OM-2250 216 871F
2006–11

Processes

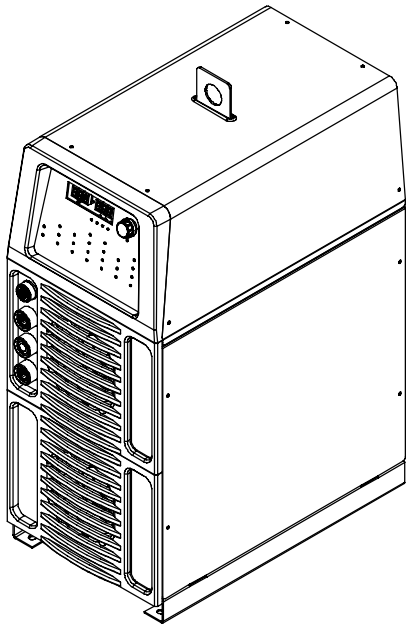
TIG (GTAW) Welding

Stick (SMAW) Welding

Description

208/575 Volt Models W/Auto-Line™
Arc Welding Power Source

Dynasty® 700
Maxstar® 700



OWNER'S MANUAL

File: TIG (GTAW)

Visit our website at
www.MillerWelds.com

From Miller to You

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

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

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

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

ISO 9001:2000 REGISTERED QUALITY SYSTEM

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

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

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

TRUE BLUE® WARRANTY

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

Miller®

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Declaration of Conformity for European Community (CE) Products

NOTE ☞	*This information is provided for units with CE certification (see rating label on unit).*

Manufacturer:

Miller Electric Mg. Co.
1635 W. Spencer St.
Appleton, WI 54914 USA
Phone: (920) 734-9821

European Contact:

Mr. Danilo Fedolfi,
Managing Director
ITW Welding Products Italy S.r.l.
Via Privata Iseo 6/E
20098 San Giuliano
Milanese, Italy
Phone: 39(02)98290-1
Fax: 39(02)98290203

European Contact Signature: _____

Declares that the product: **Dynasty® 700**

conforms to the following Directives and Standards:

Directives

Low Voltage Directive: 73/23/EEC

Electromagnetic compatibility Directives: 89/336/EEC, 92/31/EEC

Machinery Directives: 98/37EEC, 91/368/EEC, 92/31/EEC, 133/04, 93/68/EEC

Standards

Arc Welding Equipment – Part 10: Electromagnetic Compatibility (EMC) Requirements. IEC 60974-10 August 2002

Arc Welding Equipment – Part 1: Welding Power Sources. IEC 60974-1 Ed. 2.1

Degrees of Protection Provided By Enclosures (IP Code): IEC 60529 Ed. 2.1

Insulation Coordination For Equipment Within Low-Voltage Systems: Part 1: Principles, Requirements And Tests. IEC 60664-1 Ed. 1.1

Arc Welding Equipment – Part 3: Arc Striking And Stabilizing Devices. IEC 60974-3 Ed. 1

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Fax: 39(02)98290203

European Contact Signature: _____

Declares that the product: **Maxstar ® 700**

conforms to the following Directives and Standards:

Directives

Low Voltage Directive: 73/23/EEC

Electromagnetic compatibility Directives: 89/336/EEC, 92/31/EEC

Machinery Directives: 98/37EEC, 91/368/EEC, 92/31/EEC, 133/04, 93/68/EEC

Standards

Arc Welding Equipment – Part 10: Electromagnetic Compatibility (EMC) Requirements. IEC 60974-10 August 2002

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Arc Welding Equipment – Part 3: Arc Striking And Stabilizing Devices. IEC 60974-3 Ed. 1

SECTION 1 – SAFETY PRECAUTIONS - READ BEFORE USING

som _2/05

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

1-1. Symbol Usage

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

▲ **Marks a special safety message.**

☞ *Means "Note"; not safety related.*

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

1-2. Arc Welding Hazards

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

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

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

ELECTRIC SHOCK can kill.

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

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

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

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

FUMES AND GASES can be hazardous.

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

- Keep your head out of the fumes. Do not breathe the fumes.
- If inside, ventilate the area and/or use local forced ventilation at the arc to remove welding fumes and gases.
- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Material Safety Data Sheets (MSDSs) and the manufacturer's instructions for metals, consumables, coatings, cleaners, and degreasers.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained 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.

ARC RAYS can burn eyes and skin.

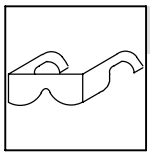
Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

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

WELDING can cause fire or explosion.

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

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



FLYING METAL can injure eyes.

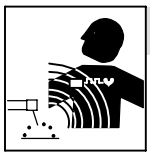
- Welding, chipping, wire brushing, and grinding cause sparks and flying metal. As welds cool, they can throw off slag.
- Wear approved safety glasses with side shields even under your welding helmet.

BUILDUP OF GAS can injure or kill.

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

HOT PARTS can cause severe burns.

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



MAGNETIC FIELDS can affect pacemakers.

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

NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

- Wear approved ear protection if noise level is high.

CYLINDERS can explode if damaged.

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

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

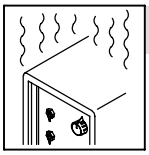
1-3. Additional Symbols For Installation, Operation, And Maintenance

FIRE OR EXPLOSION hazard.

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

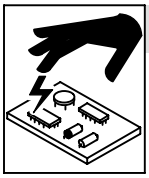
FALLING UNIT can cause injury.

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



OVERUSE can cause OVERHEATING

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



STATIC (ESD) can damage PC boards.

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

MOVING PARTS can cause injury.

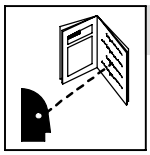
- Keep away from moving parts.
- Keep away from pinch points such as drive rolls.

WELDING WIRE can cause injury.

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

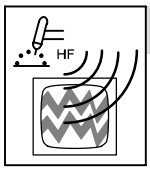
MOVING PARTS can cause injury.

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



READ INSTRUCTIONS.

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



H.F. RADIATION can cause interference.

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

ARC WELDING can cause interference.

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

1-4. California Proposition 65 Warnings

▲ **Welding or cutting equipment produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)**

▲ **Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.**

For Gasoline Engines:

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

For Diesel Engines:

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

1-5. Principal Safety Standards

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

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

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

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

Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3 (phone: 800–463–6727 or in Toronto 416–747–4044, website: www.csa–international.org).

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

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

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

1-6. EMF Information

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

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

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

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

About Pacemakers:

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

SECTION 2 – CONSIGNES DE SÉCURITÉ – LIRE AVANT UTILISATION

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

2-1. Symboles utilisés

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

▲ **Indique un message de sécurité particulier**

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

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

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

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

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

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

UNE DÉCHARGE ÉLECTRIQUE peut entraîner la mort.

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

- Ne pas toucher aux pièces électriques sous tension.
- Porter des gants isolants et des vêtements de protection secs et sans trous.
- S'isoler de la pièce à couper et du sol en utilisant des housses ou des tapis assez grands afin d'éviter tout contact physique avec la pièce à couper ou le sol.
- Ne pas se servir de source électrique à courant électrique dans les zones humides, dans les endroits confinés ou là où on risque de tomber.
- Se servir d'une source électrique à courant électrique UNIQUEMENT si le procédé de soudage le demande.
- Si l'utilisation d'une source électrique à courant électrique s'avère nécessaire, se servir de la fonction de télécommande si l'appareil en est équipé.
- D'autres consignes de sécurité sont nécessaires dans les conditions suivantes : risques électriques dans un environnement humide ou si l'on porte des vêtements mouillés ; sur des structures métalliques telles que sols, grilles ou échafaudages ; en position coincée comme assise, à genoux ou couchée ; ou s'il y a un risque élevé de contact inévitable ou accidentel avec la pièce à souder ou le sol. Dans ces conditions, utiliser les équipements suivants, dans l'ordre indiqué : 1) un poste à souder DC à tension constante (à fil), 2) un poste à souder DC manuel (électrode) ou 3) un poste à souder AC à tension à vide réduite. Dans la plupart des situations, l'utilisation d'un poste à souder DC à fil à tension constante est recommandée. En outre, ne pas travailler seul !
- Couper l'alimentation ou arrêter le moteur avant de procéder à l'installation, à la réparation ou à l'entretien de l'appareil. Déverrouiller l'alimentation selon la norme OSHA 29 CFR 1910.147 (voir normes de sécurité).
- Installer le poste correctement et le mettre à la terre convenablement selon les consignes du manuel de l'opérateur et les normes nationales, provinciales et locales.
- Toujours vérifier la terre du cordon d'alimentation. Vérifier et s'assurer que le fil de terre du cordon d'alimentation est bien raccordé à la borne de terre du sectionneur ou que la fiche du cordon est raccordée à une prise correctement mise à la terre.
- En effectuant les raccordements d'entrée, fixer d'abord le conducteur de mise à la terre approprié et contre-vérifier les connexions.
- Vérifier fréquemment le cordon d'alimentation afin de s'assurer qu'il n'est pas altéré ou à nu, le remplacer immédiatement s'il l'est. Un fil à nu peut entraîner la mort.
- L'équipement doit être hors tension lorsqu'il n'est pas utilisé.
- Ne pas utiliser des câbles usés, endommagés, de grosseur insuffisante ou mal épissés.
- Ne pas enrouler les câbles autour du corps.
- Si la pièce soudée doit être mise à la terre, le faire directement avec un câble distinct.
- Ne pas toucher l'électrode quand on est en contact avec la pièce, la terre ou une électrode provenant d'une autre machine.
- Ne pas toucher des porte électrodes connectés à deux machines en même temps à cause de la présence d'une tension à vide doublée.
- N'utiliser qu'un matériel en bon état. Réparer ou remplacer sur-le-champ les pièces endommagées. Entretenir l'appareil conformément à ce manuel.
- Porter un harnais de sécurité si l'on doit travailler au-dessus du sol.
- S'assurer que tous les panneaux et couvercles sont correctement en place.
- Fixer le câble de retour de façon à obtenir un bon contact métal-métal avec la pièce à souder ou la table de travail, le plus près possible de la soudure.
- Isoler la pince de masse quand pas mis à la pièce pour éviter le contact avec tout objet métallique.
- Ne pas raccorder plus d'une électrode ou plus d'un câble de masse à une même borne de sortie de soudage.

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

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

LES FUMÉES ET LES GAZ peuvent être dangereux.

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

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

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

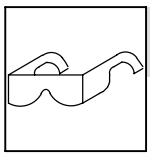
Le rayonnement de l'arc du procédé de soudage génère des rayons visibles et invisibles intenses (ultraviolets et infrarouges) susceptibles de provoquer des brûlures dans les yeux et sur la peau. Des étincelles sont projetées pendant le soudage.

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

LE SOUDAGE peut provoquer un incendie ou une explosion.

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

- Déplacer toutes les substances inflammables à une distance de 10,7 m de l'arc de soudage. En cas d'impossibilité, les recouvrir soigneusement avec des protections homologuées.
- Ne pas souder dans un endroit où des étincelles peuvent tomber sur des substances inflammables.
- Se protéger, ainsi que toute autre personne travaillant sur les lieux, contre les étincelles et le métal chaud.
- Des étincelles et des matériaux chauds du soudage peuvent facilement passer dans d'autres zones en traversant de petites fissures et des ouvertures.
- Afin d'éliminer tout risque de feu, être vigilant et garder toujours un extincteur à la portée de main.
- Le soudage effectué sur un plafond, plancher, paroi ou séparation peut déclencher un incendie de l'autre côté.
- Ne pas effectuer le soudage sur des conteneurs fermés tels que des réservoirs, tambours, ou conduites, à moins qu'ils n'aient été préparés correctement conformément à AWS F4.1 (voir les normes de sécurité).
- Brancher le câble de masse sur la pièce le plus près possible de la zone de soudage pour éviter le transport du courant sur une longue distance par des chemins inconnus éventuels en provoquant des risques d'électrocution, d'étincelles et d'incendie.
- Ne pas utiliser le poste de soudage pour dégeler des conduites gelées.
- En cas de non-utilisation, enlever la baguette d'électrode du porte-électrode ou couper le fil à la pointe de contact.
- Porter des vêtements de protection exempts d'huile tels que des gants en cuir, une veste résistante, des pantalons sans revers, des bottes et un casque.
- Avant de souder, retirer toute substance combustible de ses poches telles qu'un allumeur au butane ou des allumettes.
- Suivre les consignes de OSHA 1910.252 (a) (2) (iv) et de NFPA 51B pour travaux de soudage et prévoir un détecteur d'incendie et un extincteur à proximité.



DES PARTICULES VOLANTES peuvent blesser les yeux.

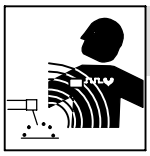
- Le soudage, l'écaillement, le passage de la pièce à la brosse en fil de fer, et le meulage génèrent des étincelles et des particules métalliques volantes. Pendant la période de refroidissement des soudures, elles risquent de projeter du laitier.
- Porter des lunettes de sécurité avec écrans latéraux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

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

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

DES PIÈCES CHAUDES peuvent provoquer des brûlures graves.

- Ne pas toucher des parties chaudes à mains nues.
- Prévoir une période de refroidissement avant d'utiliser le pistolet ou la torche.
- Ne pas toucher aux pièces chaudes, utiliser les outils recommandés et porter des gants de soudage et des vêtements épais pour éviter les brûlures.



LES CHAMPS MAGNÉTIQUES peuvent affecter les stimulateurs cardiaques.

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

LE BRUIT peut endommager l'ouïe.

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

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

LES BOUTEILLES peuvent exploser si elles sont endommagées.

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

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

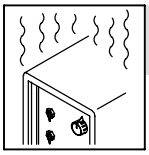
2-3. Dangers supplémentaires en relation avec l'installation, le fonctionnement et la maintenance

Risque D'INCENDIE OU D'EXPLOSION.

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

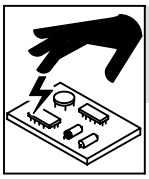
LA CHUTE DE L'APPAREIL peut blesser.

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



L'EMPLOI EXCESSIF peut SURCHAUFFER L'ÉQUIPEMENT.

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



LES CHARGES ÉLECTROSTATIQUES peuvent endommager les circuits imprimés.

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

DES ORGANES MOBILES peuvent provoquer des blessures.

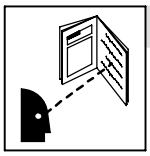
- Ne pas s'approcher des organes mobiles.
- Ne pas s'approcher des points de coincement tels que des rouleaux de commande.

LES FILS DE SOUDAGE peuvent provoquer des blessures.

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

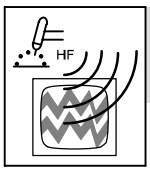
DES ORGANES MOBILES peuvent provoquer des blessures.

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



LIRE LES INSTRUCTIONS.

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



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

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

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

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

2-4. Proposition californienne 65 Avertissements

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

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

Pour les moteurs à essence :

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

Pour les moteurs diesel :

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

2-5. Principales normes de sécurité

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

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

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

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

Code for Safety in Welding and Cutting, CSA Standard W117.2, de Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3 (téléphone : 800-463-6727 ou à Toronto 416-747-4044, site Internet : www.csa-international.org).

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

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

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

2-6. Information EMF

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

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

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

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

En ce qui concerne les stimulateurs cardiaques

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

SECTION 3 – DEFINITIONS (CE Models Only)

3-1. Warning Label Definitions

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

1 Electric shock from welding electrode or wiring can kill.

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

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

1.3 Disconnect input plug or power before working on machine.

2 Breathing welding fumes can be hazardous to your health.

2.1 Keep your head out of the fumes.

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

2.3 Use ventilating fan to remove fumes.

3 Welding sparks can cause explosion or fire.

3.1 Keep flammables away from welding. Do not weld near flammables.

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

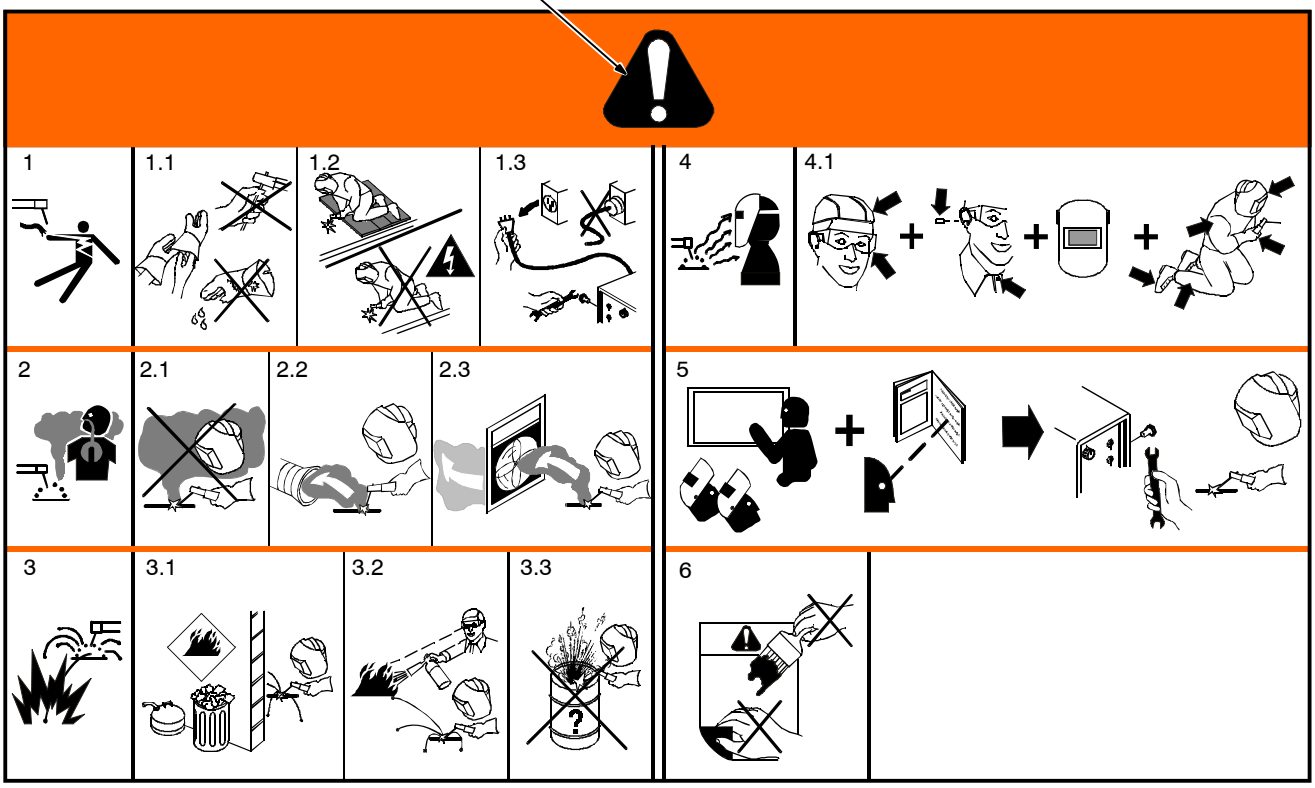
3.3 Do not weld on drums or any closed containers.

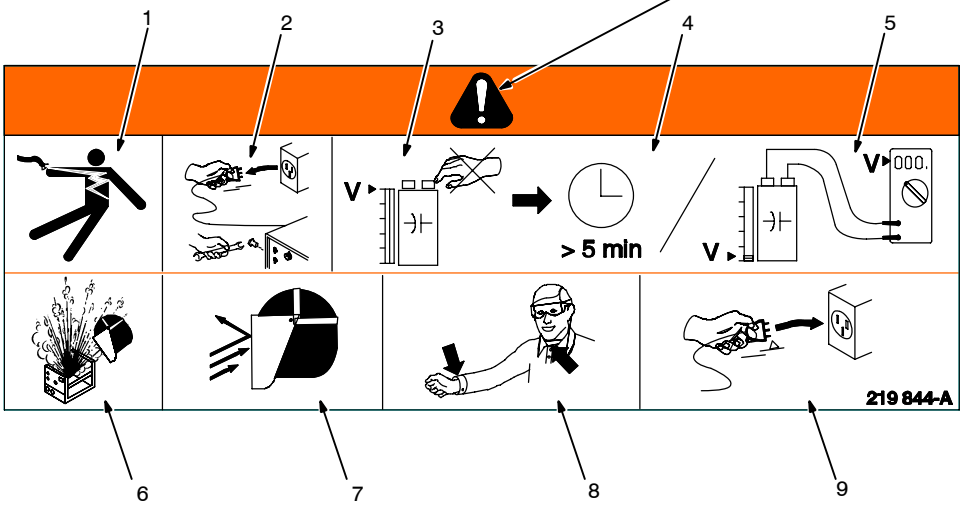
4 Arc rays can burn eyes and injure skin.

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

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

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





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

1 Electric shock from wiring can kill.

2 Disconnect input plug or power before working on machine.

3 Hazardous voltage remains on input capacitors after power is turned off. Do not touch fully charged capacitors.

4 Always wait 5 minutes after power is turned off before working on unit, OR

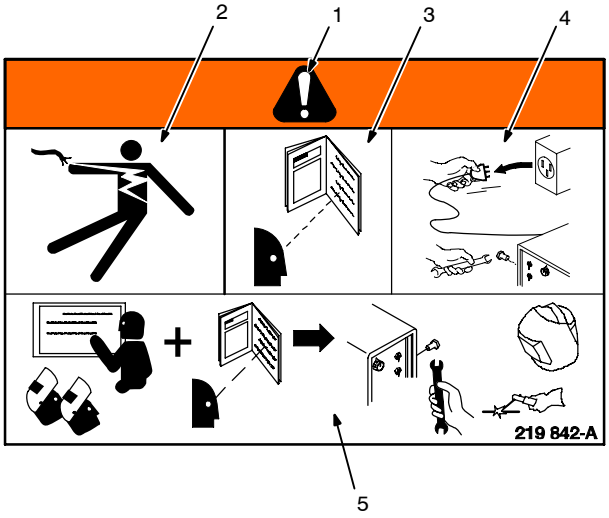
5 Check input capacitor voltage, and be sure it is near 0 before touching any parts.

6 When power is applied failed parts can explode or cause other parts to explode.

7 Flying pieces of parts can cause injury. Always wear a face shield when servicing unit.

8 Always wear long sleeves and button your collar when servicing unit.

9 After taking proper precautions as shown, connect power to unit.



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

2 Electric shock from wiring can kill.

3 Read the Owner's Manual before working on this machine.

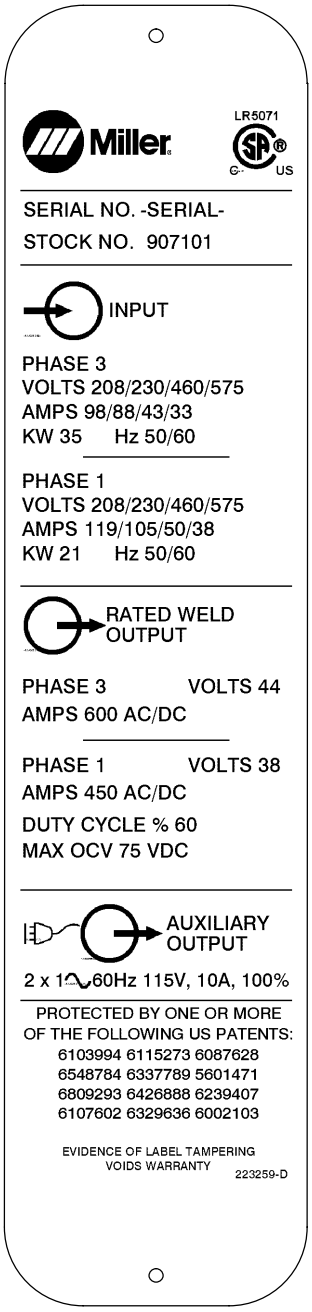
4 Disconnect input plug or power before working on machine.

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

3-2. Manufacturer's Rating Labels (Non CE Models)

☞ *For label location see Section 4-5.*

Manufacture's Rating Label For Dynasty 700 Models



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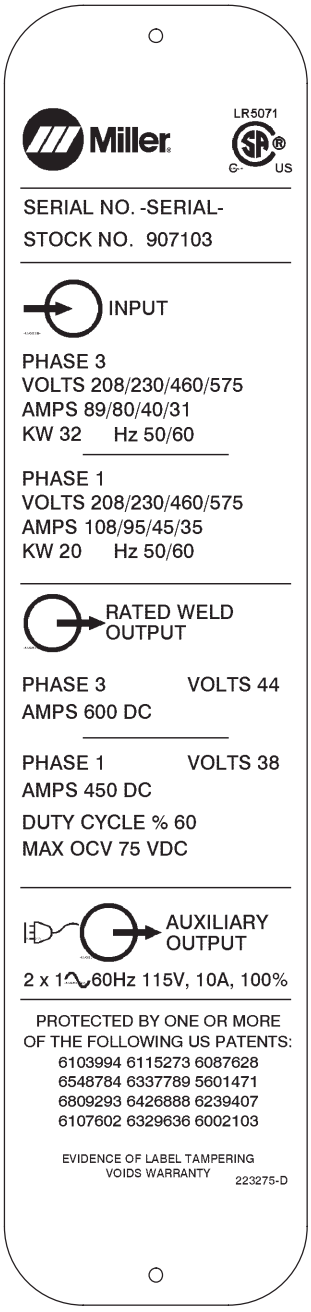
Manufacture's Rating Label Maxstar 700 Models



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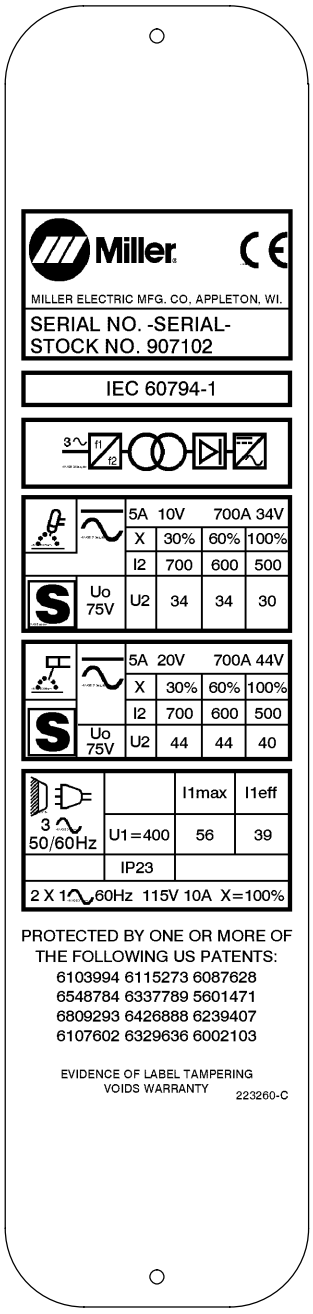
3-3. Manufacturer's Rating Labels (CE Models)

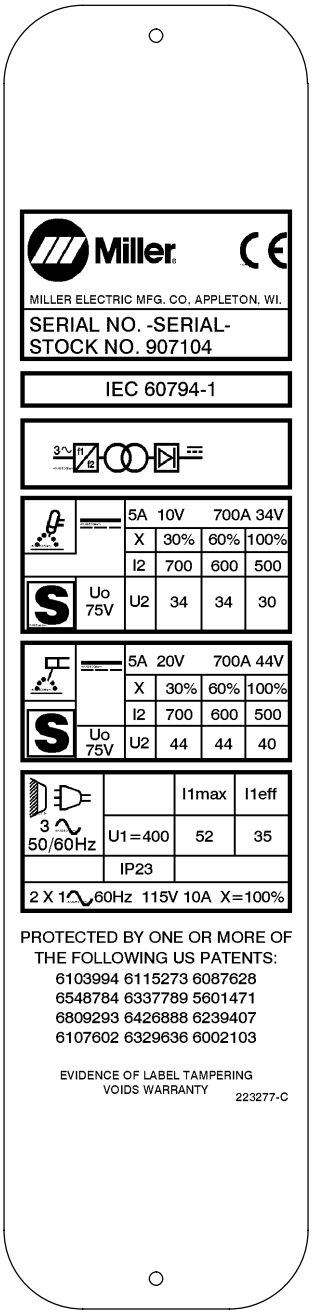
☞ *For label location see Section 4-5.*

Manufacture's Rating Label For Dynasty 700 Models



223 260-C

Manufacture's Rating Label Maxstar 700 Models



223 277-C

3-4. Symbols And Definitions

A Amperes	Output	Gas Tungsten Arc Welding (GTAW)	Shielded Metal Arc Welding (SMAW)
V Volts	Input	3 Phase Static Frequency Converter-Transformer-Rectifier	
Output	Circuit Breaker	Remote	Lift-Arc (GTAW)
Protective Earth (Ground)	Postflow Timer	Preflow Timer	S Seconds
On	Off	Positive	Negative
Alternating Current	Gas Input	Gas Output	I_2 Rated Welding Current
X Duty Cycle	Direct Current	Line Connection	U_2 Conventional Load Voltage
U_1 Primary Voltage	IP Degree Of Protection	I_{1max} Rated Maximum Supply Current	I_{1eff} Maximum Effective Supply Current
U_0 Rated No Load Voltage (Average)	Polarity Control	Initial Amperage	Increase/Decrease Of Quantity
Remote Standard		Gas/DIG Control	% Percent
Hz Hertz	Recall From Memory	Arc Force (DIG)	Impulse Starting (GTAW)
Final Slope	Final Amperage	Pulse Percent On Time	Initial Slope
AC Waveshape Control	Pulser	EP Amperage	Pulse Frequency
Work	Electrode	EN Amperage	Process
Unit may be used in environments with increased hazard of electric shock	Sequence	Background Amperage	AC Frequency

SECTION 4 – INSTALLATION

4-1. Specifications

A. Dynasty 700

Input Power	Rated Welding Output	Amperage Range	Maximum Open-Circuit Voltage DC	Amperes Input at Rated Load Output 50/60 Hz						
				208 V	230 V	400 V	460 V	575 V	KVA	KW
Three Phase	500 A @ 40 Volts, 100% Duty Cycle	5–700	75∇ 10–15♦	75	68	39	34	27	27	26
	600 A @ 44 Volts, 60% Duty Cycle			97	88	51	44	35	35	34
Single Phase	360 A @ 34 Volts, 100% Duty Cycle	5–700	75∇ 10–15♦	82	74	––	37	30	17	16
	450 A @ 38 Volts DC, 60% Duty Cycle			115	104	––	52	42	24	22

*While idling

♦ Low open-circuit voltage while in TIG Lift Arc™, or while in Stick with low open-circuit voltage selected (see Section 6-7).

∇**Normal open-circuit voltage (75 volts) is present while in Stick with normal open-circuit voltage selected** (see Section 6-7)**.**

Note: This unit is equipped with Auto-Line™**.** Auto-Line is an internal inverter power source circuit that automatically links the power source to any primary input voltage from 190 to 625 volts, single-or-three-phase, 50 or 60 hertz. Also adjusts for voltage spikes within the entire range.

B. Maxstar 700

Input Power	Rated Welding Output	Amperage Range	Maximum Open-Circuit Voltage DC	Amperes Input at Rated Load Output 50/60 Hz						
				208 V	230 V	400 V	460 V	575 V	KVA	KW
Three Phase	500 A @ 40 Volts, 100% Duty Cycle	5–700	75∇ 10–15♦	67	60	35	30	24	24	23
	600 A @ 44 Volts, 60% Duty Cycle			89	80	46	40	32	32	31
Single Phase	360 A @ 34 Volts, 100% Duty Cycle	5–700	75∇ 10–15♦	77	70	––	35	28	16	15
	450 A @ 38 Volts DC, 60% Duty Cycle			106	96	––	48	38	22	21

*While idling

♦ Low open-circuit voltage while in TIG Lift Arc™, or while in Stick with low open-circuit voltage selected (see Section 6-7).

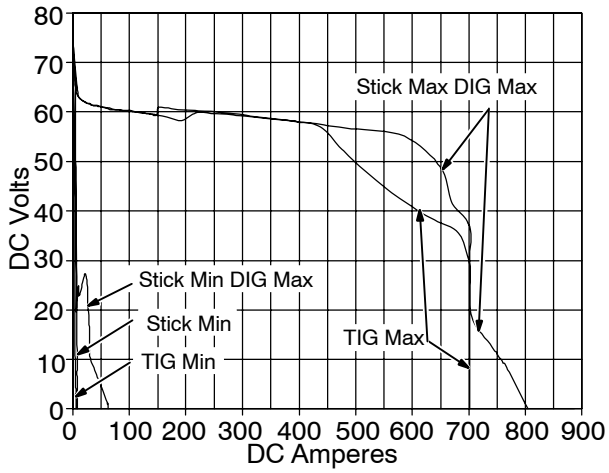
∇**Normal open-circuit voltage (75 volts) is present while in Stick with normal open-circuit voltage selected** (see Section 6-7)**.**

Note: This unit is equipped with Auto-Line™**.** Auto-Line is an internal inverter power source circuit that automatically links the power source to any primary input voltage from 190 to 625 volts, single-or-three-phase, 50 or 60 hertz. Also adjusts for voltage spikes within the entire range.

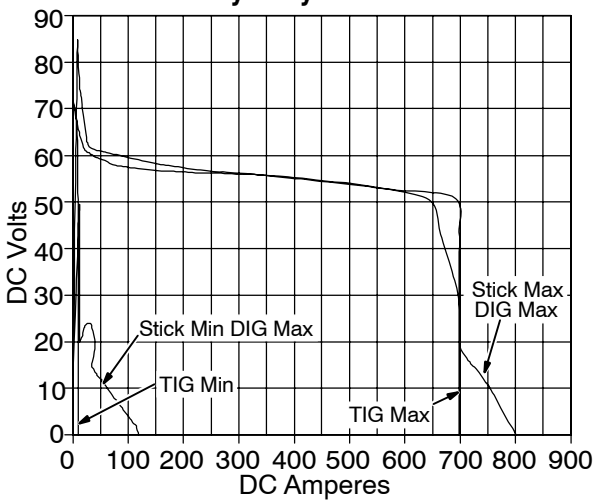
4-2. Volt-Ampere Curves

Volt-ampere curves show minimum and maximum voltage and amperage output capabilities of unit. Curves of other settings fall between curves shown.

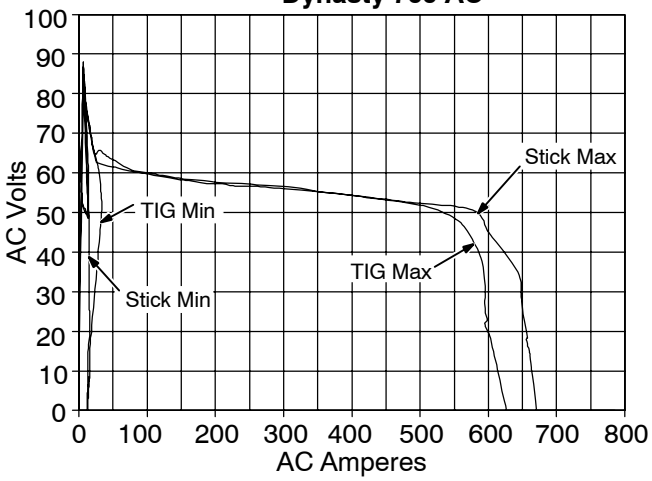
Maxstar 700



Dynasty 700 DC



Dynasty 700 AC



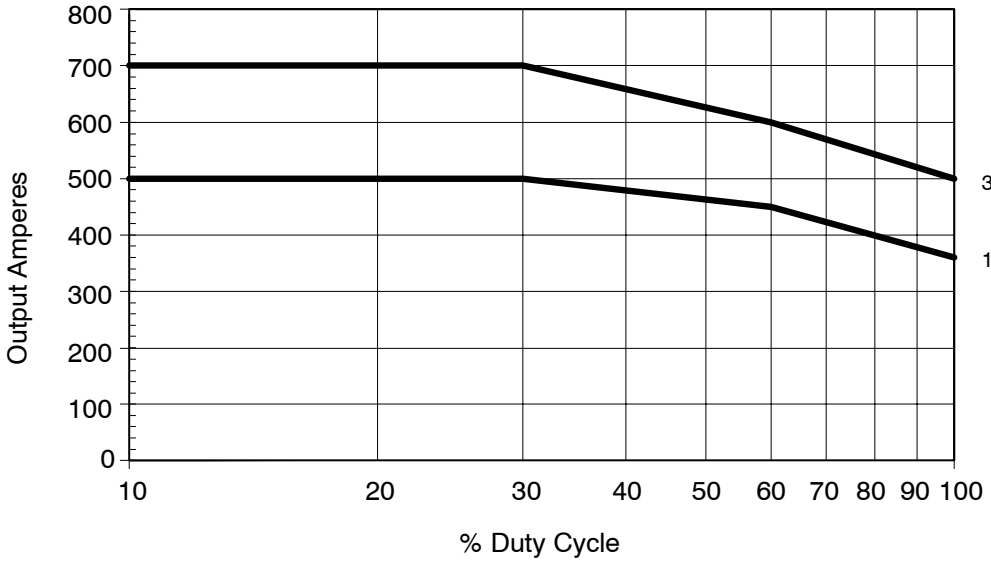
215 126-A / 213 342-A / 213 344-A

4-3. Duty Cycle and Overheating

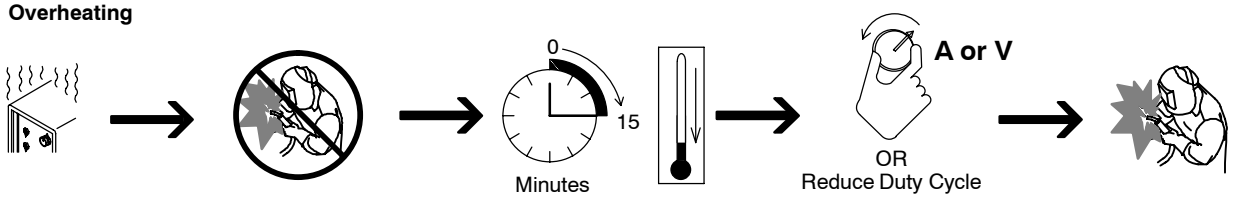
Duty Cycle is the percentage of 10 minutes that unit can weld at rated load without overheating.

If unit overheats, output stops, a Help message is displayed (see Section 7-3), and cooling fan runs. Wait fifteen minutes for unit to cool. Reduce amperage or voltage, or duty cycle before welding.

▲ **Exceeding duty cycle can damage unit and void warranty.**



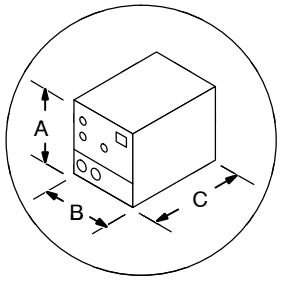
Overheating

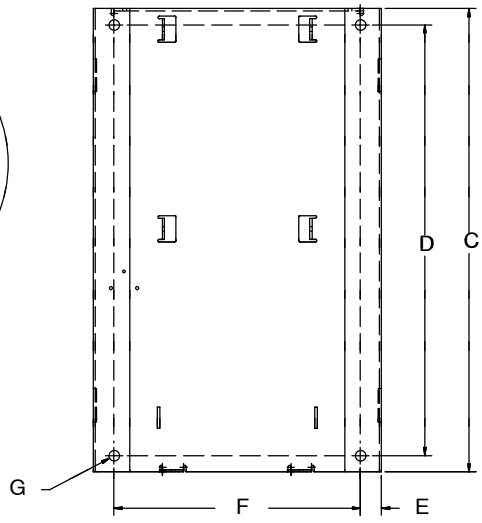


sduty1 5/95 / 213 343-B

4-4. Dimensions, Weights And Base Mounting Hole Layout

NOTE ☞ *Overall dimensions (A, B, and C) include lifting eye, handles, hardware, etc.*

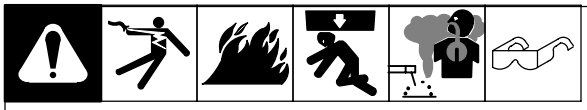




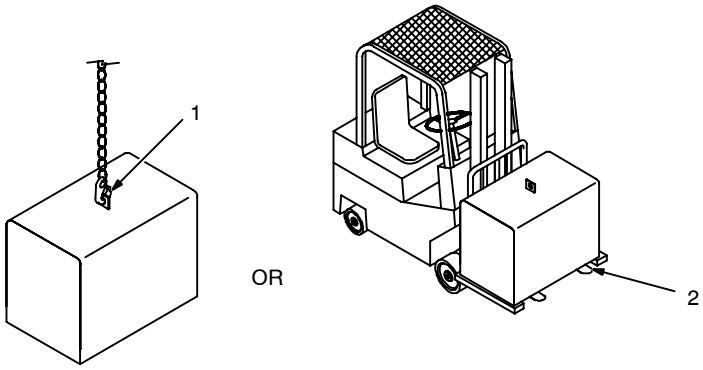
803 914-A

Dimensions	
A	34-1/2 in (876 mm)
B	13-3/4 in (349 mm)
C	22 in (559 mm)
D	20-1/2 in (521 mm)
E	1 in (25 mm)
F	11-3/4 in (298 mm)
G	1/2 in Dia. (13 mm Dia.) 4 Holes
Weight	
198 lb (90 kg)	

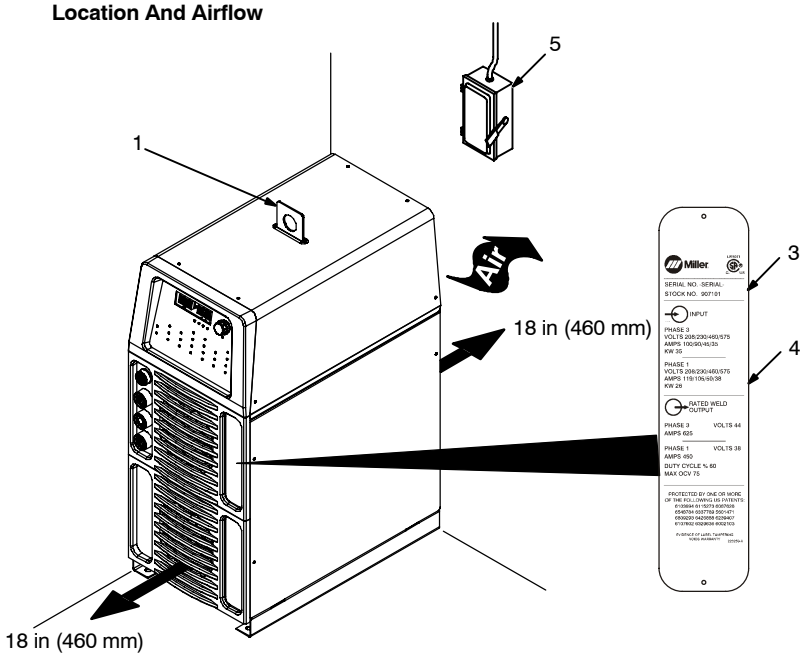
4-5. Selecting A Location



Movement



Location And Airflow



▲ **Falling Unit Can Cause Injury.**

Use equipment of adequate capacity to lift and support unit.

1 Lifting Eye

2 Lifting Forks

Use lifting eye or lifting forks to move unit.

Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories.

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

3 Serial Number/Patent Label

4 Rating Label

Use rating label to determine input power needs (see Section 3-2).

5 Line Disconnect Device

Locate unit near correct input power supply.

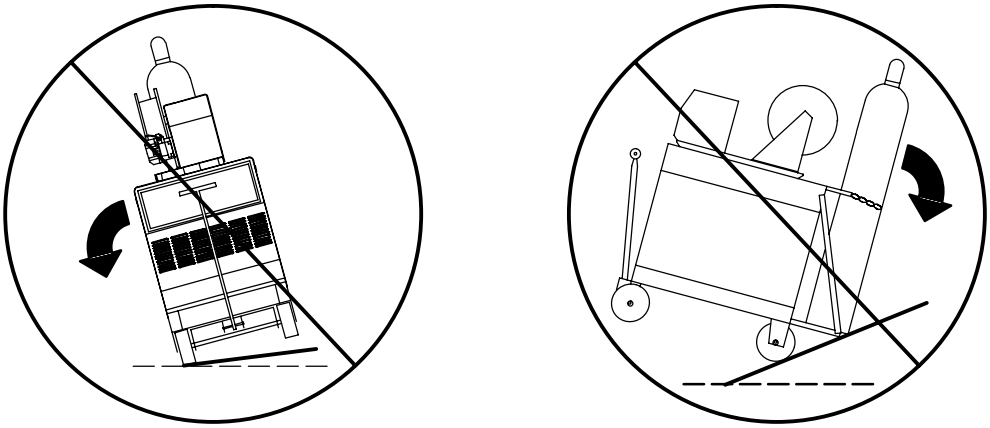
▲ **Special installation may be required where gasoline or volatile liquids are present – see NEC Article 511 or CEC Section 20.**

▲ **Be careful when placing or moving unit over uneven surfaces.**

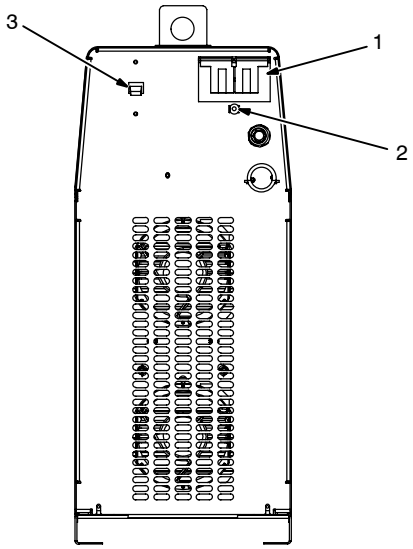
Ref. 117 264-C / 803 900-A / 223 259-A / 223 275-A

4-6. Tipping

▲ **Be careful when placing or moving unit over uneven surfaces.**



4-7. 115 Volts AC Duplex Receptacle, Supplementary Protector CB1, And Power Switch



1 AC Duplex Receptacle

Receptacle RC2 supplies 115 V 10 A of single-phase power.

2 Supplementary Protector CB1

CB1 protects duplex receptacle from overload. If circuit breaker opens, the receptacle does not work. Press button to reset protector.

3 Power On/Off Switch

803 901-A

4-8. Weld Output Terminals And Selecting Cable Sizes*

▲ **ARC WELDING can cause Electromagnetic Interference.**

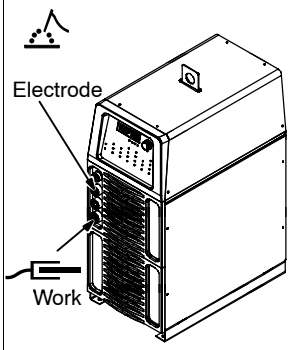
To reduce possible interference, keep weld cables as short as possible, close together, and down low, such as on the floor. Locate welding operation 100 meters from any sensitive electronic equipment. Be sure this welding machine is installed and grounded according to this manual. If interference still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

Weld Output Terminals

▲ **Turn off power before connecting to weld output terminals.**

▲ **Do not use worn, damaged, undersized, or poorly spliced cables.**

Welding Amps***	Weld Cable Size** and Total Cable (Copper) Length in Weld Circuit Not Exceeding****							
	100 ft (30 m) or Less		150 ft (45 m)	200 ft (60 m)	250 ft (70 m)	300 ft (90 m)	350 ft (105 m)	400 ft (120 m)
	10 – 60% Duty Cycle	60 – 100% Duty Cycle	10 – 100% Duty Cycle					
100	4 (20)	4 (20)	4 (20)	3 (30)	2 (35)	1 (50)	1/0 (60)	1/0 (60)
150	3 (30)	3 (30)	2 (35)	1 (50)	1/0 (60)	2/0 (70)	3/0 (95)	3/0 (95)
200	3 (30)	2 (35)	1 (50)	1/0 (60)	2/0 (70)	3/0 (95)	4/0 (120)	4/0 (120)
250	2 (35)	1 (50)	1/0 (60)	2/0 (70)	3/0 (95)	4/0 (120)	2 ea. 2/0 (2x70)	2 ea. 2/0 (2x70)
300	1 (50)	1/0 (60)	2/0 (70)	3/0 (95)	4/0 (120)	2 ea. 2/0 (2x70)	2 ea. 3/0 (2x95)	2 ea. 3/0 (2x95)
350	1/0 (60)	2/0 (70)	3/0 (95)	4/0 (120)	2 ea. 2/0 (2x70)	2 ea. 3/0 (2x95)	2 ea. 3/0 (2x95)	2 ea. 4/0 (2x120)
400	1/0 (60)	2/0 (70)	3/0 (95)	4/0 (120)	2 ea. 2/0 (2x70)	2 ea. 3/0 (2x95)	2 ea. 4/0 (2x120)	2 ea. 4/0 (2x120)
500	2/0 (70)	3/0 (95)	4/0 (120)	2 ea. 2/0 (2x70)	2 ea. 3/0 (2x95)	2 ea. 4/0 (2x120)	3 ea. 3/0 (3x95)	3 ea. 3/0 (3x95)
600	3/0 (95)	4/0 (120)	2 ea. 2/0 (2x70)	2 ea. 3/0 (2x95)	2 ea. 4/0 (2x120)	3 ea. 3/0 (3x95)	3 ea. 4/0 (3x120)	3 ea. 4/0 (3x120)
700	4/0 (120)	2 ea. 2/0 (2x70)	2 ea. 3/0 (2x95)	2 ea. 4/0 (2x120)	3 ea. 3/0 (3x95)	3 ea. 4/0 (3x120)	3 ea. 4/0 (3x120)	4 ea. 4/0 (4x120)
800	4/0 (120)	2 ea. 2/0 (2x70)	2 ea. 3/0 (2x95)	2 ea. 4/0 (2x120)	3 ea. 4/0 (3x120)	3 ea. 4/0 (3x120)	4 ea. 4/0 (4x120)	4 ea. 4/0 (4x120)
900	2 ea. 2/0 (2x70)	2 ea. 3/0 (2x95)	2 ea. 4/0 (2x120)	3 ea. 3/0 (3x95)				



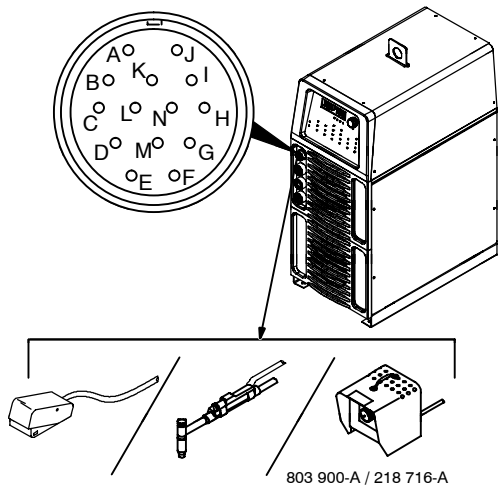
* This chart is a general guideline and may not suit all applications. If cable overheats, use next size larger cable.

**Weld cable size (AWG) is based on either a 4 volts or less drop or a current density of at least 300 circular mils per ampere.
( ) = mm^2 for metric use

S-0007-E–

***Select weld cable size for pulsing application at peak amperage value.

4-9. Remote 14 Receptacle Information (Used Without Automation Connection)

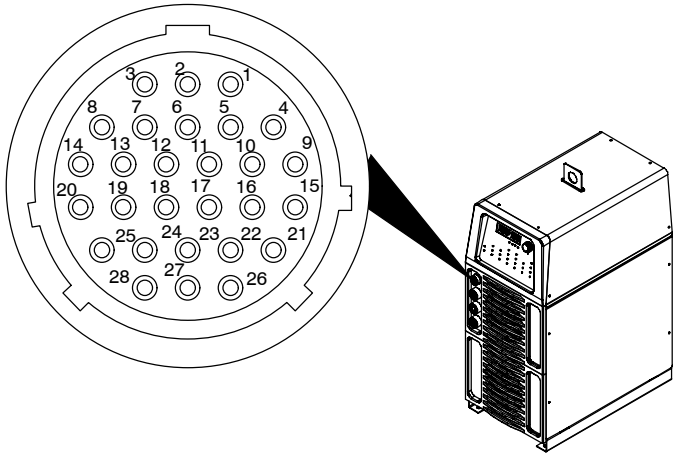


REMOTE 14	Socket*	Socket Information
15 VOLTS DC OUTPUT (CONTACTOR)	A	Contactor control, 15 volts DC.
	B	Contact closure to A completes 15 volts DC contactor control circuit, and enables output.
REMOTE OUTPUT CONTROL	C	+10 volts DC.
	D	Remote control circuit common.
	E	0 to +10 volts DC input command signal from remote control.
A/V AMPERAGE VOLTAGE	F	Current feedback; +1 volt DC per 100 amperes.
	H	Voltage feedback; +1 volt DC per 10 output receptacle volts.
CHASSIS	K	Chassis common.
GND	G	+15 volts DC (A) common.

*The remaining sockets are not used.

Note: If a remote hand control, like the RHC-14, is connected to the Remote 14 receptacle, some current value above min. must be set on the remote control before the Panel or Remote contactor is turned on. Failure to do so, will cause current to be controlled by the panel control and the remote hand control will not function.

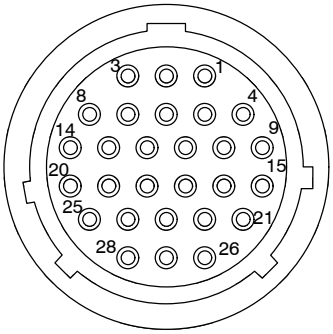
4-10. Automation Connection



803 900-A / 218 716-A

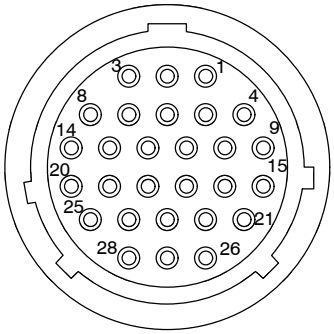
Pin	Pin Information For 28-Pin Receptacle RC28
1	Start/Stop - Closure to pin 8 starts the weld cycle. Opening closure stops weld cycle. During 2T operation, a momentary closure (greater than 100 ms, but less than 3/4 seconds) starts and stops weld output.
2	Output enable - functional only in automation modes - Closure to pin 8 must be maintained at all times. If the closure between pins 2 and 8 is broken, an output disable occurs, Postflow begins to time out, and *HELP 13* will be displayed on the meters.
3	Gas - Closure to pin 8 turns on gas. This input will override Postflow, but if a Preflow time is entered, the Preflow cycle will time out before arc initiation.
4	Valid arc, collector - Output is on when the contactor is on and there is less than 50 load volts (see Section 4-13).
5	Voltage feedback - +1 volt DC per 10 volts w/reference to pin 11.
6	Current feedback - +1 volt DC per 100 amperes w/reference to pin 11.
7	Not used
8	IGND isolation common
9	Valid arc, emitter - Output is on when the contactor is on and there is less than 50 load volts (see Section 4-13).
10	Memory enable - See Section 4-11.
11	Remote control circuit common
12	Chassis common
13	Pulse lockout, collector - Output is on when in Initial Amperage, Initial Slope, Final Slope, Final Amperage, and Pulsed Background time when the pulse frequency is less than 10 Hz (see Section 4-13).
14	Pulse lockout, emitter - Output is on when in Initial Amperage, Initial Slope, Final Slope, Final Amperage, and Pulse Background time, when the pulse frequency is less than 10 Hz (see Section 4-13).
15	Memory select 0 - See Section 4-11.
16	Memory select 1 - See Section 4-11.
17	Command signal from remote control - 0 to +10 volts DC input.
18	+10 volts DC
19	HF disable - Disables high frequency when connected to pin 8.
20	Automation enable 1 - See Section 4-12.
21	Amperage EN common - See Section 4-12.
22	Amperage EN command - See Section 4-12.
23	Final slope, collector - Output is on when in Final Slope (see Section 4-13).
24	Final slope, emitter - Output is on when in Final Slope (see Section 4-13).
25	Automation enable 2 - See Section 4-12.
26	Amperage EP command (Dynasty models only) - See Section 4-12.
27	Amperage EP common (Dynasty models only) - See Section 4-12.
28	Polarity (Dynasty models only) - See Section 4-12.

4-11. Remote Memory Select Inputs

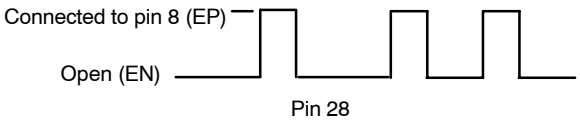


28-Pin Receptacle RC28			
Socket Designations 0 = No Connection / 1 = Connected To Ground (Pin 8) X= Do Not Care			
Function	10	15	16
Off	0	X	X
Memory 1	1	0	0
Memory 2	1	1	0
Memory 3	1	0	1
Memory 4	1	1	1

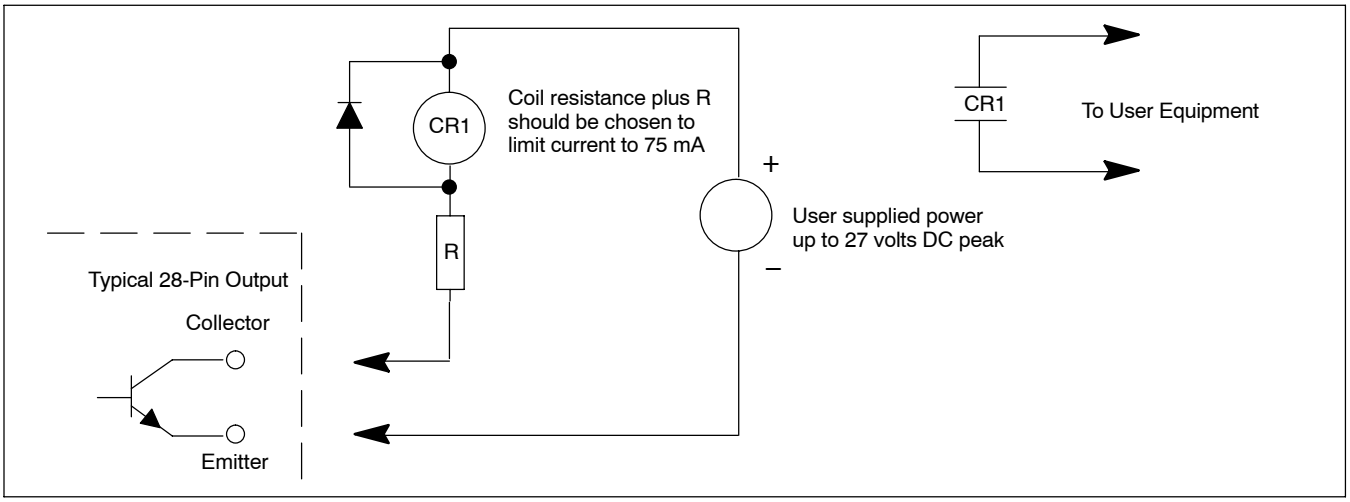
4-12. Automation Selections



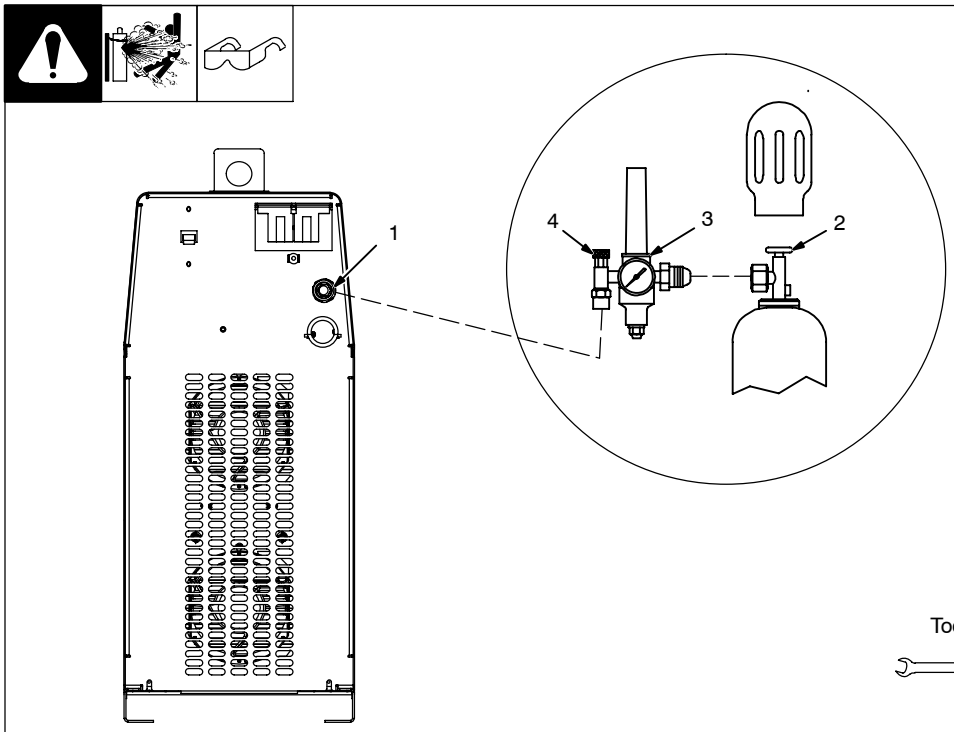
28-Pin Receptacle RC28		
Socket Designations 0 = No Connection / 1 = Connected To Ground (Pin 8) X= Do Not Care		
	Pin	
Function	20	21
No automation functions selected	0	0
Automation 1 Enables pin 2 function, Sequencer and weld timers	1	0
Automation 2 Enables pin 2 functions Pin 22 to pin 21 - 0 to +10 volts DC EN amplitude Pin 26 to pin 27 - 0 to +10 volts DC EP amplitude Pin 28 to pin 8 - EP polarity (Frequency and Balance) Pin 28 not connected to pin 8 - EN polarity (Frequency and Balance) Final Slope and Pulse outputs are not functional	X	1



4-13. Typical Application



4-14. Gas Connections



1 Gas Fitting

Fittings have 5/8-18 right-hand threads.

2 Cylinder Valve

Open valve slightly so gas flow blows dirt from valve. Close valve.

3 Regulator/Flowmeter

4 Flow Adjust

Typical flow rate is 15 cfh (cubic feet per hour).

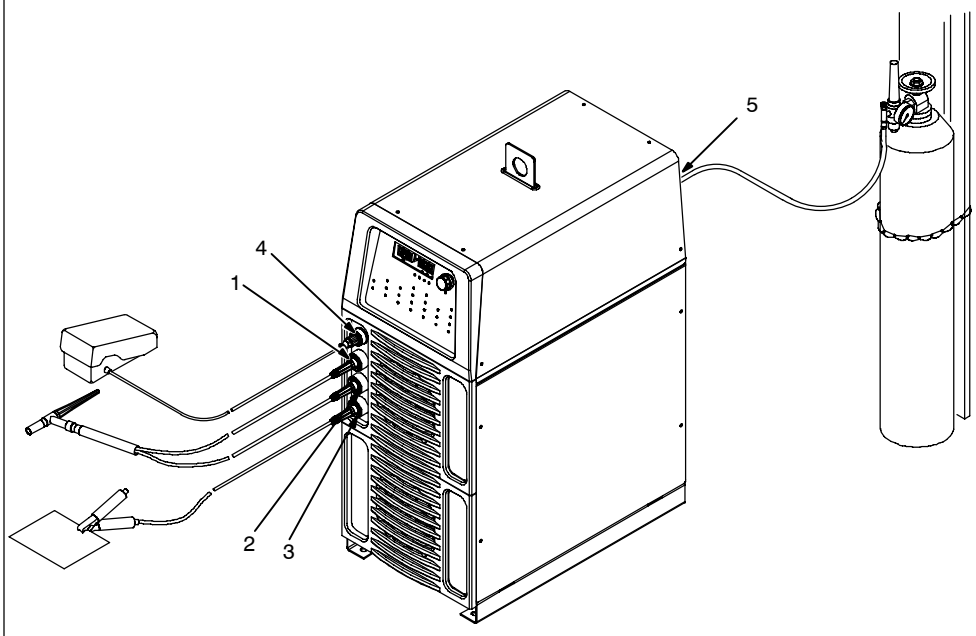
Connect customer supplied gas hose between regulator/flowmeter and gas fitting on rear of unit.

Tools Needed:

5/8, 1-1/8 in

803 901-A

4-15. TIG HF Impulse/ Lift-Arc™ Connections



▲ **Turn off power before making connections.**

1 Electrode Weld Output Terminal

Connect TIG torch to electrode weld output terminal.

2 Gas Out Connection

Connect torch gas hose to gas out fitting.

3 Work Weld Output Terminal

Connect work lead to work weld output terminal.

4 Remote 14 Receptacle

If desired, connect remote control to Remote 14 receptacle (see Section 4-9).

5 Gas In Connection

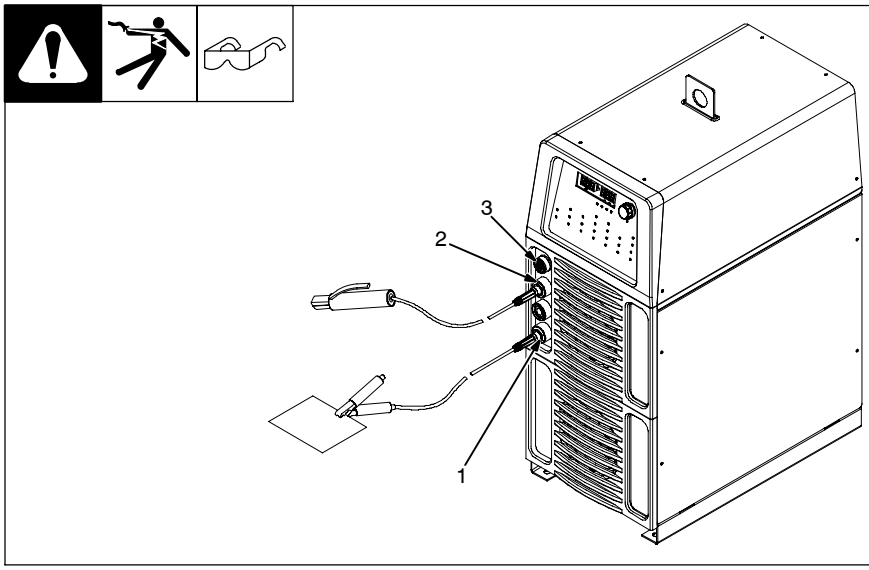
Connect gas hose from gas supply to gas in fitting (see Section 4-14).

Tools Needed:

11/16 in, (21 mm for CE units)

803 915-A

4-16. Stick Connections



▲ **Turn off power before making connections.**

☞ *Connections shown are for Dynasty models. For Maxstar models, reverse work and electrode connections*

1 Work Weld Output Terminal

Connect work lead to work weld output terminal.

2 Electrode Weld Output Terminal

Connect electrode holder to electrode weld output terminal.

3 Remote 14 Receptacle

If desired, connect remote control to Remote 14 receptacle (see Section 4-9).

803 916-A

4-17. Electrical Service Guide

A. Dynasty 700

NOTE ☞ *Actual input voltage cannot exceed ± 10% of indicated required input voltage. If actual input voltage is outside of this range, no output is available.*

	Three-Phase				
Input Voltage	208	230	400	460	575
Input Amperes At Rated Output	97	88	51	44	35
Max Recommended Standard Fuse Rating In Amperes [1]					
Time-Delay [2]	110	100	60	50	40
Normal Operating [3]	150	125	80	70	50
Min Input Conductor Size In AWG [4]	4	4	8	8	10
Max Recommended Input Conductor Length In Feet (Meters)	118 (36)	144 (44)	177 (54)	235 (72)	240 (73)
Min Grounding Conductor Size In AWG [4]	6	6	8	8	10

	Single-Phase			
Input Voltage	208	230	460	575
Input Amperes At Rated Output	115	104	52	42
Max Recommended Standard Fuse Rating In Amperes [1]				
Time-Delay [2]	125	125	60	50
Normal Operating [3]	175	150	80	60
Min Input Conductor Size In AWG [4]	3	4	8	8
Max Recommended Input Conductor Length In Feet (Meters)	107 (33)	107 (33)	178 (54)	279 (85)
Min Grounding Conductor Size In AWG [4]	6	6	8	10

Reference: 2005 National Electrical Code (NEC) (includes 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” .

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

4 Conductor data in this section specifies conductor size (excluding flexible cord or cable) between the panelboard and the equipment per NEC Table 310.16. If a flexible cord or cable is used, minimum conductor size may increase. See NEC Table 400.5(A) for flexible cord and cable requirements.

B. Maxstar 700

NOTE ☞	*Actual input voltage cannot exceed ± 10% of indicated required input voltage. If actual input voltage is outside of this range, no output is available.*

	Three-Phase				
Input Voltage	208	230	400	460	575
Input Amperes At Rated Output	89	80	46	40	32
Max Recommended Standard Fuse Rating In Amperes [1]					
Time-Delay [2]	110	100	50	50	40
Normal Operating 3	125	125	70	60	50
Min Input Conductor Size In AWG 4	4	6	8	8	10
Max Recommended Input Conductor Length In Feet (Meters)	129 (39)	101 (31)	194 (59)	257 (78)	263 (80)
Min Grounding Conductor Size In AWG 4	6	6	8	10	10

	Single-Phase			
Input Voltage	208	230	460	575
Input Amperes At Rated Output	106	96	48	38
Max Recommended Standard Fuse Rating In Amperes [1]				
Time-Delay [2]	125	110	50	45
Normal Operating 3	150	150	70	60
Min Input Conductor Size In AWG 4	4	4	8	10
Max Recommended Input Conductor Length In Feet (Meters)	94 (29)	115 (35)	189 (58)	194 (59)
Min Grounding Conductor Size In AWG 4	6	6	8	10

Reference: 2005 National Electrical Code (NEC) (includes 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.

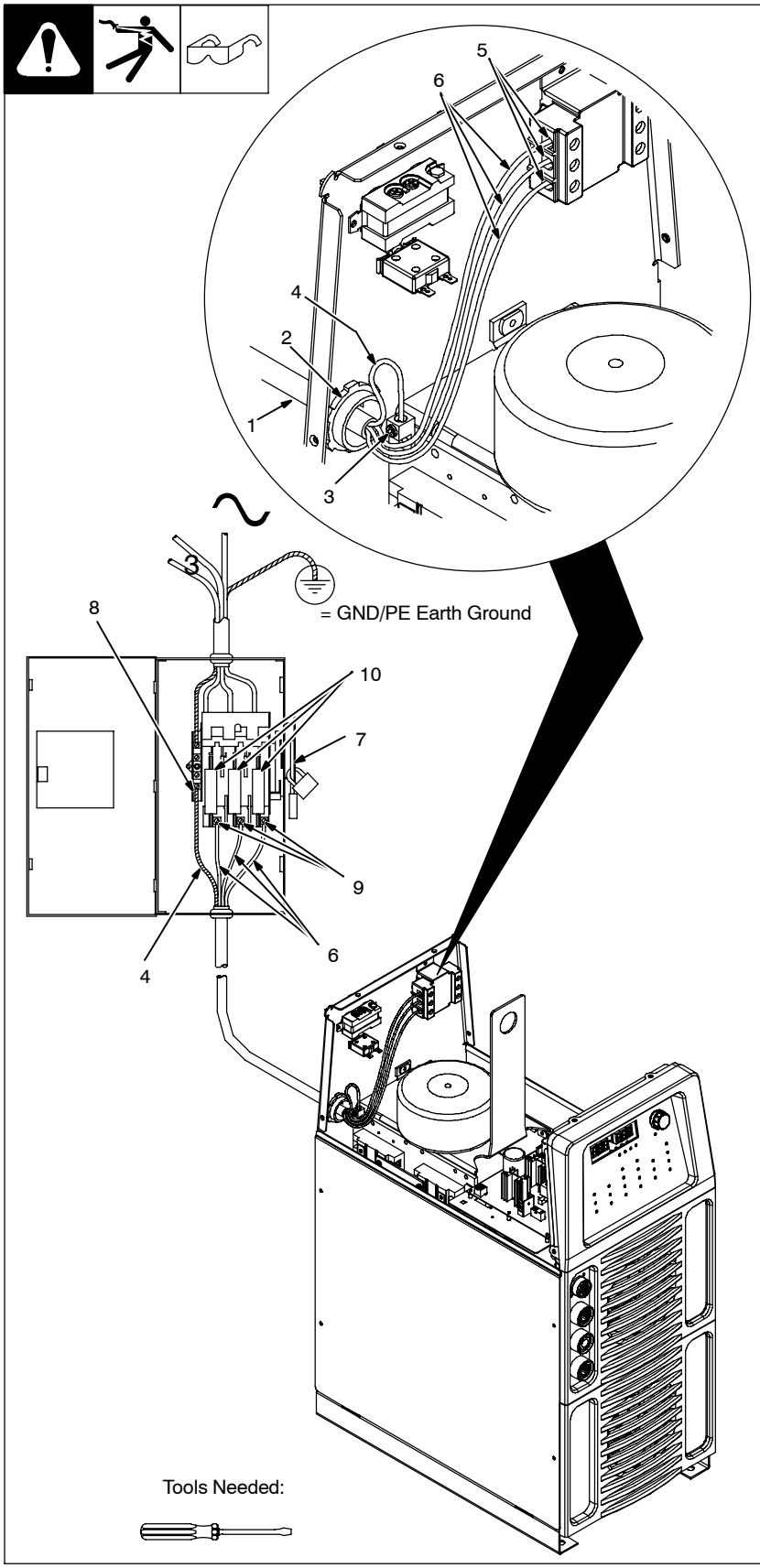
2 “Time-Delay” fuses are UL class “RK5” .

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

4 Conductor data in this section specifies conductor size (excluding flexible cord or cable) between the panelboard and the equipment per NEC Table 310.16. If a flexible cord or cable is used, minimum conductor size may increase. See NEC Table 400.5(A) for flexible cord and cable requirements.

4-18. Connecting Input Power

A. Connecting Three-Phase Input Power



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

See rating label on unit and check input voltage available at site (see Section 4-5).

1 Input Power Conductors (Customer Supplied Cord)

Select size and length of conductors using Section 4-17. Conductors must comply with national, state, and local electrical codes. If applicable, use lugs of proper amperage capacity and correct hole size.

Welding Power Source Input Power Connections

2 Strain Relief

Route conductors (cord) through strain relief and tighten screws.

3 Machine Grounding Terminal

4 Green Or Green/Yellow Grounding Conductor

Connect green or green/yellow grounding conductor to welding power source grounding terminal first.

5 Welding Power Source Line Terminals (Switch S1)

6 Input Conductors L1 (U), L2 (V) And L3 (W)

Connect input conductors L1 (U), L2 (V) and L3 (W) to welding power source line terminals.

Install cover.

Disconnect Device Input Power Connections

7 Disconnect Device (switch shown in OFF position)

8 Disconnect Device (Supply) Grounding Terminal

Connect green or green/yellow grounding conductor to disconnect device grounding terminal first.

9 Disconnect Device Line Terminals

Connect input conductors L1 (U), L2 (V) And L3 (W) to disconnect device line terminals.

10 Over-Current Protection

Select type and size of over-current protection using Section 4-17 (fused disconnect switch shown).

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

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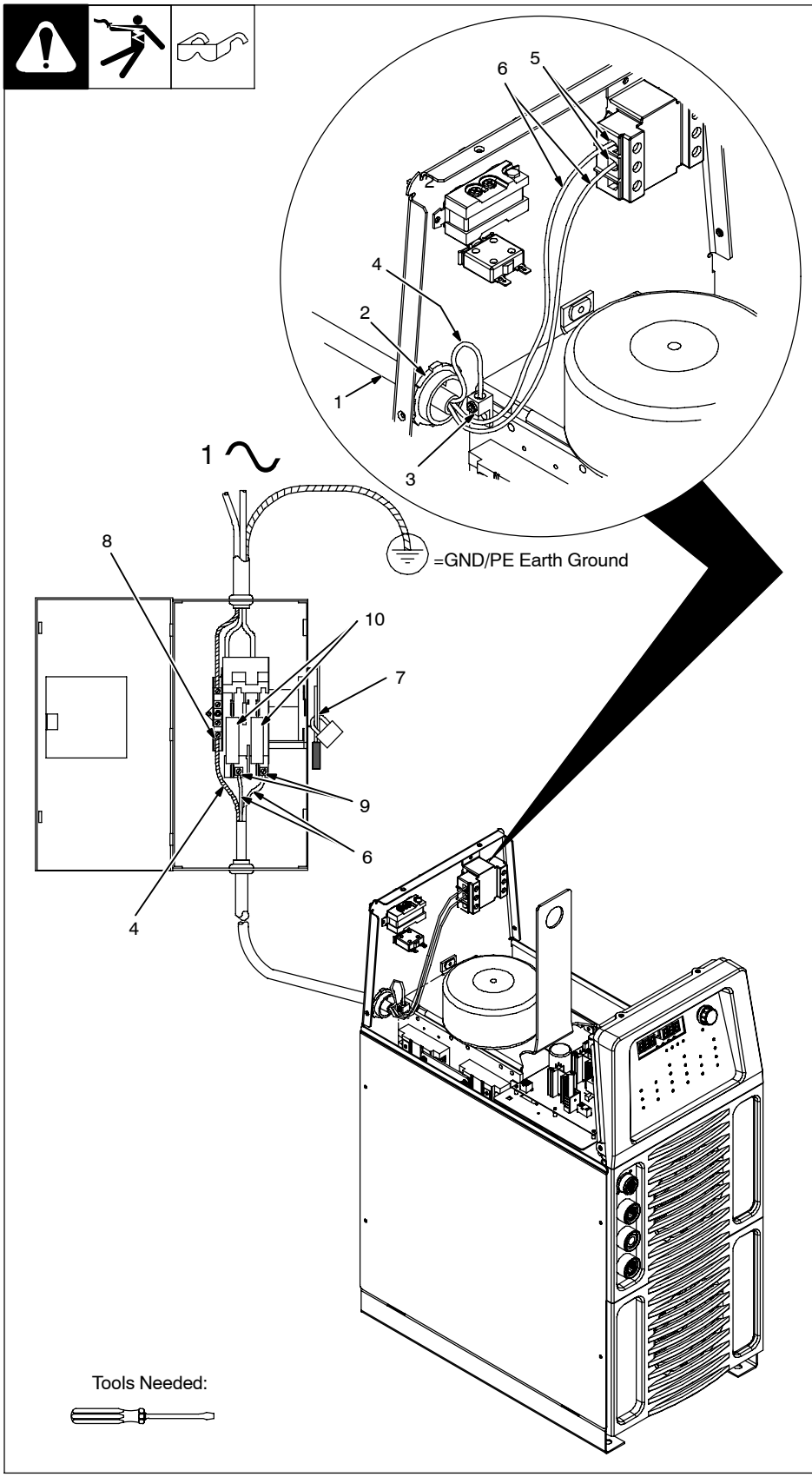
B. Connecting Single-Phase Input Power



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

▲ **Disconnect and lockout/tagout input power before connecting input conductors from unit.**

▲ **Make input power connections to the welding power source first.**

▲ **Always connect green or green/yellow conductor to supply grounding terminal first, and never to a line terminal.**

See rating label on unit and check input voltage available at site (see Section 4-5).

1 Input Power Conductors (Customer Supplied Cord)

Select size and length of conductors using Section 4-17. Conductors must comply with national, state, and local electrical codes. If applicable, use lugs of proper amperage capacity and correct hole size.

Welding Power Source Input Power Connections

2 Strain Relief

Route conductors (cord) through strain relief and tighten screws.

3 Machine Grounding Terminal

4 Green Or Green/Yellow Grounding Conductor

Connect green or green/yellow grounding conductor to welding power source grounding terminal first.

5 Welding Power Source Line Terminals (Switch S1)

6 Input Conductors L1 (U) And L2 (V)

Connect input conductors L1 (U) And L2 (V) to welding power source line terminals.

Install cover.

Disconnect Device Input Power Connections

7 Disconnect Device (switch shown in OFF position)

8 Disconnect Device (Supply) Grounding Terminal

Connect green or green/yellow grounding conductor to disconnect device grounding terminal first.

9 Disconnect Device Line Terminals

Connect input conductors L1 (U) And L2 (V) to disconnect device line terminals.

10 Over-Current Protection

Select type and size of over-current protection using Section 4-17 (fused disconnect switch shown).

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

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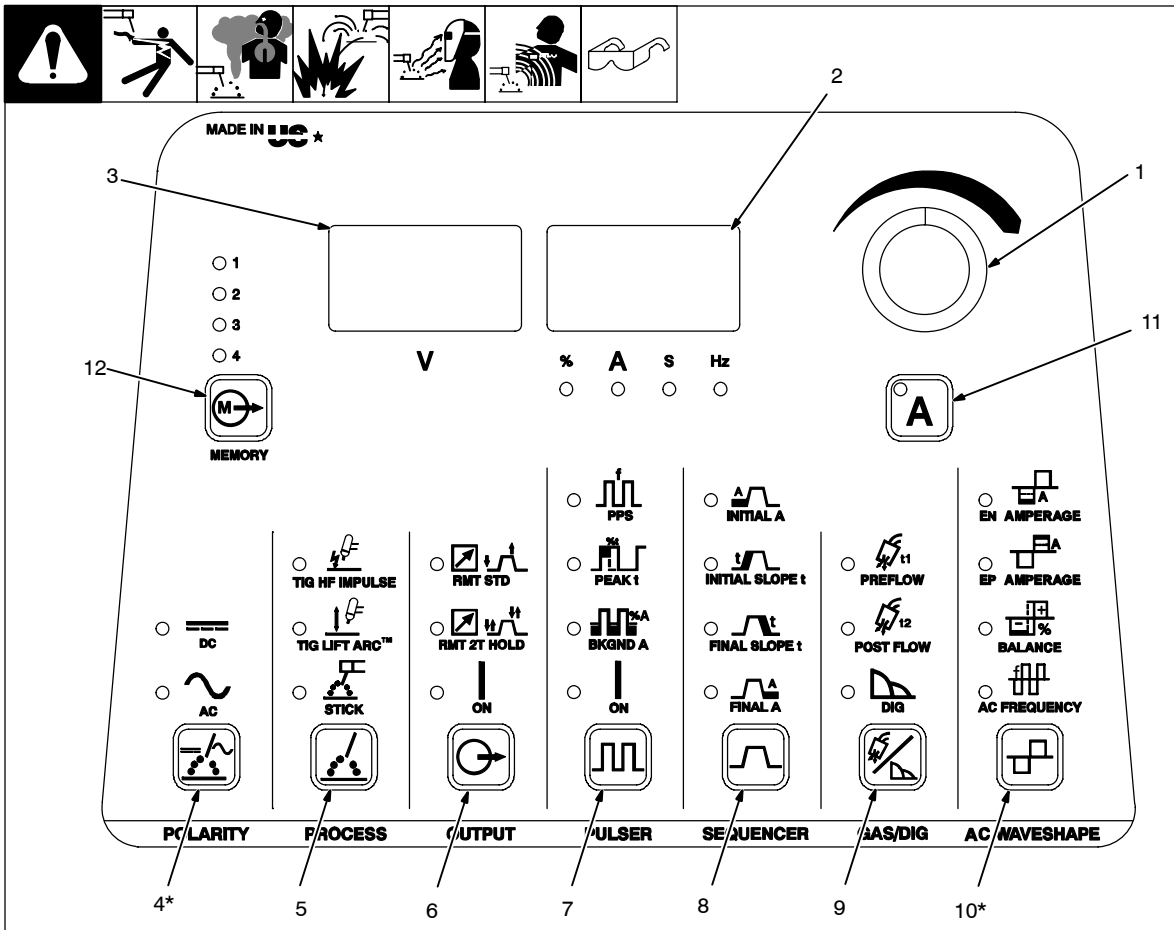
SECTION 5 – OPERATION

5-1. Controls



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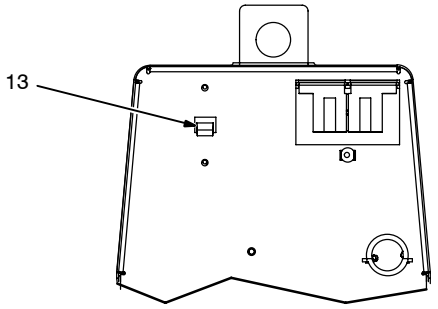
***Available On Dynasty Models Only.**



Rear Panel

☞ *For all front panel switch pad controls: press switch pad to turn on light and enable normal function.*

NOTE: Green on nameplate indicates a TIG function, Gray indicates a normal Stick function.

1 Encoder Control

2 Ammeter And Parameter Display

See Section 5-4.

3 Voltmeter

See Section 5-5.

4 Polarity Control (Dynasty Only)

See Section 5-6.

5 Process Controls

See Section 5-7.

6 Output Controls

See Section 5-9.

7 Pulser Controls

See Section 5-10.

8 Sequencer Controls

See Section 5-11.

9 Gas/DIG Controls

See Section 5-12.

10 AC Waveshape (Dynasty Only)

See Section 5-13.

11 Amperage And Spot Time Control

For Amperage Control see Section 5-3.

For Spot Time Control see Section 5-14.

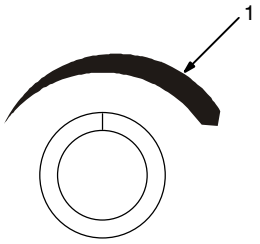
12 Memory

See Section 5-15.

13 Power Switch

Use switch to turn unit On/Off.

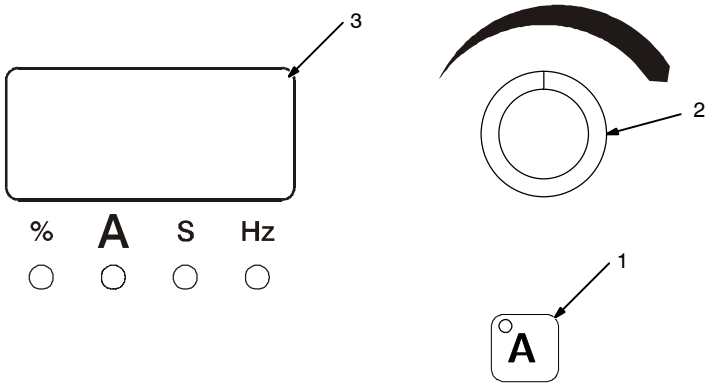
5-2. Encoder Control



1 Encoder Control

Use control in conjunction with applicable front panel function switch pad to set values for that function.

5-3. Amperage Control



1 A (Amperage Control)

2 Encoder Control

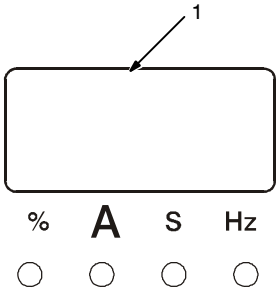
3 Ammeter

See Section 5-16 for Amperage control range.

Press Amperage switch pad, and turn Encoder control to set weld amperage, or peak amperage when Pulser function is active (see Section 5-10).

Note: See Section 5-13 for AC functions.

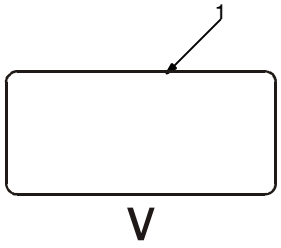
5-4. Ammeter And Parameter Display



1 Ammeter

Ammeter displays actual amperage while welding. It also displays preset parameters for any of the following: amperage, time, percentage or frequency. The LED located directly below the ammeter will also illuminate.

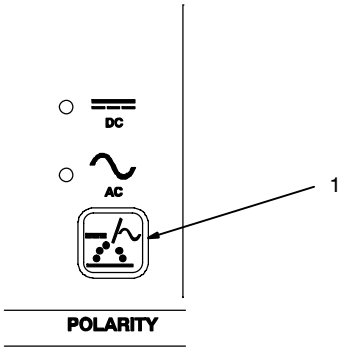
5-5. Voltmeter



1 Volt Meter

Displays output or open circuit voltage. If output is off, the voltmeter will display (---).

5-6. Polarity Control (Dynasty™ Models Only)



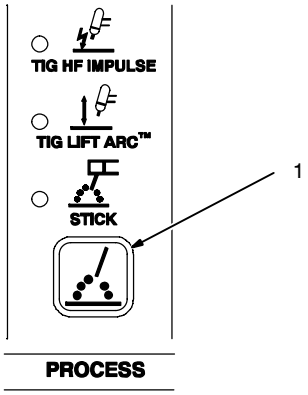
1 Polarity Control

Press switch pad until desired LED is illuminated.

DC - Set machine to DCEN for TIG welding, and to DCEP for Stick welding.

AC - Use AC for TIG and Stick welding.

5-7. Process Control



1 Process Control

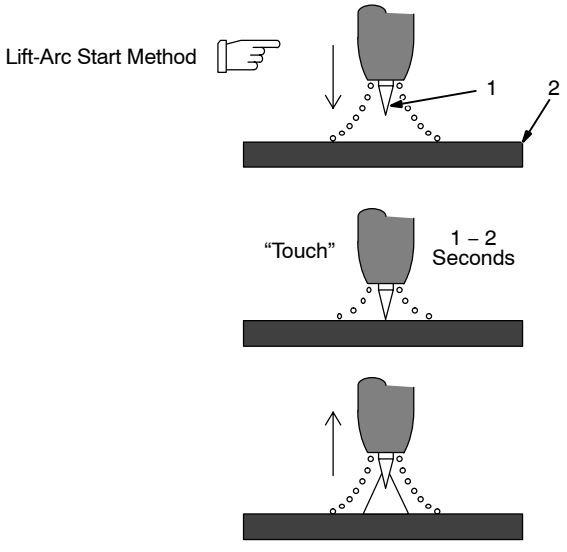
Press switch pad until desired process LED is illuminated:

TIG HF Impulse - is a pulsed HF (see Section 5-8) arc starting method that can be used with either AC or DC TIG welding. Make connections according to Section 4-15.

TIG Lift-Arc™ - is an arc starting method in which the electrode must come in contact with the workpiece (see Section 5-8). This method can be used with either AC or DC TIG welding. Make connections according to Section 4-15.

Stick (SMAW) - This method can be used with either AC or DC Stick welding. Make connections according to Section 4-16.

5-8. Lift-Arc™ And HF TIG Start Procedures



Lift-Arc Start

When Lift-Arc™ button light is On, start arc as follows:

1 TIG Electrode

2 Workpiece

Touch tungsten electrode to workpiece at weld start point, enable output and shielding gas with torch trigger, foot control, or hand control. **Hold electrode to workpiece for 1-2 seconds**, and slowly lift electrode. Arc is formed when electrode is lifted.

Normal open-circuit voltage is not present before tungsten electrode touches workpiece; only a low sensing voltage is present between electrode and workpiece. The solid-state output contactor does not energize until after electrode is touching workpiece. This allows electrode to touch workpiece without overheating, sticking, or getting contaminated.

Application:

Lift-Arc is used for the DCEN or AC GTAW process when HF Start method is not permitted, or to replace the scratch method.

HF Start

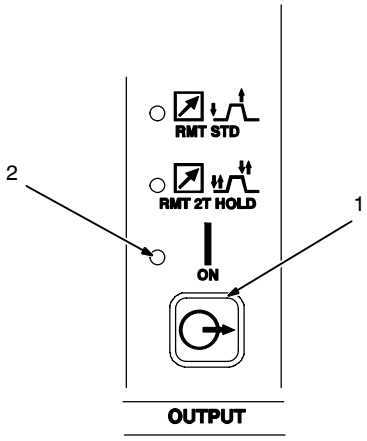
When HF Start button light is On, start arc as follows:

High frequency turns on to start arc when output is enabled. High frequency turns off when arc is started, and turns on whenever arc is broken to help restart arc.

Application:

HF start is used for the DCEN GTAW process when a non-contact arc starting method is required.

5-9. Output Control



1 Output Control

Press switch pad until desired parameter LED is illuminated.

RMT STD (Remote Standard)

Application: Use Remote Trigger (Standard) with a foot pedal or finger amperage control (see Section 6-2A).

NOTE: When a foot or finger remote current control is connected, initial amps, initial slope, final slope, and final amps are controlled by the remote control.

NOTE: If an On/Off type trigger is used, it must be a maintained switch. All Sequencer functions become active, and must be set by the operator.

RMT 2T HOLD

Application: Use Remote Trigger Hold (2T) for long extended welds.

If a foot or finger current control is connected to the welding power source, only trigger input is functional (see Section 6-2B).

NOTE: This switch function can be reconfigured for 3T, 4T, 4T Momentary, Mini Logic, or Spot control See Section 6-2C)

ON

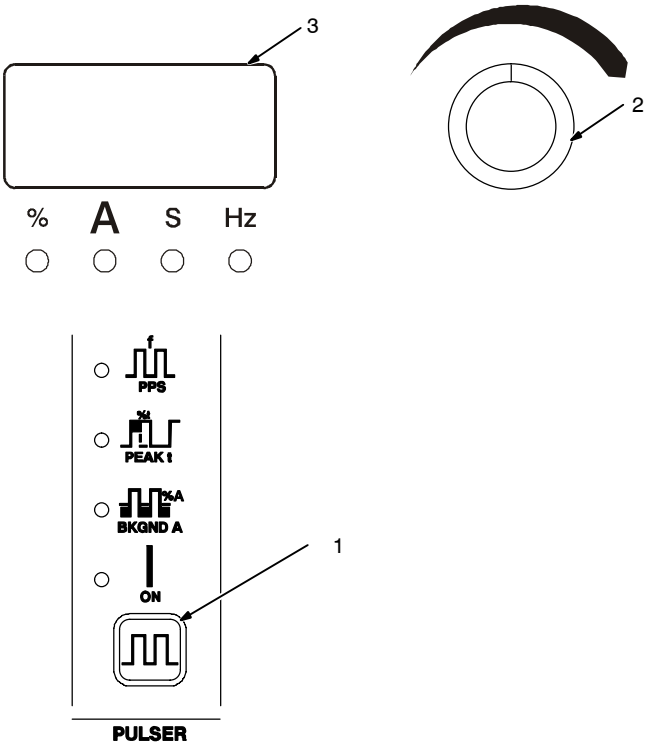
Output will energize two seconds after being selected.

Application: Use Output On for Stick (SMAW) welding, or for Lift-Arc without the use of a remote control (see Section 6-2I).

2 On LED

Blue On LED is lit whenever Output is on.

5-10. Pulser Control



1 Pulser Control

Pulsing is available while using the TIG process. Controls can be adjusted while welding.

Press switch pad to enable pulser.

ON - When illuminated, this LED indicates the pulser is on.

Press switch pad until desired parameter LED is illuminated.

To turn Pulser off, press and release switch pad until the On LED turns off.

2 Encoder Control (Set Value)

3 Ammeter (Displays Value)

See Section 5-16 for all Pulser parameter ranges.

PPS Pulses Per Second or (Pulse Frequency) Used to determine appearance of weld bead.

PEAK t - The percentage of each pulse cycle at the peak amperage level.

BKGND A (Background Amps) - Use Background Amps to set the low pulse of the weld amperage, which cools the weld puddle and affects overall heat input. Background Amps is a percentage of peak amperage.

4 Pulsed Output Waveforms

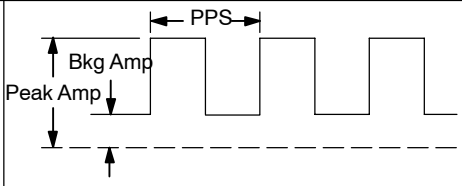
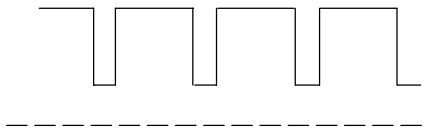
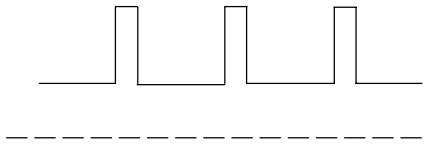
Example shows affect changing the Peak Time control has on the pulsed output waveform.

NOTE: Peak amperage is set using the Amperage control (see Section 5-3). Peak amperage is the highest welding amperage allowed in the pulse cycle. Weld penetration varies directly with peak amperage.

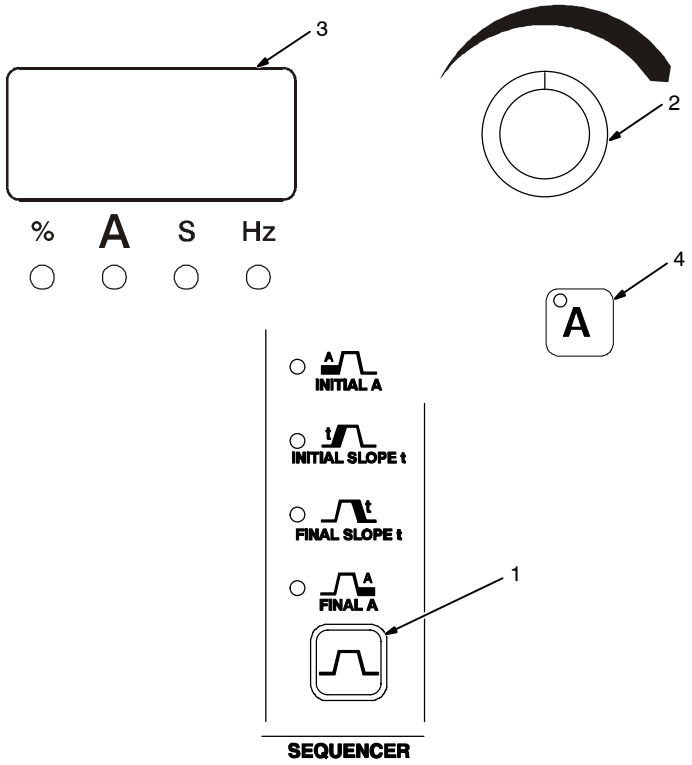
Application:

Pulsing is the alternating raising and lowering of the weld output at a specific rate. The raised portions of the weld output are controlled in width, height, and frequency, forming pulses of weld output. These pulses and the lower amperage level between them (called the background amperage) alternately heat and cool the molten weld puddle. The combined effect gives better control of penetration, bead width, crowning, undercutting, and heat input.

4

Percent (%) Peak Time Control Setting		Pulsed Output Waveforms
Balanced	(50%)	
More Time At Peak Amperage	(80%)	
More Time At Background Amperage	(20%)	

5-11. Sequencer Controls



1 Sequencer Control

Sequencing is available while using the TIG process, but is disabled if a remote foot or finger current control is connected to the Remote receptacle while in the RMT STD mode.

Press switch pad until desired parameter LED is illuminated.

2 Encoder Control (Set Value)

3 Ammeter (Displays Value)

See Section 5-16 for all Sequencer parameter ranges.

INITIAL A (Initial Amperage) - Use control to select a starting amperage that is different from the weld amperage.

Application:

Initial Amperage can be used to assist in preheating cold material prior to depositing filler material, or to ensure a soft start.

INITIAL t (Initial Time)**(Available with Automation option Only) -** Press control again and turn Encoder to set amount of time needed at the beginning of the weld.

INITIAL SLOPE t (Initial Slope Time) Use control to set amount of time that it takes to slope from initial amperage to weld amperage. To disable, set to 0.

4 Amperage Switch Pad

Weld Time (Available with Automation option Only) - Press Amperage switch pad twice. Set desired weld time.

FINAL SLOPE t (Final Slope Time) - Use control to set amount of time it takes to slope from weld amperage to final amperage. To disable, set to 0.

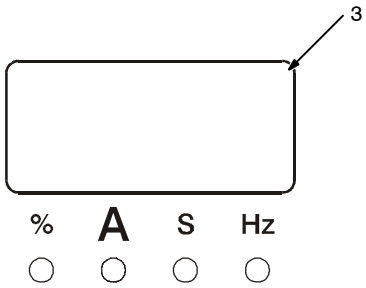
Application:

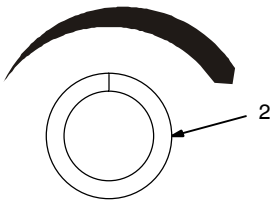
Final Slope should be used while welding materials that are crack sensitive, and/or to eliminate the crater at the end of the weld.

FINAL A (Final Amperage) - Used to set amperage to which weld amperage slopes to.

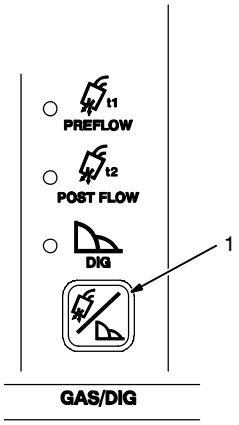
FINAL t (Final Time)**(Available with Automation option Only)** - Press control again and turn Encoder to set Final Amperage time.

5-12. Gas/DIG Controls (Preflow/Post Flow/DIG/Purge)





☞ *Some features shown are not available on all models.*



1 Gas/DIG Controls

Press switch pad until desired function LED is illuminated.

2 Encoder Control (Set Value)

3 Ammeter (Displays Value)

See Section 5-16 for all Adjust parameter ranges.

PREFLOW - If the TIG HF process is active (see Section 5-7) and Preflow is shown on the control panel, use control to set length of time gas flows before arc initiation.

Application: Preflow is used to purge the weld area and aids in arc starts.

POST FLOW - If the TIG process is active (see Section 5-7), use control to set length of time gas flows after welding stops.

Application:

Postflow is required to cool tungsten and weld, and to prevent contamination of tungsten and weld. Increase postflow time if tungsten or weld are dark in appearance.

DIG - If the DC Stick process is active (see Section 5-7), use control to set amount of DIG. When set at 0, short-circuit amperage at low arc voltage is the same as normal welding amperage.

When setting is increased, short-circuit amperage at low arc voltage increases.

Application:

Control helps arc starting or making vertical or overhead welds by increasing amperage at low arc voltage, and reduces electrode sticking while welding.

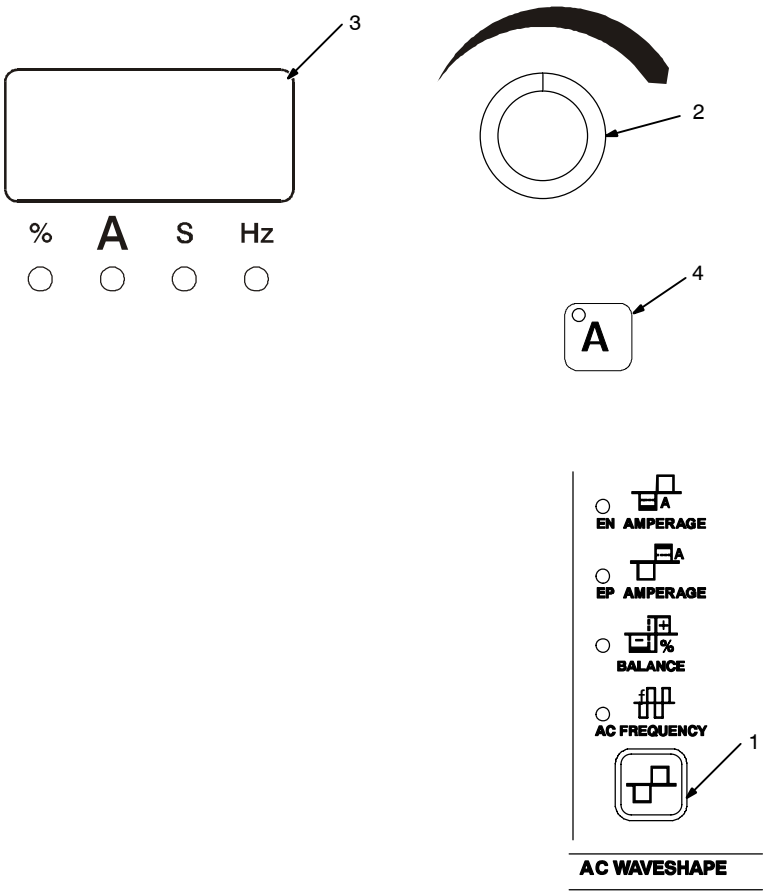
PURGE - To activate the gas valve and start the purge function, push and hold the Gas/DIG switch pad for the desired amount of time. To set from 1 to 50 seconds of purge time, hold the Gas/DIG switch pad while turning the encoder control. Default is 0.

While Purge is active, *tPUR* is shown in the left display, and purge time is shown in the right display.

Pressing any switch pad will end the purge display, but gas will continue to flow until the preset time has timed out.

Application: Purge is used to clear the gas lines.

5-13. AC Waveshape (Dynasty Models Only)



1 AC Waveshape Control

Press switch pad until desired function LED is illuminated.

2 Encoder Control (Set Value)

3 Ammeter (Displays Value)

See Section 5-16 for all AC Waveshape parameter ranges.

Balance: AC Balance control is enabled only in AC TIG to set percentage of time polarity is electrode negative.

Application:

When welding on oxide forming materials such as aluminum or magnesium, excess cleaning is not necessary. To produce a good weld, only 0.10 in (2.5mm) of etched zone along the weld toes is required.

Use AC Balance to control the etch zone width.

Joint configuration, set-up, process variables, and oxide thickness may affect setting.

AC Frequency: AC Frequency control is enabled only in AC TIG. Use control to set AC frequency (cycles per second).

Application:

AC Frequency controls arc width and directional control. As AC frequency decreases, the arc becomes wider and less focused, limiting directional control. As AC frequency increases, the arc becomes narrower and more focused, increasing directional control. Travel speed can increase as AC frequency increases.

EN Amperage: Use control to select electrode negative amperage value.

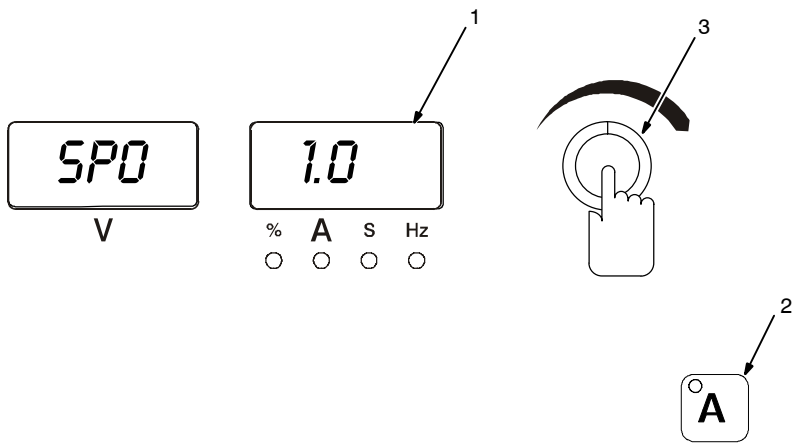
EP Amperage: Use control to select electrode positive amperage value.

EN Amperage and EP Amperage allow the operator the ability to control the amount of amperage in the negative and positive half cycles independently. A 2 to 1 or 3 to 1 ratio of EN to EP is a good starting point. This provides cleaning action, but directs more energy into the workpiece and provides faster travel speeds and deeper penetration.

4 Amperage Control

Average Amperage Control: Setting EN Amperage, EP Amperage, Balance, and Frequency values creates an average amperage. The operator can change the average amperage value while maintaining the same EN amperage to EP amperage ratio at the existing balance and frequency. To change the average amperage value, press the Amperage switch pad and turn the Encoder control. The changing average value is displayed on the ammeter. Example: If EN Amperage is 300, EP Amperage is 150, Balance is 60%, and Frequency is 120, the average amperage is 240 amps. If you press the Amperage switch pad and turn the Encoder control until 480 amps is displayed, the EN amperage is now 600 and EP amperage is now 300. The balance remains 60%, and the frequency is still 120, and the 2 to 1 EN amperage to EP amperage is maintained.

5-14. Spot Time Control (Reconfigured RMT 2T HOLD Output Selection)



1 Spot Time Meter Display

Select Spot function according to Section 6-2C.

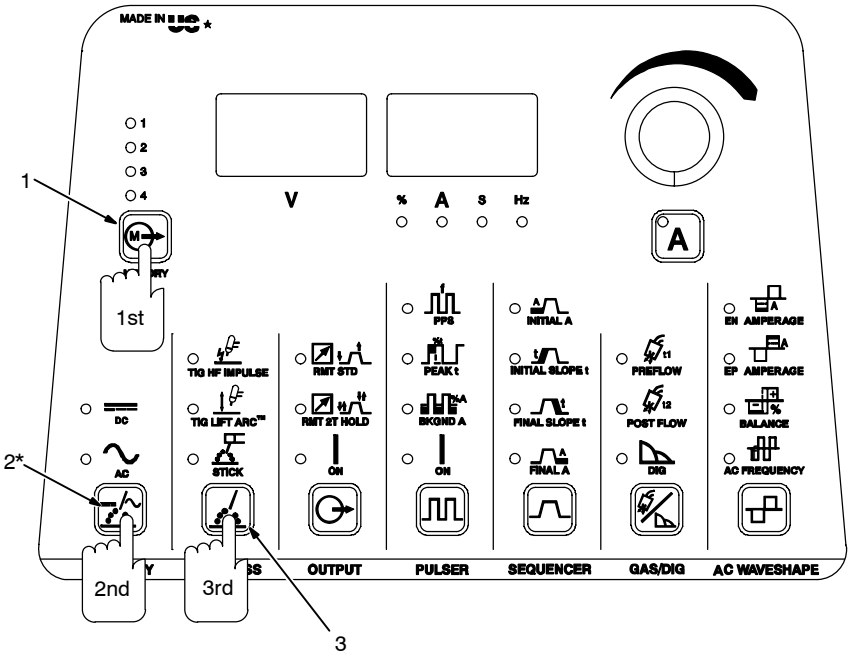
2 Amperage Switch Pad

3 Encoder Control

To set spot parameters, press Amperage switch pad once (meter A LED turns on) and turn Encoder to set spot amperage. Press Amperage switch pad again, (meter S LED lights) and turn Encoder to set spot time (.1–25 seconds). Default is 1 second.

Application: To provide a timed weld for tacking and thin sheet joining.

5-15. Memory (Program Storage Locations 1-4)



***Available On Dynasty Models Only.**

☞ *Some features shown are not available on all models.*

1 Memory (Program Storage 1-4) Switch Pad

2 Polarity Switch Pad (Dynasty Only)

3 Process Switch Pad

To create, change, or recall a welding parameters program, proceed as follows:

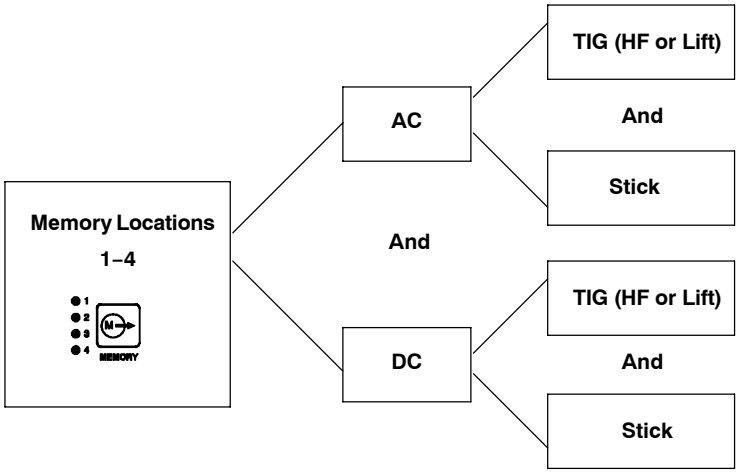
First, press Memory switch pad until the desired program storage location (1-4) LED is illuminated

Second, press Polarity switch pad until the desired polarity, AC or DC, LED is illuminated

Third, press Process switch pad until desired process, TIG HF Impulse, TIG Lift Arc, or Stick, LED is illuminated.

The program at the chosen location, for the desired polarity and process, is now the active program.

Fourth, change or set all desired parameters (see Section 5-1 for parameters).



Each memory location (1 thru 4) can store parameters for both polarities, and each polarity can store parameters for both process (TIG or Stick) for a total of 16 programs.

5-16. Factory Parameter Defaults And Range And Resolution

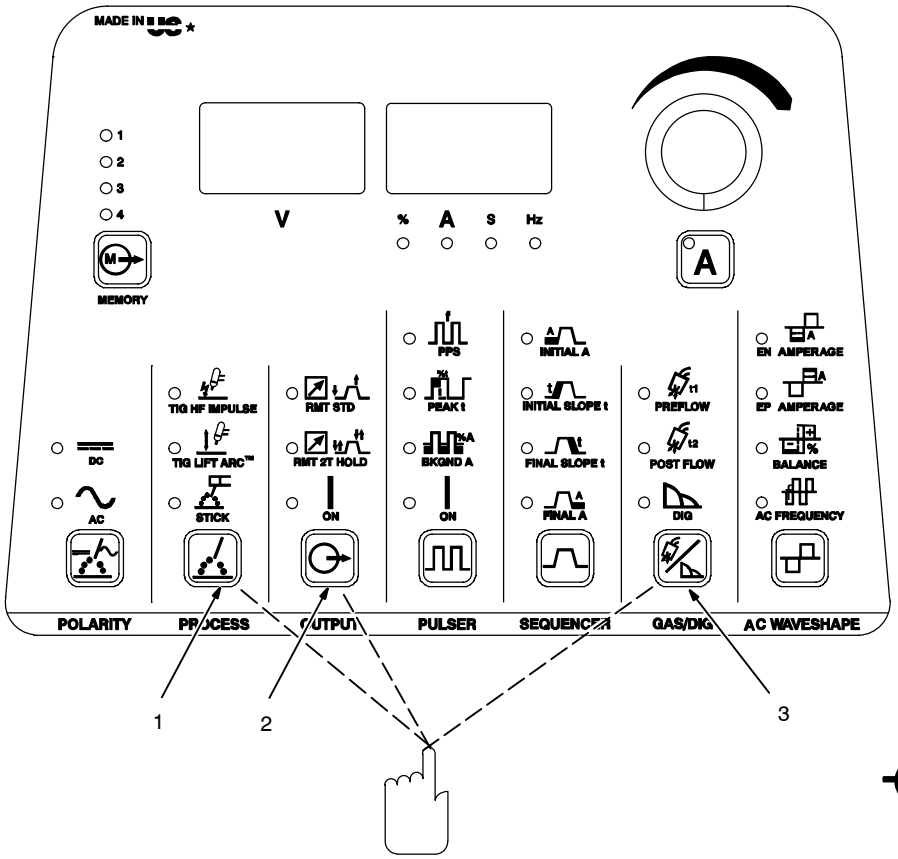
Parameter	Default	Range And Resolution
MEMORY	1	1–4
*POLARITY	AC	AC / DC
PROCESS	TIG HF Impulse	TIG HF Impulse / TIG Lift / Stick
OUTPUT	RMT STD	RMT STD / RMT 2T / ON
**RMT 2T	2T	RMT 2T can be reconfigured for: 2T / 3T / 4T / Mini Logic / 4T Momentary / Spot (see Section 6-2C)
A MAIN / PEAK		
*AC TIG	500 A	5 – 700 Amps
*AC STICK	110 A	5 – 700 Amps
DC TIG	500 A	5 – 700 Amps
DC STICK	110 A	5 – 700 Amps
Spot Time	1.0 S	0.1 – 25.0 Seconds
***Weld Time	0 S	Dual Range And Resolution
		0.0 – 99.9 / 100 – 999 Seconds
PULSER	Off	ON / OFF
PPS	100 Hz	Quad Range And Resolution
		DC: 0.1 – 9.9 / 10 – 500 / 510 – 990 / 1K – 5K Hertz
		AC: 0.1 – 9.9 / 10 – 500 Hertz
PEAK t	40%	5 – 95 Percent
BKGND A	25%	5 – 95 Percent
SEQUENCER		
INITIAL A	20 A	5 – 700 Amps
***Initial Time	0 S	0.0 – 25.0 Seconds
INITIAL SLOPE t	0 S	0.0 – 25.0 Seconds
FINAL SLOPE t	0 S	0.0 – 25.0 Seconds
FINAL A	5 A	5 – 700 Amps
***Final Time	0 S	0.0 – 25.0 Seconds
ADJUST		
PREFLOW	0.2 S	0.0 – 25.0 Seconds
POST FLOW	10.0 S	0.0 – 50.0 Seconds @ 0.2 Second Resolution
DIG	30%	0 – 100 Percent
*AC WAVESHAPE		
Waveform	Soft Square	Soft Square, Advanced Square, Sine, Triangle
EN Amps	500A	5 - 700 Amps
EP Amps	500A	5 - 700 Amps
BALANCE	75%	30 – 99 Percent
FREQUENCY	120 Hz	20 – 400 Hertz
**Impulse HF Start parameters for each program (1-4)		
MAXSTAR:		
Amperage	30 A	5 – 700 Amps
Time	3 mS	1 – 200 Milliseconds
*DYNASTY:		
DC:		
Polarity	EN	EP / EN
Amperage	30 A	5 – 700 Amps
Time	3 mS	1 – 200 Milliseconds
AC:		
Polarity	EP	EP / EN
Amperage	40 A	5 – 700 Amps
Time	40 mS	1 – 200 Milliseconds

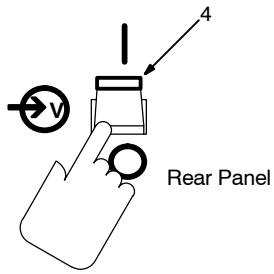
* DYNASTY parameter selection only

** Parameter adjusted using a power up configuration only

*** Parameter used with the automation option only

5-17. Resetting Unit To Factory Default Settings





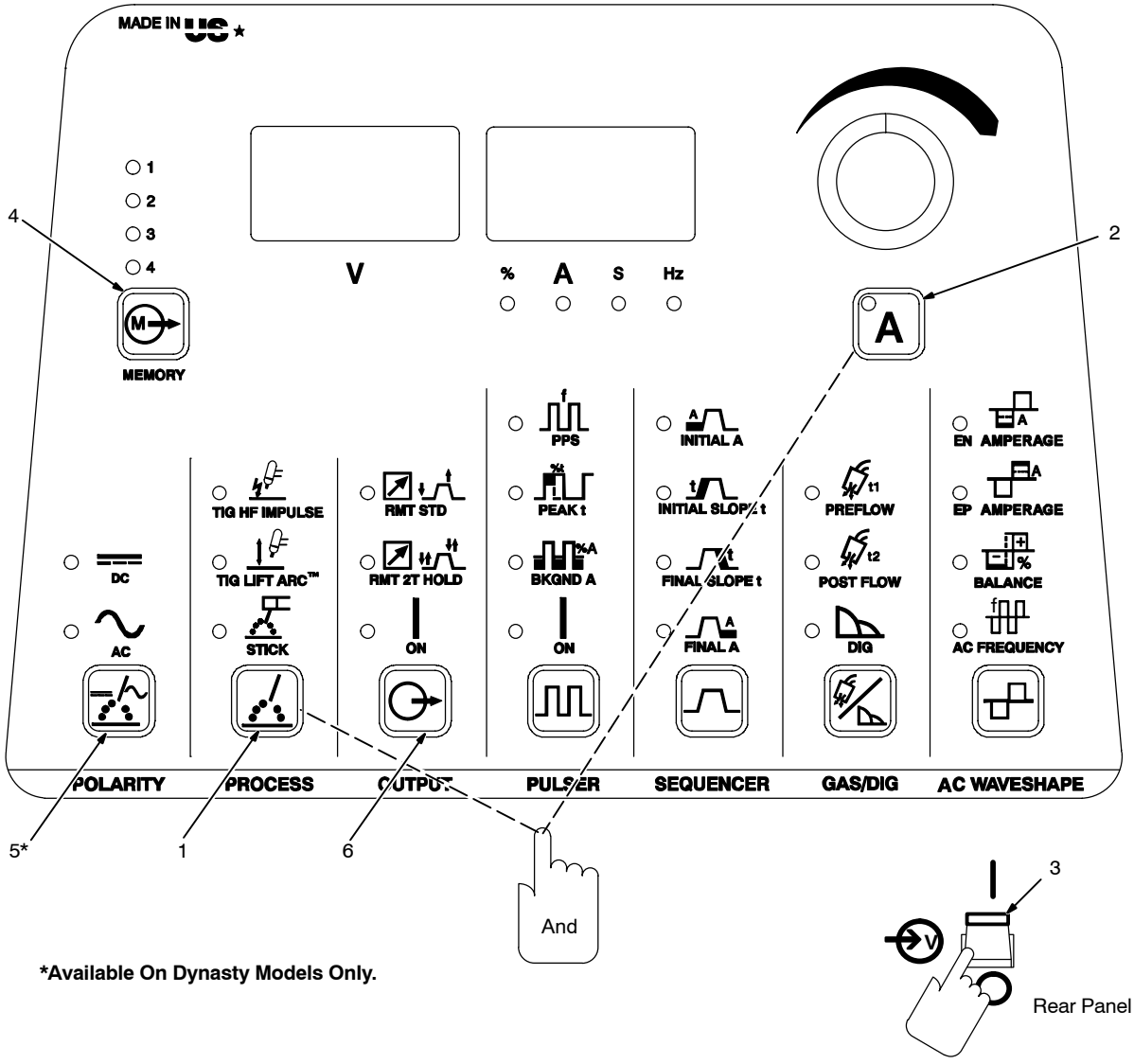
1 Process Switch Pad
2 Output Switch Pad
3 Gas/DIG Switch Pad
4 Power Switch

To reset all welding power source functions to original factory settings, lockout feature must be off (see Section 6-5). Turn power on and then press and hold the Process, Output, and Gas/DIG switch pads before the software version clears the meters.

SECTION 6 – ADVANCED FUNCTIONS

6-1. Programmable TIG Start Parameters

A. Accessing Programmable TIG Start Parameters (All Models)



***Available On Dynasty Models Only.**

NOTE: The welding cycle can be executed while in programmable start mode. Before accessing programmable TIG Start Polarity, Amperage, and Time modes, be sure that all procedures and parameters are established.

1 Process Switch Pad

2 Amperage Switch Pad

3 Power Switch

To access the programmable TIG Start Amperage and Time screens, turn power on, and then press the Process and Amperage switch pads before the software version clears the meters. Hold switch pads until software version clears the meters and *(SEL) (EP)* or *(SEL) (EN)* appears.

4 Memory Switch Pad

Press Memory switch pad to select desired memory location (see Section 5-15).

5 Polarity Switch Pad (Dynasty Models only)

Press Polarity switch pad to select AC or DC (see Section 5-6).

Note: Each memory location and each polarity (AC or DC) has its own set of start parameters.

Press the Process switch pad to select the desired process, TIG HF Impulse or TIG Lift Arc, for your application (see Section 5-7). The parameter values are the same for both processes, and any changes made to the values in one process, are duplicated in the other process.

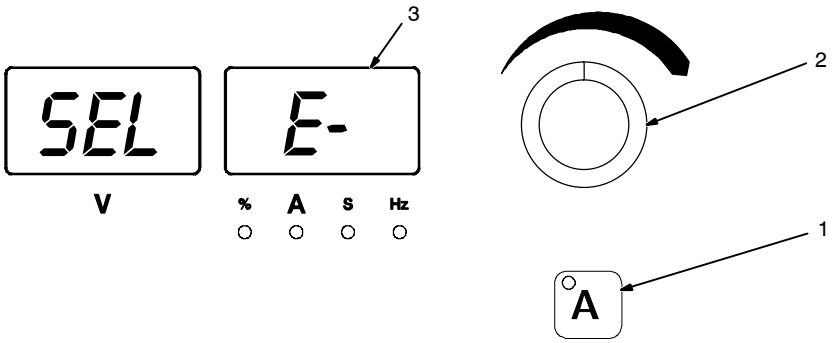
6 Output Switch Pad

Press Output switch pad to select desired type of control (see Section 5-9).

Proceed to Section B, C and/or D.

To save changes and exit Advanced Functions, turn power off.

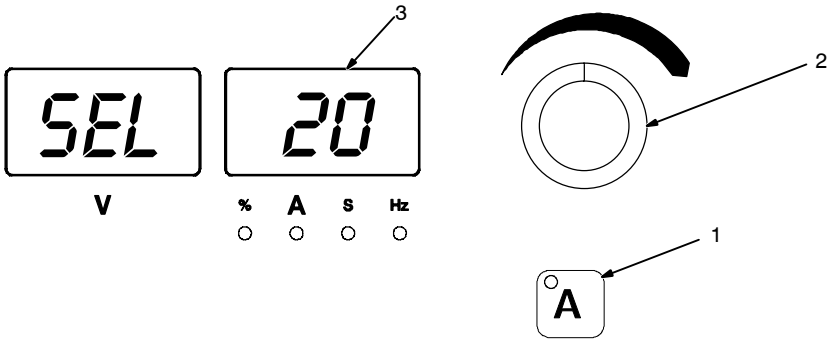
B. Changing Programmable TIG Start Polarity (Dynasty Models Only)



1 Amperage Switch Pad
2 Encoder Control
3 Amps Meter

To adjust TIG Start Polarity, press Amperage switch pad. Switch pad LED turns on, and meter % LED turns on. The current Start Polarity, *SEL) (E-)* or *(SEL) (EP)* is displayed on meters, and can be changed (see Section 5-16) by turning the Encoder control.

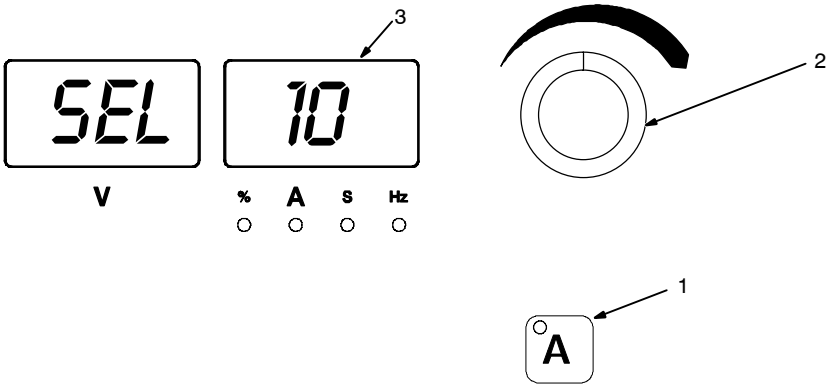
C. Changing Programmable TIG Start Amperage



1 Amperage Switch Pad
2 Encoder Control
3 Amps Meter

To adjust TIG Start Amperage, press Amperage switch pad. Switch pad LED turns on, and meter A LED turns on. The current Start Amperage is displayed on the amps meter, and can be adjusted (see Section 5-16) by turning the Encoder control.

D. Changing Programmable Start Time

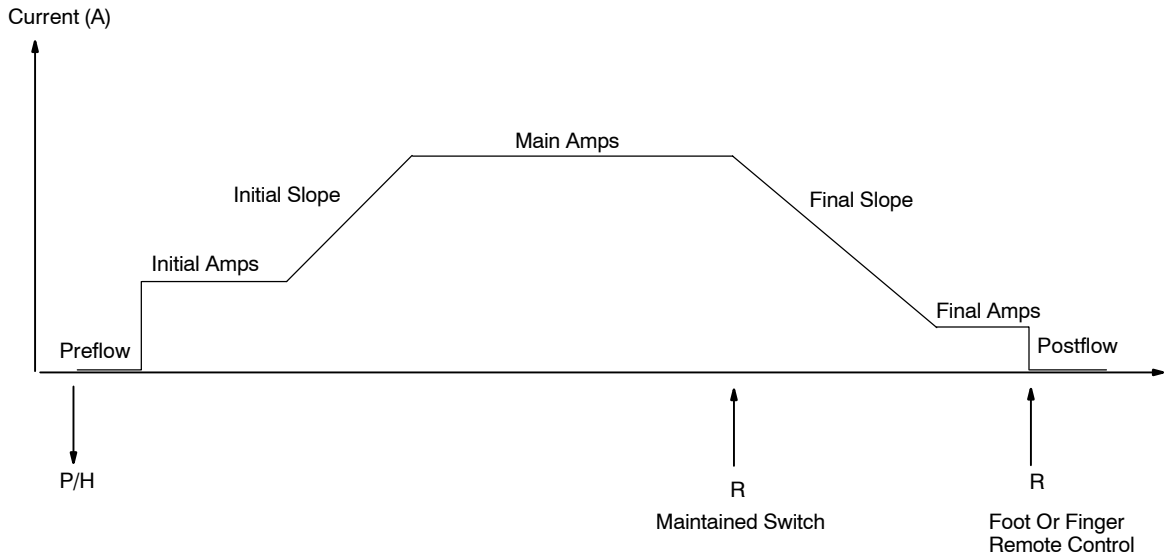


1 Amperage Switch Pad
2 Encoder Control
3 Amps Meter

To adjust Programmable Start Time, press Amperage switch pad, and meter S LED turns on. The current Start Time is displayed on the amps meter, and can be adjusted by turning the Encoder control (see Section 5-16).

6-2. Output Control And Trigger Functions

A. Remote (Standard) Torch Trigger Operation

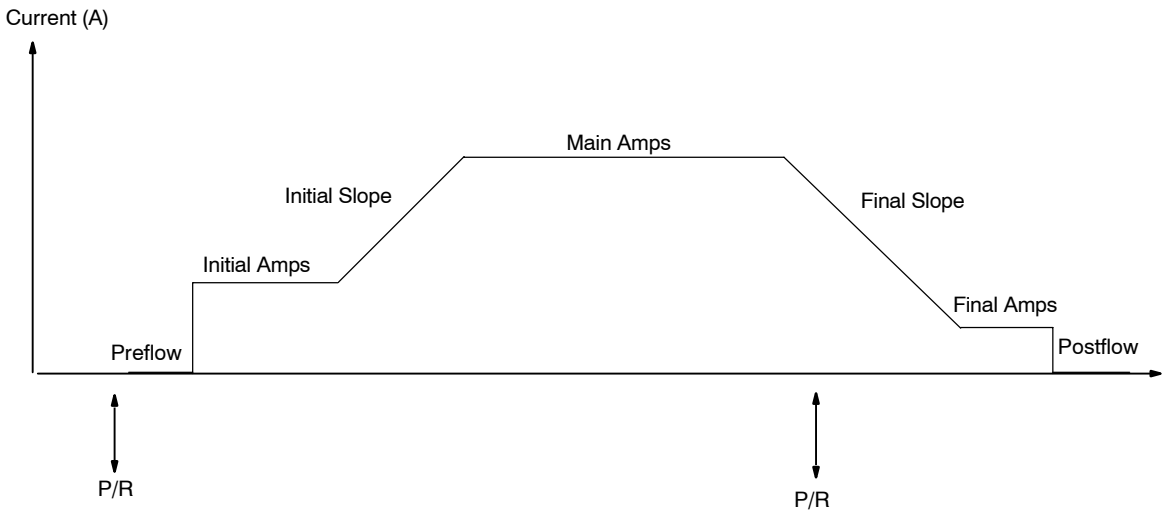


P/H = Push trigger and hold

R = Release trigger.

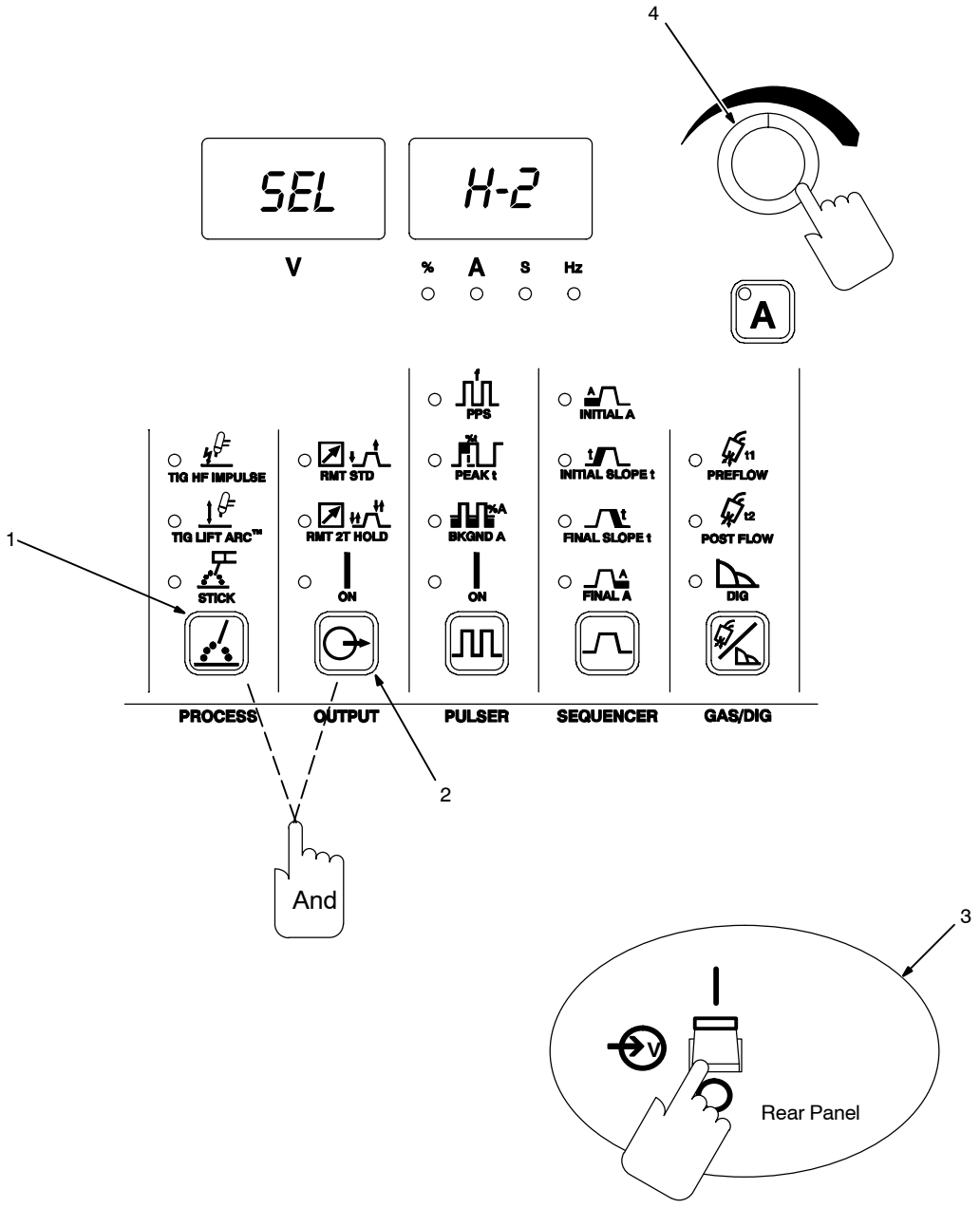
NOTE: When a foot or finger remote current control is connected to the welding power source, initial amps, initial slope, final slope and final amps are controlled by the remote control.

B. Remote 2T Torch Trigger Operation



P/R = Push trigger and release. NOTE: If torch trigger is held more than 3 seconds, operation reverts to RMT STD (Remote Standard) mode.

C. Reconfiguring RMT 2T HOLD For 2T, 3T, Spot, 4T, 4T Momentary, Or Mini Logic Control



For RMT STD (Remote Standard), RMT 2T Hold (Remote 2T Hold), and On trigger operation, see Section 6-2A, B, and I.

1 Process Switch Pad

2 Output Switch Pad

3 Power Switch

To access the RMT 2T HOLD, turn power switch on, press and hold the Process and Output switch pads before the software version clears the meters and *(SEL)* appears. RMT 2T Hold LED will light.

4 Encoder Control (Set Value)

5 Ammeter (Displays Value)

H-2 = 2T (see Section 6-2B)

SPO = Spot (see Section 6-2H)

H-3 = 3T (see Section 6-2D)

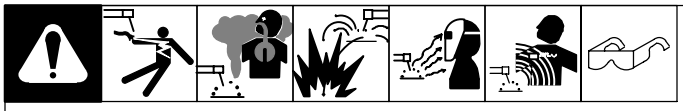
H-4 = 4T (see Section 6-2E)

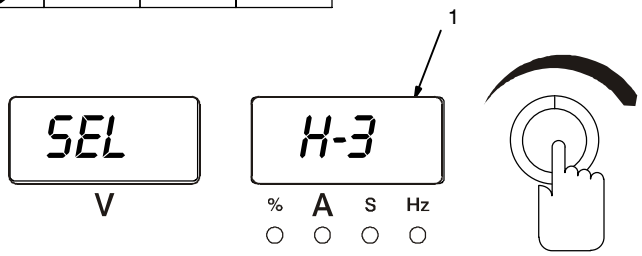
HYL = Mini Logic (see Section 6-2F)

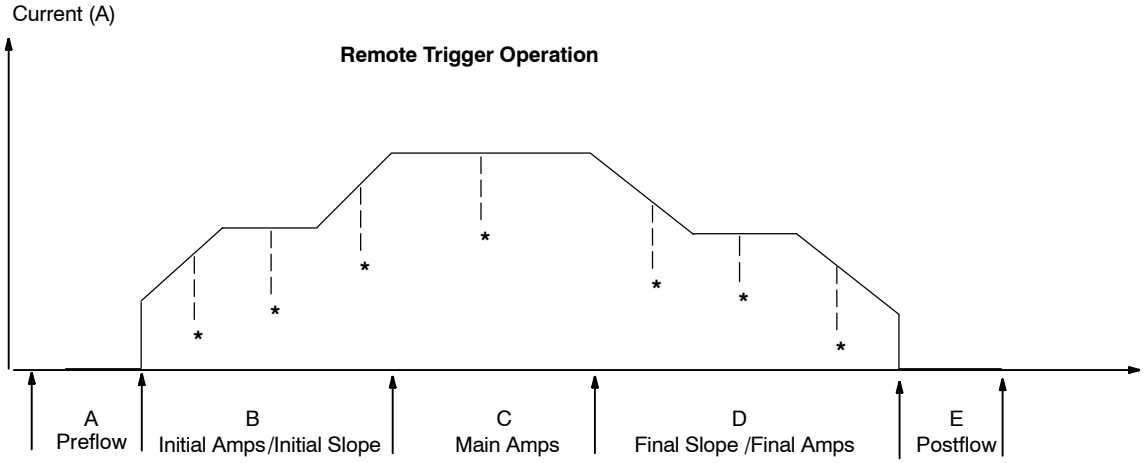
HYE = 4T Momentary (see Section 6-2G).

Press torch trigger or turn power Off to save setting.

D. 3T Specific Trigger Method







* Arc can be extinguished at any time by pressing and releasing both initial and final switches, or by lifting the torch and breaking the arc.

1 3T (Specific Trigger Operation)

Sequencer is required to reconfigure for 3T.

3T requires a specific type of remote control with two independent momentary-contact switches. One will be designated initial switch, and it must be connected between Remote 14 receptacle pins A and B. The second will be designated as the final switch, and it must be connected between Remote 14 receptacle pins D and E.

Select 3T according to Section 6-2C.

Definitions:

Initial slope rate is the rate of amperage change determined by the initial amperage, initial slope time, and main amperage.

Final slope rate is the rate of amperage change determined by the main amperage, final slope time, and final amperage.

Operation:

A.. Press and release initial switch within 3/4 second to start shielding gas flow. To stop the preflow sequence before preflow time elapses (25 seconds), press and release final switch. The preflow timer will reset and the weld sequence can be started again.

☞ *If an initial switch closure is not made again before preflow time ends, gas flow stops, the timer resets, and an initial switch press and release is necessary to start the weld sequence again.*

B.. Press initial switch to start arc at initial amps. Holding switch will change amperage at initial slope rate (release switch to weld at desired amperage level).

C.. When main amperage level is reached, initial switch can be released.

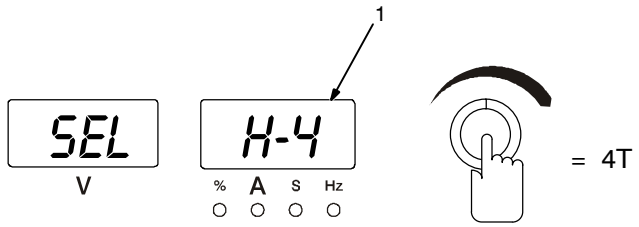
D.. Press and hold the final switch to decrease amperage at final slope rate (release switch to weld at desired amperage level).

E.. When final amperage has been reached, the arc extinguishes and shielding gas flows for the time set on the Postflow control.

Application:

With the use of two remote switches instead of potentiometers, 3T gives the operator the ability to infinitely increase, decrease, or pause and hold amperage within the range determined by the initial, main, and final amperages.

E. 4T Specific Trigger Method



1 4T (Specific Trigger Operation)

Select 4T according to Section 6-2C.

Torch trigger operation is as shown.

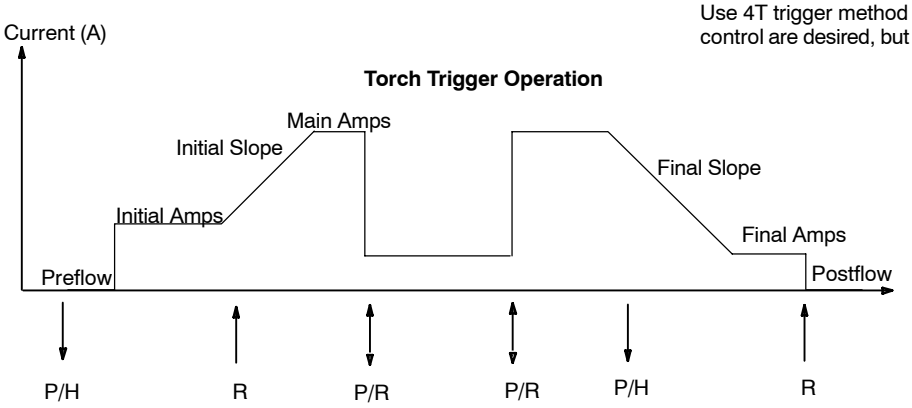
4T allows the operator to toggle between weld current and final current.

NOTE: When a remote switch is connected to the welding power source, use the remote switch to control the weld cycle. Amperage is controlled by the welding power source.

Application:

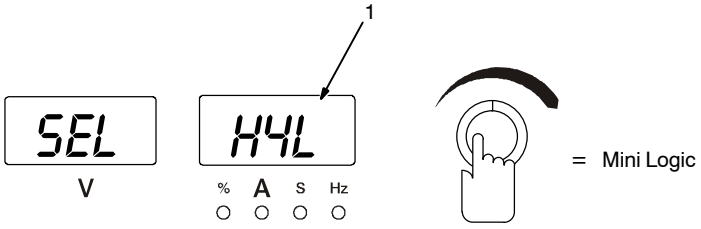
Use 4T trigger method when the functions of a remote current control are desired, but only a remote on/off control is available.

Torch Trigger Operation



P/H = Push and hold trigger; R = Release trigger; P/R = Push trigger and release in less than 3/4 seconds

F. Mini Logic Operation



1 Mini Logic Meter Display

Select Mini Logic according to Section 6-2C.

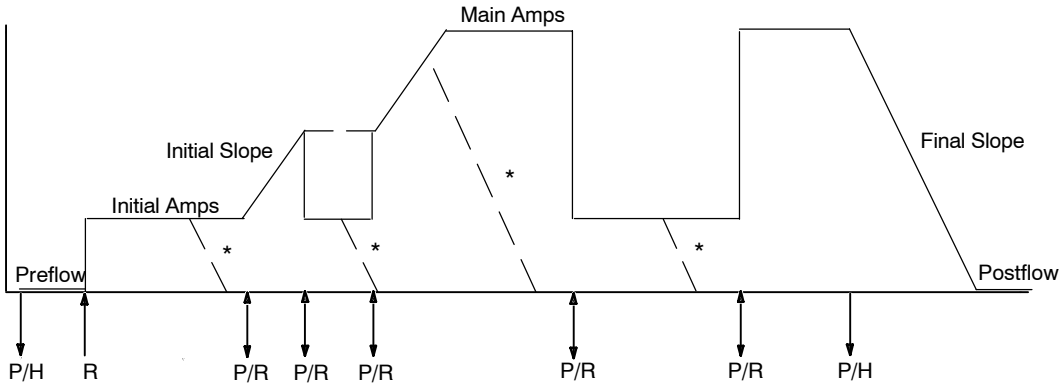
Torch trigger operation is as shown.

Mini logic allows the operator to toggle between initial slope or main amps and initial amps. Final Amperage is not available. Final slope will always slope to minimum amperage and end the cycle.

NOTE: When a remote switch is connected to the welding power source, use the remote switch to control the weld cycle. Amperage is controlled by the welding power source.

Application: This ability to change current levels without either initial slope or final slope, gives the operator the opportunity to adjust filler metal without breaking the arc.

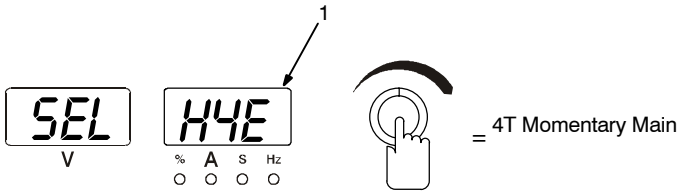
Torch Trigger Operation



P/H = Push and hold trigger; R = Release trigger; P/R = Push trigger and release in less than 3/4 seconds

* = Arc can be extinguished at final slope rate at any time by pushing and holding trigger

G. 4T Momentary Operation



1 4T Momentary Meter Display

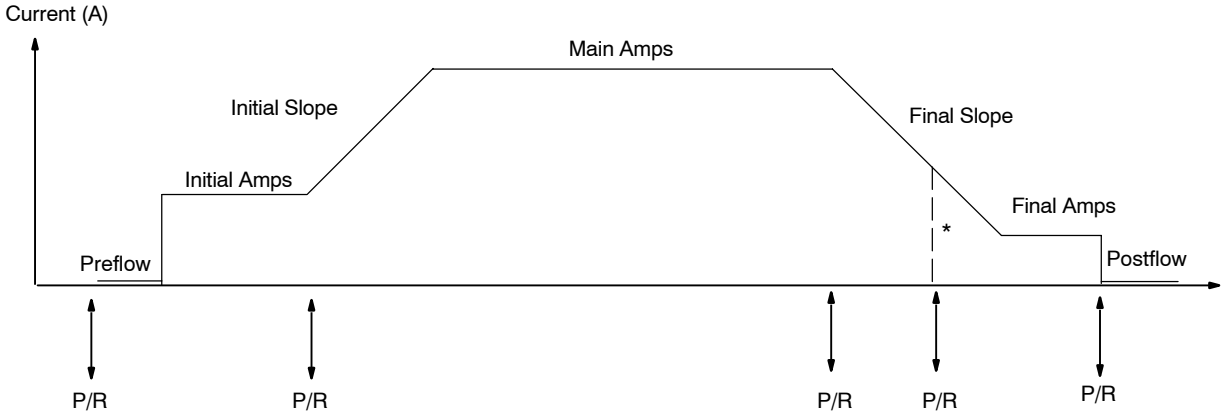
Select 4T Momentary according to Section 6-2C.

4T Momentary torch trigger operation is as shown.

NOTE: When a remote switch is connected to the welding power source, use the remote switch to control the weld cycle. Amperage is controlled by the welding power source.

Application:

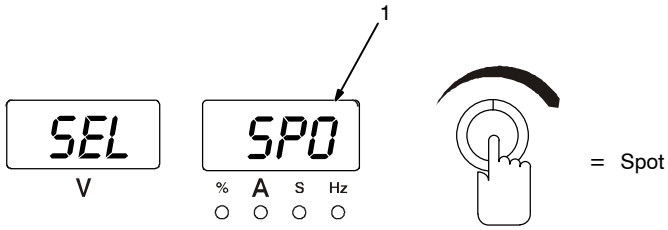
Use 4T Momentary trigger method when the functions of a remote current control are desired, but only a remote on/off control is available.



P/R = Push and release trigger; * = Push and releasing during final slope will break the arc and go to postflow

NOTE: For first torch trigger push & release, if trigger is held more than 3 seconds, trigger cycle ends

H. Spot Control Operation



1 Spot Function Meter Display

Select Spot function according to Section 6-2C.

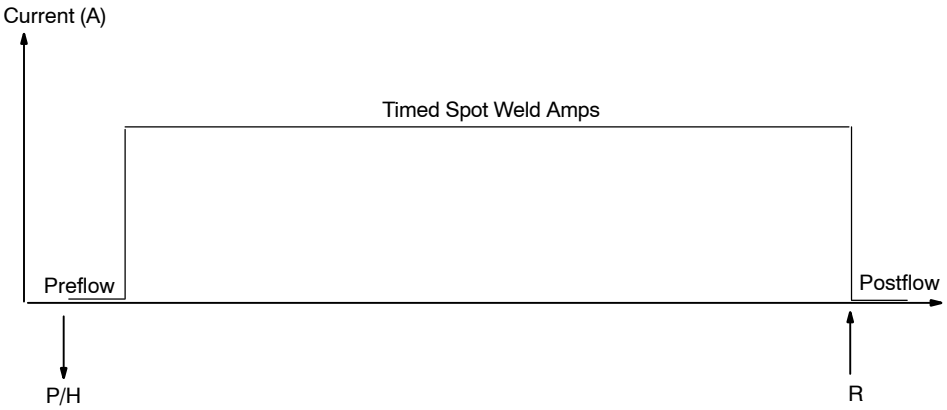
See Section 5-14 for operation.

NOTE: While in Spot Control, Sequencer settings are not be programmable.

NOTE: When a remote switch is connected to the welding power source, use the remote switch to control the weld cycle. Amperage is controlled by the welding power source.

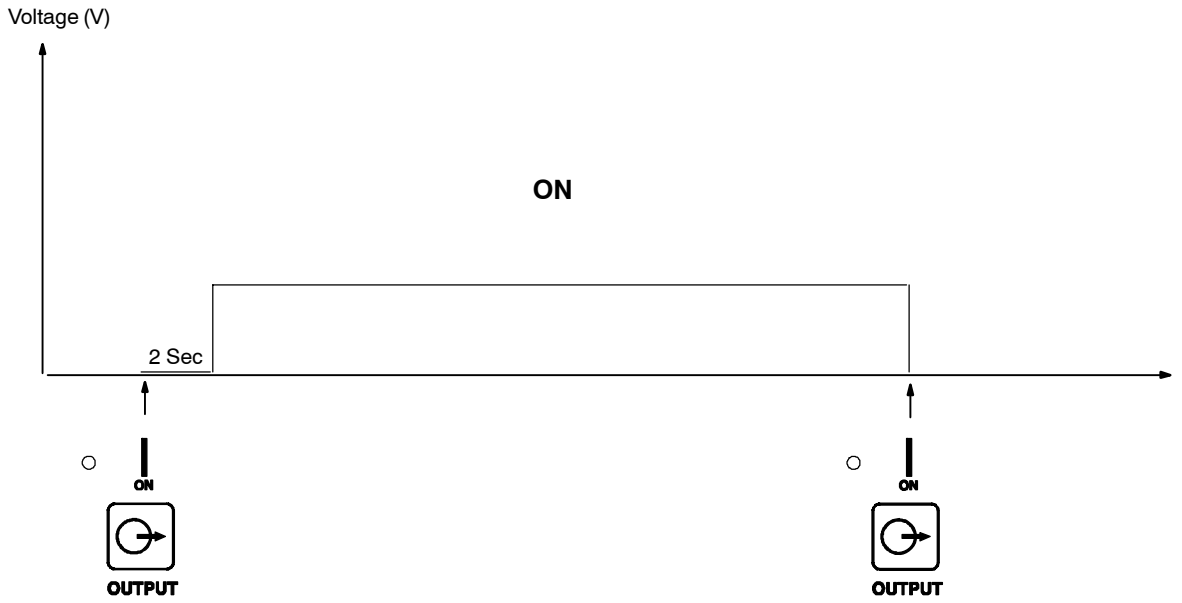
Torch trigger operation is as shown.

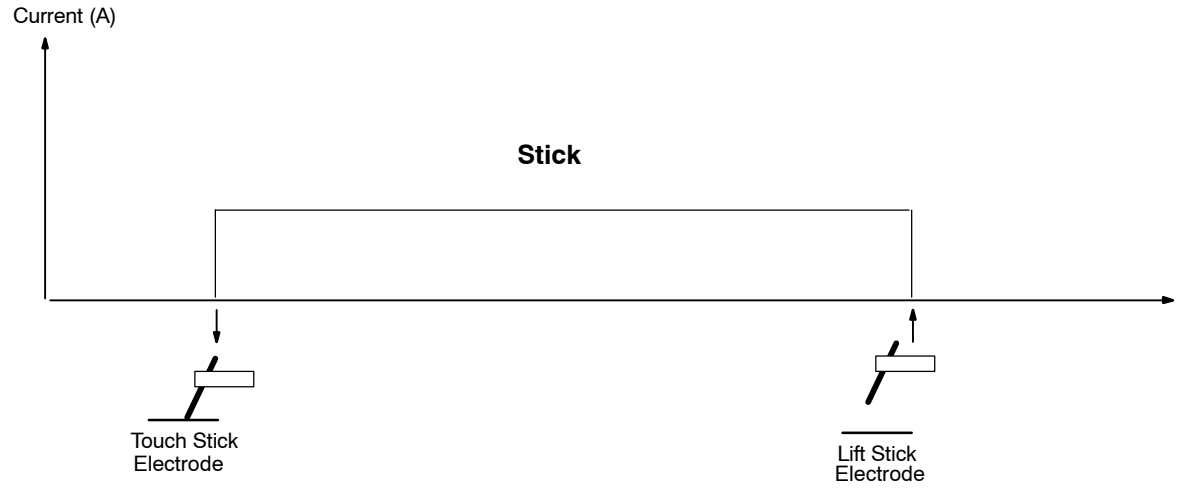
Application: Used for tacking and thin sheet joining.

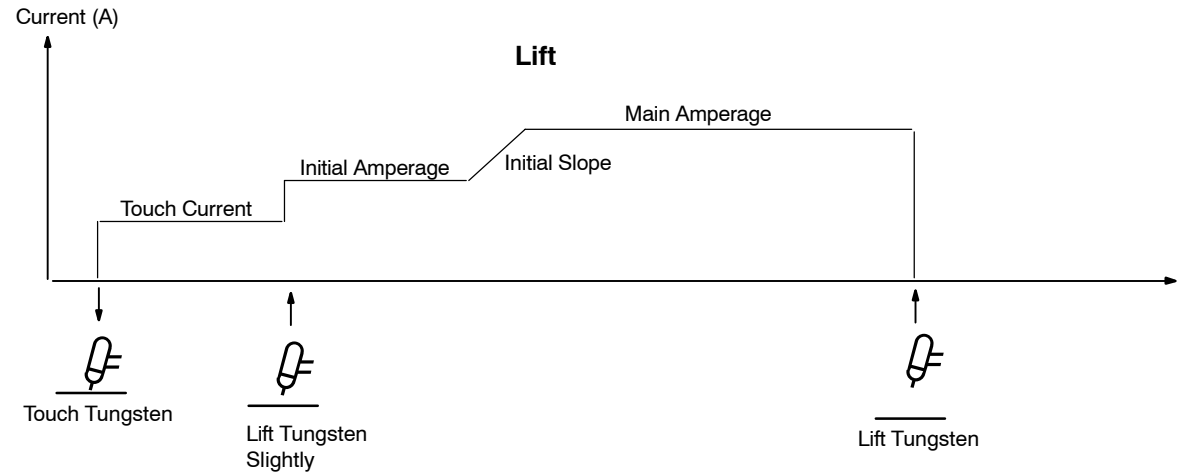


P/H = Push and hold trigger; R = Release Trigger

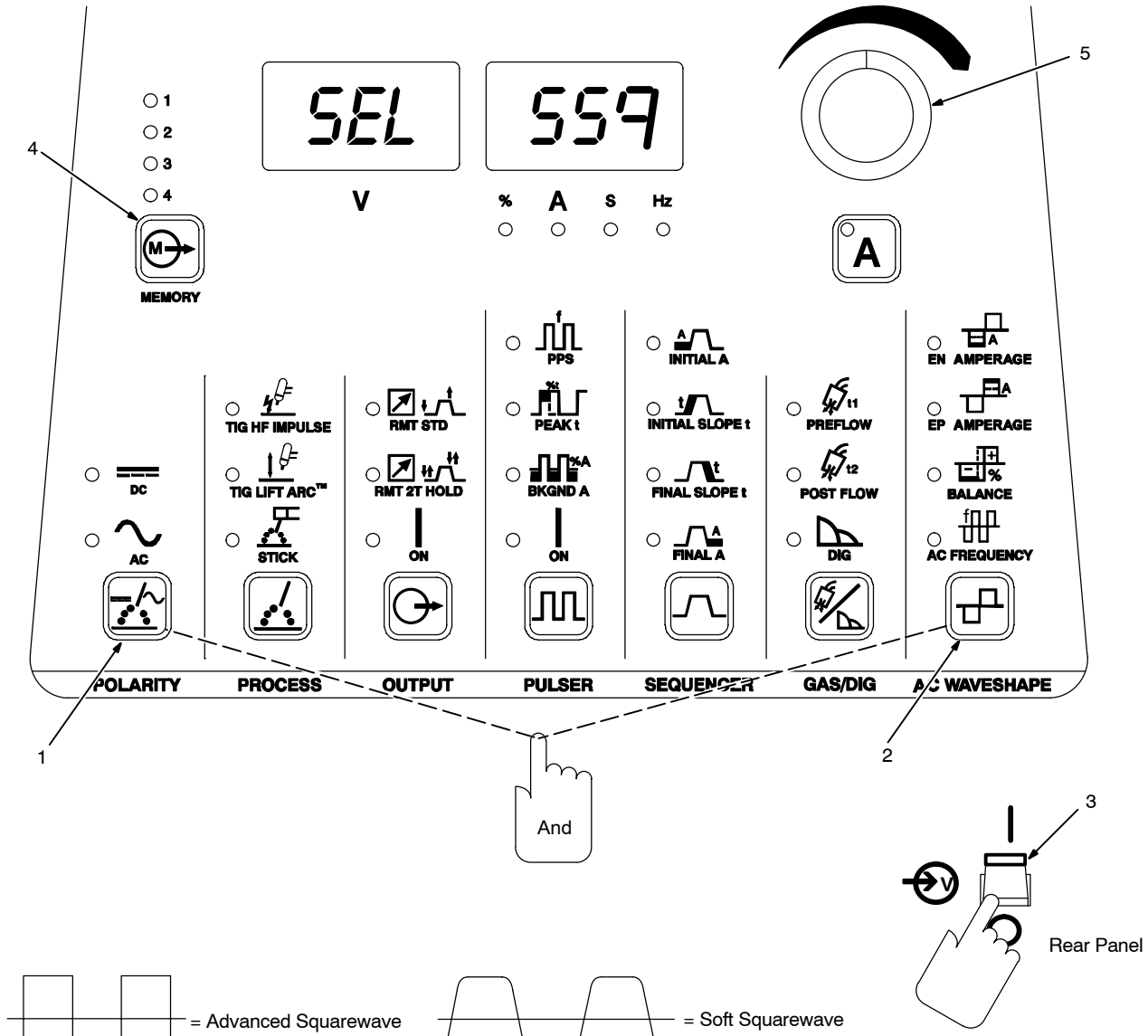
I. On Trigger Operation

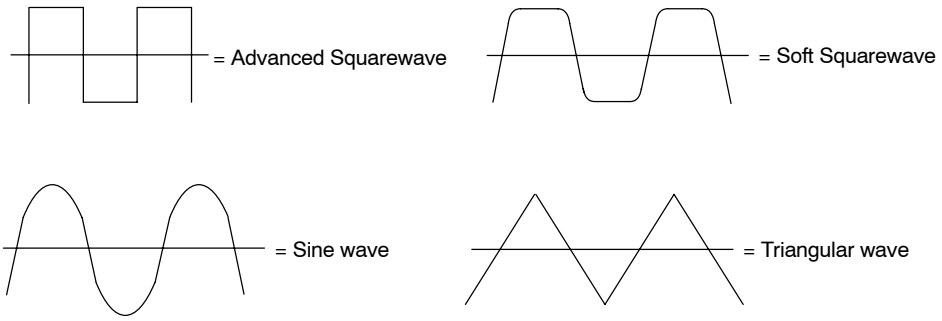






6-3. AC Waveshape Selection (Dynasty Models Only)





1 Polarity Switch Pad

2 AC Waveshape Switch Pad

3 Power Switch

To access the AC Waveshape selection screen, turn power on, and then press the Polarity and Waveshape switch pads before the software version clears the meters and *{SEL} {559}* appears. The active Memory LED, AC LED, and the EN and EP Amperage LED's will light.

4 Memory Switch Pad

Each memory location can select any of four wave shapes.

5 Encoder

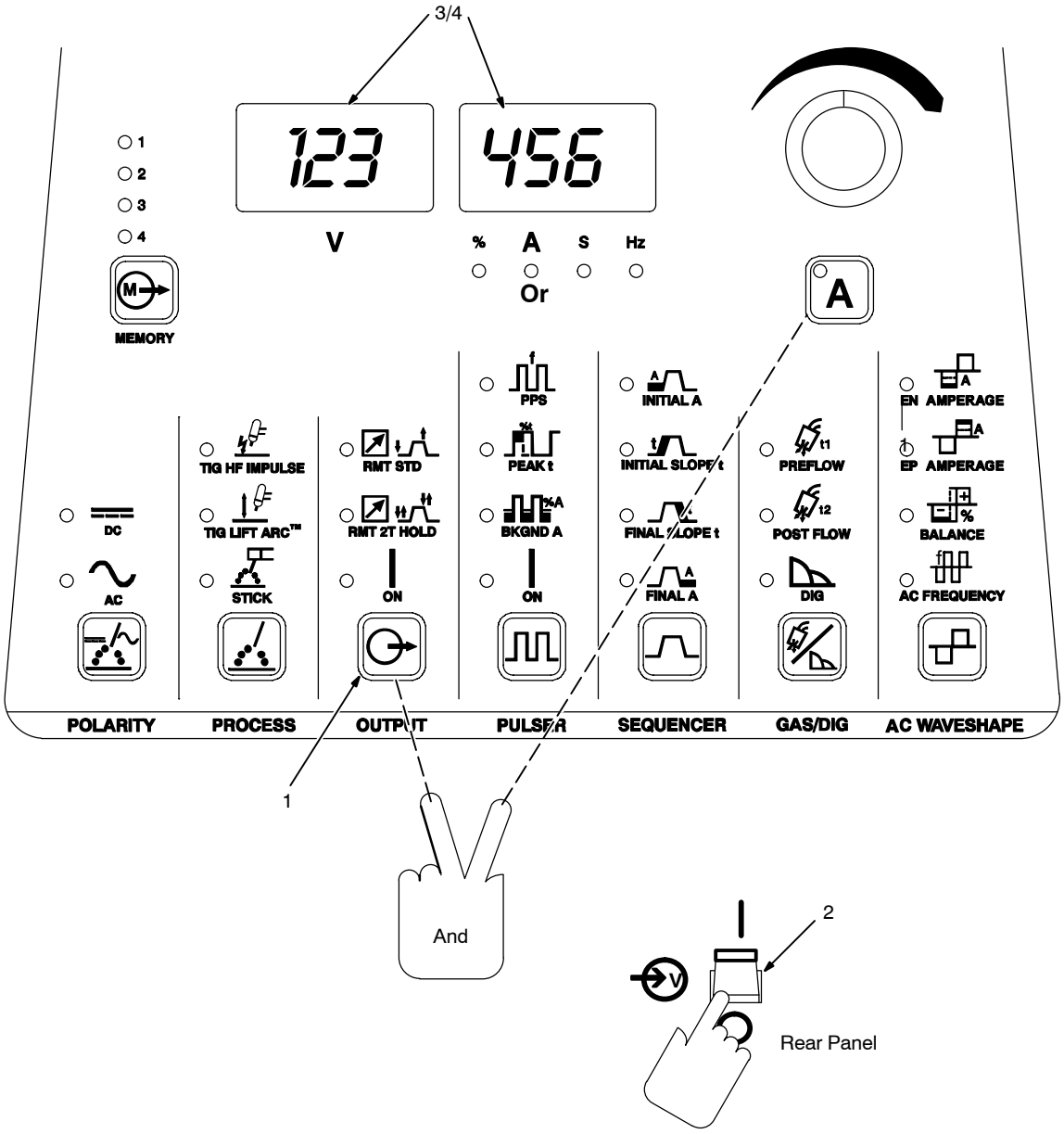
Use the Encoder, at any of the four memory locations, to select between advanced squarewave *{ASq}*, soft squarewave *{SSq}* (default), sine wave *{SIN}*, or triangle wave *{TRI}*.

To save changes and exit, press torch trigger or turn power off.

Note: During normal operation, when EN or EP Amperage is selected, the left parameter screen will display the active waveshape *{ASq}*, *{SSq}*, *{SIN}*, or *{TRI}* as a reminder.

Application: Use advance squarewave when a more focused arc is required for better directional control. Use soft squarewave when a softer arc with a more fluid puddle is desired. Use sine wave to simulate a conventional power source. Use triangular waveshape when the effects of peak amperage with reduced overall heat input is required to help control distortion on thin materials.

6-4. Arc Timer/Counter Display (All Models)



1 Output And Amperage Controls

2 Power Switch

To display the arc timer/counter, turn power switch on, press and hold the Amperage Control and Output switch pads until the software version clears the meters.

3 Arc Timer Display

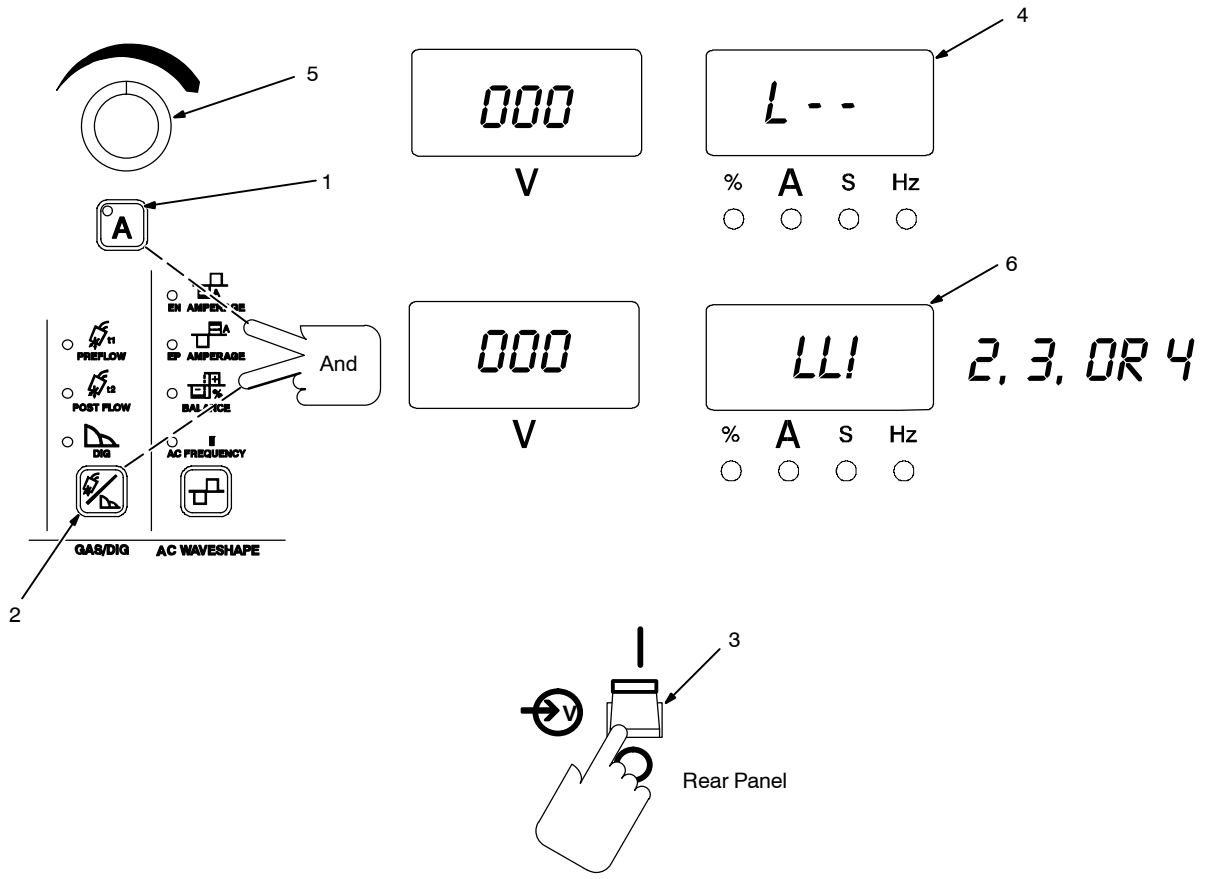
The meter S LED will turn on, and arc time will be displayed for 5 seconds as [*000 000*] to [*999 959*]. The first four numbers indicate hours, and the last two numbers indicate minutes. Example shown is read as 1,234 hours and 56 minutes. Maximum arc time is 9,999 hours and 59 minutes.

4 Arc Counter

After 5 seconds, the meter A LED turns on, and the arc counter will be displayed for the next 5 seconds as [*000 000*] to [*999 999*]. The maximum arc cycle count is 999 999.

6-5. Lockout Functions

A. Accessing Lockout Capability



See Section 5-1 for explanation of controls referred to in all of Section 6-5.

There are four (1–4) different lockout levels. Each successive level allows the operator more flexibility.

NOTE: Before activating lockout levels, be sure that all procedures and parameters are established. Parameter adjustment is limited while lockout levels are active.

1 Amperage (A) Switch Pad

2 Gas/DIG Switch Pad

3 Power Switch

To access lockout screens, turn On power switch, and then before the software version clears the meters, push and hold the Amperage and Gas/DIG switch pads until software version number clears meters.

4 Lockout Off

Upon power up as described, the meter % and Amperage (A) switch pad LED's light, and the meter display will be as shown for a lockout off condition.

5 Encoder Control

To turn On the lockout feature, proceed as follows:

Pressing Amperage (A) switch pad will toggle between the meter % and S LED's. Toggle switch pad until % LED is on.

Turn Encoder control to select a three digit lockout number. Number will appear on the voltage (left) meter. Select any number from [*001*] thru [*999*]. **IMPORTANT:** remember this three digit number, as you will need it to turn the lockout feature off.

Toggle Amperage (A) switch pad to light the meter S LED. You may now select a lockout level.

There are four lockout levels available. Turn Encoder control to select a lockout level (see Sections 6-5B for lockout level descriptions).

6 Lockout On

Once the desired three digits have been entered and a lockout level selected, press torch trigger or turn Off power to complete lockout on sequence.

NOTE: Setting a three digit lockout number of [*000*], or setting a lockout level of [*L--*] will cause a lockout off condition.

To turn Off the lockout feature, proceed as follows:

To access lockout screens, turn On power switch, and then before the software version clears the meters push and hold the Amperage and Gas/DIG switch pads until software version number clears meters.

Upon power up as described, the meter % and Amperage (A) switch pad LED's will turn on, and the meter display will be as shown for a lockout on (see callout 6) condition.

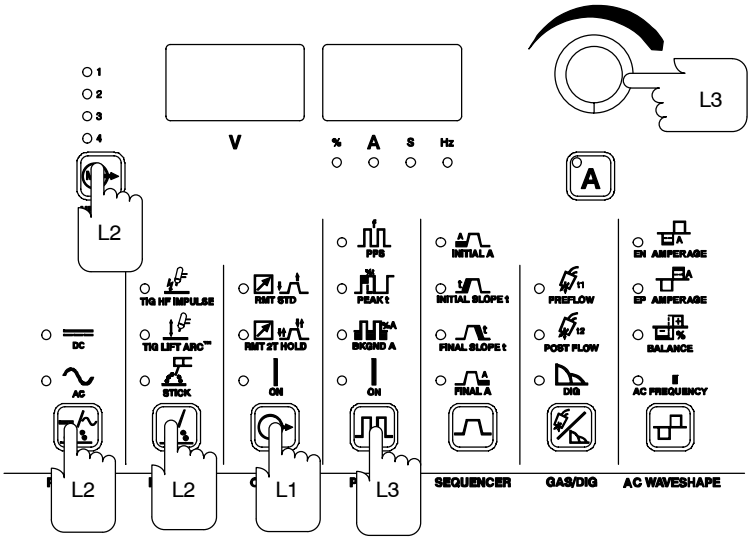
Use Encoder control to enter the same three digits that were used to turn on the lockout feature.

Press the Amperage (A) switch pad. The meter % LED will turn off, and the S LED will light. The amperage (right) meter display will change to [*L--*]. The lockout feature is now off.

Press torch trigger or turn Off power to complete lock out Off sequence.

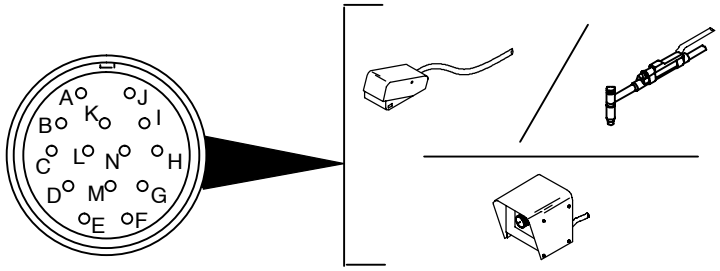
B. Lockout Levels

Levels 1, 2, And 3



Press switch pads in the hand combinations shown to access the different lockout levels, L1, L2, or L3.

Level 4



NOTE: Before activating lock out levels, be sure that all procedures and parameters are established. Parameter adjustment is limited while lock out levels are active.

Level 1

NOTE: Remote amperage control is not available in level 1.

TIG Output Selection

If either the TIG HF Impulse or TIG Lift Arc process (see Section 5-7) was active when lockout level 1 was activated, the operator can choose between RMT STD (Remote Standard) or RMT 2T HOLD (Remote 2T Hold) (see Section 5-9). The On function is also available if TIG Lift Arc was active.

If RMT 2T HOLD was reconfigured (see Section 6-2C) prior to lockout level 1 activation, the reconfigured output mode (4T, 4T momentary, mini logic, or spot) is available to the operator instead of RMT 2T.

Stick Output Selection

If the Stick process was active when lockout level 1 was activated, the operator can choose between RMT STD or On.

When parameter change or selection is limited by lock level 1, [*L-1*] is displayed as a reminder.

Level 2

NOTE: Remote amperage control is not available in level 2.

Includes all the functions of level 1 plus Memory, Polarity and Process Selection (see Sections 5-6 and 5-7).

When parameter change or selection is limited by lock level 2, [*L-2*] is displayed as a reminder.

Level 3

NOTE: Remote amperage control is not available in level 3.

Includes all the functions of levels 1 and 2 plus the following:

+/– 10% adjustment of preset TIG or Stick Weld Amps

Select desired process, TIG or Stick, and use Encoder control to adjust amperage +/– 10% of preset amperage value, up to the limits of the machine. If operator tries to go beyond the +/– 10%, the amperage (right) meter will display [*L-3*] as a reminder.

Pulser ON/Off Control

Gives operator the ability to turn on/off the Pulser control.

When parameter change or selection is limited by lock level 3, [*L-3*] is displayed as a reminder.

Level 4

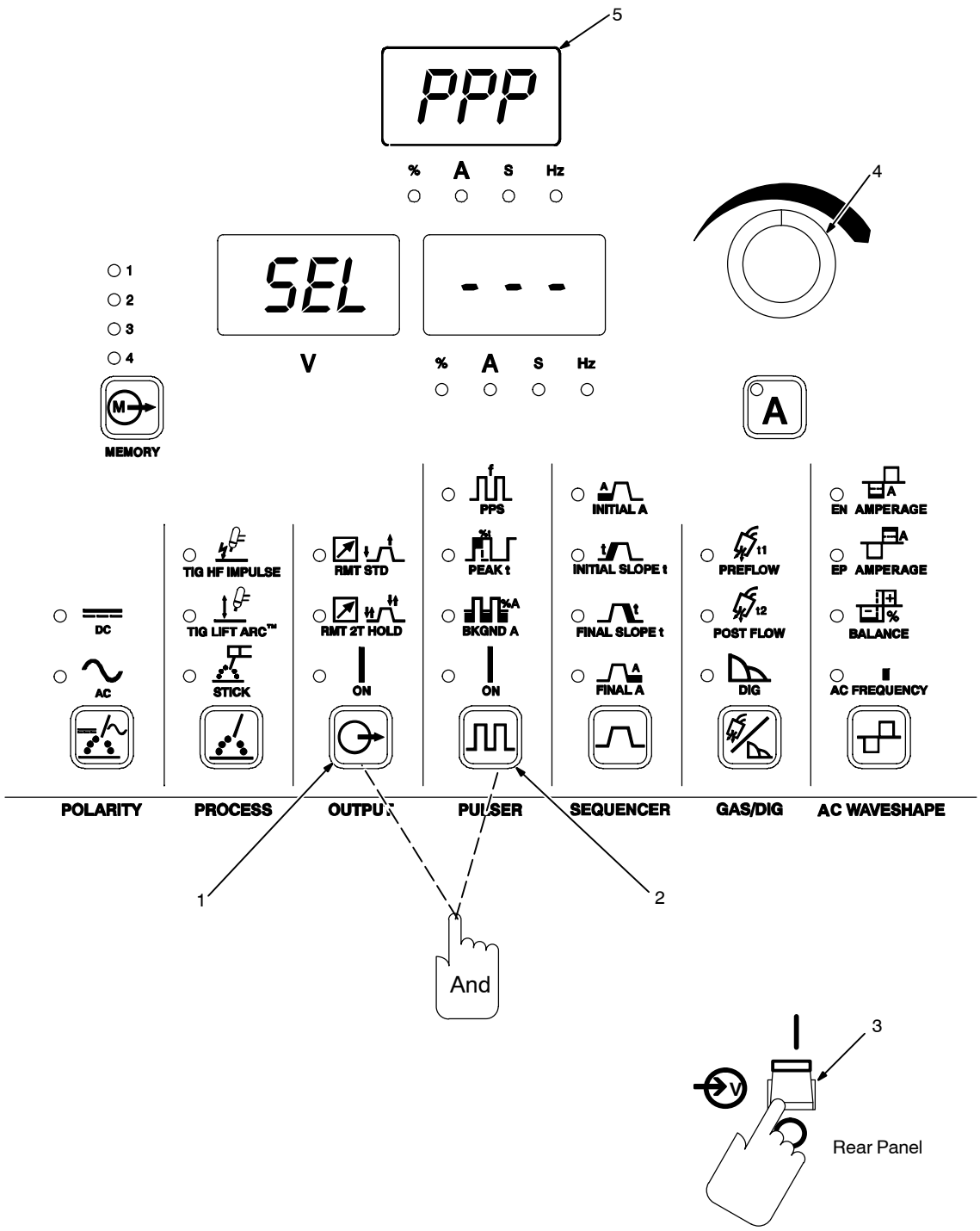
Includes all the functions of levels 1, 2, and 3 plus the following:

Remote Amperage Control

Allows operator to use remote amperage control if desired. Remote control operates from minimum to maximum of preset amperage value. Connect remote control device according to Section 4-9.

When parameter change or selection is limited by lock level 4, [*L-4*] is displayed as a reminder.

6-6. Setting Unit To Display PPP While Pulse Welding



1 Output Switch Pad

2 Pulser Switch Pad

3 Power Switch

To access the PPP while welding display, turn power switch on, press and hold the Output and Pulser switch pads until software version clears meters and *{SEL}* appears. A and Pulser On LED's will light.

4 Encoder Control

5 PPP Meter Display

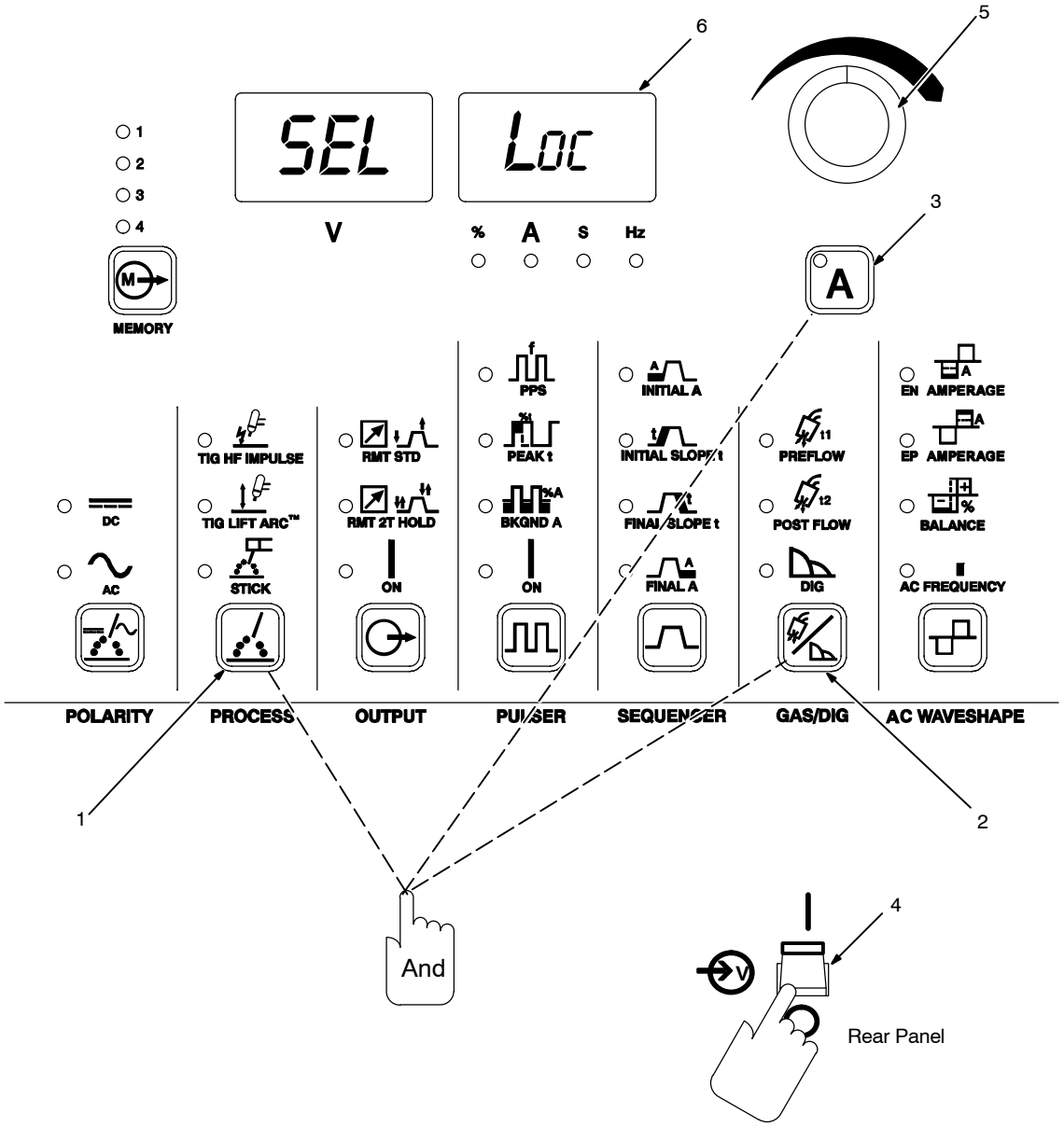
Turn Encoder to change between standard and *{PPP}* meter display.

When the *{PPP}* meter display feature is active while pulse welding, *{PPP}* is displayed, and the meter hold feature is disabled.

The *{PPP}* meter display feature will not effect the normal amperage display or Meter Hold capabilities when in a non-pulse welding mode.

Press torch trigger or turn off power to save setting.

6-7. Stick Open-Circuit Voltage (OCV) Selection



1 Process Switch Pad

2 Gas/DIG Switch Pad

3 Amperage Switch Pad

4 Power Switch

To access the Stick OCV selection, turn power switch on and then press the Process, Gas/DIG and Amperage switch pads before the software version clears the meters. Hold the switch pads until *{SEL} {Loc}* or *{SEL} {noc}* appears.

5 Encoder Control

6 Meter Display

Turn Encoder to change between low OCV *{SEL} {Loc}* and normal OCV *{SEL} {noc}*. Active selection is displayed on the meters.

When Stick low OCV is selected, open-circuit voltage is between 9 and 14 volts. When Stick normal OCV is selected, open-circuit voltage is approximately 80 volts.

Application: For most Stick applications use low open-circuit voltage. Use normal open-circuit voltage for hard to start Stick electrodes, or if required for your particular application.

SECTION 7 – MAINTENANCE AND TROUBLESHOOTING

7-1. Routine Maintenance

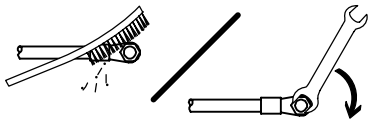
▲ **Disconnect power before maintaining.**

3 Months

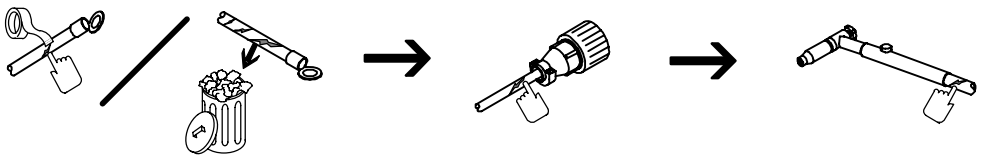
Replace unreadable labels.

Replace damaged gas hose.

Clean and tighten weld terminals.

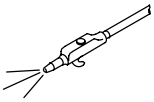


Repair or replace cracked cables and cords.

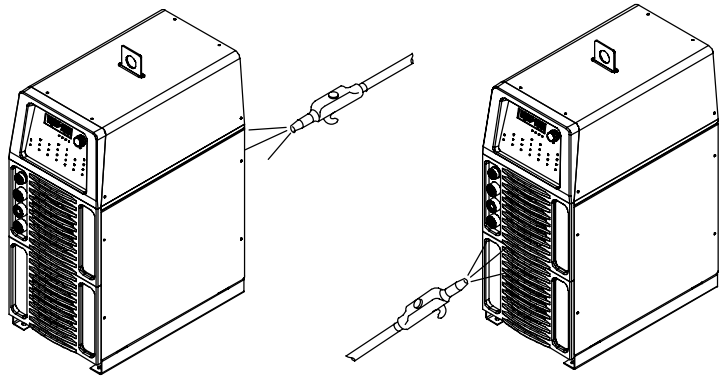


6 Months

Blow out inside. During heavy service, clean monthly.



7-2. Blowing Out Inside of Unit



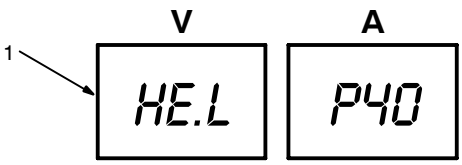
▲ **Do not remove case when blowing out inside of unit.**

To blow out unit, direct airflow through front and back louvers as shown.

803 900-A

7-3. Voltmeter/Ammeter Help Displays

30 Series Display
Top Module



40 Series Display
Bottom Module

☞ *All directions are in reference to the front of the unit. All circuitry referred to is located inside the unit.*

1 Typical Voltmeter/Ammeter Help Display

A 30 series message refers to the top power source, and a 40 series message refers to the bottom power source. Only one series message (30 or 40) will be displayed at a time

• Help *30/40* Display

Indicates a failure in the thermal protection circuitry located in the input inductor of the unit. Contact a Factory Authorized Service Agent if this display is shown.

• Help *31/41* Display

Indicates a malfunction in the primary power circuit caused by an overcurrent condition in the primary IGBT switching circuit. Contact a Factory Authorized Service Agent if this display is shown.

• Help *32/42* Display

Indicates a failure in the thermal protection circuitry located on the left side of the unit. Contact a Factory Authorized Service Agent if this display is shown.

• Help *33/43* Display

Indicates the left side of the unit has overheated. The unit has shut down to allow the fan to cool it (see Section 4-3). Operation will continue when the unit has cooled.

• Help *34/44* Display

Indicates a failure in the thermal protection circuitry located on the right side of the unit. Contact a Factory Authorized Service Agent if this display is shown.

• Help *35/45* Display

Indicates the right side of the unit has overheated. The unit has shut down to allow the fan to cool it (see Section 4-3). Operation will continue when the unit has cooled.

• Help *6* Display

Indicates that the input voltage is too low and the unit has automatically shut down. Operation will continue when the voltage is within the operating range (±10%). Have an electrician check the input voltage if this display is shown.

• Help *7* Display

Indicates that the input voltage is too high and the unit has automatically shut down. Operation will continue when the voltage is within the operating range (±10%). Have an electrician check the input voltage if this display is shown.

• Help *8* Display

Indicates a malfunction in the secondary power circuit of the unit. There is a high open circuit condition. Contact a Factory Authorized Service Agent if this display is shown.

• Help *39/49* Display

Indicates the input inductor of the unit has overheated. Contact a Factory Authorized Service Agent if this display is shown.

• Help *10* Display

Indicates torch trigger is depressed. Release trigger to continue.

• Help *12* Display

Indicates a non-allowable set-up on the front panel.

• Help *13* Display (Automation Models Only)

Output disable open causing weld output to stop, but gas continues to flow.

• Help *14* Display

Unit not ready. Primary circuit bus not up to full power.

• Help *15* Display

Indicates a primary overpower condition. Output current is decreased to limit primary power draw. Depress any switch pad and turn encoder or strike an arc to clear the last help condition.

• Help *16* Display

Secondary clamp voltage too high.

• Help *20* Display

Indicates that the power supplies for the primary drives have failed. Contact a Factory Authorized Service Agent if this display is shown.

• Help *21* Display

Indicates voltage or current feedback has been detected with contactor off. Contact a Factory Authorized Service Agent if this display is shown.

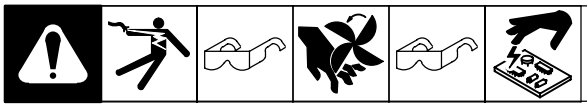
• Help *22* Display

Voltage and current not present with contactor on. Contact a Factory Authorized Service Agent if this display is shown.

• Help *24* Display

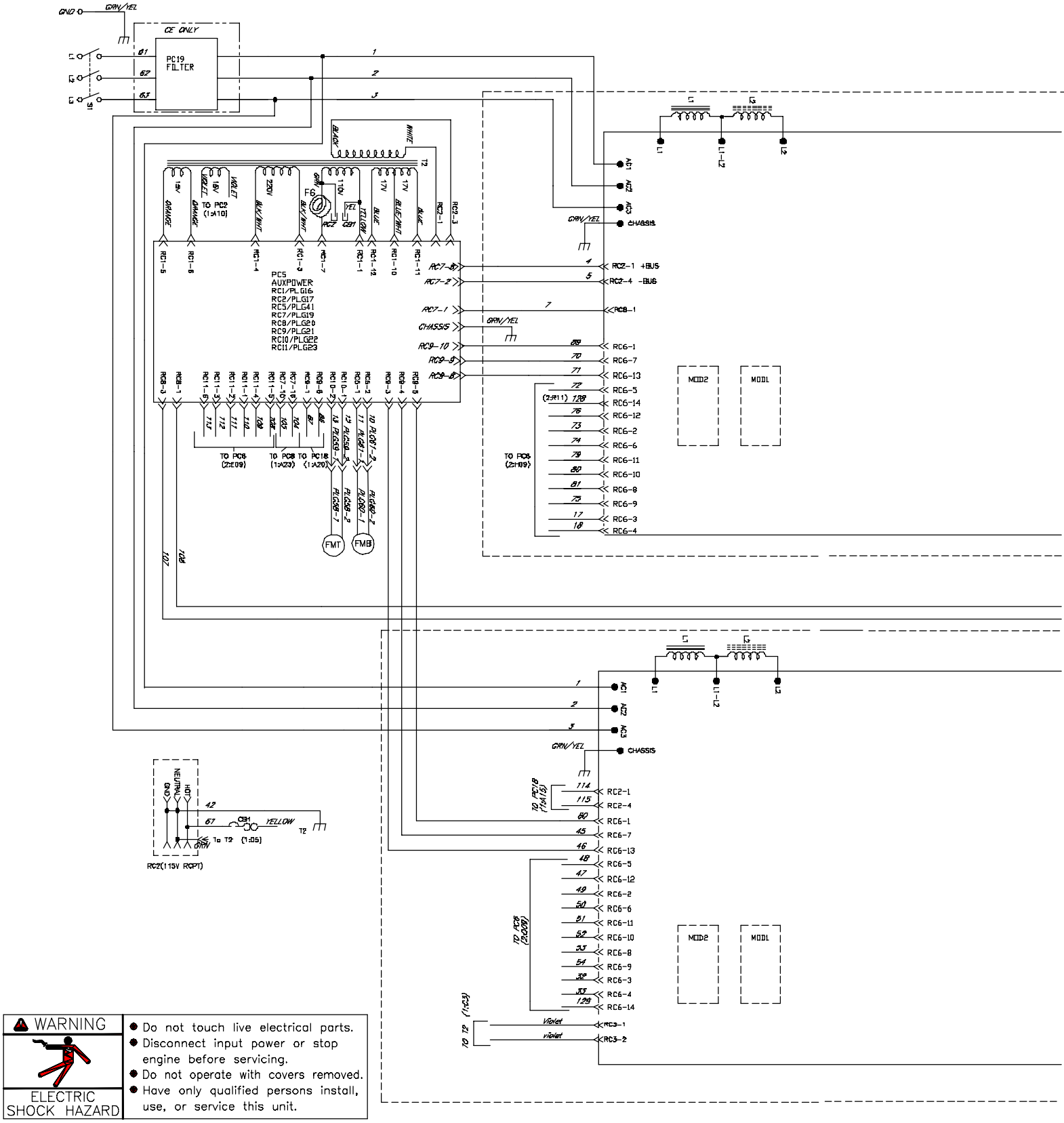
Indicates a power supplies for the control and interface board PC6 failure.

7-4. Troubleshooting



Trouble	Remedy
No weld output; unit completely inoperative.	Place line disconnect switch in On position (see Section 4-18).
	Check and replace line fuse(s), if necessary, or reset circuit breaker (see Section 4-18).
	Check for proper input power connections (see Section 4-18).
No weld output; meter display On.	If using remote control, be sure correct process is enabled to provide output control at Remote 14 receptacle (see Sections 5-1 and 4-9).
	Input voltage outside acceptable range of variation (see Section 4-17).
	Check, repair, or replace remote control.
	Unit overheated. Allow unit to cool with fan On (see Section 4-3).
Erratic or improper weld output.	Use proper size and type of weld cable (see Section 4-8).
	Clean and tighten all weld and gas connections.
No 115 volts ac output at duplex receptacle.	Reset circuit breaker CB1 (see Section 4-7).
Fan not operating. Note: Fan only runs when cooling is necessary.	Check for and remove anything blocking fan movement.
	Have Factory Authorized Service Agent check fan motor.
Wandering arc	Use proper size tungsten (see Section 10-1).
	Use properly prepared tungsten (see Section 10-2).
	Reduce gas flow rate.
Tungsten electrode oxidizing and not remaining bright after conclusion of weld.	Shield weld zone from drafts.
	Increase postflow time (see Section 5-12).
	Check and tighten all gas fittings.
	Water in torch. Refer to torch manual.

SECTION 8 – ELECTRICAL DIAGRAM

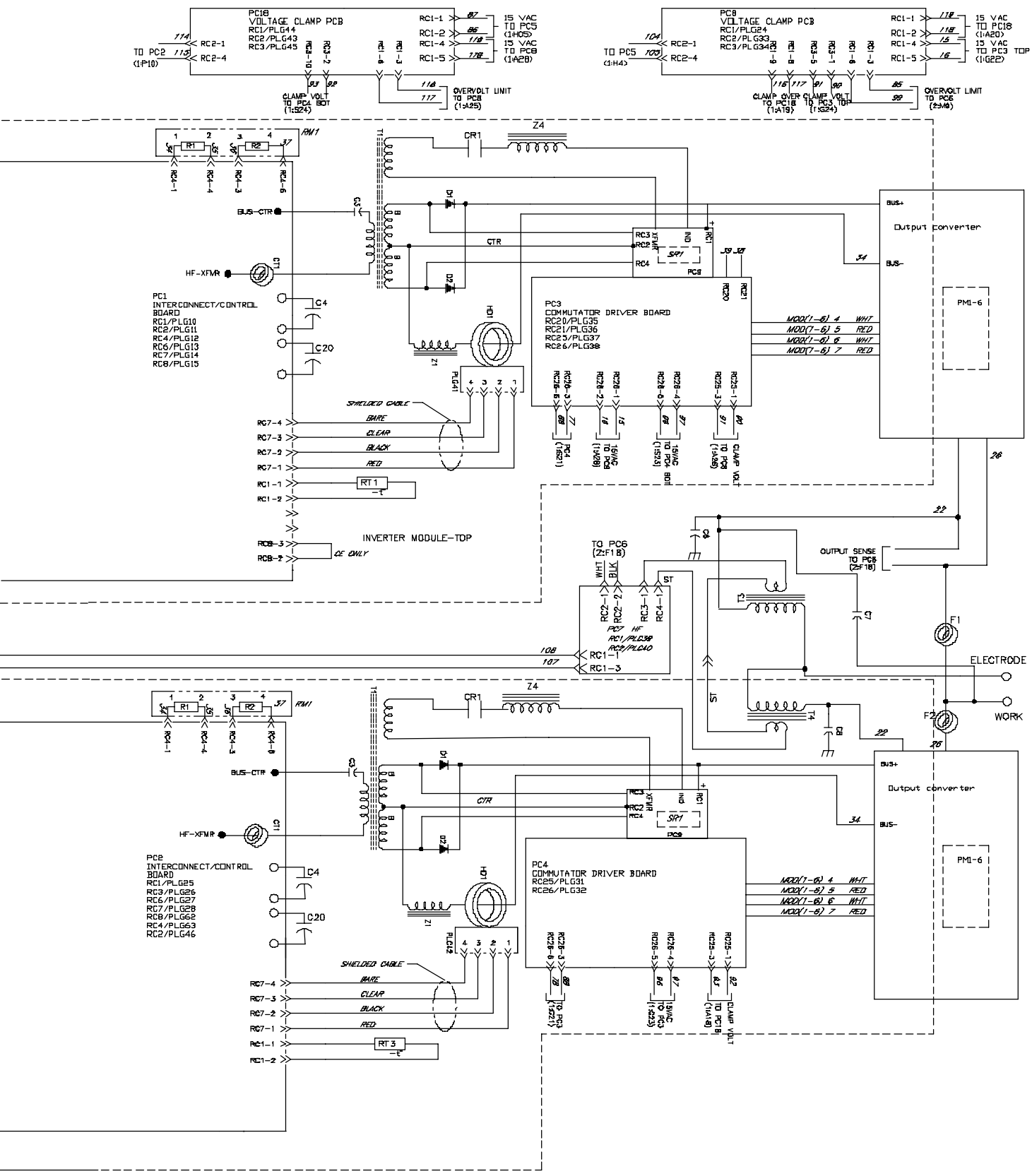


WARNING

ELECTRIC SHOCK HAZARD

- Do not touch live electrical parts.
- Disconnect input power or stop engine before servicing.
- Do not operate with covers removed.
- Have only qualified persons install, use, or service this unit.

Figure 8-1. Circuit Diagram For Dynasty 700 Models (Part 1 of 2)


PC18
VOLTAGE CLAMP PCB
RC1/PLG44
RC2/PLG43
RC3/PLG45
TO PC2 (1:P10)
RC2-1
RC2-4
RC1-1
RC1-2
RC1-4
RC1-5
15 VAC TO PC5 (1:H05)
15 VAC TO PC8 (1:A26)
CLAMP VOLT TO PC4 BOT (1:S24)
OVERVOLT LIMIT TO PC8 (1:A25)
PC8
VOLTAGE CLAMP PCB
RC1/PLG24
RC2/PLG33
RC3/PLG34
TO PC5 (1:H45)
15 VAC TO PC18 (1:A20)
15 VAC TO PC3 TOP (1:G22)
CLAMP OVER TO PC18 (1:A19)
CLAMP VOLT TO PC3 TOP (1:S24)
OVERVOLT LIMIT TO PC6 (2:M8)
Z4
RM1
R1
R2
CR1
T1
BUS-CTR
HF-XFMR
CT1
C3
C4
C20
D1
D2
HD1
Z1
PC1
INTERCONNECT/CONTROL BOARD
RC1/PLG10
RC2/PLG11
RC4/PLG12
RC6/PLG13
RC7/PLG14
RC8/PLG15
PC3
COMMUTATOR DRIVER BOARD
RC20/PLG35
RC21/PLG36
RC23/PLG37
RC26/PLG38
CTR
SPT
XFMR
IND
PC9
Output Converter
BUS+
BUS-
PM1-6
MOD(1-6) 4 WHT
MOD(1-6) 5 RED
MOD(1-6) 6 WHT
MOD(1-6) 7 RED
SHIELDED CABLE
BARE
CLEAR
BLACK
RED
RT1
INVERTER MODULE-TOP
OE ONLY
TO PC6 (2:F18)
OUTPUT SENSE TO PC6 (2:F18)
T3
C5
F1
ELECTRODE
WORK
PC7 HF
RC1/PLG39
RC2/PLG40
PC2
INTERCONNECT/CONTROL BOARD
RC1/PLG25
RC3/PLG26
RC6/PLG27
RC7/PLG28
RC8/PLG62
RC4/PLG63
RC2/PLG46
PC4
COMMUTATOR DRIVER BOARD
RC25/PLG31
RC26/PLG32
T4
C21
F2
RT3

PWN #			
RC1	RC28	WIRE #	DESCRIPTION
1	3	201	CAS ON/OFF
2	1	202	START/STOP
3	19	203	HF DISABLE
4	2	204	OUTPUT ENABLE
5	20	205	AUTO ENABLE 1
6	25	206	AUTO ENABLE 2
7	28	207	AC POLARITY
8	15	208	REMOTE MEM SEL0
9	16	209	REMOTE MEM SEL1
10	10	210	REMOTE MEM ENABLE
11	N/A		N/A
12	N/A		N/A
13	N/A		N/A
14	27	214	EP AMPS COMMON
15	26	215	EP AMPS COMMAND
16	22	216	EN AMPS COMMAND
17	21	217	EN AMPS COMMON
18	8	218	ISOLATED COMMON
19	14	219	PULSE LOCK E
20	13	220	PULSE LOCK C
21	24	221	FINAL SLOPE E
22	23	222	FINAL SLOPE C
23	9	223	VALID ARC E
24	4	224	VALID ARC C
PC6			
RC18	RC28	WIRE #	DESCRIPTION
3	6	30	1V/100A
4	5	25	1V/10V
5		42	CHASSIS
6	18	21	+10 VDC REFERENCE OUT
7	17	27	REMOTE REFERENCE 0-10VDC
	11	42	COMMON
	12	42	CHASSIS
	7		N/A

WARNING

ELECTRIC SHOCK HAZARD

- Do not touch live electrical parts.
- Disconnect input power or stop engine before servicing.
- Do not operate with covers removed.
- Have only qualified persons install, use, or service this unit.

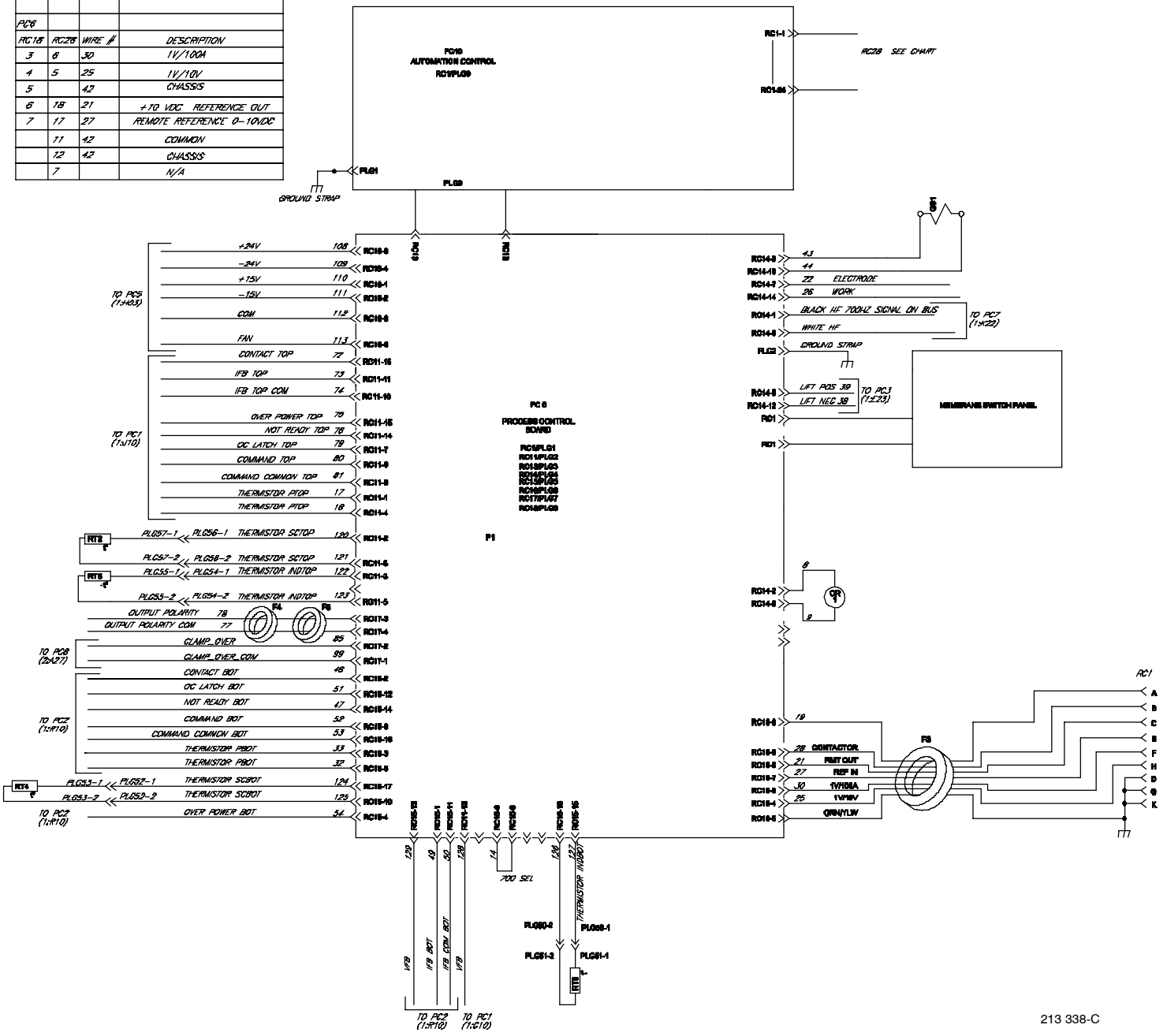


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Figure 8-2. Circuit Diagram For Dynasty 700 Models (Part 2 of 2)

Notes

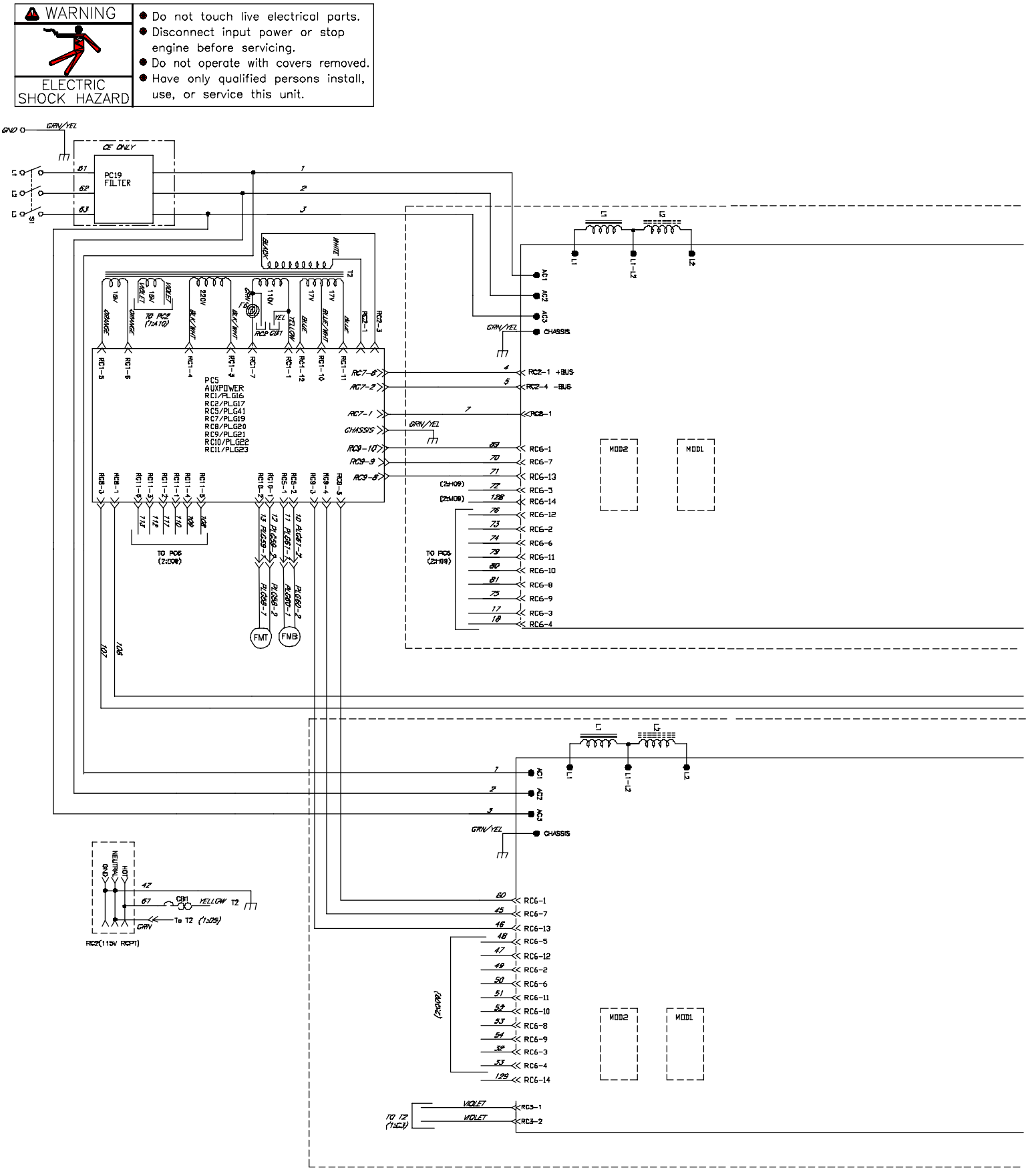
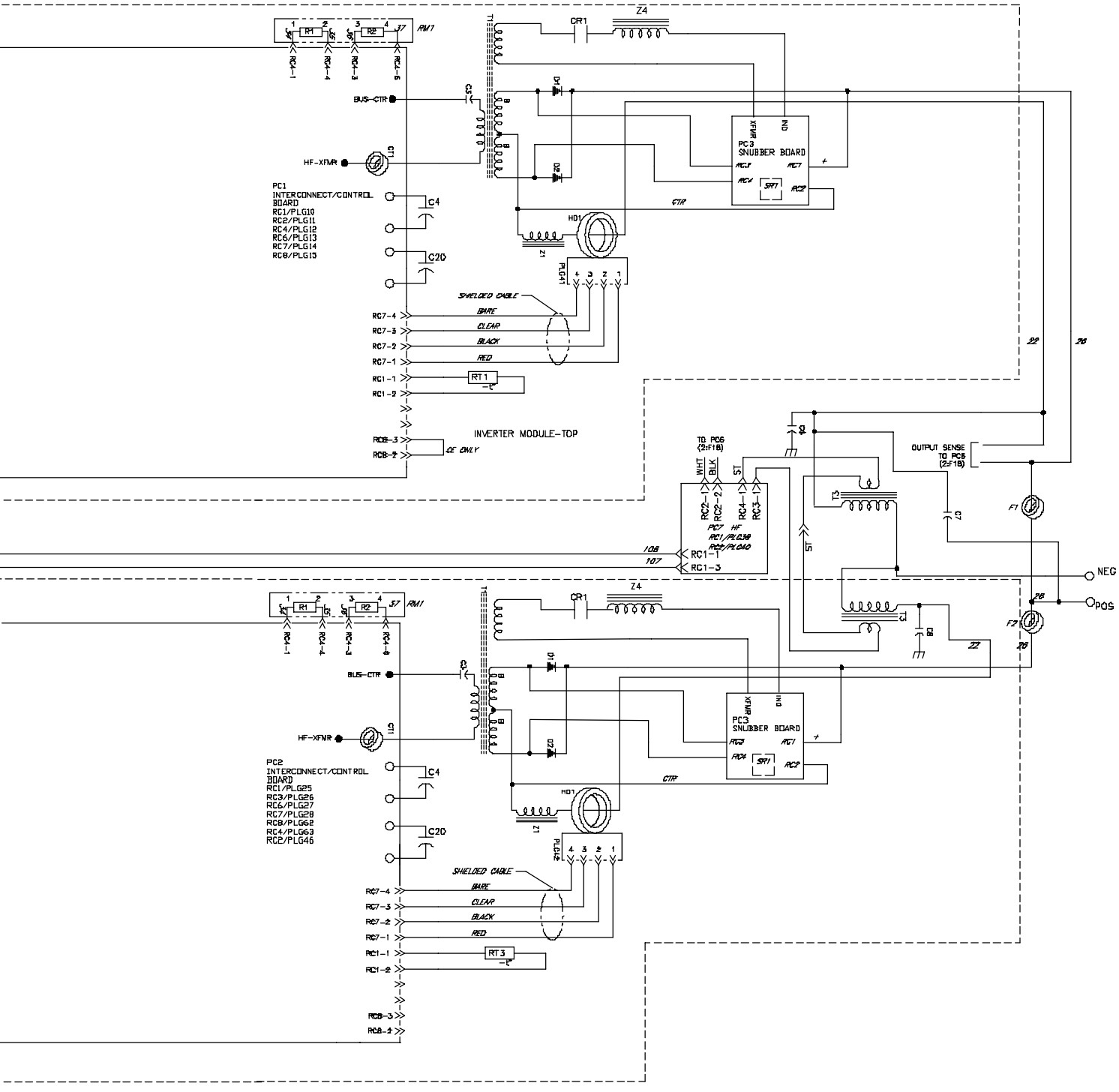
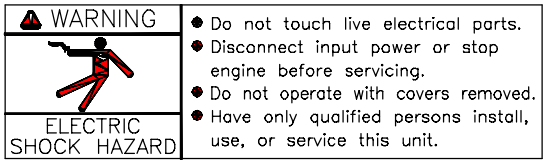


Figure 8-3. Circuit Diagram For Maxstar 700 Models (Part 1 of 2)


Z4
CR1
RM1
R1
R2
RC4-1
RC4-4
RC4-3
RC4-5
BUS-CTR
C3
HF-XFMR
CT1
D1
D2
PC3
SNUBBER BOARD
XFMR
IND
RC3
RC7
RC4
RC2
SW1
PC1
INTERCONNECT/CONTROL
BOARD
RC1/PLG10
RC2/PLG11
RC4/PLG12
RC6/PLG13
RC7/PLG14
RC8/PLG15
C4
C20
CTR
HD1
Z1
PLG41
SHIELDED CABLE
BARE
CLEAR
BLACK
RED
RC7-4
RC7-3
RC7-2
RC7-1
RC1-1
RC1-2
RT1
RC8-3
RC8-2
DE ONLY
INVERTER MODULE-TOP
TO PC6
(2:F1B)
WHT
BLK
RC2-1
RC2-2
RC4-1
RC3-1
ST
RC7 HF
RC1/PLG38
RC2/PLG40
108
107
RC1-1
RC1-3
C2
T2
C7
F1
OUTPUT SENSE
TO PC5
(2:F1B)
NEG
POS
T1
C5
C8
F2
22
28
PC2
INTERCONNECT/CONTROL
BOARD
RC1/PLG25
RC3/PLG26
RC5/PLG27
RC7/PLG28
RC8/PLG62
RC4/PLG63
RC2/PLG46
PLG42
RT3

PIN #			
RC1	RC28	WIRE #	DESCRIPTION
1	J	201	GAS ON/OFF
2	1	202	START/STOP
3	19	203	HF DISABLE
4	2	204	OUTPUT ENABLE
5	20	205	AUTO ENABLE 1
6	35	206	AUTO ENABLE 2
7	28	207	AC POLARITY
8	15	208	REMOTE MEM SEL0
9	16	209	REMOTE MEM SEL1
10	10	210	REMOTE MEM ENABLE
11	N/A		N/A
12	N/A		N/A
13	N/A		N/A
14	27	214	EP AMPS COMMON
15	26	215	EP AMPS COMMAND
16	22	216	EN AMPS COMMAND
17	21	217	EN AMPS COMMON
18	B	218	ISOLATED COMMON
19	14	219	PULSE LOCK E
20	13	220	PULSE LOCK C
21	24	221	FINAL SLOPE E
22	23	222	FINAL SLOPE C
23	9	223	VALID ARC E
24	4	224	VALID ARC C
PC8			
RC18	RC28	WIRE #	DESCRIPTION
3	6	30	1V/100A
4	5	25	1V/10V
5		42	CHASSIS
6	18	21	+10 VDC REFERENCE OUT
7	17	37	REMOTE REFERENCE 0-10VDC
	11	42	COMMON
	12	42	CHASSIS
	7		N/A



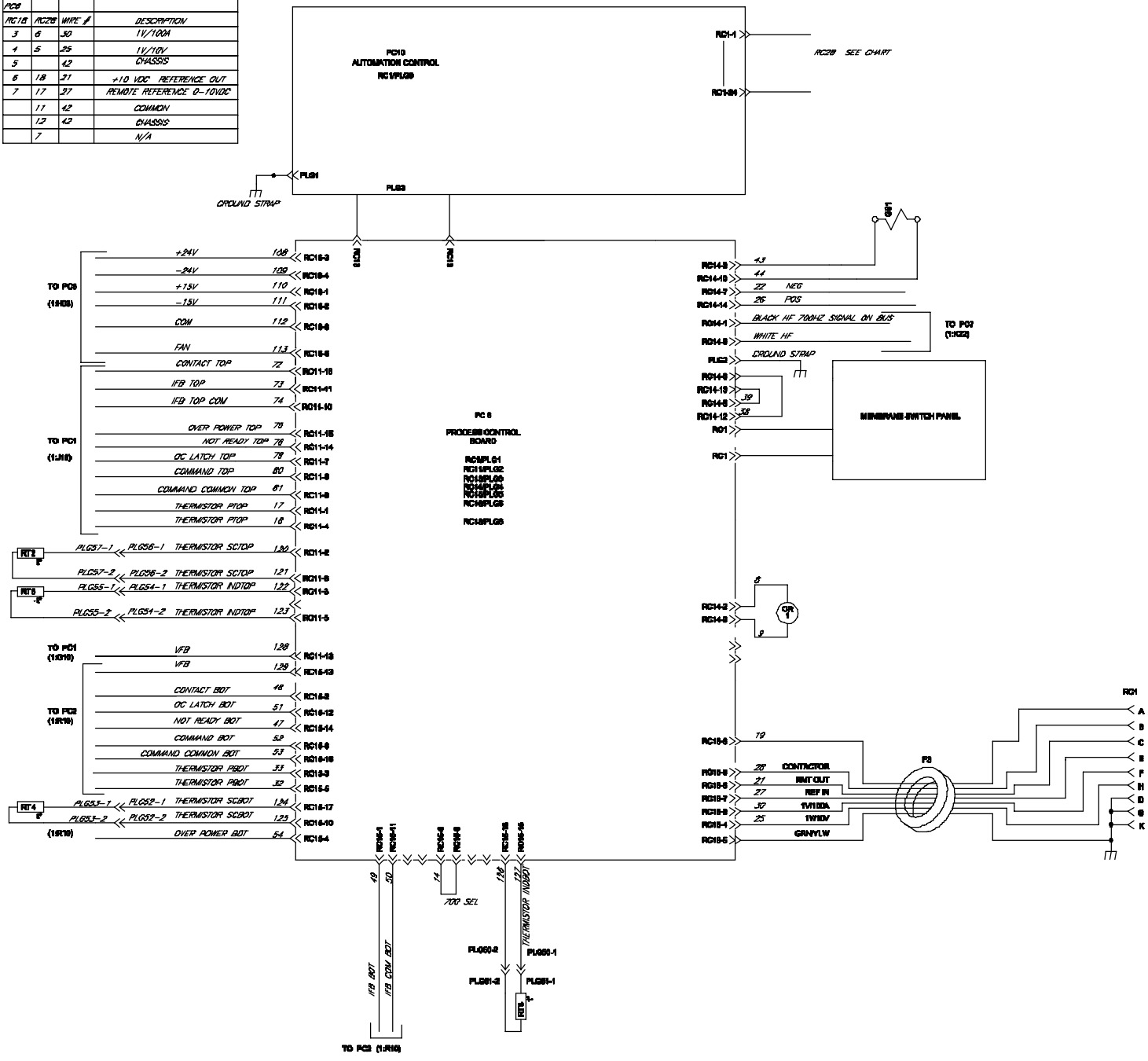


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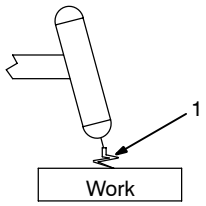
Figure 8-4. Circuit Diagram For Maxstar 700 Models (Part 2 of 2)

SECTION 9 – HIGH FREQUENCY

9-1. Welding Processes Requiring High Frequency



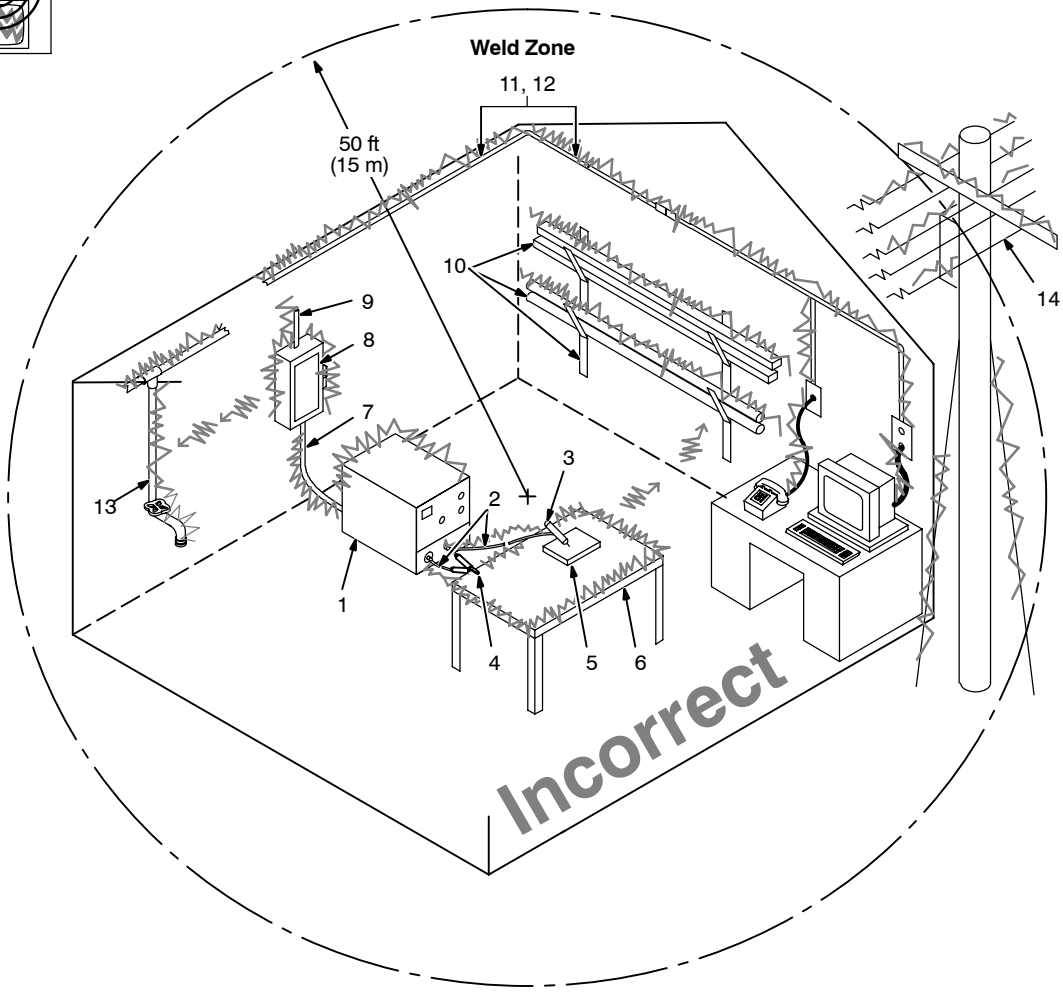
TIG

1 High-Frequency Voltage

TIG – helps arc jump air gap between torch and workpiece and/or stabilize the arc.

high_freq 12/96 – S-0693

9-2. Incorrect Installation



Sources of Direct High-Frequency Radiation

1 High-Frequency Source (welding power source with built-in HF or separate HF unit)
2 Weld Cables
3 Torch
4 Work Clamp
5 Workpiece
6 Work Table

Sources of Conduction of High Frequency

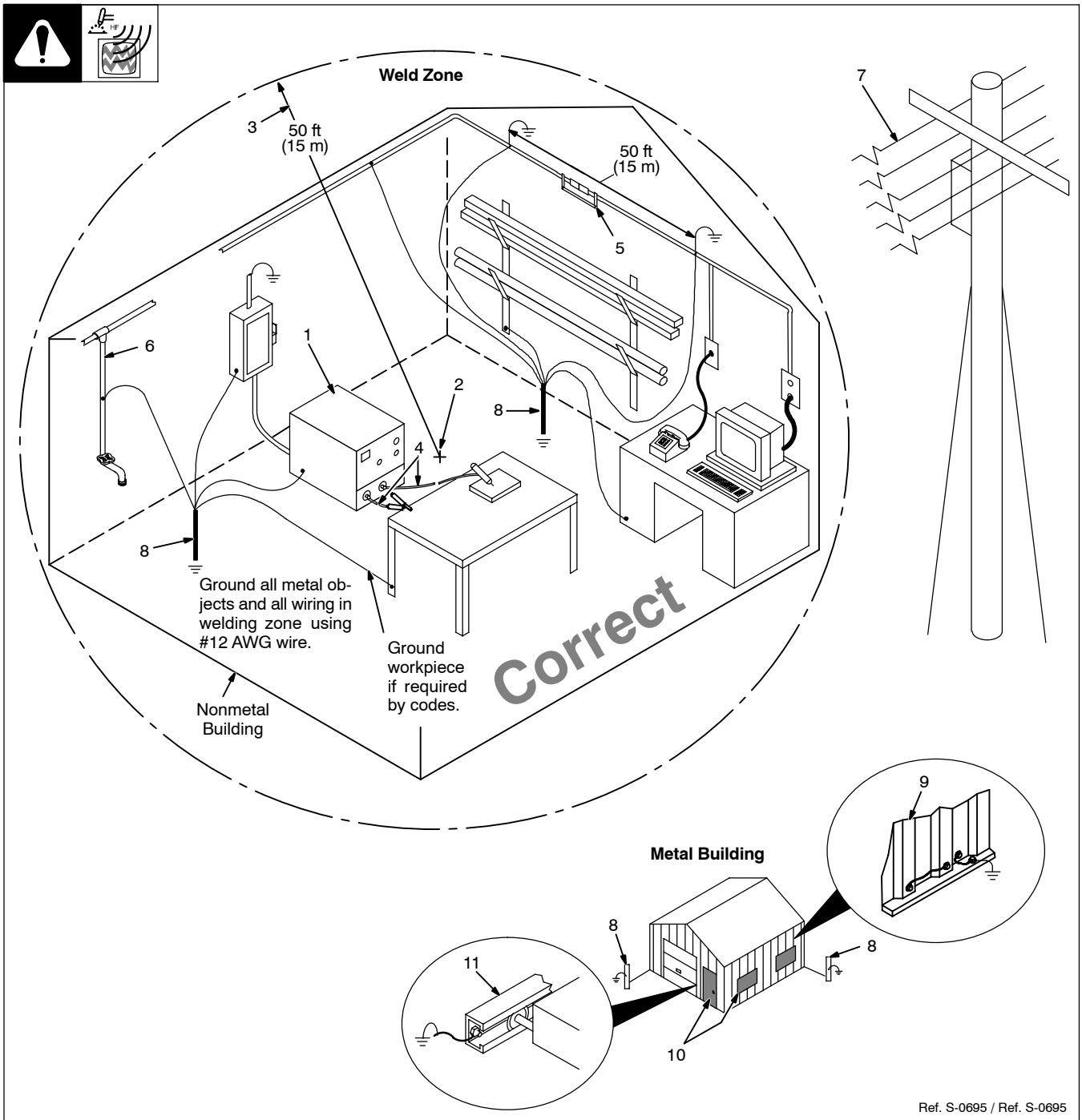
7 Input Power Cable
8 Line Disconnect Device
9 Input Supply Wiring

Sources of Reradiation of High Frequency

10 Ungrounded Metal Objects
11 Lighting
12 Wiring
13 Water Pipes and Fixtures
14 External Phone and Power Lines

S-0694

9-3. Correct Installation



Ref. S-0695 / Ref. S-0695

1 High-Frequency Source (welding power source with built-in HF or separate HF unit)

Ground metal machine case, work output terminal, line disconnect device, input supply, and worktable.

2 Center Point of Welding Zone

Midpoint between high-frequency source and welding torch.

3 Welding Zone

A circle 50 ft (15 m) from center point in all directions.

4 Weld Output Cables

Keep cables short and close together.

5 Conduit Joint Bonding and Grounding

Electrically join (bond) all conduit sections using copper straps or braided wire. Ground conduit every 50 ft (15 m).

6 Water Pipes and Fixtures

Ground water pipes every 50 ft (15 m).

7 External Power or Telephone Lines

Locate high-frequency source at least 50 ft (15 m) away from power and phone lines.

8 Grounding Rod

Consult the National Electrical Code for specifications.

Metal Building Requirements

9 Metal Building Panel Bonding Methods

Bolt or weld building panels together, install copper straps or braided wire across seams, and ground frame.

10 Windows and Doorways

Cover all windows and doorways with grounded copper screen of not more than 1/4 in (6.4 mm) mesh.

11 Overhead Door Track

Ground the track.

SECTION 10 – SELECTING AND PREPARING TUNGSTEN ELECTRODE FOR DC OR AC WELDING

ac/dc_gtaw 2/2004

▲ **Whenever possible and practical, use DC weld output instead of AC weld output.**

10-1. Selecting Tungsten Electrode (Wear Clean gloves To Prevent Contamination Of Tungsten)

Electrode Diameter	Amperage Range - Gas Type♦ - Polarity			
	DC – Argon – Electrode Negative/Straight Polarity	DC – Argon – Electrode Positive/Reverse Polarity	AC – Argon	AC – Argon – Balanced Wave
2% Ceria (Orange Band), 1.5% Lanthanum (Gray Band), Or 2% Thorium (Red Band) Alloy Tungstens				
.010”	Up to 25	*	Up to 20	Up to 15
.020”	15-40	*	15-35	5-20
.040”	25-85	*	20-80	20-60
1/16”	50-160	10-20	50-150	60-120
3/32”	135-235	15-30	130-250	100-180
1/8”	250-400	25-40	225-360	160-250
5/32”	400-500	40-55	300-450	200-320
3/16”	500-750	55-80	400-500	290-390
1/4”	750-1000	80-125	600-800	340-525
Pure Tungsten (Green Band)				
.010”	*	*	Up to 15	Up to 10
.020”	*	*	5-20	10-20
.040”	*	*	10-60	20-30
1/16”	*	10-20	50-100	30-80
3/32”	*	15-30	100-160	60-130
1/8”	*	25-40	150-210	100-180
5/32”	*	40-55	200-275	160-240
3/16”	*	55-80	250-350	190-300
1/4”	*	80-125	325-450	250-400
Zirconium Alloyed Tungsten (Brown Band)				
.010”	*	*	Up to 20	Up to 15
.020”	*	*	15-35	5-20
.040”	*	*	20-80	20-60
1/16”	*	*	50-150	60-120
3/32”	*	*	130-250	100-180
1/8”	*	*	225-360	160-250
5/32”	*	*	300-450	200-320
3/16”	*	*	400-550	290-390
1/4”	*	*	600-800	340-525

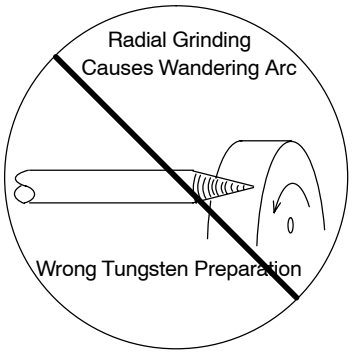
♦ Typical argon shielding gas flow rates are 15 to 35 cfh (cubic feet per hour). *Not Recommended.

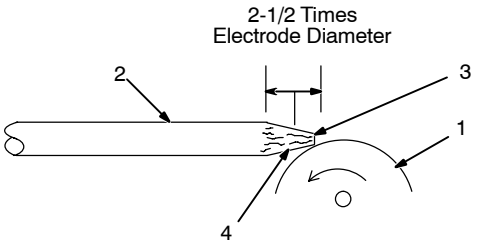
Figures listed are a guide and are a composite of recommendations from American Welding Society (AWS) and electrode manufacturers.

10-2. Preparing Tungsten Electrode For Welding

▲ **Grinding the tungsten electrode produces dust and flying sparks which can cause injury and start fires. Use local exhaust (forced ventilation) at the grinder or wear an approved respirator. Read MSDS for safety information. Consider using tungsten containing ceria, lanthana, or yttria instead of thoria. Grinding dust from thoriated electrodes contains low-level radioactive material. Properly dispose of grinder dust in an environmentally safe way. Wear proper face, hand, and body protection. Keep flammables away.**

A. Preparing Tungsten For DC Electrode Negative (DCEN) Welding Or AC Welding With Inverter Machines





Ideal Tungsten Preparation – Stable Arc

1 Grinding Wheel

Grind end of tungsten on fine grit, hard abrasive wheel before welding. Do not use wheel for other jobs or tungsten can become contaminated causing lower weld quality.

2 Tungsten Electrode

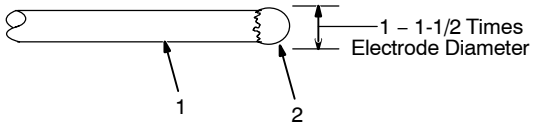
3 Flat

Diameter of this flat determines amperage capacity.

4 Straight Ground

Grind lengthwise, **not radial**.

B. Preparing Tungsten For Conventional AC Welding



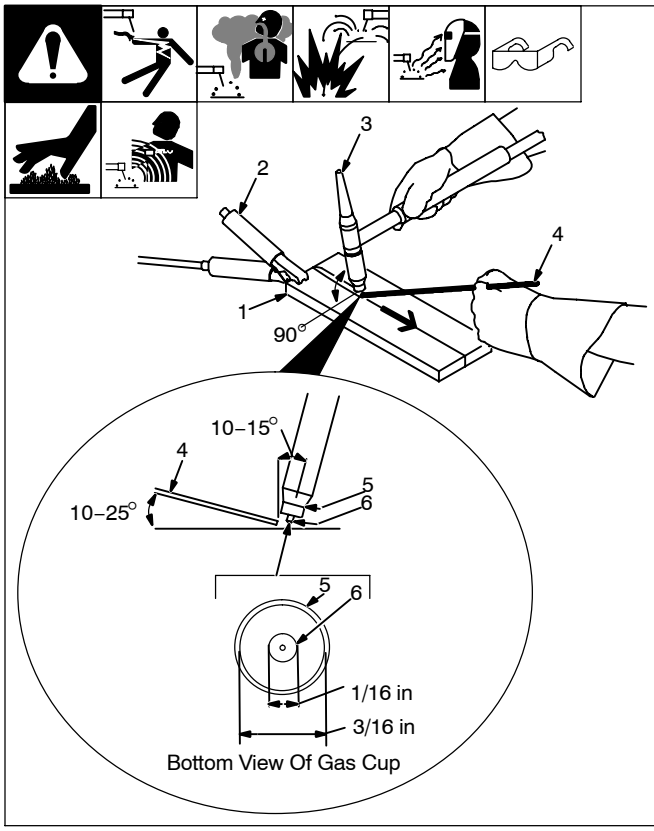
1 Tungsten Electrode

2 Balled End

Ball end of tungsten by applying AC amperage recommended for a given electrode diameter (see Section 10-1). Let ball on end of the tungsten take its own shape.

SECTION 11 – GUIDELINES FOR TIG WELDING (GTAW)

11-1. Positioning The Torch



▲ **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.**

☞ *For additional information, see your distributor for a handbook on the Gas Tungsten Arc Welding (GTAW) process.*

1 Workpiece

Make sure workpiece is clean before welding.

2 Work Clamp

Place as close to the weld as possible.

3 Torch

4 Filler Rod (If Applicable)

5 Gas Cup

6 Tungsten Electrode

Select and prepare tungsten according to Sections 10-1 and 10-2.

Guidelines:

The inside diameter of the gas cup should be at least three times the tungsten diameter to provide adequate shielding gas coverage. (For example, if tungsten is 1/16 in diameter, gas cup should be a minimum of 3/16 in diameter.

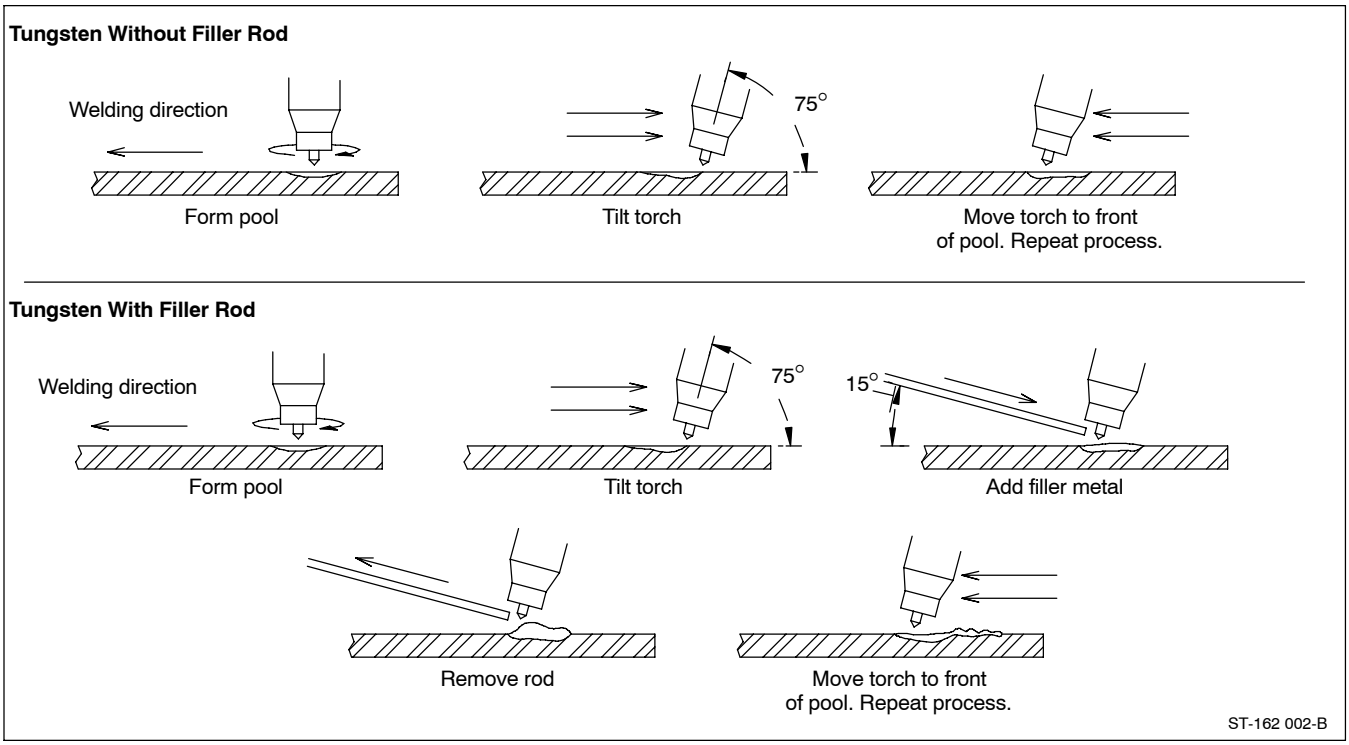
Tungsten extension is the distance the tungsten extends out gas cup of torch.

The tungsten extension should be no greater than the inside diameter of the gas cup.

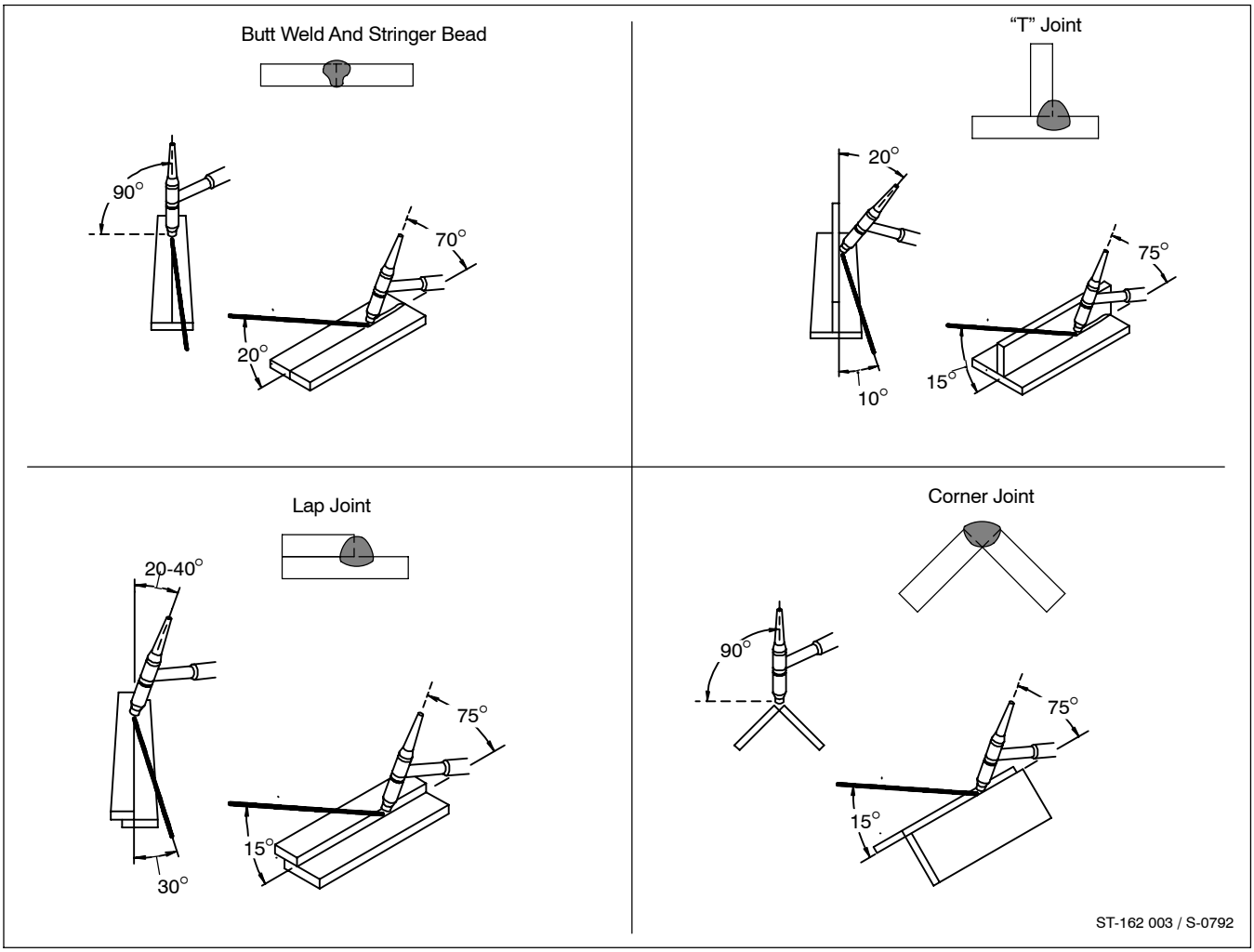
Arc length is the distance from the tungsten to the workpiece.

Ref. ST-161 892

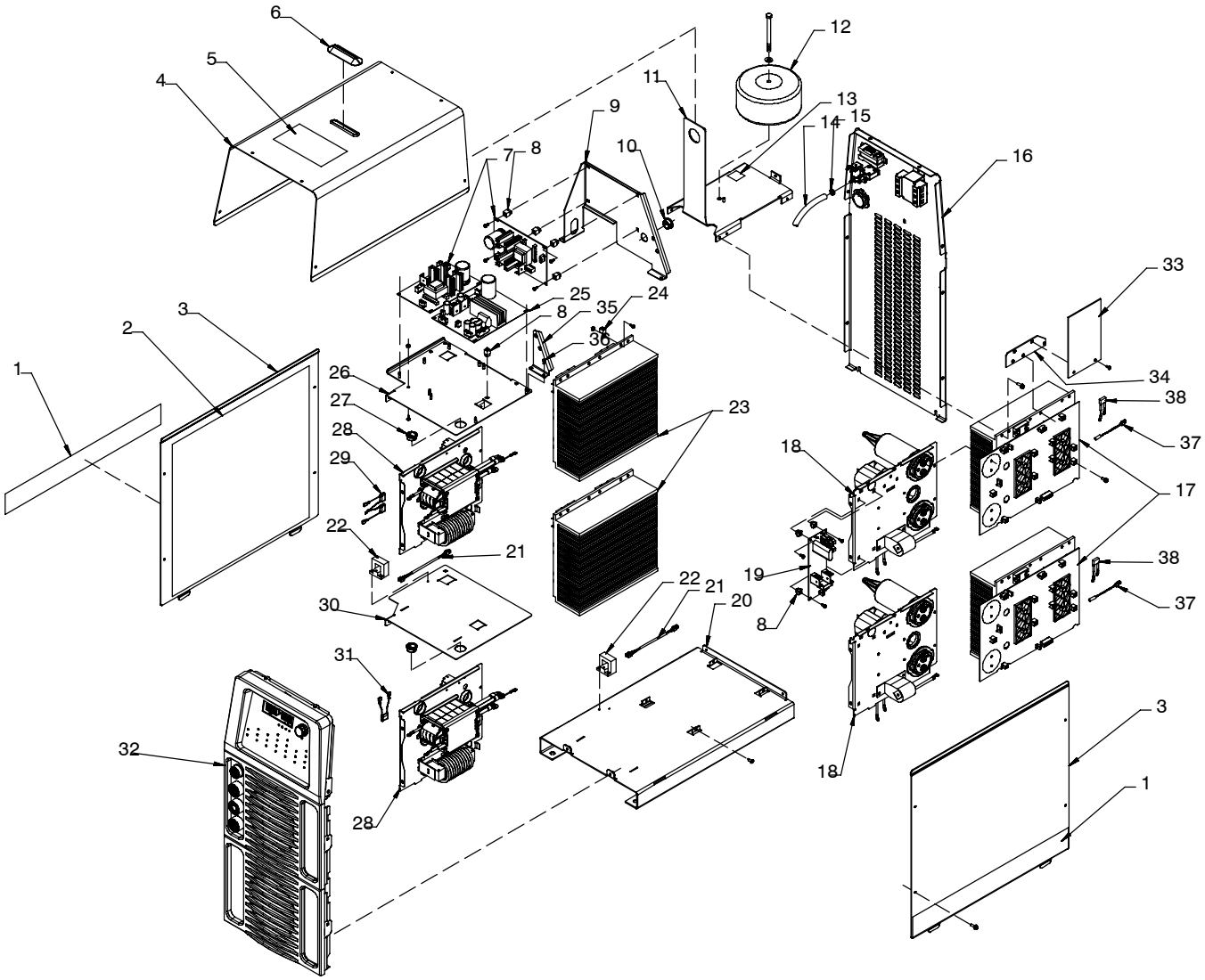
11-2. Torch Movement During Welding



11-3. Positioning Torch Tungsten For Various Weld Joints



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



Dynasty 700 illustrated

804 133-C

Figure 12-1. Main Assembly

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

Figure 12-1. Main Assembly

1		223 785	LABEL, SIDE DYNASTY 700	2
1		223 784	LABEL, SIDE MAXSTAR 700	2
2		213 071	INSULATOR, SIDE	2
3		+213 057	PANEL, SIDE	2
4		213 056	WRAPPER, TOP	1
5		203 990	LABEL, WARNING GENERAL PRECAUTIONARY STATIC	1
5		179 310	LABEL, GENERAL PRECAUTIONARY WORDLESS CE	1
6		213 073	SEAL, LIFT EYE	1
7	PC18,PC8	207 157	CIRCUIT CARD ASSY, CLAMP	2
8		080 509	GROMMET, SCR NO 8/10 PANEL HOLE .312 SQ .375 HIGH	9
9		221 708	BRACKET, MTG PC BOARD (DYNASTY 700 MODELS ONLY)	1
10		010 493	BUSHING, SNAP−IN NYL .625 ID X .875 MTG HOLE	2
11		+213 058	LIFT EYE,	1
12	T2	213 059	XFMR, 665 115/24 18/18 220	1
13		155 436	LABEL, GROUND/PROTECTIVE EARTH	1
14		218 170	HOSE, NPRN BRD NO 1 X .250 ID X 25.000	1
15		089 120	CLAMP, HOSE .375 − .450 CLP DIA SLFTTNG GREEN	2
16	Figure 12-3		PANEL, REAR W/COMPONENTS	1
17	Figure 12-5		HEAT SINK, PRIMARY ASSY	2
18	Figure 12-4		WINDTUNNEL, RIGHT HAND W/COMPONENTS	2
19	PC7	214 712	CIRCUIT CARD ASSY, HF (INCLUDES)	1
		189 786	CONTACT, SPARK GAP	2
		196 455	POINT, SPARK GAP	2
20		213 055	BASE,	1
21		213 074	CABLE, LEM 23 IN	2
22	HD1	182 918	TRANSDUCER,CURRENT 400A MODULE SUPPLY V +/− 15V	2
23	Figure 12-7		HEAT SINK, SECONDARY − DYNASTY 700	2
23	Figure 12-8		HEAT SINK, SECONDARY − MAXSTAR 700	2
24		213 248	LUG, UNIV W/SCREW 2/0−14 WIRE .266STD	1
25	PC5	221 722	CIRCUIT CARD ASSY, AUX POWER W/PROGRAM	1
26		215 402	PANEL, TOP WINDTUNNEL	1
27		057 357	BUSHING,SNAP−IN NYL .937 ID X 1.125 MTG HOLE	1
28	Figure 12-6		WINDTUNNEL, LEFT HAND W/COMPONENTS	2
29	C6,C7	222 752	CAPACITOR ASSY,	1
30		221 721	PANEL, WINDTUNNEL SEPARATOR	1
31	C8	221 707	CAPACITOR ASSY,	1
32	Figure 12-2		PANEL, FRONT W/CMPNTS	1
		215 120	CONNECTION KIT, DINSE	1
33	PC19	187 264	CIRCUIT CARD ASSY, FILTER (CE MODELS ONLY)	1
34		222 760	BRACKET, FILTER BOARD (CE MODELS ONLY)	1
35		226 878	BRACKET, HARNESS SUPPORT (MAXSTAR 700 MODELS ONLY)	1
36		195 666	SCREW, 010−32X .50 TORX PANHD W/GNDRNG STL PLD	2
37	RT5, RT6	231 292	THERMISTOR, NTC 30K OHM @ 25 DEG C 8IN W/HEAT SHRINK	2
38	C11	231 486	CAPACITOR ASSY	2

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

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

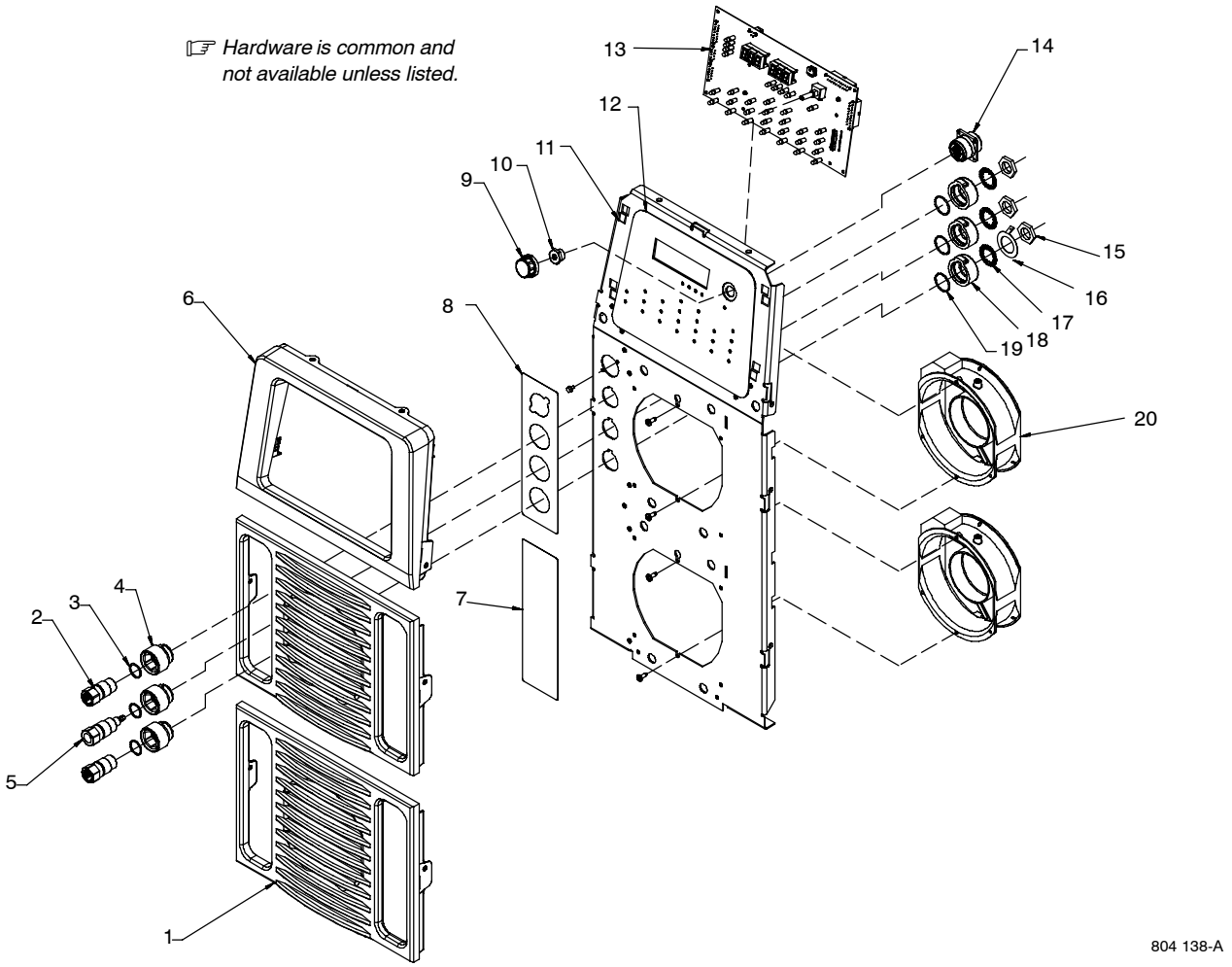


Figure 12-2. Panel, Front w/Components

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
		221 408	**Figure 12-2. Panel, Front w/Components**	
1		213 053	PANEL, LOUVER COVER (ORDER SERIAL NO. CARD ALSO)	2
2		214 826	RECEPTACLE, THREAD LOCK	2
3		186 228	O–RING, 0.739 ID X 0.070 H	3
4		185 712	INSULATOR, BULKHEAD FRONT	3
5		202 552	RECEPTACLE, GAS(FEMALE)	1
6		213 051	PANEL, FRONT TOP	1
7		216 859	PLATE, FRONT PANEL	1
8		213 069	PLATE, INDICATOR FRONT – DYNASTY 700	1
8		213 518	PLATE, INDICATOR FRONT – MAXSTAR 700	1
9		174 991	KNOB, POINTER 1.250 DIA X .250 ID W/SPRING CLIP–.21	1
10		215 294	BUSHING, FLG 375–32X.511	1
11		212 490	PANEL, FRONT	1
12		213 320	NAMEPLATE/SWITCH MEMBRANE, DYNASTY 350/700 STH/FF	1
12		215 119	NAMEPLATE/SWITCH MEMBRANE, MAXSTAR 350/700 STH/FF	1
13	PC6	220 755	CIRCUIT CARD ASSY, CONTROL & INTERFACE W/PROGRAM	1
14	RC1	213 327	RECEPTACLE, W/LEADS & PLUG 14PIN	1
15		185 717	NUT, M20–1.5 1.00HEX .19H BRS LOCKING	3
16		178 548	TERMINAL, CONNECTOR FRICTION	1
17		185 714	WASHER, TOOTH 22MMID X 31.5MMOD 1.310–1MMT INTERN	3
18		185 718	O–RING, 0.989 ID X 0.070 H	3
19		185 713	INSULATOR, BULKHEAD REAR	3
20	FMB,FMT	213 072	FAN, MUFFIN	2

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

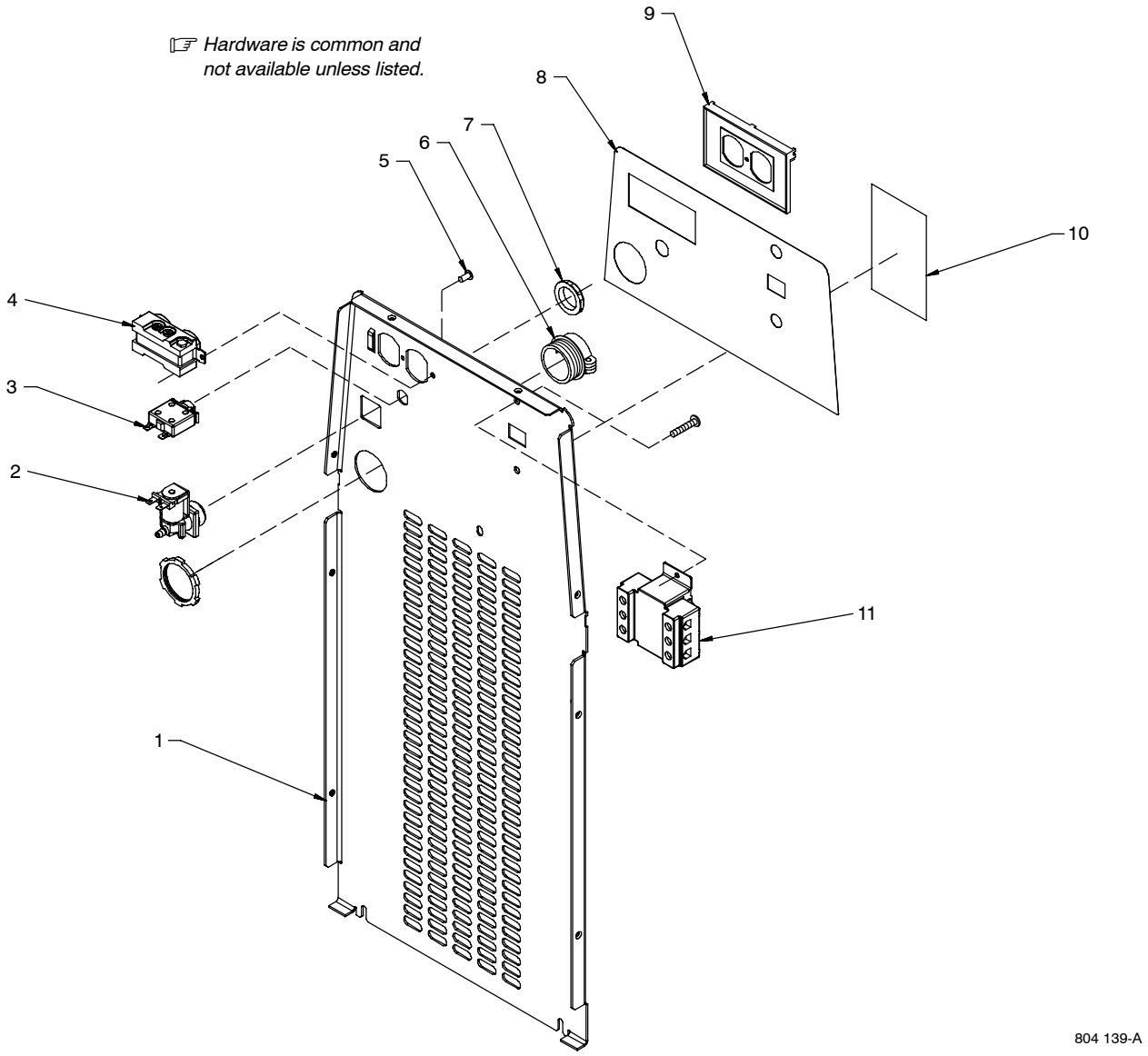


Figure 12-3. Panel, Rear w/Components

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
		221 409	**Figure 12-3. Panel, Rear w/Components**	
1		+213 054	PANEL, REAR	1
2	GS1	216 607	VALVE, 24VDC 2WAY CUSTOM PORT 1/8 ORF W/FRICT	1
3	CB1	183 492	SUPPLEMENTARY PROTECTOR, MAN RESET 1P 10A 250V FRIC	1
4	RC2	189 033	RCPT, STR DX GND 2P3W 15A 125V (GRAY)	1
5		115 516	RIVET, AL .187 DIA X .063–.125 GRIP BLK BLIND DOME	1
6		010 467	CONN, CLAMP CABLE 1.250	1
7		137 761	NUT, 750 NPT 1.31HEX .27H NYL BLK	1
8		215 117	NAMEPLATE, IDENT REAR	1
9		217 297	COVER, RECEPTACLE WEATHERPROOF DUPLEX RCPT	1
10		221 164	LABEL, WARNING ELECTRIC SHOCK/INPUT POWER CONNECT	1
10		219 842	LABEL, WARNING INPUT CONNECTIONS/ELECTRIC SHOCK CE	1
11	S1	221 124	SWITCH, TGL ASSY (INCLUDES)	1
		213 060	SWITCH, TGL 3 PST	1

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

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

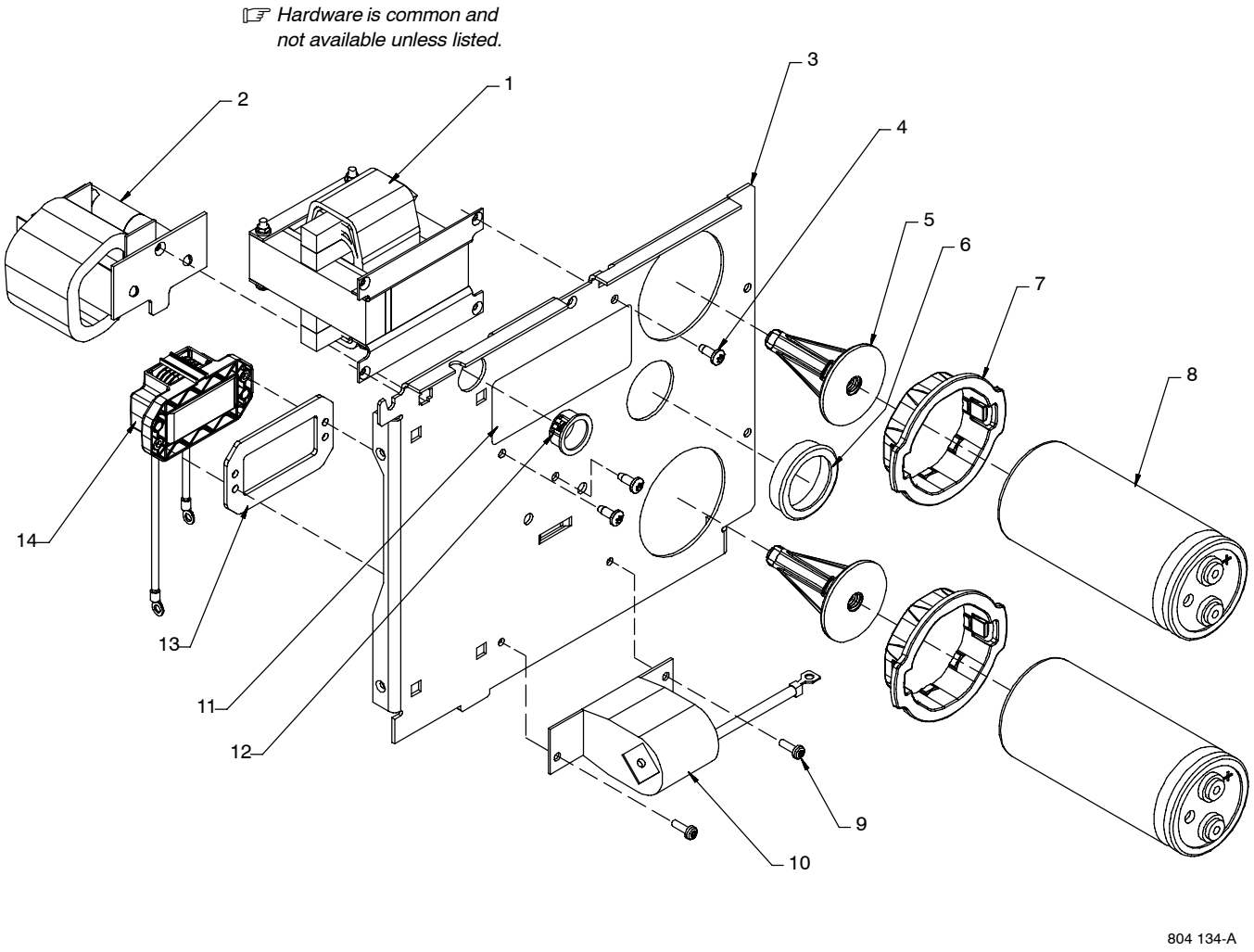


Figure 12-4. Wind Tunnel, Right Hand w/Components

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
		213 345	**Figure 12-4. Wind Tunnel, Right Hand w/Components**	
1	L1	213 350	INDUCTOR, INPUT	1
2	T3	213 326	XFMR, COUPLING (TOP)	1
2	T4	215140	XFMR, COUPLING (BOTTOM)	1
3		+212 489	PANEL, RIGHT WINDTUNNEL	1
4		195 666	SCREW, 010−32X .50 TORX PANHD WGNDRNG STL PLD	3
5		216 861	STAND−OFF, CAPACITOR	2
6		170 647	BUSHING, SNAP−IN NYL 1.312 ID X 1.500 MTG HOLE	1
7		216 860	GROMMET, CAPACITOR	2
8	C4,C20	217 941	CAPACITOR, ELCTLT 1800 UF 500 VDC CAN 2.52 DIA	2
9		207 418	SCREW, K40X 20 PAN HD−PHL STL PLD PT THREAD FORMING	2
10	C3	216 700	CAPACITOR, POLYP MET FILM 16. UF 400 VAC 10%	1
11		218 004	LABEL, WARNING ELECTRIC SHOCK/EXPLODING PARTS	1
11		219 844	LABEL, WARNING ELECTRIC SHOCK/EXPLODING PARTS CE	1
12		010 493	BUSHING, SNAP−IN NYL .625 ID X .875 MTG HOLE	1
13		218 566	GASKET, INDUCTOR MOUNTING	1
14	L2	213 348	COIL, INDUCTOR (PRE−REGULATOR)	1

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

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

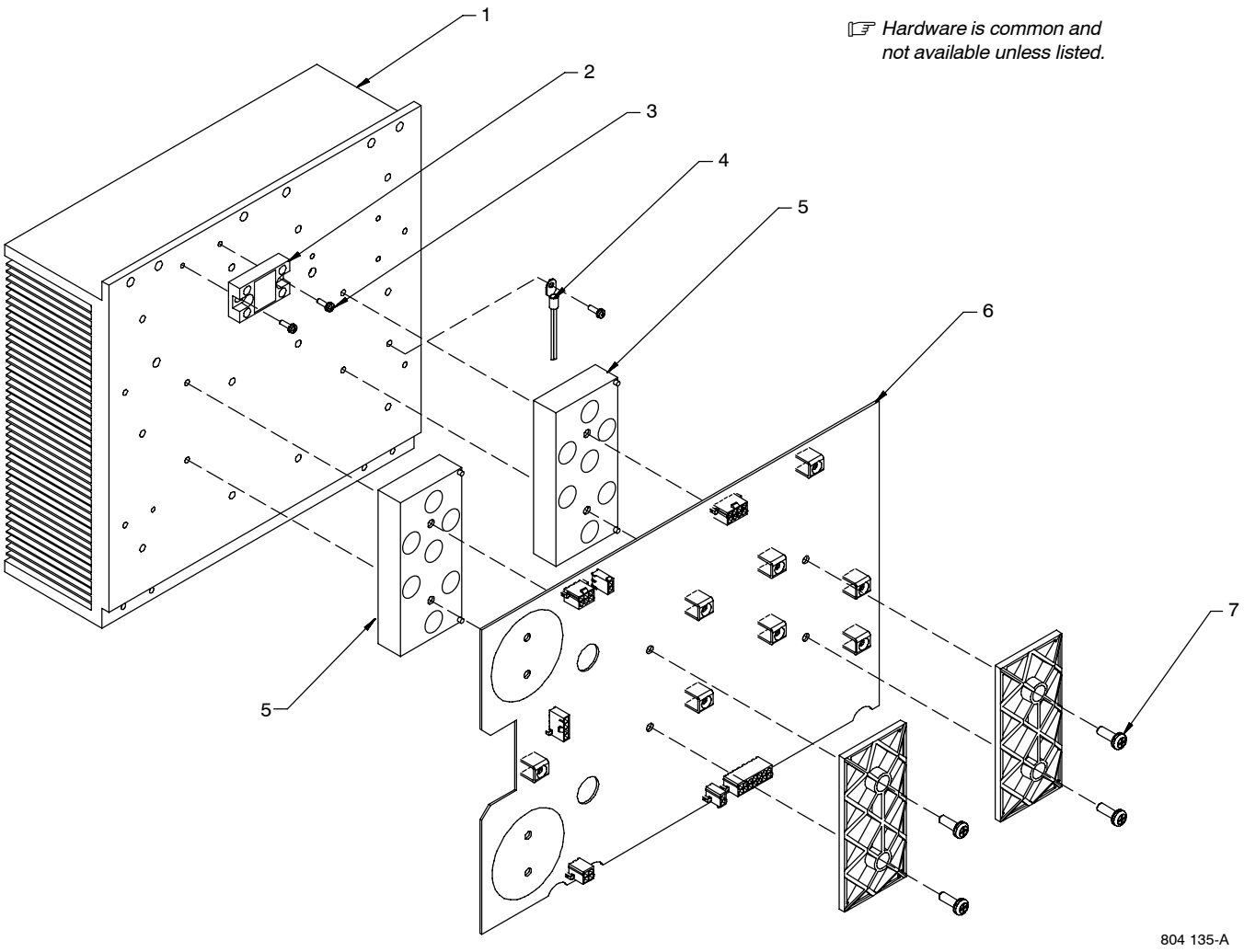


Figure 12-5. Heat Sink, Primary Assembly

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
		219 344	**Figure 12-5. Heat Sink, Primary Assembly**	
1		213 346	HEAT SINK, POWER MODULE	1
2	RM1	205 751	MODULE, POWER RESISTOR W/PLUG	1
3		207 451	SCREW, 008−32X .50 PAN HD−PHL STL PLD SEMS	3
4	RT1,RT3	213 353	THERMISTOR, NTC 30K OHM @ 25 DEG C 8IN LEAD	1
5	MOD1,2	217 625	KIT, INPUT/PRE−REGULATOR AND INVERTER MODULE	1
6	PC1,PC2	220 759	CIRCUIT CARD ASSY, POWER INTERCONNECT	1
7		200 565	SCREW, M 5− .8X 35 PAN HD−PHL STL PLD SEMS	4

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

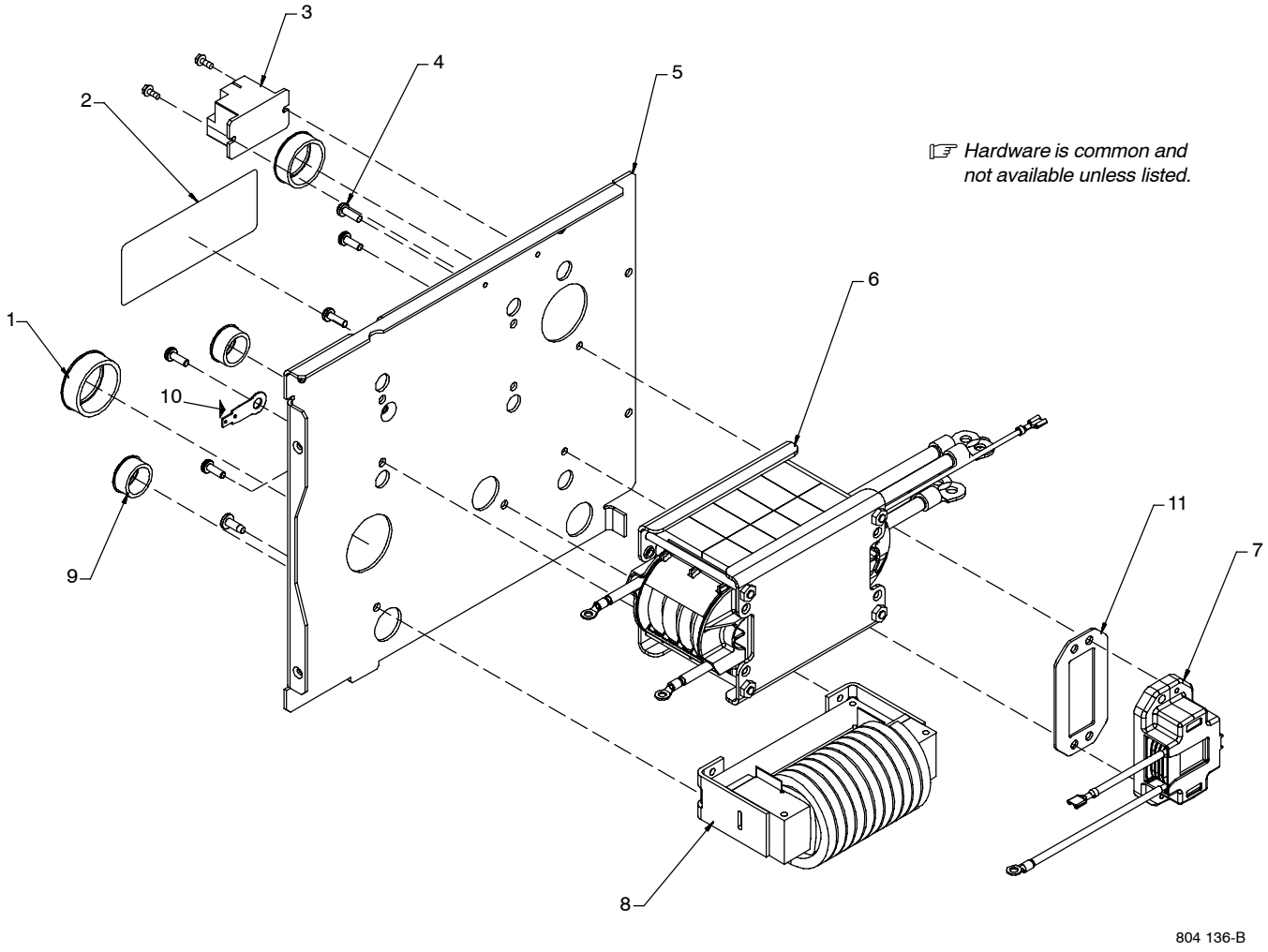


Figure 12-6. Wind Tunnel, Left Hand w/Components

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
		213 354	**Figure 12-6. Wind Tunnel, Left Hand w/Components**	
1		170 647	BUSHING, SNAP–IN NYL 1.312 ID X 1.500 MTG HOLE	2
2		218 004	LABEL, WARNING ELECTRIC SHOCK/EXPLODING PARTS	1
2		219 844	LABEL, WARNING ELECTRIC SHOCK/EXPLODING PARTS CE	1
3	CR1	206 258	RELAY, ENCL 24VDC SPST 30A/240VAC 4PIN FLANGE MTG	1
4		145 217	SCREW, K40X 12 PAN HD–PHL STL PLD PT THREAD FORMING	2
5		+212 488	PANEL, LEFT WINDTUNNEL	1
6	T1	213 361	XFMR, HF LITZ/LITZ W/BOOST	1
7	Z4	213 513	COIL, INDUCTOR (BOOST)	1
8	Z1	213 356	OUTPUT INDUCTOR ASSY,	1
9		010 493	BUSHING, SNAP–IN NYL .625 ID X .875 MTG HOLE	3
10		010 381	CONNECTOR, RECTIFIER	1
11		227 746	GASKET, INDUCTOR MOUNTING E55 FERRITE CORE	1

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

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

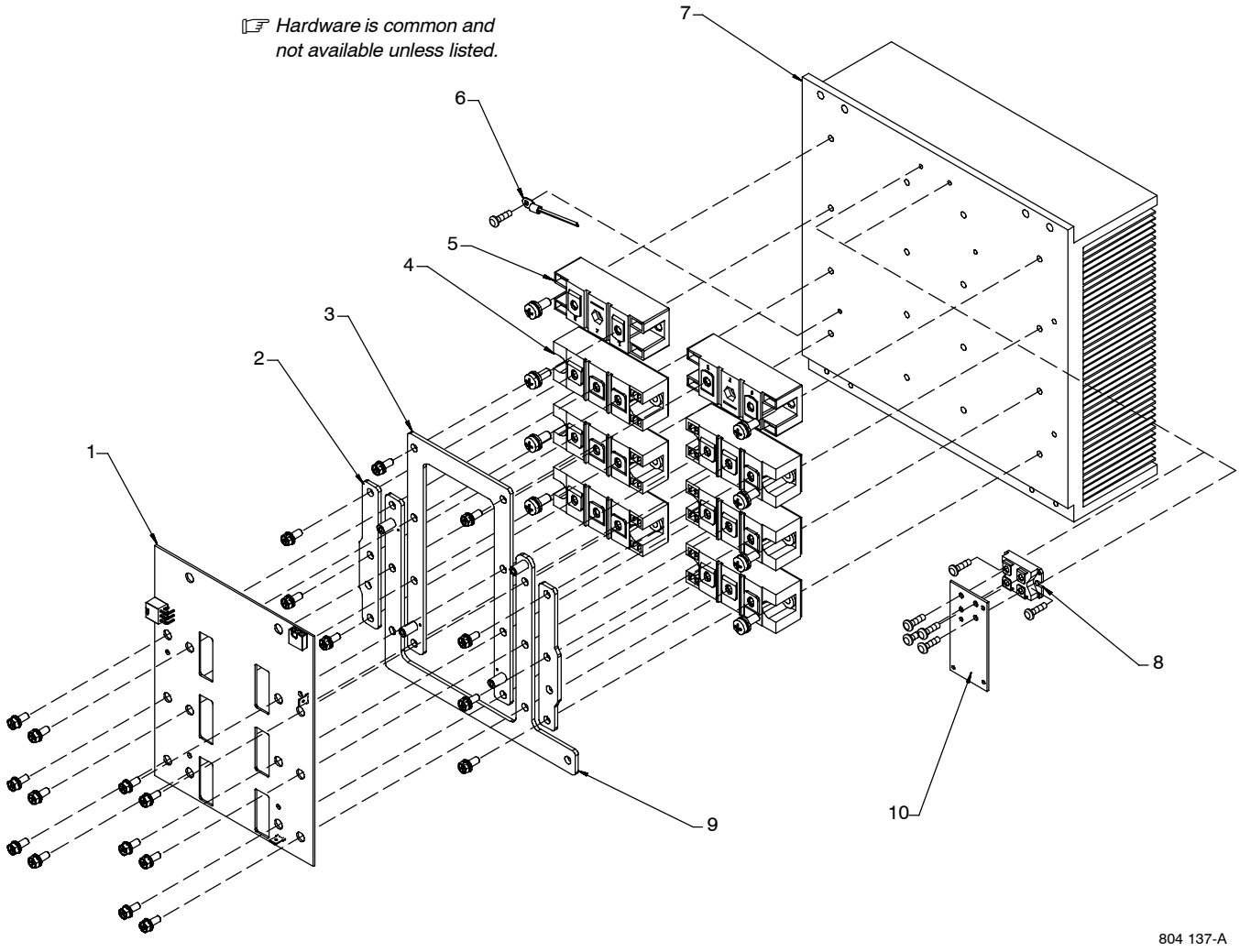


Figure 12-7. Heat Sink, Secondary – Dynasty 700

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
		219 345	**Figure 12-7. Heat Sink, Secondary – Dynasty 700**	
1	PC3,PC4	222 753	CIRCUIT CARD ASSY, COMMUTATOR CONTROL	1
2		213 517	BUS BAR, OUTPUT	2
3		216 867	BUS BAR, POSITIVE	1
4	PM1 – 6	213 522	KIT, IGBT (CONSISTS OF 3 IGBT'S)	2
5	D1,D2	213 521	KIT, ULTRA FAST DIODE	2
6	RT2,RT4	213 353	THERMISTOR, NTC 30K OHM @ 25 DEG C 8IN LEAD	1
7		213 346	HEAT SINK, POWER MODULE	1
8	SR1	201 530	KIT, DIODE FAST RECOVERY BRIDGE	1
9		216 868	BUS BAR, NEGATIVE	1
10	PC9	220987	CIRCUIT CARD ASSEMBLY, DIODE SNUBBER	1

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

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

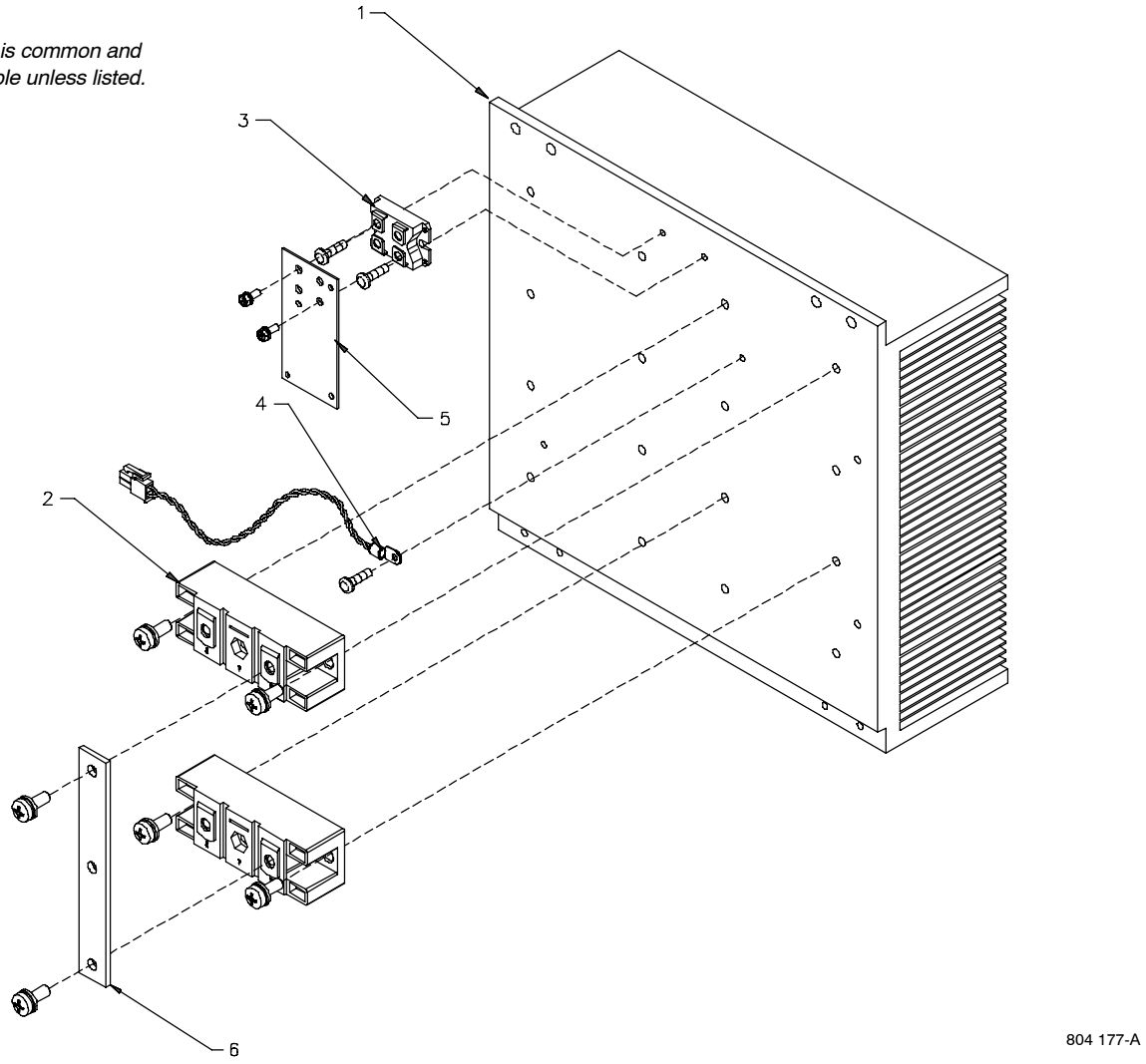


Figure 12-8. Heat Sink, Secondary – Maxstar 700

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
		221 730	**Figure 12-8. Heat Sink, Secondary – Maxstar 700**	
1		213 346	HEAT SINK, POWER MODULE	1
2	D1, D2	213 521	KIT, ULTRA FAST DIODE	2
3	SR1	201 531	KIT, DIODE POWER MODULE	1
4	RT2, RT4	213 353	THERMISTOR, NTC 30K OHM @ 25 DEG C 8IN LEAD	1
5	PC3	220 987	CIRCUIT CARD ASSY, DIODE SNUBBER	1
6		213 519	BUS BAR	1

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

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? Contact your distributor. The expertise of the distributor and Miller is there to help you, every step of the way.

Miller

TRUE BLUE® WARRANTY

Effective January 1, 2006
(Equipment with a serial number preface of "LG" or newer)

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

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

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

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

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

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

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

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

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

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

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

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

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

Owner's Record

Please complete and retain with your personal records.

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

For Service

Contact a DISTRIBUTOR or SERVICE AGENCY near you.

Always provide Model Name and Serial/Style Number.

Contact your Distributor for:	Welding Supplies and Consumables Options and Accessories Personal Safety Equipment Service and Repair Replacement Parts Training (Schools, Videos, Books) Technical Manuals (Servicing Information and Parts) Circuit Diagrams Welding Process Handbooks To locate a Distributor or Service Agency visit www.millerwelds.com or call 1-800-4-A-Miller
Contact the Delivering Carrier to:	File a claim for loss or damage during shipment. For assistance in filing or settling claims, contact your distributor and/or equipment manufacturer's Transportation Department.

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