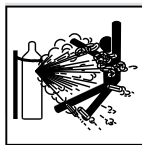
- Porter des protections approuvées pour les oreilles si le niveau sonore est trop élevé.



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

- Les porteurs de stimulateurs cardiaques et autres implants médicaux doivent rester à distance.

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



Si des BOUTEILLES sont endommagées, elles pourront exploser.

Des bouteilles de gaz comprimé 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 comprimé, régulateurs, tuyaux et raccords convenables pour cette application spécifique; les maintenir ainsi que les éléments associés en bon état.
- Tourner le dos à la sortie de vanne lors de l'ouverture de la vanne de la bouteille. Ne pas se tenir devant ou derrière le régulateur lors de l'ouverture de la vanne.
- Maintenir le chapeau de protection sur la soupape, sauf en cas d'utilisation ou de branchement de la bouteille.
- Utilisez les équipements corrects, les bonnes procédures et suffisamment de personnes pour soulever, déplacer et transporter les bouteilles.
- Lire et suivre les instructions sur les bouteilles de gaz comprimé, l'équipement connexe et le dépliant P-1 de la CGA (Compressed Gas Association) mentionné dans les principales normes de sécurité.

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



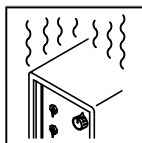
Risque D'INCENDIE OU D'EXPLOSION.

- 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.



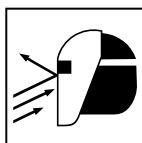
LA CHUTE DE L'ÉQUIPEMENT peut provoquer des blessures.

- Utiliser l'anneau de levage uniquement pour soulever l'appareil, NON PAS les organes de roulement, les bouteilles de gaz ou tout autre accessoire.
- Utilisez les procédures correctes et des équipements d'une capacité appropriée pour soulever et supporter l'appareil.
- En utilisant des fourches de levage pour déplacer l'unité, s'assurer que les fourches sont suffisamment longues pour dépasser du côté opposé de l'appareil.



L'EMPLOI EXCESSIF peut SURCHAUFFER L'ÉQUIPEMENT.

- Laisser l'équipement refroidir ; respecter le facteur de marche nominal.
- Réduire le courant ou le cycle opératoire avant de recommencer le soudage.
- Ne pas obstruer les passages d'air du poste.



LES ÉTINCELLES PROJÉTÉES peuvent provoquer des blessures.

- Porter un écran facial pour protéger le visage et les yeux.

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



LES CHARGES ÉLECTROSTATIQUES peuvent endommager les circuits imprimés.

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



Les PIÈCES MOBILES peuvent causer des blessures.

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



LES FILS DE SOUDAGE peuvent provoquer des blessures.

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



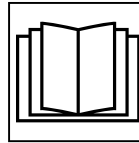
L'EXPLOSION DE LA BATTERIE peut provoquer des blessures.

- Ne pas utiliser l'appareil de soudage pour charger des batteries ou faire démarrer des véhicules à l'aide de câbles de démarrage, sauf si l'appareil dispose d'une fonctionnalité de charge de batterie destinée à cet usage.



Les PIÈCES MOBILES peuvent causer des blessures.

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

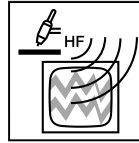


LIRE LES INSTRUCTIONS.

- 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

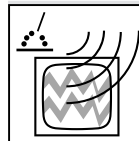
section.

- N'utiliser que des pièces de remplacement provenant du fabricant.
- Effectuer l'installation, l'entretien et toute intervention selon les manuels d'utilisateurs, les normes nationales, provinciales et de l'industrie, ainsi que les codes municipaux.



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

⚠ Avertissement – Ce produit peut vous exposer à des produits chimiques tels que le plomb, reconnus par l'État de Californie comme cancérigènes et sources de malformations ou d'autres troubles de la reproduction.

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

2-5. Principales normes de sécurité

Safety in Welding, Cutting, and Allied Processes, American Welding Society standard ANSI Standard Z49.1. Website: <http://www.aws.org>.

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

Safe Practices for the Preparation of Containers and Piping for Welding and Cutting, American Welding Society Standard AWS F4.1. Website: <http://www.aws.org>.

National Electrical Code, NFPA Standard 70 from National Fire Protection Association. Website: www.nfpa.org.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1 from Compressed Gas Association. Website: www.cganet.com.

Safety in Welding, Cutting, and Allied Processes, CSA Standard W117.2 from Canadian Standards Association. Website: www.csagroup.org.

Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B from National Fire Protection Association. Website: www.nfpa.org.

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910.177 Subpart N, Part 1910 Subpart Q, and Part 1926, Subpart J. Website: www.osha.gov.

OSHA Important Note Regarding the ACGIH TLV, Policy Statement on the Uses of TLVs and BEIs. Website: www.osha.gov.

Applications Manual for the Revised NIOSH Lifting Equation from the National Institute for Occupational Safety and Health (NIOSH). Website: www.cdc.gov/NIOSH.

SOM_fre 2022-01

2-6. Informations relatives aux CEM

Le courant électrique qui traverse tout conducteur génère des champs électromagnétiques (CEM) à certains endroits. Le courant issu d'un soudage à l'arc (et de procédés connexes, y compris le soudage par points, le gougeage, le découpage plasma et les opérations de chauffage par induction) crée un champ électromagnétique (CEM) autour du circuit de soudage. Les champs électromagnétiques produits peuvent causer interférence à certains implants médicaux, p. ex. les stimulateurs cardiaques. Des mesures de protection pour les porteurs d'implants médicaux doivent être prises: 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 – DEFINITIONS

3-1. Miscellaneous Symbols And Definitions

 Some symbols are found only in CE products.

A	Amperage
	Gas Input
U₁	Primary Voltage
U₀	Rated No Load Voltage (OCV)
IP	Internal Protection Rating
1~	Single Phase
==	Direct Current (DC)

	Circuit Breaker
+	Positive
U₂	Conventional Load Voltage
X	Duty Cycle
	Alternating Current (AC)
I₂	Rated Welding Current
—	Negative

	Line Connection
I_{1eff}	Maximum Effective Supply Current
V	Voltage
I_{1max}	Rated Maximum Supply Current
Hz	Hertz
	Gas Metal Arc Welding (GMAW)
	Single Phase Static Frequency Converter-Transformer-Rectifier

SECTION 4 – SPECIFICATIONS

4-1. Serial Number And Rating Label Location

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

4-2. Software Licensing Agreement

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

4-3. Information About Default Weld Parameters And Settings

NOTICE – Each welding application is unique. Although certain Miller Electric products are designed to determine and default to certain typical welding parameters and settings based upon specific and relatively limited application variables input by the end user, such default settings are for reference purposes only; and final weld results can be affected by other variables and application-specific circumstances. The appropriateness of all parameters and settings should be evaluated and modified by the end user as necessary based upon application-specific requirements. The end user is solely responsible for selection and coordination of appropriate equipment, adoption or adjustment of default weld parameters and settings, and ultimate quality and durability of all resultant welds. Miller Electric expressly disclaims any and all implied warranties including any implied warranty of fitness for a particular purpose.

4-4. Unit Specifications

Rated Welding Output	Amperage Range		Maximum Open-Circuit Voltage DC (U ₀ **)	Amperes Input at Rated Load Output 120 V, 60 Hz, Single-Phase	KVA	KW	Weight W/ Gun	Overall Dimensions
100 A @ 19.0 Volts DC, 60% Du-ty Cycle	30 - 140		57	19.3	2.32	2.32	33 lb (15.4 kg)	Length: 20 in. (508 mm)
80 A @ 18 Volts DC, 100% Duty Cycle*				14.8	1.78	1.78		Width: 9.75 in. (248 mm) Height: 14.625 in. (371.5 mm)
Wire Type And Dia	Solid	Stainless	Flux Cored	Wire Feed Speed Range				
	.024 - .030 in. (0.6 - 0.8 mm)	.023 - .030 in. (0.6 - 0.8 mm)	.030 - .035 in. (0.8 - 0.9 mm)	60 - 600 IPM (1.52 - 15.2 m/min) Feeding Wire				

4-5. Environmental Specifications

A. IP Rating

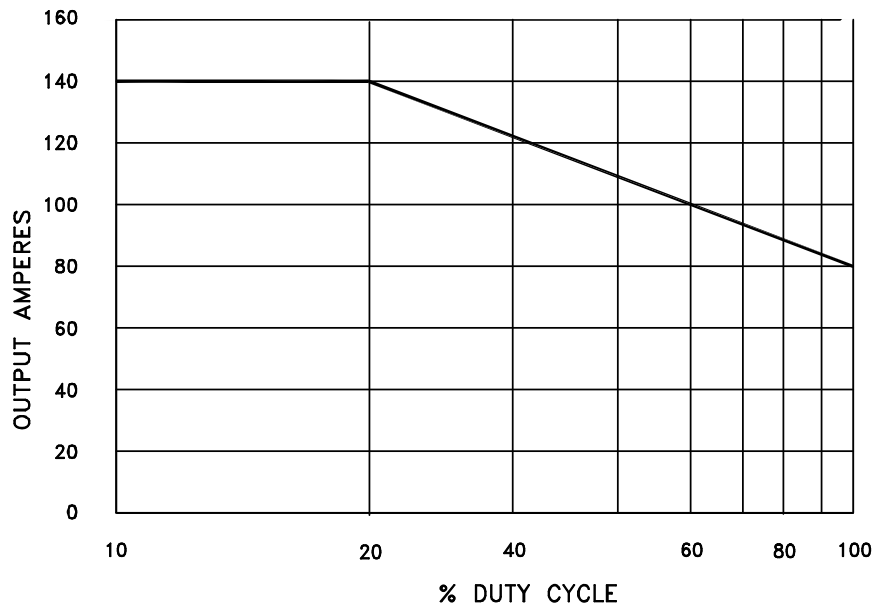
IP Rating
IP21
This equipment is designed for indoor use and is not intended to be used or stored outside.

B. Temperature Specifications

Operating Temperature Range*	Storage/Transportation Temperature Range
14 to 104°F (-10 to 40°C)	-4 to 131°F (-20 to 55°C)

*Output is derated at temperatures above 104°F (40°C).

4-6. Duty Cycle And Overheating



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

If unit overheats, output stops, error message is displayed (see Error Messages), and cooling fan runs. Wait for unit to cool and error message to clear. Reduce amperage or duty cycle before welding.

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

60% Duty Cycle at 100 Amps



6 Minutes Welding



4 Minutes Resting



Overheating



Minutes



A or V

OR
Reduce Duty Cycle

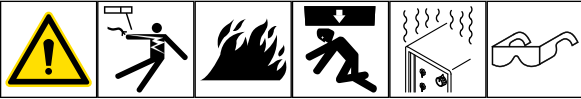


4-7. Static Characteristics

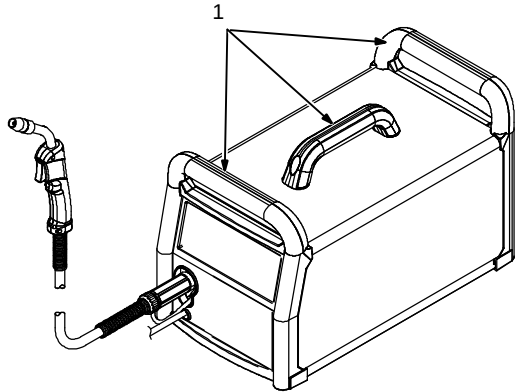
The static (output) characteristics of the welding power source can be described as *flat* during the GMAW process and *drooping* during the SMAW and GTAW processes. Static characteristics are also affected by control settings (including software), electrode, shielding gas, weldment material, and other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

SECTION 5 – INSTALLATION

5-1. Selecting A Location



Movement



⚠ Do not move or operate unit where it could tip.

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

1 Lifting Handles

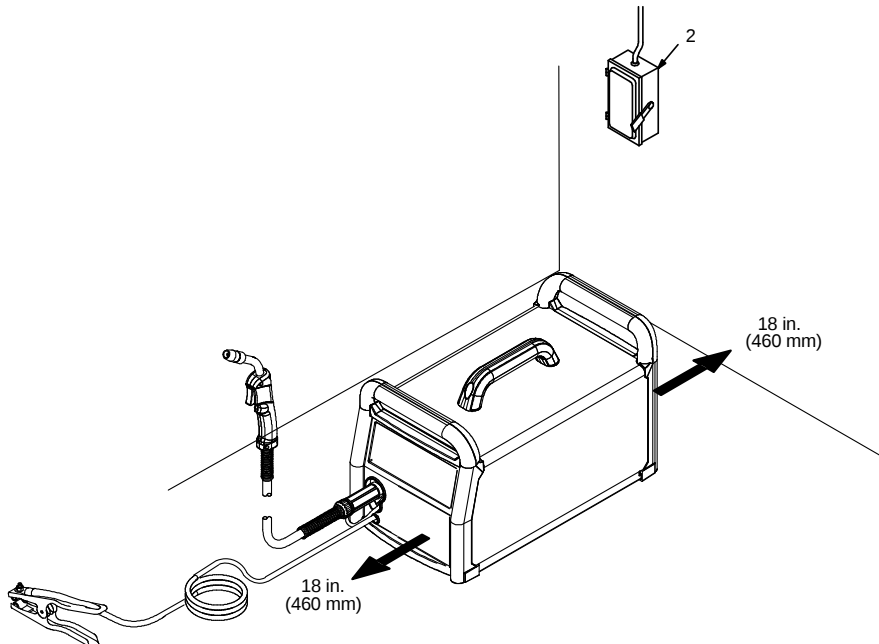
Use handles to lift unit.

2 Line Disconnect Device

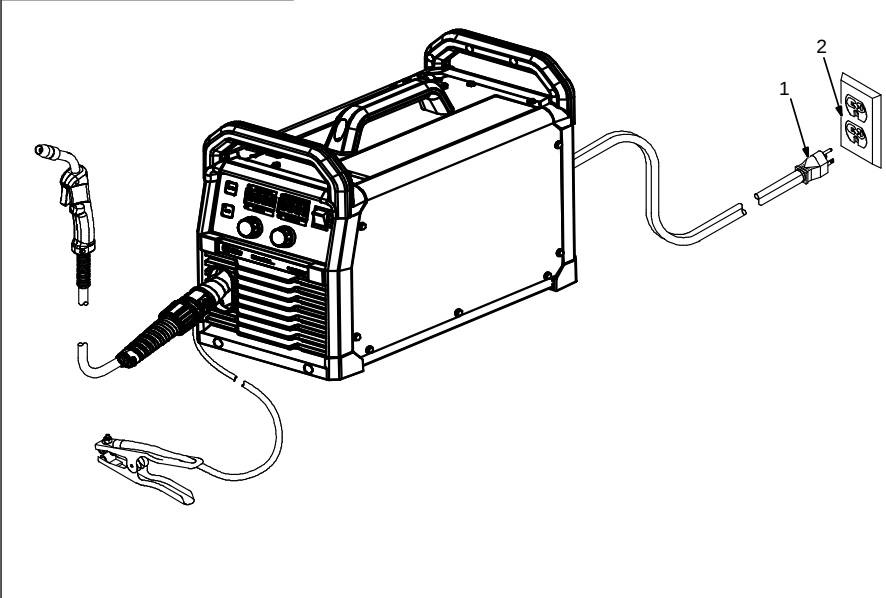
Locate unit near correct input power supply.



Location And Airflow



5-2. Connecting 120 Volt Input Power



⚠ Installation must meet all National and Local Codes – have only qualified persons make this installation.

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

For 120 volts AC input power, a 15, 20, or 30 ampere individual branch circuit protected by time-delay fuses or circuit breaker is required.

1 Plug From Unit

2 Receptacle – NEMA Type 5-15R or Type 5-20R (Customer Supplied)

5-3. Electrical Service Guide

⚠ Failure to follow these electrical service guide recommendations could create an electric shock or fire hazard. These recommendations are for an individual branch circuit sized for the rated output and duty cycle of one welding power source. In individual branch circuit installations, the National Electrical Code (NEC) allows the receptacle or conductor rating to be less than the rating of the circuit protection device. All components of the circuit must be physically compatible. See NEC articles 210.21, 630.11, and 630.12.

	60 Hz 1-Phase
Rated Supply Voltage (V)	120 Volts AC
Rated Maximum Supply Current I_{1max} (A)	19.3
Rated Effective Supply Current I_{1eff} (A)	15.0
Maximum Recommended Standard Fuse Rating In Amperes ¹	A 15, 20, or 30 ampere individual branch circuit protected by time-delay fuses or circuit breaker is required. See Section 5-2.
Time Delay Fuses ²	
Normal Operating Fuses ³	
Minimum Supply Conductor Size In AWG (mm ²) ⁵	
Maximum Recommended Supply Conductor Length In Feet (Meters) ⁴	
Minimum Grounding Conductor Size In AWG (mm ²) ⁵	

Reference: 2020 National Electrical Code (NEC) (including article 630)

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

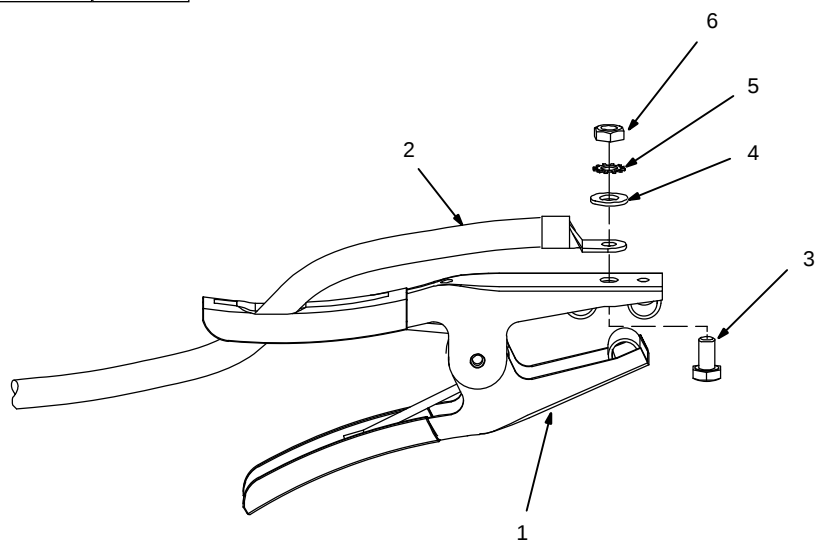
2 "Time-Delay" fuses are UL class "RK5" . See UL 248.

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

5 Raceway conductor data in this section specifies conductor size (excluding flexible cord or cable) between the panelboard and the equipment per NEC Table 310.15(B)(16) and is based on allowable ampacities of insulated copper conductors having a temperature rating of 75°C (167°F) with not more than three single current-carrying conductors in a raceway.

4 Maximum total length of copper input conductors in entire installation, raceway and/or flexible cord.

5-4. Installing Work Clamp

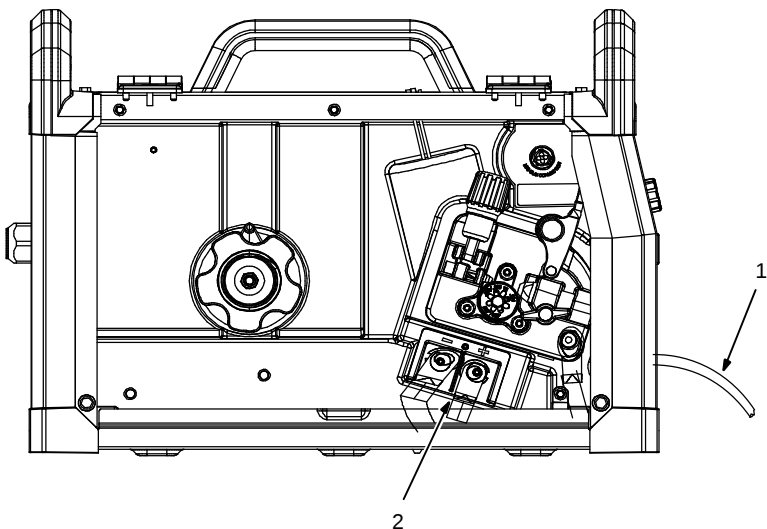


 *Tighten connection hardware with proper tools. Do not just hand tighten hardware. A loose electrical connection will cause poor weld performance and excessive heating of the work clamp.*

- 1 Work Clamp
- 2 Work Cable From Unit
- 3 Screw
- 4 Flat Washer
- 5 Lock Washer
- 6 Nut

Route work cable through hole in clamp handle. Secure cable with hardware as shown

5-5. Work Cable Routing Inside Unit



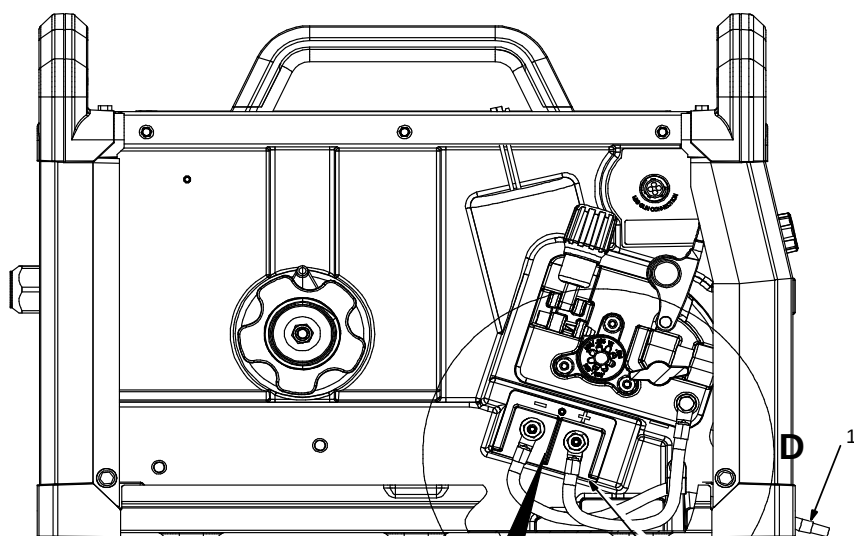
- 1 Work Cable
- 2 Output Polarity Block

Work cable is routed through the hole in front panel and routed along base of unit to output polarity block.

5-6. Process/Polarity Table

Process	Polarity	Cable Connections	
		Wire Drive Assembly Cable	Work Cable
GMAW — Solid wire with shielding gas	DCEP — Reverse Polarity	Connect to positive (+) output receptacle	Connect to negative (-) output receptacle
FCAW—S — Self-shielding wire-no shielding gas	DCEN — Straight Polarity	Connect to negative (-) output receptacle	Connect to positive (+) output receptacle
FCAW—G — Flux-cored wire with shielding gas	DCEP — Reverse Polarity	Connect to positive (+) output receptacle	Connect to negative (-) output receptacle

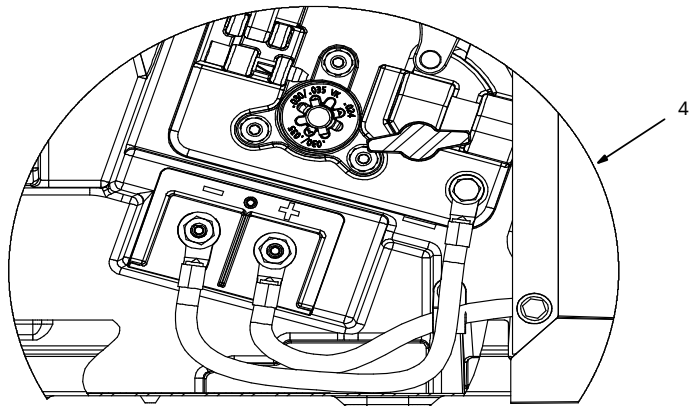
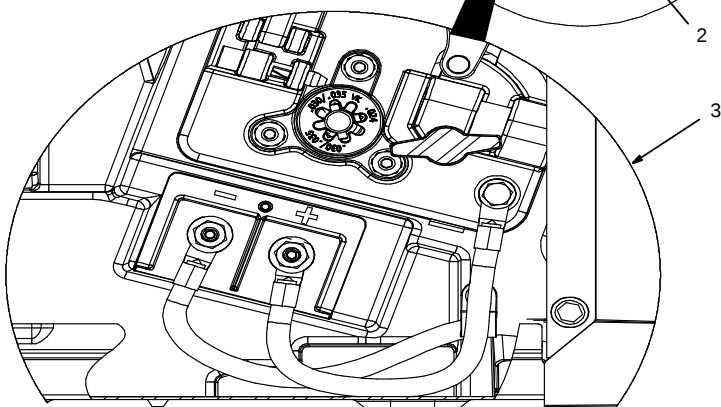
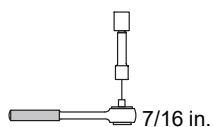
5-7. Changing Polarity



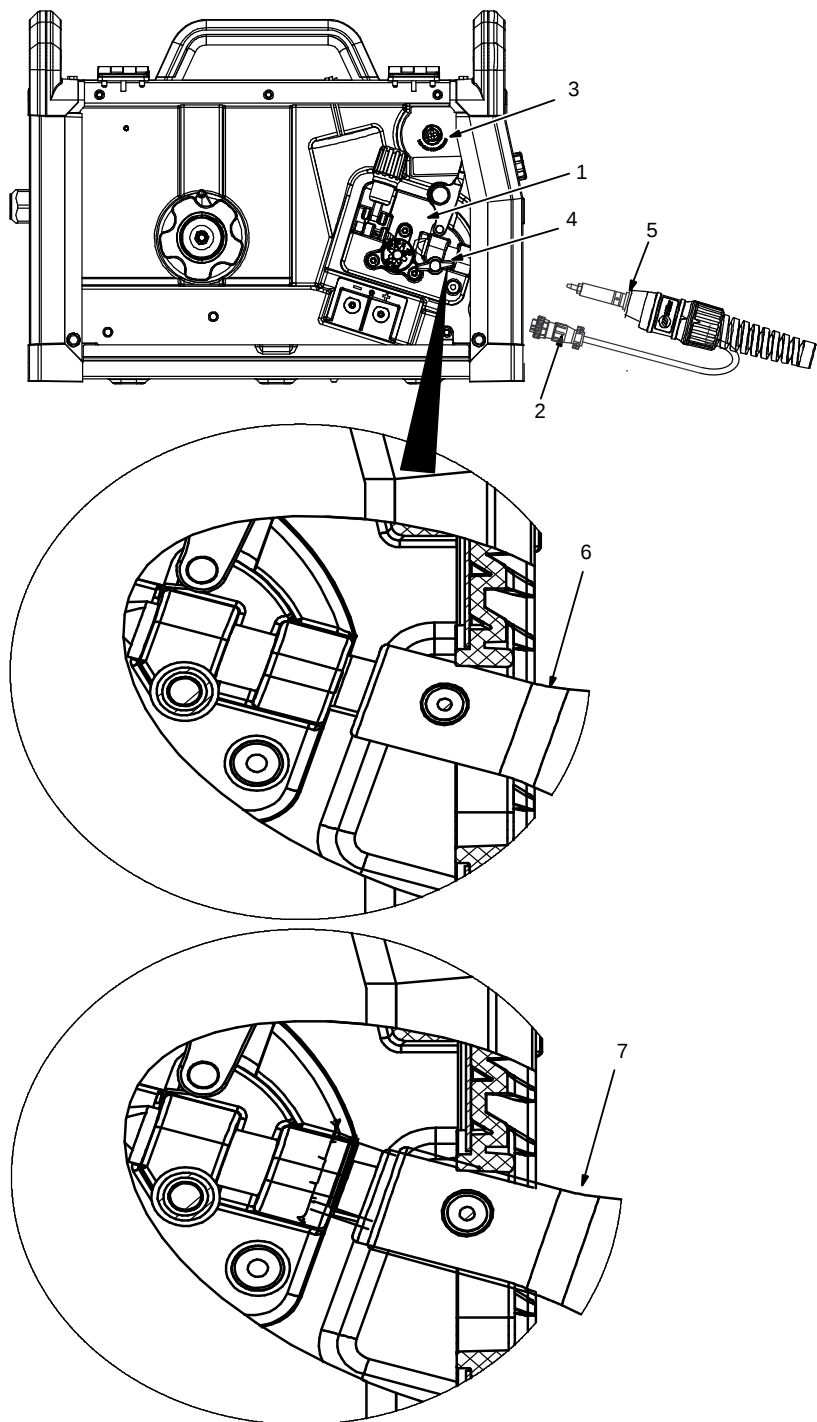
Always read and follow wire manufacturer's recommended polarity, and (see Section 5-6).

- 1 Work Cable
- 2 Output Connection Polarity Block
- 3 DCEP Electrode Positive FOR SOLID WIRE
- 4 DCEN Electrode Negative FOR FLUX CORE WIRE

 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 at the terminal block.



5-8. Installing Welding Gun Or Spool Gun



- 1 Drive Assembly
- 2 Gun Trigger Plug
- 3 Gun Trigger Receptacle

Route gun trigger plug through front panel.

Insert plug into receptacle, and tighten threaded collar.

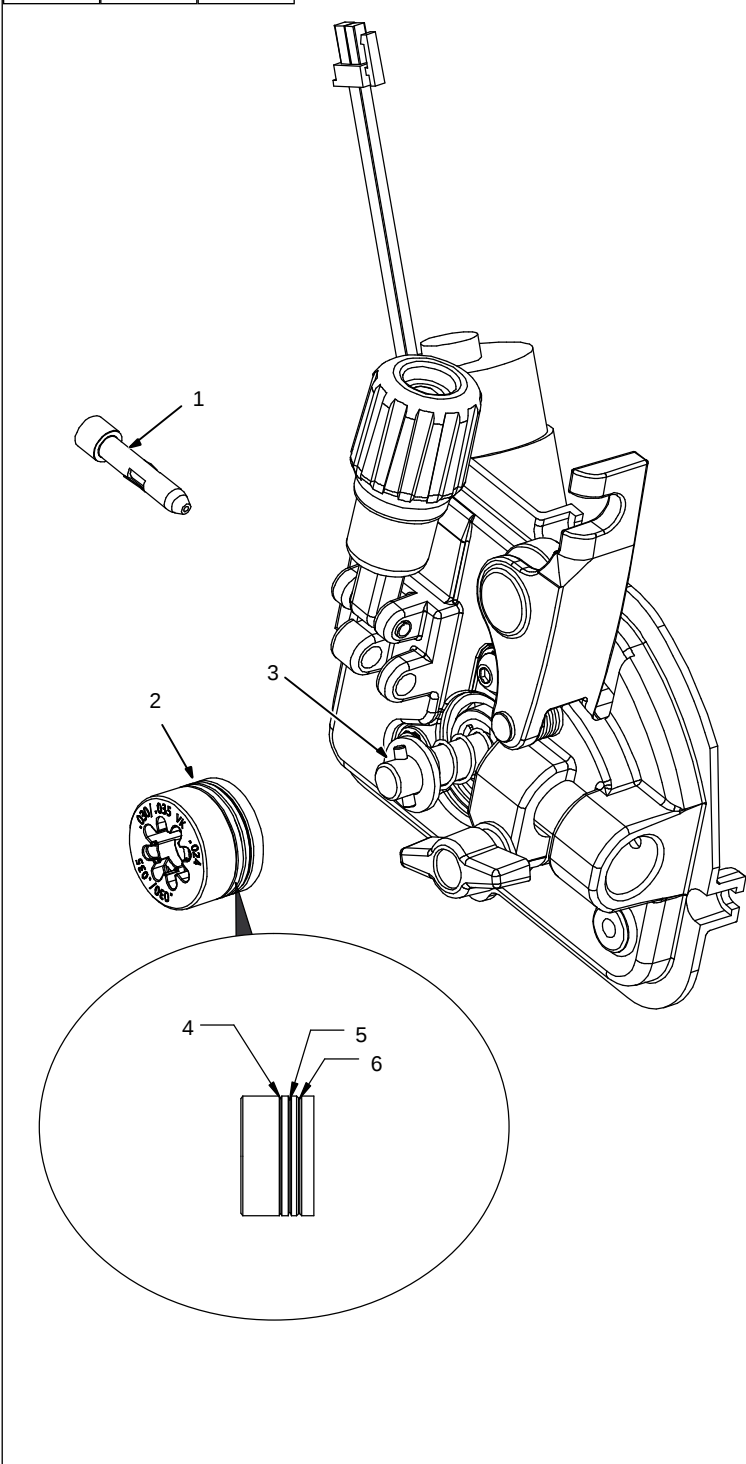
- 4 Gun Securing Knob
- 5 Gun End
- 6 Correct View
- 7 Incorrect View

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

Close door.

 Be sure that gun end is tight against drive assembly. Incorrect installation will have adverse effects on gas flow.

5-9. Changing Drive Roll Or Wire Inlet Guide



1 Inlet Wire Guide

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

2 Drive Roll

The drive roll includes three different sized grooves. The text aligned with the drive roll retaining pin indicates the selected groove.

3 Retaining Pin

4 0.024V Groove

5 0.030–0.035V Groove

6 0.030–0.035 V-Knurled Groove

To secure drive roll, locate open slot and push drive roll completely over retaining pin, then rotate drive roll to desired slot.

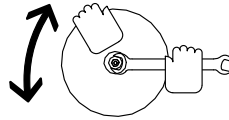
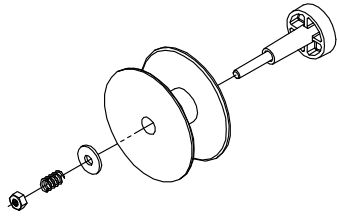
Table 5–1. Drive Roll Grooves And Wire Type Compatibility

Groove	Compatible Wire
0.024V	0.024 Solid Wire
0.030–0.035V	0.030–0.035 Solid Wire
0.030–0.035 V-Knurled	0.030–0.035 Flux-Core

5-10. Installing Wire Spool And Adjusting Hub Tension



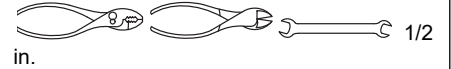
Installing 4 in. (102 mm) Wire Spool



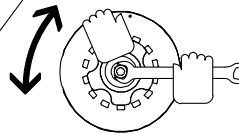
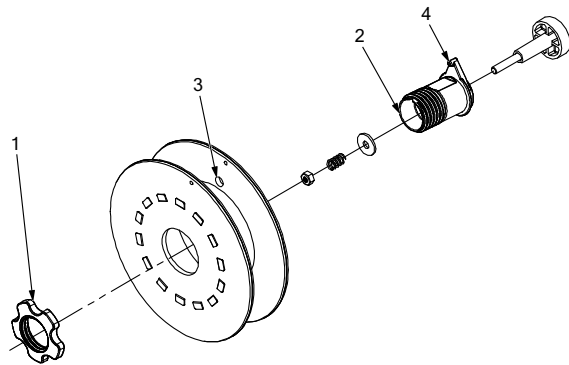
When a slight force is needed to turn spool, tension is set.

- 1 Retaining Ring
- 2 Adapter
- 3 Locking Hole
- 4 Locking Pin

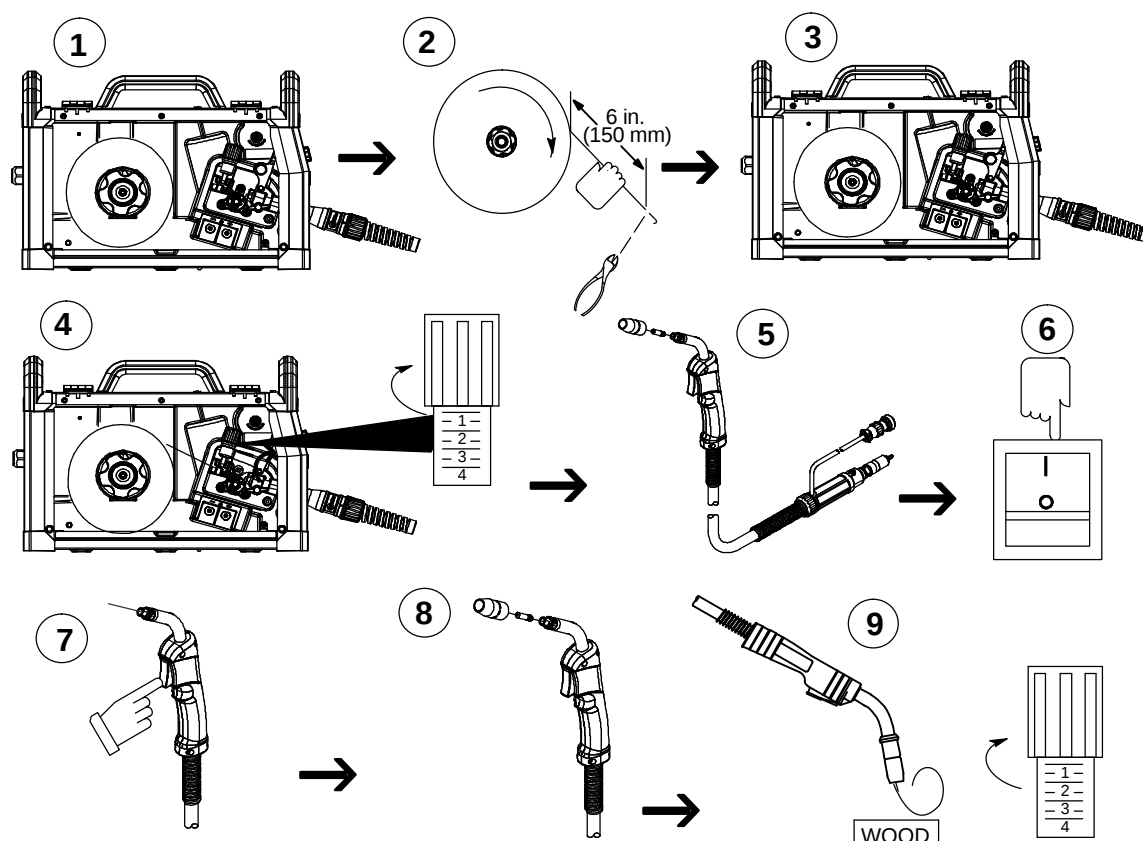
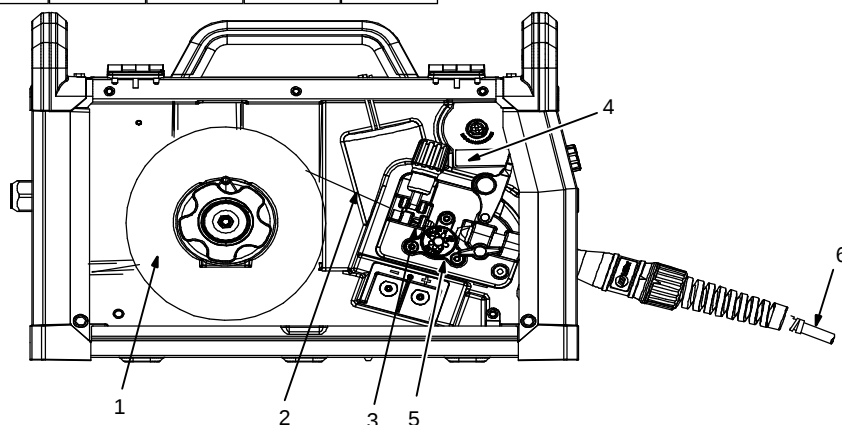
Align locking hole in spool with locking pin on spool hub.



Installing 8 in. (203 mm) Wire Spool



5-11. 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.

Step 1. Open pressure assembly.

Step 2. Pull and hold wire; cut off end.

Hold wire tightly to keep it from unraveling.

Step 3. Push wire through guides into gun; continue to hold wire.

Step 4. Close and tighten pressure assembly, and let go of wire.

Use pressure indicator scale to set a desired drive roll pressure. Begin with a setting of 2. If necessary, make additional adjustments after trying this initial setting.

Step 5. Remove gun nozzle and contact tip.

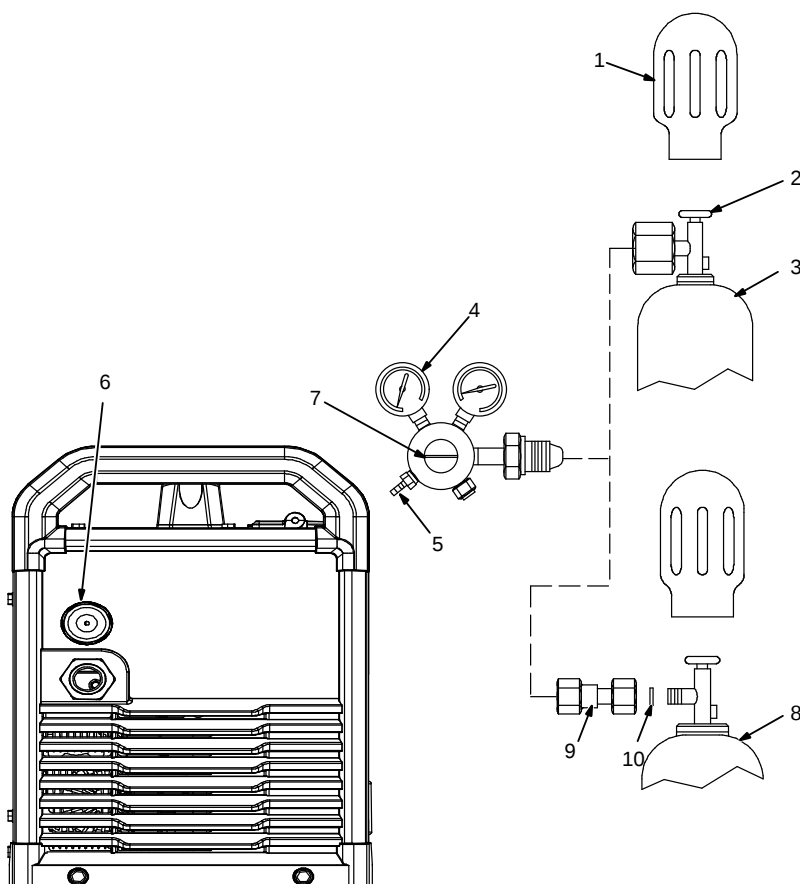
Step 6. Turn Power On.

Step 7. Press gun trigger until wire comes out of gun.

Step 8. Be sure that contact tip matches wire diameter. Reinstall contact tip and nozzle.

Step 9. Feed wire to check drive roll pressure. Tighten knob enough to prevent slipping.

5-12. Installing Gas Supply



DO NOT use Argon/Mixed gas regulator/flowmeter with CO₂ shielding gas. See Parts List for optional CO₂ gas regulator/flowmeter and hose.

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 Argon Gas Or Mixed Gas Cylinder
- 4 Regulator/Flowmeter

Install so face is vertical.

- 5 Regulator or Flowmeter Gas Hose Connection
- 6 Power Source Gas Hose Connection

Connect supplied 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 25–35 cfh (cubic feet per hour). Check wire manufacturer's recommended flow rate.

- 8 CO₂ Gas Cylinder
- 9 CO₂ Adapter (Customer Supplied)
- 10 O-Ring (Customer Supplied)

Install adapter with O-ring between regulator/flowmeter and CO₂ cylinder.

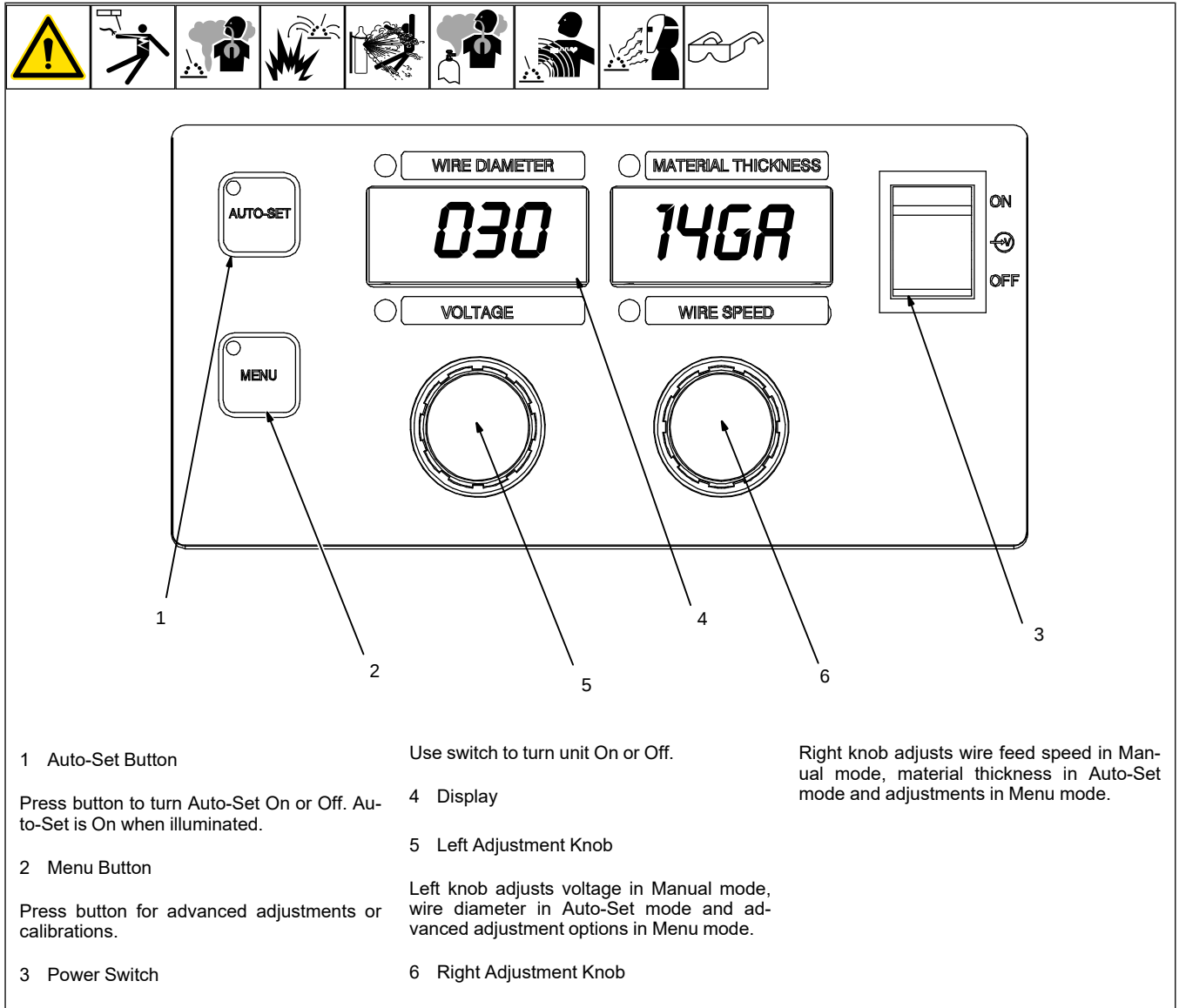
After flow is set, close feedhead pressure assembly.

5,8, 1-1/8 in.



SECTION 6 – OPERATION

6-1. Manual Setup

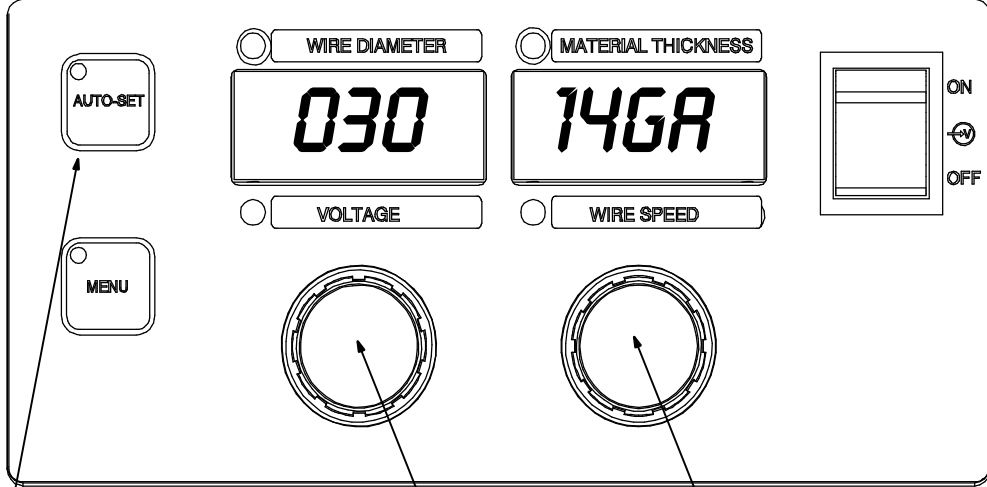


6-2. Special Features

- | | |
|------------------------------|---|
| Auto-Set | Predefined weld settings to increase ease of use and ensure that the job is done right for operators of all skill levels. |
| Jog Mode | If gun trigger is pressed and held for more than 3 seconds without striking an arc, unit will automatically shut off weld power and shielding gas. Trigger error will be displayed after preset length of wire is fed, dependent on MIG gun selected. |
| FasTack | FasTack reduces arc start time by automatically increasing the run-in speed when doing repetitive arc starts. FasTack automatically uses a slower wire feed speed when the wire is cool and a faster wire feed speed when the wire is hot. FasTack is enabled by default. |
| Fan-On-Demand | A Fan-On-Demand cooling system, which operates at fan max speed only when needed, reduces power consumption and contaminants drawn into the machine. The fan will turn on when components rise above thermal threshold and turn off when the temperature drops below the thermal threshold. |
| Smooth Start (Run-In) | The speed of the wire prior to the welding arc being struck. |

6-3. Using Auto-Set





1 Auto-Set Button

Press button to turn Auto-Set On or Off. Auto-Set is On when illuminated.

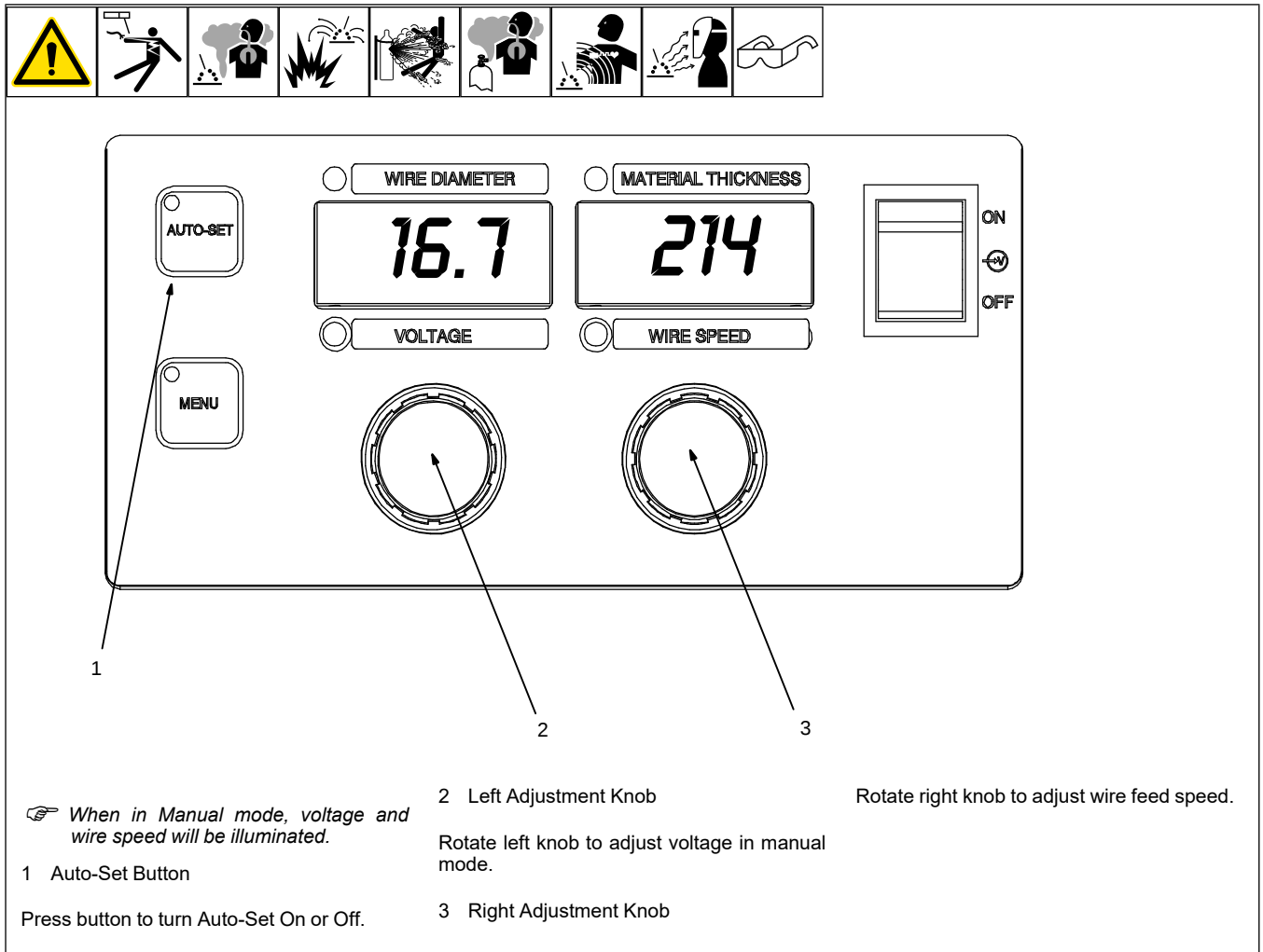
2 Left Adjustment Knob

Rotate left knob to select the size of the wire. (desired wire diameter setting)

Rotate right knob to select material (steel) thickness. (desired steel material thickness to weld)

Auto-Set predefined weld settings are configured for steel material with C25 gas mixture and Spool gun aluminum material with argon gas.

6-4. Using Manual Mode



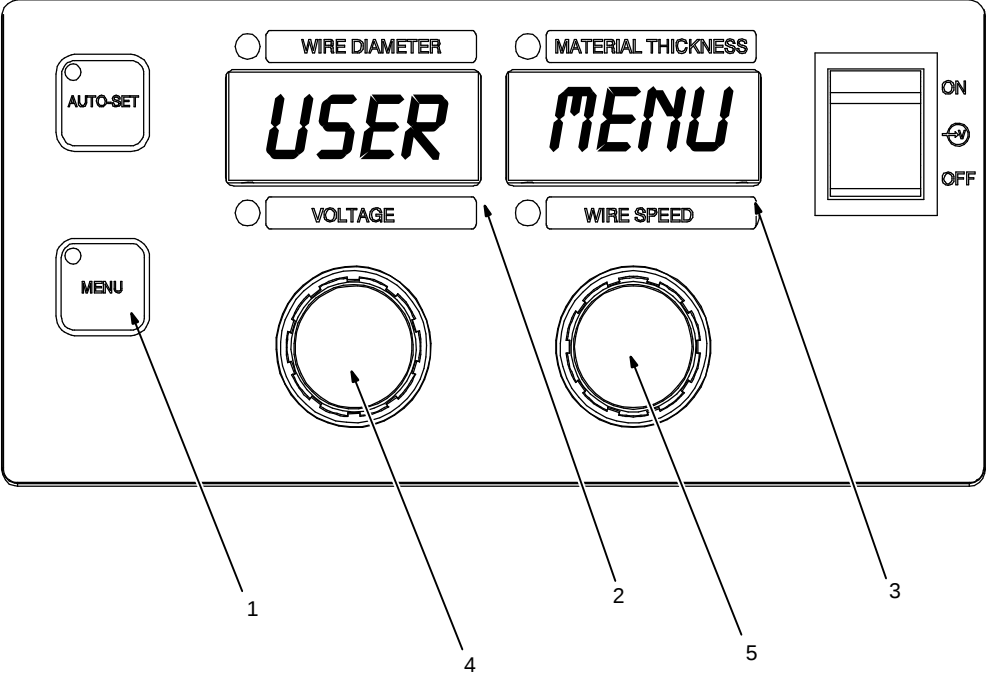
6-5. Menu Controls









1 Menu Button
Press Menu Button.

2 Menu Display

3 Menu Setting Display

4 Left Adjustment Knob
Rotate knob to change menu option.

5 Right Adjustment Knob
Rotate knob to adjust setting.

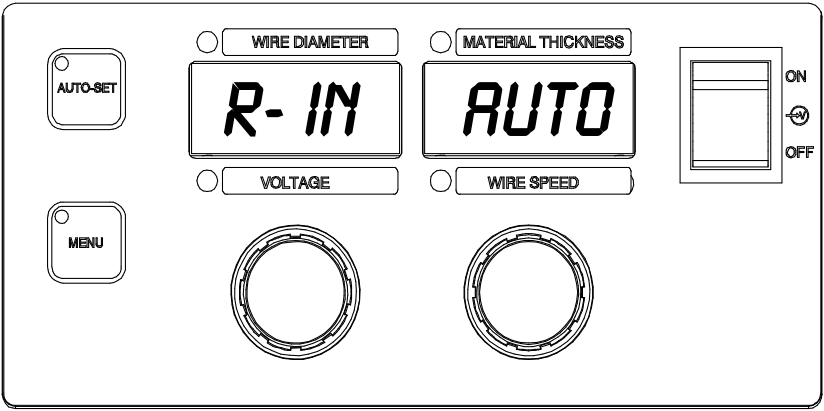
To exit menu, press the Menu button.

 *Settings in the User Menu pertain to all processes including Auto-Set.*

6-6. Run In

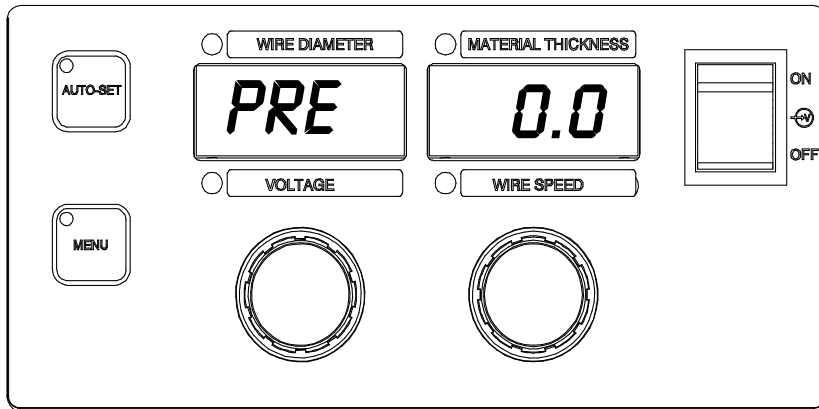






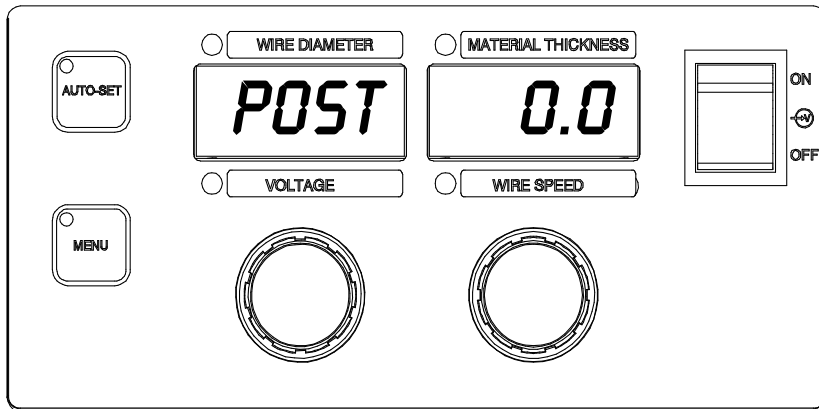
Run-In (Smooth Start) Run-In is the wire feed speed prior to the welding arc being struck. When set to (AUTO) the welder determines the optimal run-in speed for each start. When set is disabled the run-in speed is the same as the wire feed speed.

6-7. Preflow Time



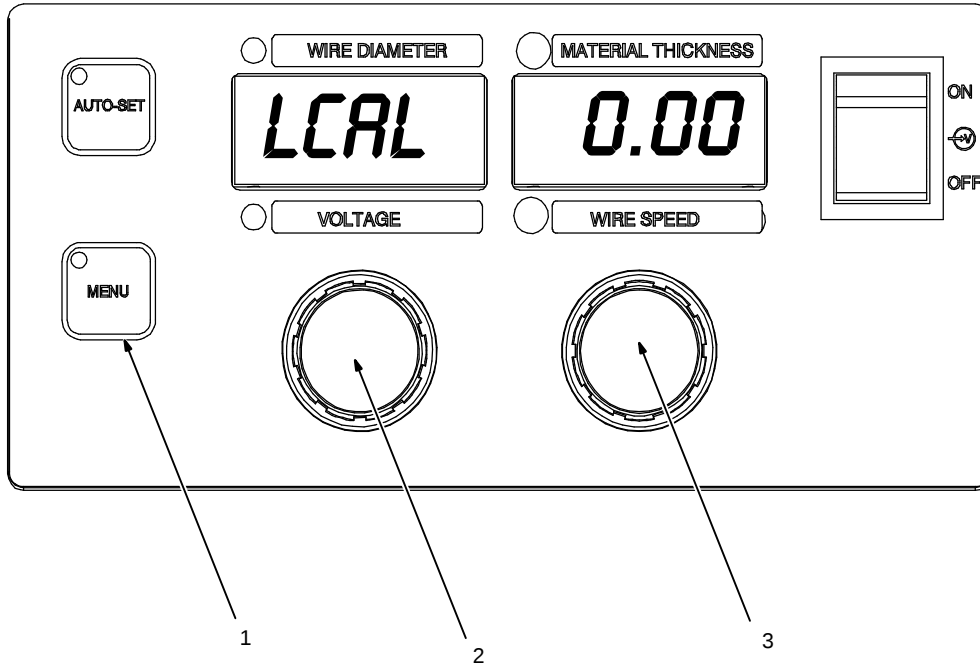
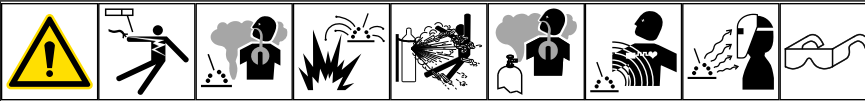
Preflow Time: Controls length of time that gas flows prior to arc start. Range is 0–5 seconds. To adjust, rotate the left knob while in Menu until (PRE) is displayed and rotate the right knob to desired increments in seconds [0.0–5.0].

6-8. Postflow Time



Postflow Time: Controls length of time that gas flows after welding stops. Range is 0–5 seconds. To adjust, rotate the left knob while in Menu until (POST) is displayed and rotate the right knob to desired increments in seconds [0.0–5.0].

6-9. Drive Calibration, Low



The unit's internal drive motor is calibrated at the factory. No calibration is needed unless the drive motor or control board is changed.

Cut wire flush at the nozzle.

1 Menu Button

Press Menu Button.

2 Left Adjustment Knob

Rotate knob until [L.Cal] is displayed

Be sure the wire is cut flush at nozzle, then trigger the MIG gun. Motor will feed approximately 24 inches of wire through the MIG gun.

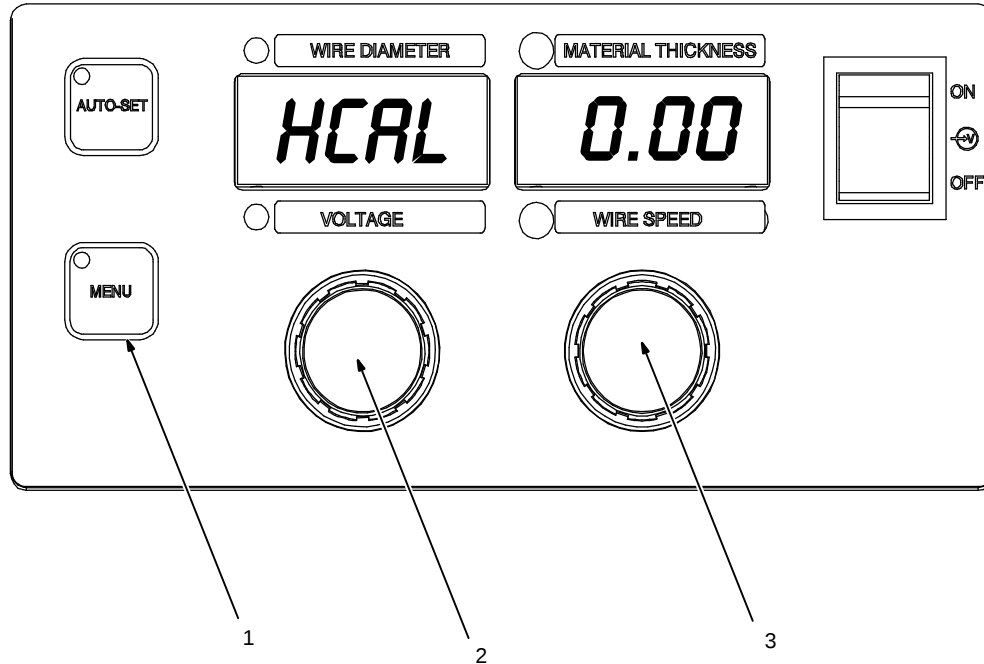
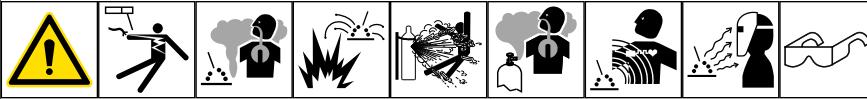
Cut the wire flush at nozzle and measure run-out.

If length of run-out is not 24 inches, adjust with right knob.

3 Right Adjustment Knob

Rotate knob to desired .25 inch increments. [-8.00] — [7.75].

6-10. Drive Calibration, High



The unit's internal drive motor is calibrated at the factory. No calibration is needed unless the drive motor or control board is changed.

Cut wire flush at the nozzle.

1 Menu Button

Press Menu Button.

2 Left Adjustment Knob

Rotate knob until [H.Cal] is displayed.

Be sure the wire is cut flush at nozzle, then trigger the MIG gun. Motor will feed approximately 24 inches of wire through the MIG gun.

Cut the wire flush at nozzle and measure run-out.

If length of run-out is not 24 inches, adjust with right knob.

3 Right Adjustment Knob

Rotate knob to desired .25 inch increments. [-8.00] — [7.75].

6-11. Factory Reset

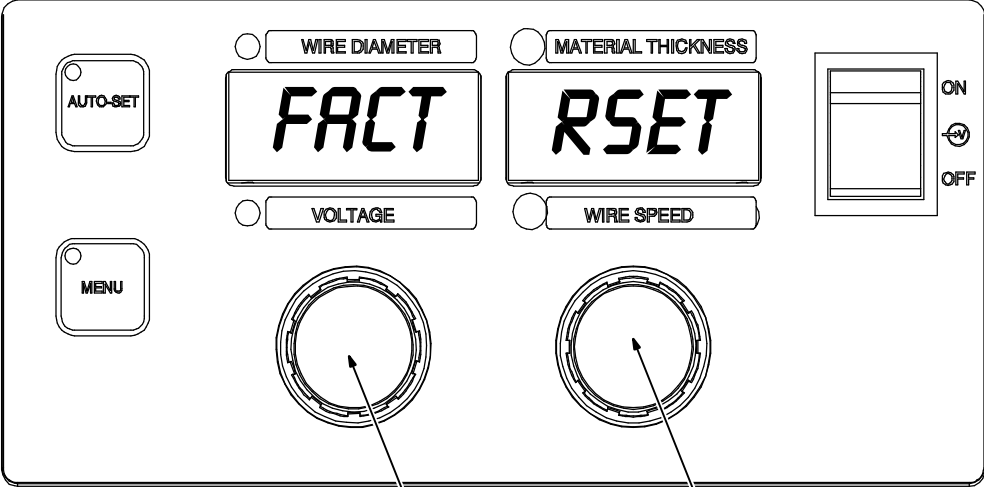












 A Factory Reset will reset the selected process, and all process settings. Motor calibration settings, Spoolmate calibration settings and software information will ne retained.

To perform a factory reset:

1 Left Adjustment Knob

Rotate knob while in Menu until [FACT] [RSET] is displayed

2 Right Adjustment Knob

Rotate knob to [YES] on the menu setting display.

6-12. Jog Mode

If gun trigger is held for longer than 3 seconds without initiating a weld arc, unit will enter Jog mode and disable weld output.

- Jog mode is used to quickly feed wire through the wire drive assembly and MIG gun.
- While in Jog mode, wire feed speed is adjustable using the Wire Speed/Wire Diameter control knob.
- To exit Jog mode, release gun trigger.

6-13. Welding Parameter Chart



Quick Reference Guide

QR for Setup

Scan this code or visit MillerWelds.com/mml42setup to view video of Millermatic 142 setup.

Auto-Set™ Mode

- Press Auto-Set button. Auto-Set predefined weld settings are configured for Steel material with C25 Argon gas and 1/8 in. Spoolmate wire diameter.
- Rotate left knob to select Wire Diameter.
- Rotate right knob to select Material. Auto-Set parameters will hold when switching to Manual Mode.

Manual Mode (Auto-Set™ Off)

- Press Auto-Set button to turn off Auto-Set. Auto-Set parameters will hold when Auto-Set button is turned off.
- Rotate left knob to adjust voltage. Button indicator light will darken.
- Rotate right knob to adjust wire feed speed.

Installing 4 in. Wire Spool

STEP 1
REMOVE NUT AND SLIDE LARGE SPOOL OFF SHIRT AS SHOWN.

STEP 2
INSTALL 4 IN. SPOOL ON SHIRT. TIGHTEN NUT TO LOCK. TENSION NUT SO THE SPOOL DOES NOT FREELY SPIN.

Changing Polarity

DCEP
Electrode Positive For Solid Wire

DCEN
Electrode Negative For Flux-Cored Wire

1-800-4-A-Miller
MillerWelds.com

Drive Rolls

261137 Quick Select™ Drive Roll
Solid Wire .024 in. (0.6 mm) or .030/.035 in. (0.8/0.9 mm)
Flux-Cored .030/.035 in. (0.8/0.9 mm)
260908 142-Head-Only Drive Roll
Flux-Cored .030/.035 in. (0.8/0.9 mm)
.045 in. (1.2 mm)

Gun Consumables

Miller™ Acculock™ MDX Consumables

Contact Tips (10 per package)
AT-100 .030 in. (0.8 mm)
T-40030 .030 in. (0.8 mm)
T-40035 .035 in. (0.9 mm)
T-40045 .045 in. (1.2 mm)
T-40045 3/64 in. (1.2 mm)

Nozzles
NS-M1200B Brass, 1/2 in. ID, flush
NS-M1200C Copper, 1/2 in. ID, flush
NS-M1200D Nickel, 1/2 in. ID, flush
Monoset Replacement Lines (10 ft.)
LM1A-10 .030/.035 in. (0.8 mm)
LM2A-10 .030/.035 in. (0.8/0.9 mm)
LM3A-10 .030/.045 in. (0.8/1.2 mm)

Steel Wire Welding (MIG/Flux-Cored) Parameters												
Material	Polarity	Shielding Gas*	Wire Type	Wire Size	120 Volt							
					24ga V/WFS	22ga V/WFS	20ga V/WFS	18ga V/WFS	16ga V/WFS	14ga V/WFS	1/8" V/WFS	3/16" V/WFS
Steel	DCEP	C25	Solid Wire ER70S-6	.024"	14.3/125	14.3/137	14.9/211	16.1/271	16.5/330	17.8/409	18.6/492	-
		.030"		14.0/95	14.1/105	14.3/110	15.2/195	16.0/200	16.8/240	18.3/320	19.0/360	
		.024"		-	16.4/180	16.8/190	17.4/190	18.5/280	19.0/300	-	-	
Steel	DCEN	N/A	Flux-Cored	.030"	-	-	-	13.6/92	15.2/110	17.6/170	17.0/190	19.0/280
				.035"	-	-	-	13.4/73	14.2/82	16.0/133	18.5/160	19.0/185
				.024"	-	14.8/170	15.4/195	16.4/260	17.0/300	17.8/379	-	-
Stainless Steel	DCEP	C2	Stainless Steel	.030"	-	15.0/140	15.7/185	16.4/225	16.7/241	17.3/302	18.0/375	19.0/415
				.024"	-	-	-	-	-	-	-	-
Aluminum Wire Welding (MIG) Parameters												
Material	Polarity	Shielding Gas	Wire Type	Wire Size	120 Volt							
					24ga V/WFS	22ga V/WFS	20ga V/WFS	18ga V/WFS	16ga V/WFS	14ga V/WFS	1/8" V/WFS	3/16" V/WFS
Aluminum w/ Optional Spoolmate 100 or 150	DCEP	Argon	4043	.030"	-	-	-	12.5/295	15.4/420	16.2/440	-	-
				.035"	-	-	-	12.0/230	13.0/333	15.7/375	-	-
				.035"	-	-	-	-	-	-	-	-

* Please see Owner's Manual for detailed information on welding gas selection and mixtures.
NOTE: Settings are approximate. Adjust as required.
 "—" Means not recommended.
IMPORTANT: Match drive roll groove to diameter of wire being used. Set Tension knob setting to 2 at start. Adjust tension per instructions in the Owner's Manual.

29155A-4

SECTION 7 – MAINTENANCE AND TROUBLESHOOTING

7-1. Routine Maintenance

     					
 Disconnect power before maintaining.  <i>Maintain more often during severe conditions.</i>					
	✓ = Check	◇ = Change	○ = Clean	☆ = Replace	Reference
Every 3 Months	  ☆ Unreadable Labels	 ○ Weld Terminals	  ✓ ☆ Weld Cables		
Every 6 Months	 ○ Inside Unit				

*To be done by factory authorized service agent.

7-2. Troubleshooting Table

     					
Trouble	Remedy				
No display or lights.	Switch the Power switch On. Secure the power cord plug in the input electrical service receptacle. Check the building line fuse or circuit breaker.				
No weld output; wire does not feed; fan does not run.	Secure power cord plug in receptacle (see Section 5-2).				
	Replace building line fuse or reset circuit breaker if open.				
	Place Power switch in On position (see Section 6-1).				
	Check the connection of the 4-Pin connector of the welding gun to the connector located on the center panel above the wire feed system				
	Depress the trigger switch on the mig gun.				
No weld output; wire does not feed; fan motor continues to run.	If OVER TEMP indication is shown on digital display, allow the fan to run and unit to cool until the OVER TEMP indication is cleared from the display.				
	Secure gun trigger plug (see Section 5-8).				
	Release gun trigger and cycle unit power off and back on again.				
No weld output; wire feeds.	Connect work clamp to get good metal to metal contact.				
	Check for loose connections.				
	Replace gun contact tip (see gun Owner's Manual).				
	Check for proper polarity connections (see Section 5-7).				
	Check thumbscrew securing gun end to feed head adapter and tighten if necessary.				
Low weld output.	Connect unit to proper input voltage or check for low line voltage.				
	Adjust the weld voltage control to the desired output. (see Section 6-4).				
Electrode wire feeding stops during welding.	Straighten gun cable and/or replace damaged parts.				
	Adjust drive roll pressure (see Section 5-11).				
	Change to proper drive roll groove (see Section 5-9).				
	Readjust hub tension (see Section 5-10).				
	Be sure that wire is positioned in proper drive roll groove and wire is laying in the groove.				
	Replace contact tip if blocked (see gun Owner's Manual). Oversized tip may be required for some wires.				
	Clean or replace wire inlet guide or liner if dirty or plugged (see Section 5-9 or gun Owner's Manual).				

Trouble	Remedy
	Replace drive roll or pressure bearing if worn or slipping (see Section 5-9).
	Secure gun trigger plug (see Section 5-8).
	Check and clear any restrictions at drive assembly and liner (see Section 5-11 or gun Owner's Manual).
	Release gun trigger and allow gun and motor protection circuitry to reset.
	Have nearest Factory Authorized Service Agent check drive motor.

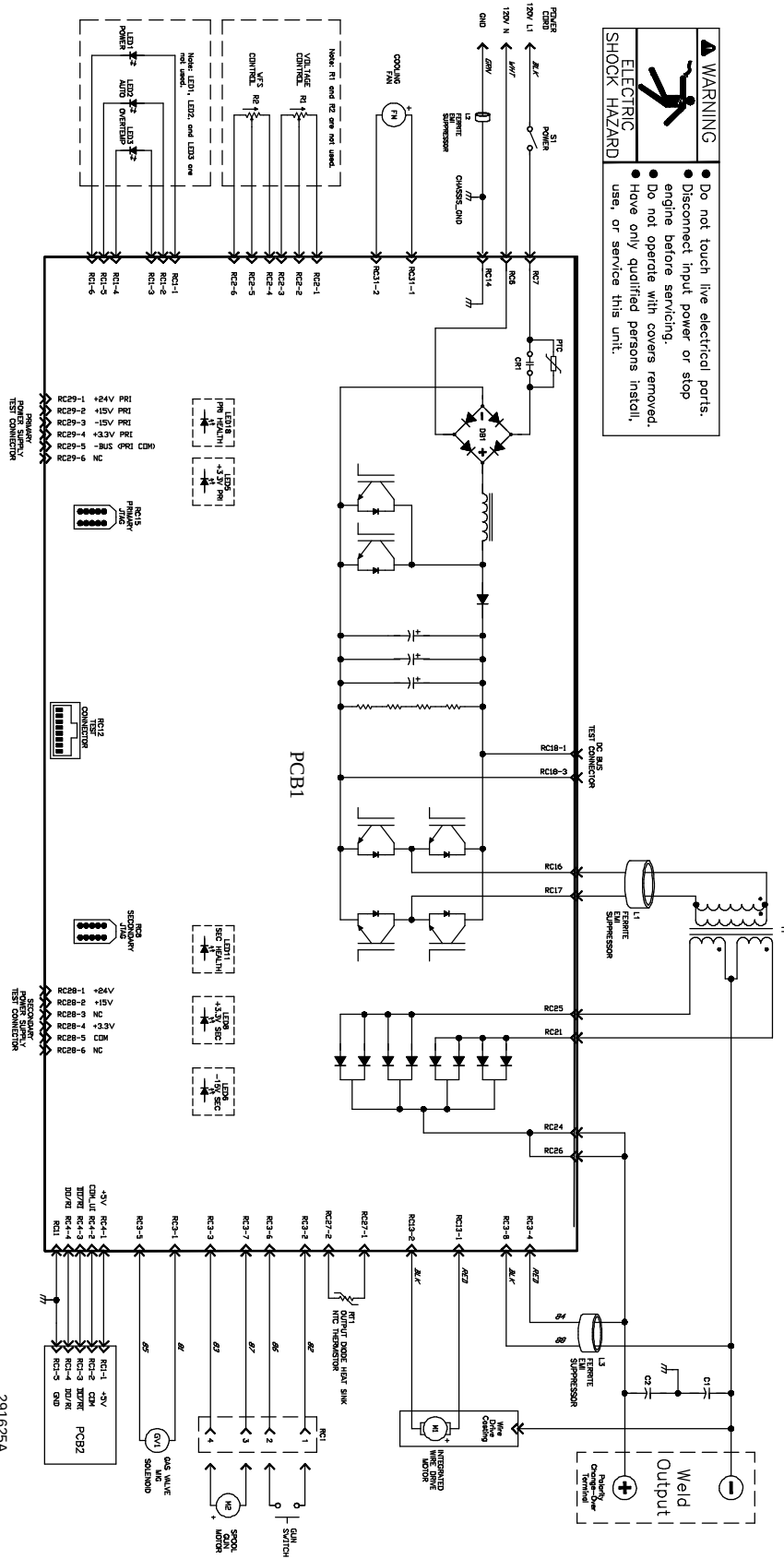
7-3. Error Messages

Red LED DDM								DHC	Description	
W	E	L	D		S	T	U	K	ALRT DL02	The contact tip is likely stuck to the work material. Release the trigger and remove the short. If problem persists contact service.
W	E	L	D		S	T	U	K	ALRT DL07	Weld current was detected while jogging wire. Release the trigger and remove the short
O	V	E	R		T	E	M	P	ALRT DT00	The welder has overheated. Wait for the machine to cool down
M	U	S	T		W	A	I	T		
O	V	E	R		T	E	M	P	ALRT HT05	The welder has overheated. Wait for the machine to cool down
M	U	S	T		W	A	I	T		
H	E	L	D		B	U	T	N	ALRT KP00	A UI button is being held.If problem persists contact service.
L	O	S	T		C	O	M	M	ERR NC00	A communication error has occurred. Cycle power and contact service if problem persists.
C	Y	C	L		P	O	W	R		
L	O	S	T		C	O	M	M	ERR NC02	A communication error has occurred. Cycle power and contact service if problem persists.
C	Y	C	L		P	O	W	R		
		U	P		D	A	T	E	ERR SA07	A data error has occurred. Cycle power and contact service if problem persists.
S	O	F	T		W	A	R	E		
		U	P		D	A	T	E	ERR SA09	A firmware error has occurred. Cycle power and contact service if problem persists.
S	O	F	T		W	A	R	E		
	N	O	T		V	A	L	D	ALRT KS01	A firmware error has occurred. Cycle power and contact service if problem persists.
C	Y	C	L		P	O	W	R		
H	E	L	D		T	R	G	R	ALRT TP00	A held trigger was detected. Release the trigger and contact service if the problem persists.
H	E	L	D		T	R	G	R	ALRT TP07	JOG timeout reached..
H	E	L	D		T	R	G	R	ALRT TP02	A held trigger was detected. Release the trigger and contact service if the problem persists.
	B	A	D		G	U	N		ALRT TP08	A trigger fault was detected. Fix or replace the damaged gun.
U	N	D	R		V	O	L	T	ALRT VU01	The primary voltage is too low for operation
C	Y	C	L		P	O	W	R		
P	O	W	R		D	O	W	N	ALRT VU02	The machine is powering down.
O	V	E	R		V	O	L	T	ALRT VU00	The primary voltage is too high for operation
C	Y	C	L		P	O	W	R		
C	H	C	K		F	E	E	D	ALRT WG01	The internal wire feed motor has drawn too much current. Check for feeding obstructions and drive roll tension.
C	H	C	K		F	E	E	D	ALRT WG02	The spool gun wire feed motor has drawn too much current. Check for feeding obstructions and drive roll tension.
	B	A	D		G	U	N		ALRT WG05	A fault has been detected in the connected spool gun that could cause machine damage.
C	Y	C	L		P	O	W	R		
	B	A	D		G	U	N		ALRT WG06	A fault has been detected in the connected spool gun that could cause machine damage.
C	Y	C	L		P	O	W	R		
H	A	V	E		U	N	I	T	ERR DH06 ERR DH07 ERR EB03 ERR EB04	A machine error has occurred. Cycle power and contact service if problem persists.
S	E	R	V		I	C	E	D		

									ERR EE00 ERR ES00 ERR HH14 ERR HH15 ERR KS00 ERR LE00 ERR LS00 ERR SA05 ERR WG04	
T	E	S	T		O	V	E	R	ALRT ZX00	Field Test Time Trial Expired

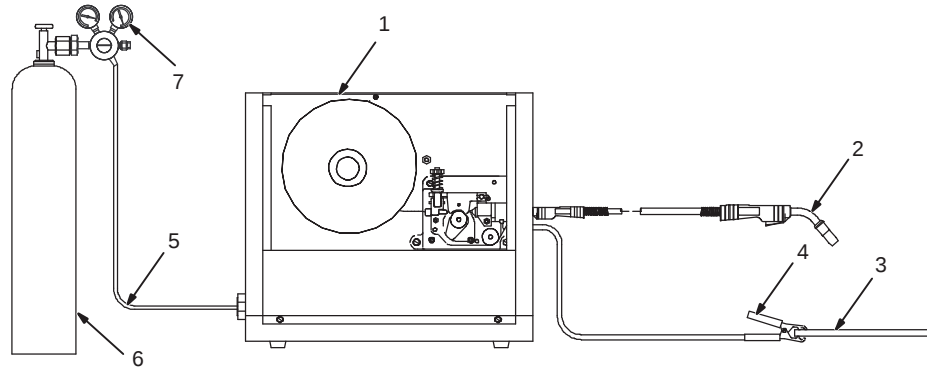
 The last two digits in the right display (shown with XX in the table) will indicate a specific fault a Factory Authorized Service Agent can use to troubleshoot the wire feeder.

SECTION 8 – ELECTRICAL DIAGRAMS



SECTION 9 – GMAW (MIG) WELDING (MIG) GUIDELINES

9-1. Typical GMAW (MIG) Process Connections

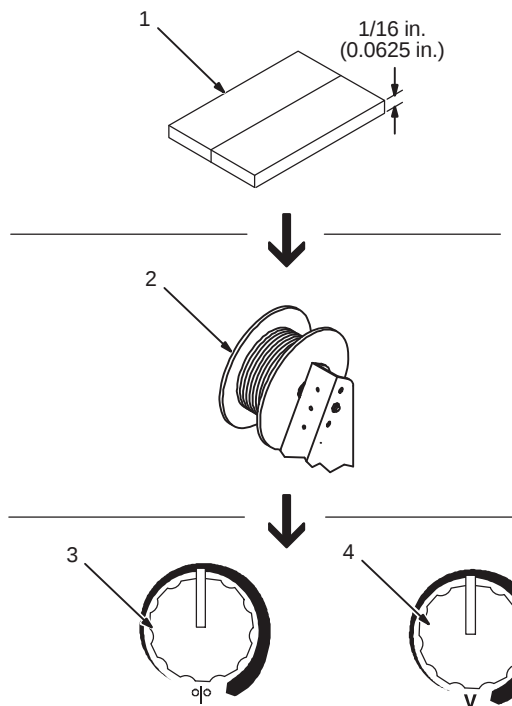


⚠ Weld current can damage electronic parts in vehicles. Disconnect both battery cables before welding on a vehicle. Place work clamp as close to the weld as possible.

- 1 Wire Feeder/Welding Power Source
- 2 Gun
- 3 Workpiece
- 4 Work Clamp

- 5 Gas
- 6 Shielding Gas
- 7 Regulator/Flowmeter

9-2. Typical GMAW (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.

- 1 Material Thickness

Material thickness determines weld parameters.

Convert material thickness to amperage (A):

$$0.001 \text{ in. (0.025 mm)} = 1 \text{ ampere}$$

$$0.0625 \text{ in. (1.59 mm)} \div 0.001 = 62.5 \text{ A}$$

- 2 Select Wire Size

See table below.

- 3 Select Wire Feed Speed (Amperage)

Wire feed speed (amperage) controls weld penetration. See table below.

- 4 Select Voltage

Voltage controls height and width of weld bead.

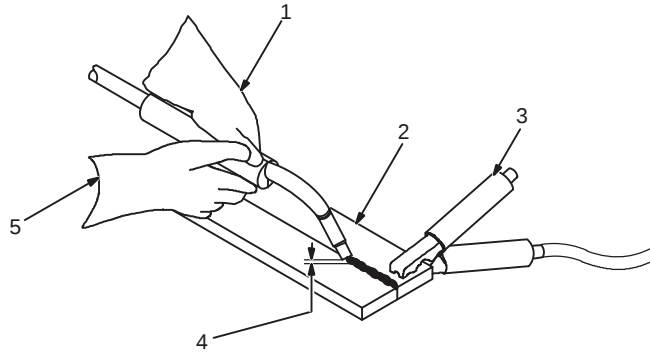
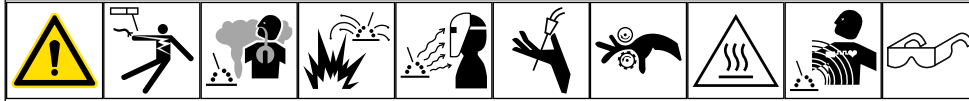
Low Voltage: wire stubs into work

High Voltage: arc is unstable (spatter)

Set voltage midway between high and low voltage.

Wire Size	Amperage Range	Recommended Wire Feed Speed	Wire Feed Speed *
0.023 in. (0.58 mm)	30-90 A	3.5 in. (89 mm) per amp	3.5 x 62.5 A = 219 ipm (5.56 mpm)
0.030 in. (0.76 mm)	40-145 A	2 in. (51 mm) per amp	2 x 62.5 A = 125 ipm (3.19 mpm)
0.035 in. (0.89 mm)	50-180 A	1.6 in. (41 mm) per amp	1.6 x 62.5 A = 100 ipm (2.56 mpm)
*62.5 A based on 1/16 in. (1.6 mm) material thickness. ipm = inches per minute; mpm = meters per minute			

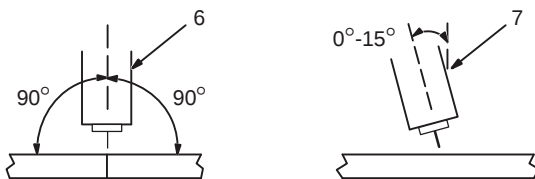
9-3. Holding And Positioning Welding Gun



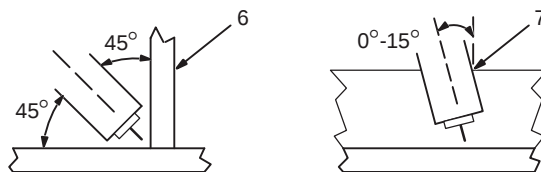
☞ *Welding wire is energized when gun trigger is pressed. Before lowering helmet and pressing trigger, be sure wire is no more than 1/2 in. (13 mm) past end of nozzle, and tip of wire is positioned correctly on seam.*

- 1 Hold Gun and Control Gun Trigger
- 2 Workpiece
- 3 Work Clamp
- 4 Electrode Extension (Stickout)
Solid Wire – 3/8 to 1/2 in. (9 to 13 mm)
- 5 Cradle Gun and Rest Hand on Workpiece
- 6 End View Of Work Angle
- 7 Side View Of Gun Angle

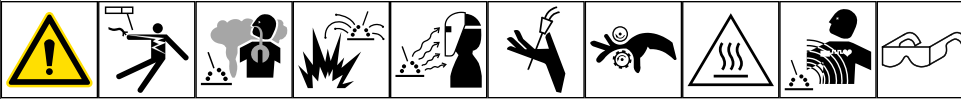
Groove Welds



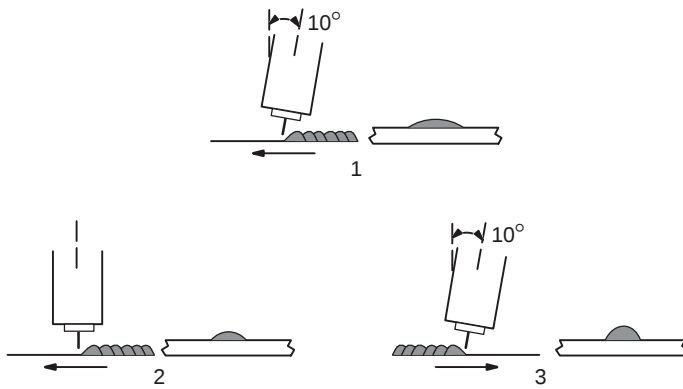
Fillet Welds



9-4. Conditions That Affect Weld Bead Shape



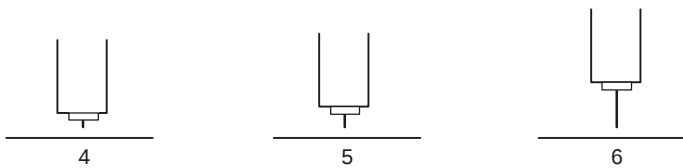
Gun Angles and Weld Bead Profiles



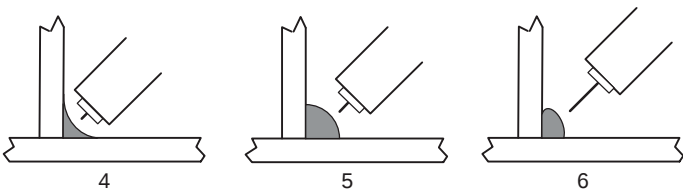
Weld bead shape depends on gun angle, direction of travel, electrode extension (stickout), travel speed, thickness of base metal, wire feed speed (weld current), and voltage.

- 1 Push
- 2 Perpendicular
- 3 Drag
- 4 Short
- 5 Normal
- 6 Long
- 7 Slow
- 8 Normal
- 9 Fast

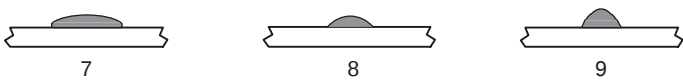
Electrode Extensions (Stickout)



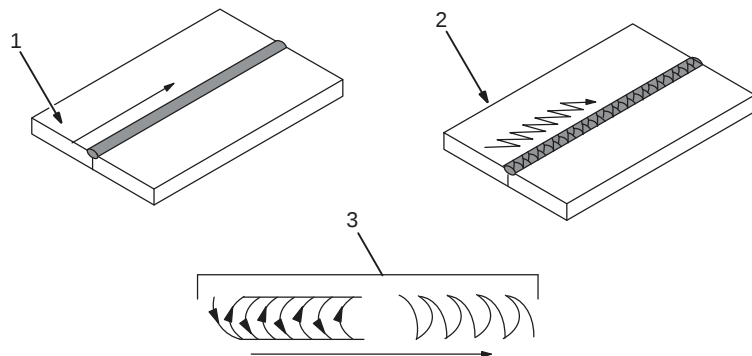
Fillet Weld Electrode Extensions (Stickout)



Gun Travel Speed



9-5. Gun Movement During Welding

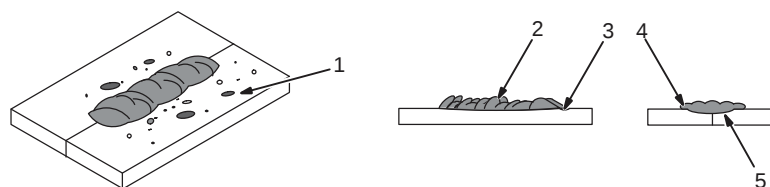


Normally, a single stringer bead is satisfactory for most narrow groove weld joints; however, for wide groove weld joints or bridging across gaps, a weave bead or multiple stringer beads works better.

- 1 Stringer Bead - Steady Movement Along Seam
- 2 Weave Bead - Side To Side Movement Along Seam
- 3 Weave Patterns

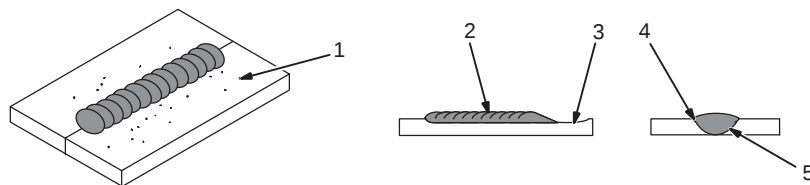
Use weave patterns to cover a wide area in one pass of the electrode.

9-6. Poor Weld Bead Characteristics



- 1 Large Spatter Deposits
- 2 Rough, Uneven Bead
- 3 Slight Crater During Welding
- 4 Bad Overlap
- 5 Poor Penetration

9-7. Good Weld Bead Characteristics

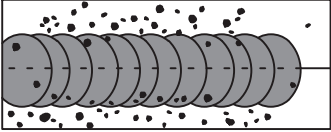


- 1 Fine Spatter
- 2 Uniform Bead
- 3 Moderate Crater During Welding

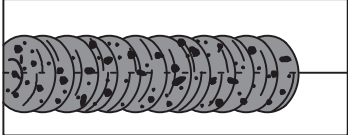
Weld a new bead or layer for each 1/8 in. (3.2 mm) thickness in metals being welded.

- 4 No Overlap
- 5 Good Penetration into Base Metal

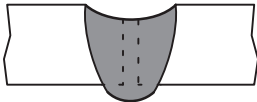
9-8. Troubleshooting – Excessive Spatter

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

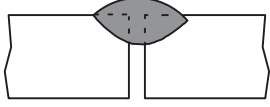
9-9. Troubleshooting – Porosity

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

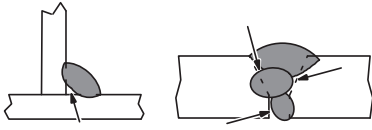
9-10. Troubleshooting – Excessive Penetration

	Excessive Penetration - weld metal melting through base metal and hanging underneath weld.
Possible Causes	Corrective Actions
Excessive heat input.	Select lower voltage range and reduce wire feed speed.
	Increase travel speed.

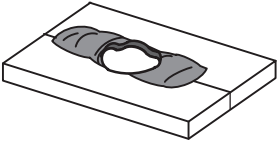
9-11. Troubleshooting – Lack Of Penetration

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

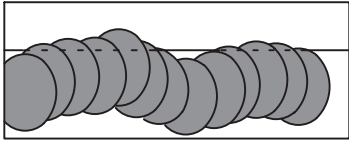
9-12. Troubleshooting – Incomplete Fusion

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

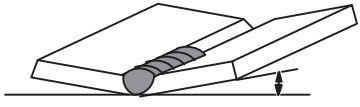
9-13. Troubleshooting – Burn-Through

	Burn-Through - weld metal melting completely through base metal resulting in holes where no metal remains.
Possible Causes	Corrective Actions
Excessive heat input.	Select lower voltage range and reduce wire feed speed.
	Increase and/or maintain steady travel speed.

9-14. Troubleshooting – Waviness Of Bead

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

9-15. Troubleshooting – Distortion

	Distortion - contraction of weld metal during welding that forces base metal to move. Illustration: Base metal moves in the direction of the weld bead.
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.

9-16. 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 Cir-cuiting Steel	GMAW-P Steel	Spray Arc Stainless Steel	Short Cir-cuiting Stainless Steel	GMAW-P Stainless Steel	Spray Arc Aluminum	Short Cir-cuiting Aluminum	GMAW-P Aluminum
Argon			All Positions				All Positions	All Positions	All Positions
Argon + 1% O ₂	Flat & Horizontal Fillet		All Positions	Flat & Horizontal Fillet					
Argon + 2% O ₂	Flat & Horizontal Fillet		All Positions	Flat & Horizontal Fillet					
Argon + 5% CO ₂	Flat & Horizontal Fillet		All Positions						
Argon + 10% CO ₂	Flat & Horizontal Fillet	All Positions	All Positions						
Argon + 25% CO ₂		All Positions							
Argon + 50% CO ₂		All Positions							
CO ₂		All Positions							
Helium							All Positions*		
Argon + Helium							All Positions*		
90% HE + 7-1/2% AR + 2-1/2% CO ₂					All Positions				
65% AR + 33% HE + 2% CO ₂						All Positions			

* Heavy Thicknesses

9-17. 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 (GMAW).	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.
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

Notes

Notes



Effective January 1, 2023 (Equipment with a serial number preface of ND or newer)

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

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

Within the warranty periods listed below, Miller will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. Miller must be notified in writing within thirty (30) days of such defect or failure, at which time Miller will provide instructions on the warranty claim procedures to be followed. Notifications submitted as online warranty claims must provide detailed descriptions of the fault and troubleshooting steps taken to diagnose failed parts. Warranty claims that lack the required information as defined in the Miller Service Operation Guide (SOG) may be denied by Miller.

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

1 5 Years Parts — 3 Years Labor

- Original Main Power Rectifiers Only to Include SCRs, Diodes, and Discrete Rectifier Modules in non-inverter products

2 4 Years Parts (No Labor)

- Auto-Darkening ClearLight 2.0 Helmet Lenses

3 3 Years — Parts and Labor Unless Specified

- Auto-Darkening Helmet Lenses (No Labor)
- Engine Driven Welder/Generators (Including EnPak) (**NOTE: Engines are Warranted Separately by the Engine Manufacturer.**)
- Insight Welding Intelligence Products (Except External Sensors)
- Inverter Power Sources
- Plasma Arc Cutting Power Sources
- Process Controllers
- Semi-Automatic and Automatic Wire Feeders
- Transformer/Rectifier Power Sources

4 2 Years — Parts and Labor

- Auto-Darkening Weld Masks (No Labor)
- Fume Extractors - Filtair 215, Capture 5, and Industrial Collector Series

5 1 Year — Parts and Labor Unless Specified

- ArcReach Heater
- AugmentedArc, LiveArc, and MobileArc Welding Systems
- Automatic Motion Devices
- Bernard BTB Air-Cooled MIG Guns (No Labor)

- CoolBelt, PAPR Blower, and PAPR Face Shield (No Labor)
- Desiccant Air Dryer System
- Field Options (**NOTE: Field options are covered for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.**)
- RFCS Foot Controls (Except RFCS-RJ45)
- Fume Extractors - Filtair 130, MWX and SWX Series, ZoneFlow Extraction Arms and Motor Control Box
- HF Units
- ICE/XT Plasma Cutting Torches (No Labor)
- Induction Heating Power Sources, Coolers (**NOTE: Digital Recorders are Warranted Separately by the Manufacturer.**)
- Insight Sensors
- Load Banks
- Motor-Driven Guns (except Spoolmate Spoolguns)
- Positioners and Controllers
- Racks (For Housing Multiple Power Sources)
- Running Gear/Trailers
- Subarc Wire Drive Assemblies
- Supplied Air Respirator (SAR) Boxes and Panels
- TIG Torches (No Labor)
- Tregaskiss Guns (No Labor)
- Water Cooling Systems
- Wireless Remote Foot/Hand Controls and Receivers
- Work Stations/Weld Tables (No Labor)

6 6 Months — Parts

- 12 Volt Automotive-Style Batteries

7 90 Days — Parts

- Accessories (Kits)
- ArcReach Heater Quick Wrap and Air Cooled Cables
- Canvas Covers
- Induction Heating Coils and Blankets, Cables, and Non-Electronic Controls
- MDX Series MIG Guns
- M-Guns
- MIG Guns, Subarc (SAW) Torches, and External Cladding Heads
- Remote Controls and RFCS-RJ45
- Replacement Parts (No labor)
- Spoolmate Spoolguns

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

1. **Consumable components; such as contact tips, cutting nozzles, 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 Miller, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer's warranty, if any.
3. Equipment that has been modified by any party other than Miller, or equipment that has been

improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

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

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

The exclusive remedies for warranty claims are, at Miller's option, either: (1) repair; or (2) replacement; or, if approved in writing by Miller, (3) the pre-approved cost of repair or replacement at an authorized Miller service station; or (4) payment of or credit for the purchase price (less reasonable depreciation based upon use). Products may not be returned without Miller's written approval. Return shipment shall be at customer's risk and expense.

The above remedies are F.O.B. Appleton, WI, or Miller's authorized service facility. Transportation and freight are the customer's responsibility. TO THE EXTENT PERMITTED BY LAW, THE REMEDIES HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES REGARDLESS OF THE LEGAL THEORY. IN NO EVENT SHALL MILLER BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFIT) REGARDLESS OF THE LEGAL THEORY. ANY WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY, OR REPRESENTATION, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, ARE EXCLUDED AND DISCLAIMED BY MILLER.

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

Warranty Questions?

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

Your distributor also gives you...

Service

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

Support

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

Owner's Record

Please complete and retain with your personal records.

Model Name	Serial/Style Number
Purchase Date	(Date which equipment was delivered to original customer.)
Distributor	
Address	
City	
State	Zip

For Service

Contact a *DISTRIBUTOR* or *SERVICE AGENCY* near you.

Always provide Model Name and Serial/Style Number.

Contact your Distributor for:	Welding Supplies and Consumables Options and Accessories Personal Protective Equipment (PPE) Service and Repair Replacement Parts Training (Schools, Videos, Books) Welding Process Handbooks To locate a Distributor or Service Agency visit www.millerwelds.com or call 1-800-4-A-Miller
-------------------------------	--

Contact the Delivering Carrier to:	File a claim for loss or damage during shipment. For assistance in filing or settling claims, contact your distributor and/or equipment manufacturer's Transportation Department.
------------------------------------	--

Miller Electric Mfg. LLC

An Illinois Tool Works Company
1635 West Spencer Street
Appleton, WI 54914 USA

International Headquarters—USA

USA Phone: 920-735-4505
USA & Canada FAX: 920-735-4134
International FAX: 920-735-4125

For International Locations Visit
www.MillerWelds.com

