Processes

- TIG (GTAW) Welding
- Stick (SMAW) Welding

Description

208/575 Volt Models W/ Auto-Line™
380/575 Volt Three-Phase W/ Auto-Line™ (CE)
Arc Welding Power Source

Dynasty® 350, 700
Maxstar® 350, 700
Including Optional Cart And Cooler
CE And Non-CE Models

Visit our website at www.MillerWelds.com
DECLARATION OF CONFORMITY

for European Community (CE marked) products.

MILLER Electric Mfg. Co., 1635 Spencer Street, Appleton, WI 54914 U.S.A. declares that the product(s) identified in this declaration conform to the essential requirements and provisions of the stated Council Directive(s) and Standard(s).

Product/Apparatus Identification:

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<thead>
<tr>
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<td>Dynasty 350</td>
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<tr>
<td>Maxstar 350</td>
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Council Directives:
- 2014/35/EU Low Voltage
- 2014/30/EU Electromagnetic Compatibility
- 2011/65/EU Restriction of the use of certain Hazardous Substances in electrical and electronic equipment

Standards:

Signatory:

David A. Werba
MANAGER, PRODUCT DESIGN COMPLIANCE

July 21, 2015
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COMPLETE PARTS LIST − Available at www.MillerWelds.com

WARRANTY
SECTION 1 – SAFETY PRECAUTIONS - READ BEFORE USING

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

1-1. Symbol Usage

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

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

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

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.

**Indicates special instructions.**

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

**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 avoidable or accidental contact with the workpiece or ground. For these conditions, use the following equipment in order presented: 1) a semiautomatic DC constant voltage (wire) welder, 2) a DC manual (stick) welder, or 3) an AC welder with reduced open-circuit voltage. In most situations, use of a DC, constant voltage wire welder is recommended. And, do not work alone!
- Disconnect input power or stop engine before installing or servicing this equipment. Lockout/tagout input power according to OSHA 29 CFR 1910.147 (see Safety Standards).
- Properly install, ground, and operate this equipment according to its Owner’s Manual and national, state, and local codes.
- Always verify the supply ground – check and be sure that input power cord ground wire is properly connected to ground terminal in disconnect box or that cord plug is connected to a properly grounded receptacle outlet.
- When making input connections, attach proper grounding conductor first – double-check connections.
- Keep cords dry, free of oil and grease, and protected from hot metal and sparks.
- Frequently inspect input power cord and ground conductor for damage or bare wiring – replace immediately if damaged – bare wiring can kill.
- Turn off all equipment when not in use.
- Do not use worn, damaged, undersized, or repaired cables.
- Do not drape cables over your body.
- If earth grounding of the workpiece is required, ground it directly with a separate cable.
- Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.
- Do not touch electrode holders connected to two welding machines at the same time since double open-circuit voltage will be present.
- Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.
- Wear a safety harness if working above floor level.
- Keep all panels and covers securely in place.
- Clamp work cable with good metal-to-metal contact to workpiece or worktable as near the weld as practical.
- Insulate work clamp when not connected to workpiece to prevent sparks.
- Insulate work clamp when not connected to workpiece to prevent contact with any metal object.
- Do not connect more than one electrode or work cable to any single weld output terminal. Disconnect cable for process not in use.
- Use GFCI protection when operating auxiliary equipment in damp or wet locations.

**HOT PARTS can burn.**

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

**SIGNIFICANT DC VOLTAGE exists in inverter welding power sources AFTER removal of input power.**

- Turn Off inverter, disconnect input power, and discharge input capacitors according to instructions in Maintenance Section before touching any parts.
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. The recommended way to determine adequate ventilation is to sample for the composition and quantity of fumes and gases to which personnel are exposed.
- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer’s instructions for adhesives, coatings, cleaners, consumables, coolants, degrazers, fluxes, and metals.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watch-person nearby. Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
- Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
- Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area. The area is well ventilated, and while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

ARC RAYS can burn eyes and skin.

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

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

WELDING can cause fire or explosion.

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

- Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
- Do not weld where flying sparks can strike flammable material.
- Protect yourself and others from flying sparks and hot metal.
- Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
- Watch for fire, and keep a fire extinguisher nearby.
- Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
- Do not weld on containers that have held combustibles, or on closed containers such as tanks, drums, or pipes unless they are properly prepared according to AWS F4.1 and AWS A8.0 (see Safety Standards).
- Do not weld where the atmosphere may contain flammable dust, gas, or liquid vapors (such as gasoline).
- Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock, sparks, and fire hazards.
- Do not use welder to thaw frozen pipes.

- Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
- Wear body protection made from durable, flame−resistant material (leather, heavy cotton, wool). Body protection includes oil-free clothing such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.
- Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding.
- After completion of work, inspect area to ensure it is free of sparks, glowing embers, and flames.
- Use only correct fuses or circuit breakers. Do not oversize or bypass them.
- Follow requirements in OSHA 1910.252 (a) (2) (iv) and NFPA 51B for hot work and have a fire watcher and extinguisher nearby.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer’s instructions for adhesives, coatings, cleaners, consumables, coolants, degrazers, fluxes, and metals.

FLYING METAL or DIRT can injure eyes.

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

BUILDUP OF GAS can injure or kill.

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

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

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

NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

- Wear approved ear protection if noise level is high.

CYLINDERS can explode if damaged.

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

- Protect compressed gas cylinders from excessive heat, mechanical shocks, physical damage, slag, open flames, sparks, and arcs.
- Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping.
- Keep cylinders away from any welding or other electrical circuits.
- Never drape a welding torch over a gas cylinder.
- Never allow a welding electrode to touch any cylinder.
- Never weld on a pressurized cylinder — explosion will result.
- Use only correct compressed gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
- Turn face away from valve outlet when opening cylinder valve. Do not stand in front of or behind the regulator when opening the valve.
- Keep protective cap in place over valve except when cylinder is in use or connected for use.
- Use the right equipment, correct procedures, and sufficient number of persons to lift and move cylinders.
- Read and follow instructions on compressed gas cylinders, associated equipment, and Compressed Gas Association (CGA) publication P-1 listed in Safety Standards.
1-3. Additional Symbols For Installation, Operation, And Maintenance

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

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

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

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

**STATIC (ESD) can damage PC boards.**
- Put on grounded wrist strap BEFORE handling boards or parts.
- Use proper static-proof bags and boxes to store, move, or ship PC boards.

**MOVING PARTS can injure.**
- Keep away from moving parts.
- Keep away from pinch points such as drive rolls.

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

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

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

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

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

**ARC WELDING can cause interference.**
- Electromagnetic energy can interfere with sensitive electronic equipment such as computers and computer-driven equipment such as robots.
- Be sure all equipment in the welding area is electromagnetically compatible.
- To reduce possible interference, keep weld cables as short as possible, close together, and down low, such as on the floor.
- Locate welding operation 100 meters from any sensitive electronic equipment.
- Be sure this welding machine is installed and grounded according to this manual.
- If interference still occurs, the user must take extra measures such as moving the welding machine, using shielded cables, using line filters, or shielding the work area.
1-4. California Proposition 65 Warnings

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

⚠️ This product contains chemicals, including lead, known to the state of California to cause cancer, birth defects, or other reproductive harm. Wash hands after use.

1-5. Principal Safety Standards


1-6. EMF Information

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

1. Keep cables close together by twisting or taping them, or using a cable cover.

2. Do not place your body between welding cables. Arrange cables to one side and away from the operator.

3. Do not coil or drape cables around your body.

4. Keep head and trunk as far away from the equipment in the welding circuit as possible.

5. Connect work clamp to workpiece as close to the weld as possible.

6. Do not work next to, sit or lean on the welding power source.

7. Do not weld whilst carrying the welding power source or wire feeder.

About Implanted Medical Devices:
Implanted Medical Device wearers should consult their doctor and the device manufacturer before performing or going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating operations. If cleared by your doctor, then following the above procedures is recommended.
SECTION 2 – CONSIGNES DE SÉCURITÉ – LIRE AVANT UTILISATION

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

2-1. Symboles utilisés

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

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

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

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 !
- Installez, mettez à la terre et utilisez correctement cet équipement conformément à son Manuel d’Utilisation et aux réglementations nationales, gouvernementales et locales.
- Toujours vérifier la terre du cordon d’alimentation. Vérifier et s’assurer que le fil de terre du cordon d’alimentation est bien raccordé à la borne de terre du sectionneur ou que la fiche du cordon est raccordée à une prise correctement mise à la terre.
- En effectuant les raccordements d’entrée, fixer d’abord le conducteur de mise à la terre approprié et contre-vérifier les connexions.
- Les câbles doivent être exempts d’humidité, d’huile et de graisse ; protéger–les contre les étincelles et les pièces métalliques chaudes.
- Vérifier fréquemment le cordon d’alimentation et le conducteur de mise à la terre afin de s’assurer qu’il n’est pas altéré ou dénudé --, le remplacer immédiatement s’il l’est --. Un fil dénudé peut entraîner la mort.
- L’équipement doit être hors tension lorsqu’il n’est pas utilisé.
- Ne pas utiliser des câbles usés, endommagés, de grosseur insuffisante ou mal épissés.
- Ne pas enrouler les câbles autour du corps.
- Si la pièce soudée doit être mise à la terre, le faire directement avec un câble distinct.
- Ne pas toucher l’électrode quand on est en contact avec la pièce, la terre ou une électrode provenant d’une autre machine.
- Ne pas toucher des portes électrodes connectées 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.
Il reste une TENSION DC NON NÉGLIGEABLE dans les sources de soudage onduleur UNE FOIS l'alimentation coupée.

**LES PIÈCES CHAUDES peuvent provoquer des brûlures.**

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

**LES FUMÉES ET LES GAZ peuvent être dangereux.**

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

- Eloigner votre tête des fumées. Ne pas respirer les fumées.
- À l'intérieur, ventiler la zone et/ou utiliser une ventilation forcée au niveau de l'arc pour l'évacuation des fumées et des gaz de soudage. Pour déterminer la bonne ventilation, il est recommandé de procéder à un prélèvement pour la composition et la quantité de fumées et de gaz auxquels est exposé le personnel.

**Les rayons de l'arc peuvent(356,249),(539,370)**

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

- Porter un masque de soudage approuvé muni de verres filtrants approprié pour protéger visage et yeux pour protéger votre visage et vos yeux pendant le soudage ou pour regarder (voir ANSI Z49.1 et 287.1 énuméré dans les normes de sécurité).
- Porter des lunettes de sécurité avec écrans latéraux même sous votre casque.

**LE SOUDAGE peut provoquer un incendie ou une explosion.**

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

- Déplacer toutes les substances inflammables à une distance de 10,7 m de l'arc de soudage. En cas d'impossibilité les recouvrir soigneusement avec des protections homologuées.
- Ne pas souder dans un endroit là où des étincelles peuvent tomber sur des substances inflammables.
- Se protéger et d'autres personnes de la projection d'étincelles et de métal chaud.
- Des étincelles et des matériaux chauds du soudage peuvent facilement passer dans d'autres zones en traversant de petites fissures et des ouvertures.
- Surveiller tout déclenchement d'incendie et tenir un extincteur à proximité.
- Le soudage effectué sur un plafond, plancher, pare 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 et AWS A6.0 (voir les Normes de Sécurité).
- Ne soyez pas si l'air ambiant est chargé de particules, gaz, ou vapeurs inflammables (vapeur d'essence, par exemple).
- Brancher le câble de masse sur la pièce le plus près possible de la zone de soudage pour éviter le transport du courant sur une longue distance par des chemins inconnus éventuels en provoquant des risques d'électrocution, d'étincelles et d'incendie.
- Ne pas utiliser le poste de soudage pour dégeler des conduites gelées.
- En cas de non utilisation, enlever la baguette d'électrode du porte-electrode ou couper le fil à la pointe de contact.
**2-3. Dangers supplémentaires en relation avec l’installation, le fonctionnement et la maintenance**

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

**LA CHUTE DE L’ÉQUIPEMENT peut provoquer des blessures.**
- Utiliser l’anneau de levage uniquement pour soulever l’appareil, NON PAS les chariots, les bouteilles de gaz ou tout autre accessoire.
- Utiliser un équipement de levage de capacité suffisante pour lever l’appareil.
- En utilisant des fourches de levage pour déplacer l’unité, s’assurer que les fourches sont suffisamment longues pour dépasser du côté opposé de l’appareil.
- Tenir l’équipement (câbles et cordons) à distance des véhicules mobiles lors de toute opération en hauteur.

**LES BOUTEILLES peuvent exploser si elles sont endommagées.**
- Les bouteilles de gaz comprimé contiennent du gaz sous haute pression. Si une bouteille est endommagée, elle peut exploser. Du fait que les bouteilles de gaz font normalement partie du procédé de soudage, les manipuler avec précaution.
- Protéger les bouteilles de gaz comprimé d’une chaleur excessive, des chocs mécaniques, des dommages physiques, du laitier, des flammes ouvertes, des étincelles et des arcs.
- Placer les bouteilles debout en les fixant dans un support stationnaire ou dans un porte-bouteilles pour les empêcher de tomber ou de se renverser.
- Tenir les bouteilles éloignées des circuits de soudage ou autres circuits électriques.
- Ne jamais placer une torche de soudage sur une bouteille à gaz.
- Une électrode de soudage ne doit jamais entrer en contact avec une bouteille.
- Ne jamais souder une bouteille pressurisée – risque d’explosion.
- Utiliser seulement des bouteilles de gaz comprimé, régulateurs, tuyaux et raccords convenables pour cette application spécifique; les maintenir ainsi que les éléments associés en bon état.
- Toumer le dos à la sortie de vanne lors de l’ouverture de la vanne de la bouteille. Ne pas se tenir devant ou derrière le régulateur lors de l’ouverture de la vanne.
- Le couvercle du détendeur doit toujours être en place, sauf lors que 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.
LES CHARGES ÉLECTROSTATIQUES peuvent endommager les circuits imprimés.
- Établir la connexion avec la barrette de terre avant de manipuler des cartes ou des pièces.
- Utiliser des pochettes et des boîtes antistatiques pour stocker, déplacer ou expédier des cartes de circuits imprimés.

Les PIÈCES MOBILES peuvent causer des blessures.
- Ne pas s’approcher des organes mobiles.
- Ne pas s’approcher des points de coinement 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.

L’EXPLOSION DE LA BATTERIE peut provoquer des blessures.
- Ne pas utiliser l’appareil de soudage pour charger des batteries ou faire démarrer des véhicules à l’aide de câbles de démarrage, sauf si l’appareil dispose d’une fonctionnalité de charge de batterie destinée à cet usage.

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

LIRE LES INSTRUCTIONS.
- N’utiliser que les pièces de rechange recommandées par le constructeur.
- Effectuer l’entretien en respectant les manuels d’utilisation, les normes industrielles et les codes nationaux, d’état et locaux.

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

LE SOUDAGE À L’ARC risque de provoquer des interférences.
- L’énergie électromagnétique risque de provoquer des interférences pour l’équipement électronique sensible tel que les ordinateurs et l’équipement commandé par ordinateur tel que les robots.
- Veiller à ce que tout l’équipement de la zone de soudage soit compatible électromagnétiquement.
- Pour réduire la possibilité d’interférence, maintenir les câbles de soudage aussi courts que possible, les grouper, et les poser aussi bas que possible (ex. par terre).
- Veiller à souder à une distance de 100 mètres de tout équipement électronique sensible.
- Veiller à ce que ce poste de soudage soit posé et mis à la terre conformément à ce mode d’emploi.
- En cas d’interférences après avoir pris les mesures précédentes, il incombe à l’utilisateur de prendre des mesures supplémentaires telles que le déplacement du poste, l’utilisation de câbles blindés, l’utilisation de filtres de ligne ou la pose de protecteurs dans la zone de travail.
2-4. Proposition californienne 65 Avertissements

⚠️ Les équipements de soudage et de coupe 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)

⚠️ Ce produit contient des produits chimiques, notamment du plomb, dont l’État de Californie reconnaît qu’ils provoquent des cancers, des malformations congénitales ou d’autres problèmes de procréation. Se laver les mains après utilisation.

2-5. Principales normes de sécurité


2-6. Informations relatives aux CEM

Le courant électrique qui traverse tout conducteur génère des champs électromagnétiques (CEM) à certains endroits. Le courant issu d’un soudage à l’arc (et de procédés connexes, y compris le soudage par points, le gougeage, le découpage plasma et les opérations de chauffage par induction) crée un champ électromagnétique (CEM) autour du circuit de soudage. Les CEM peuvent créer des interférences avec certains implants médicaux comme des stimulateurs cardiaques. Des mesures de protection pour les porteurs d’implants médicaux doivent être prises: Limiter par exemple tout accès aux passants ou procéder à une évaluation des risques individuels pour les soudeurs. Tous les soudeurs doivent appliquer les procédures suivantes pour minimiser l’exposition aux CEM provenant du circuit de soudage:

1. Rassembler les câbles en les torsadant ou en les attachant avec du ruban adhésif ou avec une housse.
2. Ne pas se tenir au milieu des câbles de soudage. Disposer les câbles d’un côté et à distance de l’opérateur.
3. Ne pas courber et ne pas entourer les câbles autour de votre corps.
4. Maintenir la tête et le torse aussi loin que possible du matériel du circuit de soudage.
5. Connecter la pince sur la pièce aussi près que possible de la soudure.
6. Ne pas travailler à proximité d’une source de soudage, ni s’asseoir ou se pencher dessus.
7. Ne pas souder tout en portant la source de soudage ou le dévidoir.

En ce qui concerne les implants médicaux :
Les porteurs d’implants doivent d’abord consulter leur médecin avant de s’approcher des opérations de soudage à l’arc, de soudage par points, de gougeage, du découpage plasma ou de chauffage par induction. Si le médecin approuve, il est recommandé de suivre les procédures précédentes.
### 3-1. Additional Safety Symbols And Definitions

> Some symbols are found only on CE products.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>!</td>
<td>Warning! Watch Out! There are possible hazards as shown by the symbols.</td>
</tr>
<tr>
<td></td>
<td>Safe1 2012−05</td>
</tr>
<tr>
<td>👷‍♂️</td>
<td>Wear dry insulating gloves. Do not touch electrode with bare hand. Do not wear wet or damaged gloves.</td>
</tr>
<tr>
<td></td>
<td>Safe2 2012−05</td>
</tr>
<tr>
<td>🚨</td>
<td>Protect yourself from electric shock by insulating yourself from work and ground.</td>
</tr>
<tr>
<td></td>
<td>Safe3 2012−05</td>
</tr>
<tr>
<td>🌊</td>
<td>Disconnect input plug or power before working on machine.</td>
</tr>
<tr>
<td></td>
<td>Safe5 2012−05</td>
</tr>
<tr>
<td>🔴</td>
<td>Keep your head out of the fumes.</td>
</tr>
<tr>
<td></td>
<td>Safe6 2012−05</td>
</tr>
<tr>
<td>🎈</td>
<td>Use forced ventilation or local exhaust to remove the fumes.</td>
</tr>
<tr>
<td></td>
<td>Safe8 2012−05</td>
</tr>
<tr>
<td>💨</td>
<td>Use ventilating fan to remove fumes.</td>
</tr>
<tr>
<td></td>
<td>Safe10 2012−05</td>
</tr>
<tr>
<td>🍂</td>
<td>Keep flammables away from welding. Do not weld near flammables.</td>
</tr>
<tr>
<td></td>
<td>Safe12 2012−05</td>
</tr>
<tr>
<td>🔥</td>
<td>Welding sparks can cause fires. Have a fire extinguisher nearby, and have a watchperson ready to use it.</td>
</tr>
<tr>
<td></td>
<td>Safe14 2012−05</td>
</tr>
<tr>
<td>🍺</td>
<td>Do not weld on drums or any closed containers.</td>
</tr>
<tr>
<td></td>
<td>Safe16 2012−05</td>
</tr>
<tr>
<td>![Icon]</td>
<td>Do not remove or paint over (cover) the label.</td>
</tr>
<tr>
<td>![Icon]</td>
<td>Do not discard product (where applicable) with general waste. Reuse or recycle Waste Electrical and Electronic Equipment (WEEE) by disposing at a designated collection facility. Contact your local recycling office or your local distributor for further information.</td>
</tr>
<tr>
<td>![Icon]</td>
<td>Disconnect input plug or power before working on machine.</td>
</tr>
<tr>
<td>![Icon]</td>
<td>When power is applied failed parts can explode or cause other parts to explode.</td>
</tr>
<tr>
<td>![Icon]</td>
<td>Always wear long sleeves and button your collar when servicing unit.</td>
</tr>
<tr>
<td>![Icon]</td>
<td>After taking proper precautions as shown, connect power to unit.</td>
</tr>
<tr>
<td>![Icon]</td>
<td>Do not use one handle to lift or support unit.</td>
</tr>
<tr>
<td>![Icon]</td>
<td>Always lift and support unit using both handles. Keep angle of lifting device less than 60 degrees. Use a proper cart to move unit.</td>
</tr>
<tr>
<td>![Icon]</td>
<td>Hazardous voltage remains on input capacitors after power is turned off. Do not touch fully charged capacitors. Always wait 60 seconds after power is turned off before working on unit, OR check input capacitor voltage, and be sure it is near 0 before touching any parts.</td>
</tr>
<tr>
<td>![Icon]</td>
<td>Become trained and read the instructions before working on the machine or welding.</td>
</tr>
<tr>
<td>![Icon]</td>
<td>Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection.</td>
</tr>
</tbody>
</table>
### 3-2. Miscellaneous Symbols And Definitions

Some symbols are found only on CE products.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Amperage</td>
</tr>
<tr>
<td>O</td>
<td>Output</td>
</tr>
<tr>
<td>⬠</td>
<td>Gas Tungsten Arc Welding (GTAW)</td>
</tr>
<tr>
<td>♂</td>
<td>Shielded Metal Arc Welding (SMAW)</td>
</tr>
<tr>
<td>V</td>
<td>Volts</td>
</tr>
<tr>
<td>⬡</td>
<td>Input</td>
</tr>
<tr>
<td>⬡</td>
<td>3 Phase Static Frequency Converter-Transformer-Rectifier</td>
</tr>
<tr>
<td>∇</td>
<td>Output</td>
</tr>
<tr>
<td>⬦</td>
<td>Supplementary Protector</td>
</tr>
<tr>
<td>⬤</td>
<td>Remote</td>
</tr>
<tr>
<td>⬠</td>
<td>Lift-Arc (GTAW)</td>
</tr>
<tr>
<td>⬠</td>
<td>Protective Earth (Ground)</td>
</tr>
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<td>t2</td>
<td>Postflow Timer</td>
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<td>Preflow Timer</td>
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<td>–</td>
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<td>⬠</td>
<td>Gas Output</td>
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<tr>
<td>I₂</td>
<td>Rated Welding Current</td>
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<tr>
<td>X</td>
<td>Duty Cycle</td>
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<td>—</td>
<td>Direct Current</td>
</tr>
<tr>
<td>—</td>
<td>Line Connection</td>
</tr>
<tr>
<td>U₂</td>
<td>Conventional Load Voltage</td>
</tr>
<tr>
<td>U₁</td>
<td>Primary Voltage</td>
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<tr>
<td>IP</td>
<td>Degree Of Protection</td>
</tr>
<tr>
<td>I₁max</td>
<td>Rated Maximum Supply Current</td>
</tr>
<tr>
<td>I₁eff</td>
<td>Maximum Effective Supply Current</td>
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<tr>
<td>U₀</td>
<td>Rated No Load Voltage (OCV)</td>
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<td>Polarity Control</td>
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<td>Increase/Decrease Of Quantity</td>
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<td>Remote 2T Hold</td>
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<td>Gas/DIG Control</td>
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<tr>
<td>→</td>
<td>Arc Force (DIG)</td>
</tr>
<tr>
<td>𝗷 𝗼 𝗼</td>
<td>Impulse Starting (GTAW)</td>
</tr>
<tr>
<td>𝗷 𝗼 𝗼</td>
<td>Final Slope</td>
</tr>
<tr>
<td>𝗷 𝗼 𝗼</td>
<td>Final Amperage</td>
</tr>
<tr>
<td>𝗷 𝗼 𝗼</td>
<td>Pulse Percent On Time</td>
</tr>
<tr>
<td>𝗷 𝗼 𝗼</td>
<td>Initial Slope</td>
</tr>
<tr>
<td>𝗷 𝗼 𝗼</td>
<td>AC Waveshape Control</td>
</tr>
<tr>
<td>𝗷 𝗼 𝗼</td>
<td>Pulser</td>
</tr>
<tr>
<td>𝗷 𝗼 𝗼</td>
<td>EP Amperage</td>
</tr>
<tr>
<td>𝗷 𝗼 𝗼</td>
<td>Pulse Frequency</td>
</tr>
<tr>
<td>𝗷 𝗼 𝗼</td>
<td>Work</td>
</tr>
<tr>
<td>𝗷 𝗼 𝗼</td>
<td>Electrode</td>
</tr>
<tr>
<td>𝗷 𝗼 𝗼</td>
<td>EN Amperage</td>
</tr>
<tr>
<td>𝗷 𝗼 𝗼</td>
<td>Process</td>
</tr>
<tr>
<td>S</td>
<td>Unit may be used in environments with increased hazard of electric shock</td>
</tr>
<tr>
<td>⬠</td>
<td>Sequence</td>
</tr>
<tr>
<td>⬠</td>
<td>Background Amperage</td>
</tr>
<tr>
<td>⬠</td>
<td>AC Frequency</td>
</tr>
<tr>
<td>⬠</td>
<td>Water (Coolant) Input</td>
</tr>
<tr>
<td>⬠</td>
<td>Water (Coolant) Output</td>
</tr>
<tr>
<td>⬠</td>
<td>Circulating Unit With Coolant Pump</td>
</tr>
</tbody>
</table>
For additional welding information and resources, visit:
www.MillerWelds.com/resources/improving-your skills
4-1. Serial Number And Rating Label Location

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

4-2. Specifications

A. Dynasty 350 Models

Do not use information in unit specifications table to determine electrical service requirements. See Sections 5-14A and 5-15A or B for information on connecting input power.

<table>
<thead>
<tr>
<th>Input Power</th>
<th>Rated Welding Output</th>
<th>Ampere-Rage</th>
<th>Max Open-Circuit Voltage DC (Uo)</th>
<th>Rated Peak Striking Voltage (Up)</th>
<th>Amperes Input at Rated Load Output 50/60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three Phase</td>
<td>250 A @ 30 Volts, 100% Duty Cycle</td>
<td>3–350</td>
<td>75V 10–15♦</td>
<td>15 KV**</td>
<td>29 26 16 15 13 10 10.3 9.9 *(.06)</td>
</tr>
<tr>
<td></td>
<td>300 A @ 32 Volts, 60% Duty Cycle</td>
<td></td>
<td></td>
<td></td>
<td>36 32 19 18 16 13 12.7 12.1 *(.06)</td>
</tr>
<tr>
<td>Single Phase</td>
<td>180 A @ 27.2 Volts, 100% Duty Cycle</td>
<td>3–350</td>
<td>75V 10–15♦</td>
<td>15 KV**</td>
<td>35 32 — — 15 12 7.4 6.8 *(.06)</td>
</tr>
<tr>
<td></td>
<td>225 A @ 29 Volts, 60% Duty Cycle</td>
<td></td>
<td></td>
<td></td>
<td>47 43 — — 21 16 9.8 9.1 *(.06)</td>
</tr>
</tbody>
</table>

*While idling
** Arc starting device is designed for manual guided operations.
♦ Low open-circuit voltage while in TIG Lift Arc **, or while in Stick with low open-circuit voltage selected (see Section 7-8).
∇ Normal open-circuit voltage (75 volts) is present while in Stick with normal open-circuit voltage selected (see Section 7-8).

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 350 Models

Do not use information in unit specifications table to determine electrical service requirements. See Sections 5-14B and 5-15A or B for information on connecting input power.

<table>
<thead>
<tr>
<th>Input Power</th>
<th>Rated Welding Output</th>
<th>Ampere-Rage</th>
<th>Max Open-Circuit Voltage DC (Uo)</th>
<th>Rated Peak Striking Voltage (Up)</th>
<th>Amperes Input at Rated Load Output 50/60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three Phase</td>
<td>250 A @ 30 Volts, 100% Duty Cycle</td>
<td>3–350</td>
<td>75V 10–15♦</td>
<td>15 KV**</td>
<td>27 24 15 14 12 9 9.7 9.3 *(.06)</td>
</tr>
<tr>
<td></td>
<td>300 A @ 32 Volts, 60% Duty Cycle</td>
<td></td>
<td></td>
<td></td>
<td>33 30 18 17 15 12 12 11.5 *(.06)</td>
</tr>
<tr>
<td>Single Phase</td>
<td>180 A @ 27.2 Volts, 100% Duty Cycle</td>
<td>3–350</td>
<td>75V 10–15♦</td>
<td>15 KV**</td>
<td>32 29 — — 14 11 6.4 6 *(.06)</td>
</tr>
<tr>
<td></td>
<td>225 A @ 29 Volts, 60% Duty Cycle</td>
<td></td>
<td></td>
<td></td>
<td>43 39 — — 19 14 8.6 8.2 *(.06)</td>
</tr>
</tbody>
</table>

*While idling
** Arc starting device is designed for manual guided operations.
♦ Low open-circuit voltage while in TIG Lift Arc **, or while in Stick with low open-circuit voltage selected (see Section 7-8).
∇ Normal open-circuit voltage (75 volts) is present while in Stick with normal open-circuit voltage selected (see Section 7-8).

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.
C. Dynasty 700 Models

Do not use information in unit specifications table to determine electrical service requirements. See Sections 5-14C and 5-16B or C for information on connecting input power.

<table>
<thead>
<tr>
<th>Input Power</th>
<th>Rated Welding Output</th>
<th>Amperage Range</th>
<th>Max Open-Circuit Voltage DC (Uo)</th>
<th>Rated Peak Striking Voltage (Up)</th>
<th>Amperes Input at Rated Load Output 50/60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>208 V</td>
</tr>
<tr>
<td>Three Phase</td>
<td>500 A @ 40 Volts, 100% Duty Cycle</td>
<td>5−700</td>
<td>75V 10−15♦</td>
<td>15 KV **</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>600 A @ 44 Volts, 60% Duty Cycle</td>
<td>5−700</td>
<td>75V 10−15♦</td>
<td>15 KV **</td>
<td>98</td>
</tr>
<tr>
<td>Single Phase</td>
<td>360 A @ 34 Volts, 100% Duty Cycle</td>
<td>5−700</td>
<td>75V 10−15♦</td>
<td>15 KV **</td>
<td>82</td>
</tr>
<tr>
<td></td>
<td>450 A @ 38 Volts, 60% Duty Cycle</td>
<td>5−700</td>
<td>75V 10−15♦</td>
<td>15 KV **</td>
<td>119</td>
</tr>
</tbody>
</table>

*While idling
** Arc starting device is designed for manual guided operations.
♦ Low open-circuit voltage while in TIG Lift Arc **, or while in Stick with low open-circuit voltage selected (see Section 7-8).
∇ Normal open-circuit voltage (75 volts) is present while in Stick with normal open-circuit voltage selected (see Section 7-8).

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.

D. Maxstar 700 Models

Do not use information in unit specifications table to determine electrical service requirements. See Sections 5-14D and 5-16A or C for information on connecting input power.

<table>
<thead>
<tr>
<th>Input Power</th>
<th>Rated Welding Output</th>
<th>Amperage Range</th>
<th>Max Open-Circuit Voltage DC (Uo)</th>
<th>Rated Peak Striking Voltage (Up)</th>
<th>Amperes Input at Rated Load Output 50/60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>208 V</td>
</tr>
<tr>
<td>Three Phase</td>
<td>500 A @ 40 Volts, 100% Duty Cycle</td>
<td>5−700</td>
<td>75V 10−15♦</td>
<td>15 KV **</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>600 A @ 44 Volts, 60% Duty Cycle</td>
<td>5−700</td>
<td>75V 10−15♦</td>
<td>15 KV **</td>
<td>89</td>
</tr>
<tr>
<td>Single Phase</td>
<td>360 A @ 34 Volts, 100% Duty Cycle</td>
<td>5−700</td>
<td>75V 10−15♦</td>
<td>15 KV **</td>
<td>77</td>
</tr>
<tr>
<td></td>
<td>450 A @ 38 Volts, 60% Duty Cycle</td>
<td>5−700</td>
<td>75V 10−15♦</td>
<td>15 KV **</td>
<td>108</td>
</tr>
</tbody>
</table>

*While idling
** Arc starting device is designed for manual guided operations.
♦ Low open-circuit voltage while in TIG Lift Arc **, or while in Stick with low open-circuit voltage selected (see Section 7-8).
∇ Normal open-circuit voltage (75 volts) is present while in Stick with normal open-circuit voltage selected (see Section 7-8).

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.
4-3. Dimensions, Weights And Base Mounting Hole Layout

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

A. Welding Power Source

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>350 Amp Models</th>
<th>700 Amp Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>24-3/4 in (654 mm)</td>
<td>34-5/8 in (879 mm)</td>
</tr>
<tr>
<td>B</td>
<td>13-3/4 in (349 mm)</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>22 in (559 mm)</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>20-1/2 in (521 mm)</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>1 in (25 mm)</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>11-3/4 in (298 mm)</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>1/2 in Dia. (13 mm Dia.)</td>
<td>4 Holes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>135.5 lb (61.5 kg)</td>
<td>198 lb (89.8 kg)</td>
</tr>
</tbody>
</table>

B. Welding Power Source With Cart And Cooler

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>350 Models</th>
<th>700 Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>43-3/4 in (1111 mm)</td>
<td>53-3/4 in (1365 mm)</td>
</tr>
<tr>
<td>B</td>
<td>23-1/8 in (587 mm)</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>41-3/4 in (1060 mm)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight For 350 Models</th>
<th>Weight For 700 Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>250.5 lb (113.6 Kg)</td>
<td>313 lb (142 Kg)</td>
</tr>
</tbody>
</table>
4-4. Environmental Specifications

A. IP Rating (All Models)

<table>
<thead>
<tr>
<th>IP Rating</th>
<th>Operating Temperature Range</th>
<th>Storage Temperature Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP23</td>
<td>14 to 104 °F (10 to 40°C)</td>
<td>−4 to 131 °F (−20 to 55°C)</td>
</tr>
</tbody>
</table>

This equipment is designed for outdoor use. It may be stored, but is not intended to be used for welding outside during precipitation unless sheltered.

B. Information On Electromagnetic Fields (EMF)

⚠️ This equipment shall not be used by the general public as the EMF limits for the general public might be exceeded during welding.

This equipment is built in accordance with EN 60974–1 and is intended to be used only in an occupational environment (where the general public access is prohibited or regulated in such a way as to be similar to occupational use) by an expert or an instructed person.

Wire feeders and ancillary equipment (such as torches, liquid cooling systems and arc striking and stabilizing devices) as part of the welding circuit may not be a major contributor to the EMF. See the Owner's Manuals for all components of the welding circuit for additional EMF exposure information.

- The EMF assessment on this equipment was conducted at 0.5 meter.
- At a distance of 1 meter the EMF exposure values were less than 20% of the permissible values.

The weld cable occupational exposure assessment was performed at the center of a radius of a curved weld cable under worst-case conditions. The following special conditions apply to the operation of this equipment:

- Use mechanized welding operations when welding with AC or pulsed DC processes and power source settings are above 350 A.

C. Information On Electromagnetic Compatibility (EMC) (Dynasty 350)

⚠️ This Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There can be potential difficulties in ensuring electromagnetic compatibility in those locations, due to conducted as well as radiated disturbances.

This equipment complies with IEC61000-3-11 and IEC 61000–3–12 and can be connected to public low-voltage systems provided that the public low-voltage system impedance $Z_{\text{max}}$ at the point of common coupling is less than 38.63mΩ (or the short-circuit power $S_{\text{sc}}$ is greater than 4.1MVA). It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the system impedance complies with the impedance restrictions.

D. Information On Electromagnetic Compatibility (EMC) (Maxstar 350)

⚠️ This Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There can be potential difficulties in ensuring electromagnetic compatibility in those locations, due to conducted as well as radiated disturbances.

This equipment complies with IEC61000-3-11 and IEC 61000–3–12 and can be connected to public low-voltage systems provided that the public low-voltage system impedance $Z_{\text{max}}$ at the point of common coupling is less than 119.38mΩ (or the short-circuit power $S_{\text{sc}}$ is greater than 1.3MVA). It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the system impedance complies with the impedance restrictions.

E. Information On Electromagnetic Compatibility (EMC) (Dynasty 700)

⚠️ This Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There can be potential difficulties in ensuring electromagnetic compatibility in those locations, due to conducted as well as radiated disturbances.

This equipment complies with IEC61000-3-11 and IEC 61000–3–12 and can be connected to public low-voltage systems provided that the public low-voltage system impedance $Z_{\text{max}}$ at the point of common coupling is less than 17.03mΩ (or the short-circuit power $S_{\text{sc}}$ is greater than 9.4MVA). It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the system impedance complies with the impedance restrictions.
F. Information On Electromagnetic Compatibility (EMC) (Maxstar 700)

This Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There can be potential difficulties in ensuring electromagnetic compatibility in those locations, due to conducted as well as radiated disturbances.

This equipment complies with IEC61000-3-11 and IEC 61000–3–12 and can be connected to public low-voltage systems provided that the public low-voltage system impedance $Z_{\text{max}}$ at the point of common coupling is less than 49.09m$\Omega$ (or the short-circuit power $S_{\text{sc}}$ is greater than 3.3MVA). It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the system impedance complies with the impedance restrictions.

4-5. 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 8-4), and cooling fan runs. Wait fifteen minutes for unit to cool. Reduce amperage or voltage, or duty cycle before welding.

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

<table>
<thead>
<tr>
<th>Output Amperes</th>
<th>%Duty Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>700 3 Phase</td>
<td>10 100</td>
</tr>
<tr>
<td>700 1 Phase</td>
<td>20 30</td>
</tr>
<tr>
<td>350 3 Phase</td>
<td>40 50</td>
</tr>
<tr>
<td>350 1 Phase</td>
<td>60 70</td>
</tr>
</tbody>
</table>

Overheating

- Reduce Duty Cycle
- Reduce Amperage or Voltage

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4-6. 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.
SECTION 5 − INSTALLATION

5-1. Selecting A Location

Movement

Location And Airflow

1 Lifting Eye
2 Lifting Forks
Use lifting eye or lifting forks to move unit.
If using lifting forks, extend forks beyond opposite side of unit.
3 Line Disconnect Device
Locate unit near correct input power supply.

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

Do not move or operate unit where it could tip.

Notes
5-2. Weld Output Terminals And Selecting Cable Sizes*

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

<table>
<thead>
<tr>
<th>Welding Amperes***</th>
<th>Weld Cable Size** and Total Cable (Copper) Length in Weld Circuit Not Exceeding</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100 ft (30 m) or Less****</td>
</tr>
<tr>
<td></td>
<td>10 – 60% Duty Cycle</td>
</tr>
<tr>
<td></td>
<td>AWG (mm²)</td>
</tr>
<tr>
<td>100</td>
<td>4 (20)</td>
</tr>
<tr>
<td>150</td>
<td>3 (30)</td>
</tr>
<tr>
<td>200</td>
<td>3 (30)</td>
</tr>
<tr>
<td>250</td>
<td>2 (35)</td>
</tr>
<tr>
<td>300</td>
<td>1 (50)</td>
</tr>
<tr>
<td>350</td>
<td>1/0 (60)</td>
</tr>
<tr>
<td>400</td>
<td>1/0 (60)</td>
</tr>
<tr>
<td>500</td>
<td>2/0 (70)</td>
</tr>
<tr>
<td>600</td>
<td>3/0 (95)</td>
</tr>
<tr>
<td>700</td>
<td>4/0 (120)</td>
</tr>
<tr>
<td>800</td>
<td>4/0 (120)</td>
</tr>
<tr>
<td>900</td>
<td>2x2/0 (2x70)</td>
</tr>
</tbody>
</table>

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

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

( ) = mm² for metric use

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

****For distances longer than 100 ft (30 m) and up to 200 ft (60 m), use direct current (DC) output only. For distances longer than those shown in this guide, call a factory applications rep. at 920-735-4505 (Miller) or 1-800-332-3281 (Hobart).

Ref. S-0007-L 2015−02 (TIG)

5-3. Weld Output Terminals

- Turn off power before connecting to weld output terminals.
- Do not use worn, damaged, undersized, or repaired cables.
- Work Weld Output Terminal (Dynasty Models)
- (+) Positive Weld Output Terminal (Maxstar Models)
- Electrode Weld Output Terminal (Dynasty Models)
- (−) Negative Weld Output Terminal (Maxstar Models)
- Remote 14 Receptacle (All Models)

See Sections 5-10 thru 5-13 for connection diagrams.
5-4. Remote 14 Receptacle Information (Used Without Automation Connection)

<table>
<thead>
<tr>
<th>Socket</th>
<th>Socket Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Contactor control, 15 volts DC.</td>
</tr>
<tr>
<td>B</td>
<td>Contact closure to A completes 15 volts DC contactor control circuit, and enables output.</td>
</tr>
<tr>
<td>C</td>
<td>+10 volts DC.</td>
</tr>
<tr>
<td>D</td>
<td>Remote control circuit common.</td>
</tr>
<tr>
<td>E</td>
<td>0 to +10 volts DC input command signal from remote control.</td>
</tr>
<tr>
<td>F</td>
<td>Current feedback; +1 volt DC per 100 amperes.</td>
</tr>
<tr>
<td>H</td>
<td>Voltage feedback; +1 volt DC per 10 output receptacle volts.</td>
</tr>
<tr>
<td>K</td>
<td>Chassis common.</td>
</tr>
<tr>
<td>G</td>
<td>+15 volts DC (A) common.</td>
</tr>
</tbody>
</table>

* The remaining sockets are not used.

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.

Notes
5-5. Automation Connection (For 28-Pin Receptacle If Present)

A. Basic Automation Mode
Use this mode when only the basic functions of the automation board are required. These functions include Start/Stop, Valid Arc Indication, Gas Control, High Frequency Arc Start Disable, and Remote Memory Select. The welding power source functions as a standard unit. Automation 2 mode should be used when an externally controlled pulse waveform is needed, or if the welder’s amperage is affected by noise injected into the cabling between the remote equipment and the welder.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Direction</th>
<th>Pin Information For 28-Pin Receptacle RC28</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Input</td>
<td></td>
<td>Start/Stop = Maintained connection to pin 8 starts the weld cycle. Opening connection stops weld cycle. For momentary closure operation, set unit to 2T. A momentary closure greater than 100 ms, but less than 3/4 of a second starts and stops weld output.</td>
</tr>
<tr>
<td>3</td>
<td>Input</td>
<td></td>
<td>Gas Control = This input is used to control the gas flow outside the settings of the preflow and/or postflow set on the machine. Connection to pin 8 turns on gas.</td>
</tr>
<tr>
<td>4</td>
<td>Output</td>
<td></td>
<td>Valid Arc Indication = Paired with Pin 9. This output is used to signal external fixtures that the machine has detected a valid arc. Pin is closed to pin 9 when the output is on and there is less than 65 load volts. Electrical specifications: Open collector transistor maximum values 27volts DC peak @ 75mA. (See Section 5-7 for typical application).</td>
</tr>
<tr>
<td>5</td>
<td>Output</td>
<td></td>
<td>Scaled Actual Welding Voltage = +1 volt DC per 10 volts of output w/reference to pin 11.</td>
</tr>
<tr>
<td>6</td>
<td>Output</td>
<td></td>
<td>Scaled Actual Welding Amperage = +1 volt DC per 100 amperes of output w/reference to pin 11.</td>
</tr>
<tr>
<td>7</td>
<td>Output</td>
<td></td>
<td>+15volts DC with respect to pin 11 (Pin A of 14 pin)</td>
</tr>
<tr>
<td>8</td>
<td>Output</td>
<td></td>
<td>Reference PIN = This pin is the signal reference for pins 1,2,3,10,15,16</td>
</tr>
<tr>
<td>9</td>
<td>Output</td>
<td></td>
<td>Valid Arc Indication Reference = Paired with Pin 4. Connect to user’s external voltage supply common. (See Section 5-7 for typical application).</td>
</tr>
<tr>
<td>10</td>
<td>Input</td>
<td></td>
<td>Memory Select = Used to select between memory numbers. Used in conjunction with pin 15 and 16. (See Sections 4-14 and 5-14.)</td>
</tr>
<tr>
<td>11</td>
<td>Output</td>
<td></td>
<td>Amperage Control Reference = for pins 5,6,7,17 and 18. (Pin D of 14 pin)</td>
</tr>
<tr>
<td>12</td>
<td>Output</td>
<td></td>
<td>Welders Chassis = Earth ground. Connected only if common potentials are needed between user equipment and the welder.</td>
</tr>
<tr>
<td>13</td>
<td>Output</td>
<td></td>
<td>Arc Length Control Lockout = Paired with Pin 14. Used to send signal to an automatic voltage control to ignore the voltage during certain situations. Pin is closed to pin 14 when weld cycle is in Initial Amperage, Initial Slope, Final Slope, Final Amperage, and Pulsed Background time. Electrical specifications: Open collector transistor maximum values 27 volts DC peak @ 75mA. (See Section 5-7 for typical application)</td>
</tr>
<tr>
<td>14</td>
<td>Output</td>
<td></td>
<td>Arc Length Control Lockout Reference = Paired with Pin 13. Connect to user’s external voltage supply common (See Section 4-17 for typical application).</td>
</tr>
<tr>
<td>15</td>
<td>Input</td>
<td></td>
<td>Memory Select = Used to select between memory numbers. Used in conjunction with pin 10 and 16. (See Sections 4-15 and 5-14.)</td>
</tr>
<tr>
<td>16</td>
<td>Input</td>
<td></td>
<td>Memory Select = Used to select between memory numbers. Used in conjunction with pin 10 and 15. (See Sections 4-15 and 5-14.)</td>
</tr>
<tr>
<td>17</td>
<td>Input</td>
<td></td>
<td>Amperage Control = 0 to +10 volts DC with respect to pin 11. The 10 volts represents the amperage value set on machine’s meter. (Pin E of 14 pin)</td>
</tr>
</tbody>
</table>

Continued on next page
Continued from previous page Section A.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Direction</th>
<th>Pin Information For 28-Pin Receptacle RC28</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Output</td>
<td>+10 volts DC = with respect to pin 11 for use with an external potentiometer to vary the signal into pin 17 (Pin C of 14 pin)</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Input</td>
<td>High Frequency Arc Start Disable = Disables the arc starter from being activated when connected to pin 8.</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Output</td>
<td>Final Slope Sequence Indication = Paired with Pin 24. Pin is closed to pin 24 when in Final Slope. Electrical specifications: Open collector transistor maximum values 27 volts DC peak @ 75mA. (See Section 5-7 for typical application).</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Output</td>
<td>Final Slope Sequence Indication Reference = Paired with pin 23. Connect to user’s external voltage supply common. (See Section 5-7 for typical application).</td>
<td></td>
</tr>
</tbody>
</table>

All other pins not used.

B. Welder Controlled Automation Mode (Pin 20 Connected To Pin 8) Automation 1

Use this mode when only the basic functions of the automation board are required, or if the welder needs to control the initial and final weld timers. These functions include Start/Stop, Valid Arc Indication, Gas Control, High Frequency Arc Start Disable, Remote Memory Select, and Emergency weld stop. The welding power source functions as a standard unit. Automation 2 mode should be used when an externally controlled pulse waveform is needed, or if the welder’s amperage is affected by noise injected into the cabling between the remote equipment and the welder.
Continued from previous page Section B.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal Direction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Output Arc Length Control Lockout Reference</td>
<td>Paired with Pin 13. Connect to user’s external voltage supply common (See Section 5-7 for typical application).</td>
</tr>
<tr>
<td>15</td>
<td>Input Memory Select</td>
<td>Used to select between memory numbers. Used in conjunction with pin 10 and 16. (See Sections 4-15 and 5-14.)</td>
</tr>
<tr>
<td>16</td>
<td>Input Memory Select</td>
<td>Used to select between memory numbers. Used in conjunction with pin 10 and 15. (See Sections 4-15 and 5-14.)</td>
</tr>
<tr>
<td>17</td>
<td>Input Amperage Control</td>
<td>= 0 to +10 volts DC with respect to pin 11. The 10 volts represents the amperage value set on machine’s meter. (Pin E of 14 pin)</td>
</tr>
<tr>
<td>18</td>
<td>Output +10 volts DC</td>
<td>= with respect to pin 11 for use with an external potentiometer to vary the signal into pin 17 (Pin C of 14 pin)</td>
</tr>
<tr>
<td>19</td>
<td>Input High Frequency Arc Start Disable</td>
<td>= Disables the arc starter from being activated when connected to pin 8.</td>
</tr>
<tr>
<td>20</td>
<td>Input Welder Control Select</td>
<td>= Connect to pin 8 to activate this mode.</td>
</tr>
<tr>
<td>23</td>
<td>Output Final Slope Sequence Indication</td>
<td>= Paired with Pin 24. Pin is closed to pin 24 when in Final Slope. Electrical specifications: Open collector transistor maximum values 27 volts DC peak @ 75mA. (See Section 5-7 for typical application).</td>
</tr>
<tr>
<td>24</td>
<td>Output Final Slope Sequence Indication Reference</td>
<td>= Paired with pin 23. Connect to user’s external voltage supply common. (See Section 5-7 for typical application).</td>
</tr>
</tbody>
</table>

All other pins not used.

C. User Controlled Automation Mode (Pin 25 Connected To Pin 8) Automation 2
This mode includes all the basic functions of the automation board, plus gives the welder the option to control the pulse or AC waveforms, or to minimize the noise that can be injected into the welder from the control and cables. These functions include Start/Stop, Valid Arc Indication, Gas Control, High Frequency Arc Start Disable, and Emergency weld stop.

### Pin Information For 28-Pin Receptacle RC28

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal Direction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Input Start/Stop</td>
<td>= Maintained connection to pin 8 starts the weld cycle. Opening connection stops weld cycle. For momentary closure operation, set unit to 2T. A momentary closure greater than 100 ms, but less than 3/4 of a second starts and stops weld output.</td>
</tr>
<tr>
<td>2</td>
<td>Input Emergency Weld Stop</td>
<td>= Used to remotely stop the weld outside the normal welding cycle (i.e. light curtains or external E-Stop). Connection to pin 8 must be maintained at all times. If the connection is broken, output stops, Postflow begins, and AUTO STOP will be displayed on the meters.</td>
</tr>
<tr>
<td>3</td>
<td>Input Gas Control</td>
<td>= This input is used to control the gas flow outside the settings of the preflow and/or postflow set on the machine. Connection to pin 8 turns on gas.</td>
</tr>
<tr>
<td>4</td>
<td>Output Valid Arc Indication</td>
<td>= Paired with Pin 9. This output is used to signal external fixtures that the machine has detected a valid arc. Pin is closed to pin 9 when the output is on and there is less than 65 load volts. Electrical specifications: Open collector transistor maximum values 27 volts DC peak @ 75mA. (See Section 5-7 for typical application).</td>
</tr>
<tr>
<td>5</td>
<td>Output Scaled Actual Welding Voltage</td>
<td>= +1 volt DC per 10 volts of output w/reference to pin 11.</td>
</tr>
<tr>
<td>6</td>
<td>Output Scaled Actual Welding Amperage</td>
<td>= +1 volt DC per 100 amperes of output w/reference to pin 11.</td>
</tr>
<tr>
<td>7</td>
<td>Output +15 volts DC</td>
<td>= with respect to pin 11 (Pin A of 14 pin)</td>
</tr>
<tr>
<td>8</td>
<td>Output Reference PIN</td>
<td>= This pin is the signal reference for pins 1,2,3,10,15,16</td>
</tr>
<tr>
<td>9</td>
<td>Output Valid Arc Indication Reference</td>
<td>= Paired with Pin 4. Connect to user’s external voltage supply common. (See Section 5-7 for typical application).</td>
</tr>
</tbody>
</table>
Continued from previous page Section C.

<table>
<thead>
<tr>
<th>11</th>
<th>Output</th>
<th>Control Reference for pins 5 and 6.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Output</td>
<td>Welders Chassis = Earth ground. Connected only if common potentials are needed between user equipment and the welder.</td>
</tr>
<tr>
<td>19</td>
<td>Input</td>
<td>High Frequency Arc Start Disable = Disables the arc starter from being activated when connected to pin 8.</td>
</tr>
<tr>
<td>21</td>
<td>Input</td>
<td>Isolated EN Amperage Common = Paired with Pin 22.</td>
</tr>
<tr>
<td>22</td>
<td>Input</td>
<td>Isolated EN Amperage Command = Paired with pin 21. Sets output amperage value for a Maxstar and the EN amperage value for a Dynasty. Value should be between .3 to 10V corresponding to the minimum to maximum of the machine.</td>
</tr>
<tr>
<td>25</td>
<td>Input</td>
<td>User Controlled Automation Select = Connect to pin 8 to active this mode.</td>
</tr>
<tr>
<td>26</td>
<td>Input</td>
<td>Isolated EP Amperage Command (Dynasty models only) = Paired with Pin 27. Sets EP(cleaning) output amperage value. Value should be between .3 to 10 volts corresponding to the minimum to maximum of the machine.</td>
</tr>
<tr>
<td>27</td>
<td>Input</td>
<td>Isolated EP Amperage Common (Dynasty models only) = Paired with Pin 26.</td>
</tr>
<tr>
<td>28</td>
<td>Input</td>
<td>AC waveform Generation (Dynasty models only) - User controlled polarity(EN or EP), frequency (20-400 HZ) and balance of an AC waveform. When this pin is not connected to pin 8 the weld output is EN. When this pin is connected to pin 8 the weld output is EP. Alternating between connection and disconnection at different intervals creates the frequency and balance of the waveform.</td>
</tr>
</tbody>
</table>

All other pins not used.

5-6. Remote Memory Select Inputs (For 28-Pin Receptacle If Present)

<table>
<thead>
<tr>
<th>28-Pin Receptacle RC28</th>
<th>Socket Designations 0 = No Connection / 1 = Connected To Ground (Pin 8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>10</td>
</tr>
<tr>
<td>Off</td>
<td>0</td>
</tr>
<tr>
<td>Memory 1</td>
<td>0</td>
</tr>
<tr>
<td>Memory 2</td>
<td>0</td>
</tr>
<tr>
<td>Memory 3</td>
<td>0</td>
</tr>
<tr>
<td>Memory 4</td>
<td>1</td>
</tr>
<tr>
<td>Memory 5</td>
<td>1</td>
</tr>
<tr>
<td>Memory 6</td>
<td>1</td>
</tr>
<tr>
<td>Memory 7</td>
<td>1</td>
</tr>
</tbody>
</table>

Notes
5-7. Typical Automation Application For Valid Arc Length Control Lockout And Final Slope Indication

Coil resistance plus R should be chosen to limit current to 75 mA

User supplied power up to 27 volts DC peak

Typical 28-Pin Output
Collector: Pins 4, 13, 23
Emitter: Pins 9, 14, 24

5-8. 115 Volts AC Cooler Receptacle, Supplementary Protector CB1, And Power Switch

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

RC2 is a designated use receptacle intended only for supplying AC power to a Miller-approved cooler.

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

3 Power On/Off Switch
5-9. 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 cfm (cubic feet per hour).
Connect customer supplied gas hose between regulator/flowmeter and gas fitting on rear of unit.

Tools Needed:

803 901-A

5-10. 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 5-4).
5 Gas In Connection
Connect gas hose from gas supply to gas in fitting (see Section 5-9).

Tools Needed:

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

803 915-B
5-11. Cooler Connections

Cart and cooler are optional equipment.

1. AC Cooler Receptacle RC2

RC2 is a designated use receptacle intended only for supplying AC power to a Miller-approved cooler.

2. 115 VAC Cord

Provides 115 vac to power cooler.

3. Electrode Weld Output Terminal (Weld Output Terminal On Maxstar Models)

Connect TIG torch to electrode weld output terminal.

4. Gas Out Connection

Connect TIG torch gas hose to gas out fitting.

5. Work Weld Output Terminal (Weld Output Terminal On Maxstar Models)

Connect work lead to work weld output terminal.

6. Water-Out (To Torch) Connection

Connect torch water-in (blue) hose to welding power source water-out connection.

7. Water-In (From Torch) Connection

Connect torch water-out (red) hose to welding power source water-in connection.

Tools Needed:

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

NOTICE – Use of any coolant other than those listed in the table voids the warranty on any parts that come in contact with the coolant (pump, radiator, etc.).

<table>
<thead>
<tr>
<th>Application</th>
<th>GTAW Or Where HF* Is Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Conductivity Coolant</td>
<td>3-1/2 Gal Low Conductivity Coolant No. 043 810**; Distilled Or Deionized Water OK Above 32° F (0° C)</td>
</tr>
</tbody>
</table>

*HF: High Frequency Current
**Coolant 043 810, a 50/50 solution, protect to -37° F (-38° C) and resist algae growth.
5-12. Dynasty Stick Connections

![Diagram of Dynasty Stick Connections]

- **Work Weld Output Terminal**: Connect work lead to work weld output terminal.
- **Electrode Weld Output Terminal**: Connect electrode holder to electrode weld output terminal.
- **Remote 14 Receptacle**: If desired, connect remote control to Remote 14 receptacle (see Section 5-4).

**Important:** Turn off power before making connections.

Connections shown are for Dynasty models.

5-13. Maxstar Stick Connections

![Diagram of Maxstar Stick Connections]

- **+ Weld Output Terminal**: Connect electrode lead to positive (+) weld output terminal.
- **− Weld Output Terminal**: Connect work lead to negative (−) weld output terminal.
- **Remote 14 Receptacle**: If desired, connect remote control to Remote 14 receptacle (see Section 5-4).

**Important:** Turn off power before making connections.

Connections shown are for Maxstar models.
5-14. Electrical Service Guide

A. Dynasty 350 Models

Actual input voltage should not be 10% less than minimum (5% for 380 volt CE models) and/or 10% more than maximum input voltages listed in table. If actual input voltage is outside this range, output may not be available.

**NOTICE** – INCORRECT INPUT POWER can damage this welding power source. Phase to ground voltage shall not exceed +10% of rated input voltage.

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

In dedicated circuit installations, the National Electrical Code (NEC) allows the receptacle or conductor rating to be less than the rating of the circuit protection device. All components of the circuit must be physically compatible. See NEC articles 210.21, 630.11, and 630.12.

CE-marked equipment shall only be used on a supply network that is a three-phase, four-wire system with an earthed neutral.

<table>
<thead>
<tr>
<th>Input Voltage (V)</th>
<th>Three-Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>208</td>
</tr>
<tr>
<td>Input Amperes (A) At Rated Output - 300 amps @ 32 volts</td>
<td>36</td>
</tr>
<tr>
<td>Max Recommended Standard Fuse Rating In Amperes¹</td>
<td>40</td>
</tr>
<tr>
<td>Time-Delay Fuses²</td>
<td>50</td>
</tr>
<tr>
<td>Normal Operating Fuses³</td>
<td>10</td>
</tr>
<tr>
<td>Min Input Conductor Size In AWG⁴</td>
<td>88</td>
</tr>
<tr>
<td>Max Recommended Input Conductor Length In Feet (Meters)</td>
<td>10</td>
</tr>
<tr>
<td>Min Grounding Conductor Size In AWG⁴</td>
<td>10</td>
</tr>
</tbody>
</table>

Reference: 2014 National Electrical Code (NEC) (including article 630)

1. If a circuit breaker is used in place of a fuse, choose a circuit breaker with time-current curves comparable to the recommended fuse.
2. “Time-Delay” fuses are UL class “RK5”. See UL 248.
3. “Normal Operating” (general purpose - no intentional delay) fuses are UL class “K5” (up to and including 60 amps), and UL class “H” (65 amps and above).
4. Conductor data in this section specifies conductor size (excluding flexible cord or cable) between the panelboard and the equipment per NEC Table 310.15(B)(16). If a flexible cord or cable is used, minimum conductor size may increase. See NEC Table 400.5(A) for flexible cord and cable requirements.

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

In dedicated circuit installations, the National Electrical Code (NEC) allows the receptacle or conductor rating to be less than the rating of the circuit protection device. All components of the circuit must be physically compatible. See NEC articles 210.21, 630.11, and 630.12.

<table>
<thead>
<tr>
<th>Input Voltage (V)</th>
<th>Single-Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>208</td>
</tr>
<tr>
<td>Input Amperes (A) At Rated Output - 225 amps @ 29 volts</td>
<td>47</td>
</tr>
<tr>
<td>Max Recommended Standard Fuse Rating In Amperes¹</td>
<td>50</td>
</tr>
<tr>
<td>Time-Delay Fuses²</td>
<td>70</td>
</tr>
<tr>
<td>Normal Operating Fuses³</td>
<td>8</td>
</tr>
<tr>
<td>Min Input Conductor Size In AWG⁴</td>
<td>88</td>
</tr>
<tr>
<td>Max Recommended Input Conductor Length In Feet (Meters)</td>
<td>10</td>
</tr>
<tr>
<td>Min Grounding Conductor Size In AWG⁴</td>
<td>8</td>
</tr>
</tbody>
</table>

Reference: 2014 National Electrical Code (NEC) (including article 630)

1. If a circuit breaker is used in place of a fuse, choose a circuit breaker with time-current curves comparable to the recommended fuse.
2. “Time-Delay” fuses are UL class “RK5”. See UL 248.
3. “Normal Operating” (general purpose - no intentional delay) fuses are UL class “K5” (up to and including 60 amps), and UL class “H” (65 amps and above).
4. Conductor data in this section specifies conductor size (excluding flexible cord or cable) between the panelboard and the equipment per NEC Table 310.15(B)(16). If a flexible cord or cable is used, minimum conductor size may increase. See NEC Table 400.5(A) for flexible cord and cable requirements.

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B. Maxstar 350 Models

Actual input voltage should not be 10% less than minimum (5% for 380 volt CE models) and/or 10% more than maximum input voltages listed in table. If actual input voltage is outside this range, output may not be available.

**NOTICE** – INCORRECT INPUT POWER can damage this welding power source. Phase to ground voltage shall not exceed +10% of rated input voltage.

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

In dedicated circuit installations, the National Electrical Code (NEC) allows the receptacle or conductor rating to be less than the rating of the circuit protection device. All components of the circuit must be physically compatible. See NEC articles 210.21, 630.11, and 630.12.

CE-marked equipment shall only be used on a supply network that is a three-phase, four-wire system with an earthed neutral.

<table>
<thead>
<tr>
<th>Input Voltage (V)</th>
<th>Three-Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>208</td>
</tr>
<tr>
<td>Input Amperes (A) At Rated Output - 300 amps @ 32 volts</td>
<td>33</td>
</tr>
<tr>
<td>Max Recommended Standard Fuse Rating In Amperes¹</td>
<td>Time-Delay Fuses²</td>
</tr>
<tr>
<td></td>
<td>Normal Operating Fuses³</td>
</tr>
<tr>
<td>Min Input Conductor Size In AWG⁴</td>
<td>10</td>
</tr>
<tr>
<td>Max Recommended Input Conductor Length In Feet (Meters)</td>
<td>93</td>
</tr>
<tr>
<td>Min Grounding Conductor Size In AWG⁴</td>
<td>10</td>
</tr>
</tbody>
</table>

Reference: 2014 National Electrical Code (NEC) (including article 630)

1. If a circuit breaker is used in place of a fuse, choose a circuit breaker with time-current curves comparable to the recommended fuse.
2. “Time-Delay” fuses are UL class “RK5”. See UL 248.
3. “Normal Operating” (general purpose - no intentional delay) fuses are UL class “K5” (up to and including 60 amps), and UL class “H” (65 amps and above).
4. Conductor data in this section specifies conductor size (excluding flexible cord or cable) between the panelboard and the equipment per NEC Table 310.15(B)(16). If a flexible cord or cable is used, minimum conductor size may increase. See NEC Table 400.5(A) for flexible cord and cable requirements.

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

In dedicated circuit installations, the National Electrical Code (NEC) allows the receptacle or conductor rating to be less than the rating of the circuit protection device. All components of the circuit must be physically compatible. See NEC articles 210.21, 630.11, and 630.12.

<table>
<thead>
<tr>
<th>Input Voltage (V)</th>
<th>Single-Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>208</td>
</tr>
<tr>
<td>Input Amperes (A) At Rated Output - 225 amps @ 29 volts</td>
<td>43</td>
</tr>
<tr>
<td>Max Recommended Standard Fuse Rating In Amperes¹</td>
<td>Time-Delay Fuses²</td>
</tr>
<tr>
<td></td>
<td>Normal Operating Fuses³</td>
</tr>
<tr>
<td>Min Input Conductor Size In AWG⁴</td>
<td>8</td>
</tr>
<tr>
<td>Max Recommended Input Conductor Length In Feet (Meters)</td>
<td>99</td>
</tr>
<tr>
<td>Min Grounding Conductor Size In AWG⁴</td>
<td>10</td>
</tr>
</tbody>
</table>

Reference: 2014 National Electrical Code (NEC) (including article 630)

1. If a circuit breaker is used in place of a fuse, choose a circuit breaker with time-current curves comparable to the recommended fuse.
2. “Time-Delay” fuses are UL class “RK5”. See UL 248.
3. “Normal Operating” (general purpose - no intentional delay) fuses are UL class “K5” (up to and including 60 amps), and UL class “H” (65 amps and above).
4. Conductor data in this section specifies conductor size (excluding flexible cord or cable) between the panelboard and the equipment per NEC Table 310.15(B)(16). If a flexible cord or cable is used, minimum conductor size may increase. See NEC Table 400.5(A) for flexible cord and cable requirements.
C. Dynasty 700 Models

Actual input voltage should not be 10% less than minimum (5% for 380 volt CE models) and/or 10% more than maximum input voltages listed in table. If actual input voltage is outside this range, output may not be be available.

**NOTICE** – INCORRECT INPUT POWER can damage this welding power source. Phase to ground voltage shall not exceed +10% of rated input voltage.

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

In dedicated circuit installations, the National Electrical Code (NEC) allows the receptacle or conductor rating to be less than the rating of the circuit protection device. All components of the circuit must be physically compatible. See NEC articles 210.21, 630.11, and 630.12.

CE-marked equipment shall only be used on a supply network that is a three-phase, four-wire system with an earthed neutral.

<table>
<thead>
<tr>
<th>Input Voltage (V)</th>
<th>Three-Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>208</td>
</tr>
<tr>
<td>Input Amperes (A) At Rated Output - 600 amps @ 44 volts</td>
<td>98</td>
</tr>
<tr>
<td>Max Recommended Standard Fuse Rating In Amperes¹</td>
<td></td>
</tr>
<tr>
<td>Time-Delay Fuses²</td>
<td>110</td>
</tr>
<tr>
<td>Normal Operating Fuses³</td>
<td>150</td>
</tr>
<tr>
<td>Min Input Conductor Size In AWG⁴</td>
<td>4</td>
</tr>
<tr>
<td>Max Recommended Input Conductor Length In Feet (Meters)</td>
<td>118 (36)</td>
</tr>
<tr>
<td>Min Grounding Conductor Size In AWG⁵</td>
<td>6</td>
</tr>
</tbody>
</table>

Reference: 2014 National Electrical Code (NEC) (including article 630)
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In dedicated circuit installations, the National Electrical Code (NEC) allows the receptacle or conductor rating to be less than the rating of the circuit protection device. All components of the circuit must be physically compatible. See NEC articles 210.21, 630.11, and 630.12.

<table>
<thead>
<tr>
<th>Input Voltage (V)</th>
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<tbody>
<tr>
<td></td>
<td>208</td>
</tr>
<tr>
<td>Input Amperes (A) At Rated Output - 450 amps @ 38 volts</td>
<td>119</td>
</tr>
<tr>
<td>Max Recommended Standard Fuse Rating In Amperes¹</td>
<td></td>
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<tr>
<td>Time-Delay Fuses²</td>
<td>125</td>
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<tr>
<td>Normal Operating Fuses³</td>
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<td>Min Input Conductor Size In AWG⁴</td>
<td>3</td>
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<tr>
<td>Max Recommended Input Conductor Length In Feet (Meters)</td>
<td>107 (33)</td>
</tr>
<tr>
<td>Min Grounding Conductor Size In AWG⁵</td>
<td>6</td>
</tr>
</tbody>
</table>

Reference: 2014 National Electrical Code (NEC) (including article 630)
1 If a circuit breaker is used in place of a fuse, choose a circuit breaker with time-current curves comparable to the recommended fuse.
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D. Maxstar 700 Models

Actual input voltage should not be 10% less than minimum (5% for 380 volt CE models) and/or 10% more than maximum input voltages listed in table. If actual input voltage is outside this range, output may not be be available.

**NOTICE** – INCORRECT INPUT POWER can damage this welding power source. Phase to ground voltage shall not exceed +10% of rated input voltage.

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

In dedicated circuit installations, the National Electrical Code (NEC) allows the receptacle or conductor rating to be less than the rating of the circuit protection device. All components of the circuit must be physically compatible. See NEC articles 210.21, 630.11, and 630.12.

CE-marked equipment shall only be used on a supply network that is a three-phase, four-wire system with an earthed neutral.

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<tr>
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<td>89</td>
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<tr>
<td>Max Recommended Standard Fuse Rating In Amperes¹</td>
<td>110</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Time-Delay Fuses²</td>
<td>8</td>
</tr>
<tr>
<td>Normal Operating Fuses³</td>
<td>129</td>
</tr>
<tr>
<td>Min Input Conductor Size In AWG⁴</td>
<td>6</td>
</tr>
<tr>
<td>Max Recommended Input Conductor Length In Feet (Meters)</td>
<td>129 (39)</td>
</tr>
<tr>
<td>Min Grounding Conductor Size In AWG⁴</td>
<td>6</td>
</tr>
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</table>

Reference: 2014 National Electrical Code (NEC) (including article 630)

1 If a circuit breaker is used in place of a fuse, choose a circuit breaker with time-current curves comparable to the recommended fuse.
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Failure to follow these electrical service guide recommendations could create an electric shock or fire hazard. These recommendations are for a dedicated circuit sized for the rated output and duty cycle of the welding power source.

In dedicated circuit installations, the National Electrical Code (NEC) allows the receptacle or conductor rating to be less than the rating of the circuit protection device. All components of the circuit must be physically compatible. See NEC articles 210.21, 630.11, and 630.12.

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<tr>
<td>Normal Operating Fuses³</td>
<td>94</td>
</tr>
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<td>Min Input Conductor Size In AWG⁴</td>
<td>6</td>
</tr>
<tr>
<td>Max Recommended Input Conductor Length In Feet (Meters)</td>
<td>94 (29)</td>
</tr>
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<td>Min Grounding Conductor Size In AWG⁴</td>
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5-15. Connecting Input Power For 350 Models

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. Follow established procedures regarding the installation and removal of lockout/tagout devices.

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

The Auto-Line circuitry in this unit automatically adapts the power source to the primary voltage being applied. Check input voltage available at site. This unit can be connected to any input power between 208 and 575 VAC without removing cover to relink the power source.

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

For Three-Phase Operation

1. Input Power Cord.
2. Disconnect Device (switch shown in the OFF position)
3. Green Or Green/Yellow Grounding Conductor
4. Disconnect Device Grounding Terminal
5. Input Conductors (L1, L2 And L3)
6. Disconnect Device Line Terminals

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

Connect input conductors L1, L2, and L3 to disconnect device line terminals.

7. Over-Current Protection

Select type and size of over-current protection using Section 5-14 (fused disconnect switch shown).

Close and secure door on disconnect device. Follow established lockout/tagout procedures to put unit in service.

Tools Needed:

Ref. Input 2 2012-12 / Ref. 804 746-B
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. Follow established procedures regarding the installation and removal of lockout/tagout devices.

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

The Auto-Line circuitry in this unit automatically adapts the power source to the primary voltage being applied. Check input voltage available at site. This unit can be connected to any input power between 208 and 575 VAC without removing cover to relink the power source.

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

1 Black And White Input Conductor (L1 And L2)
2 Red Input Conductor
3 Green Or Green/Yellow Grounding Conductor
4 Insulation Sleeving
5 Electrical Tape
6 Input Power Cord.
7 Disconnect Device (switch shown in the OFF position)
8 Disconnect Device Grounding Terminal
9 Disconnect Device Line Terminals
Connect green or green/yellow grounding conductor to disconnect device grounding terminal first.

Connect input conductors L1 and L2 to disconnect device line terminals.
10 Over-Current Protection
Select type and size of over-current protection using Section 5-14 (fused disconnect switch shown).

Close and secure door on disconnect device. Follow established lockout/tagout procedures to put unit in service.

![Diagram of single-phase input power connections]

Tools Needed:
5-16. Connecting Input Power For 700 Models

A. Connecting Three-Phase Input Power For Maxstar 700 Models

![Diagram of Maxstar 700 Model]

- **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. Follow established procedures regarding the installation and removal of lockout/tagout devices.
- **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 5-1).

1. **Input Power Conductors (Customer Supplied Cord)**
   - Select size and length of conductors using Section 5-14. 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**
   - Connect input conductors L1 (U), L2 (V) and L3 (W) to welding power source line terminals.
6. **Cable Tie (CE Only)**
   - Secure wires with supplied cable tie.

**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 5-14 (fused disconnect switch shown).
   - Close and secure door on line disconnect device. Follow established lockout/tagout procedures to put unit in service.
B. Connecting Three-Phase Input Power For Dynasty 700 Models

Tools Needed:

- Input3 2012−12 / 805 470-B

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. Follow established procedures regarding the installation and removal of lockout/tagout devices.

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 5-1).

1 Input Power Conductors (Customer Supplied Cord)

Select size and length of conductors using Section 5-14. 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 Ferrite Core F9 (CE Only)

For Dynasty models, wrap green/yellow grounding conductor through supplied ferrite F9 4 times as shown.

6 Welding Power Source Line Terminals (Switch S1)

7 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.

8 Cable Tie (CE Only)
Secure wires with supplied cable tie.

Install cover.

Disconnect Device Input Power Connections

9 Disconnect Device (switch shown in OFF position)

10 Disconnect Device (Supply) Grounding Terminal
Connect green or green/yellow grounding conductor to disconnect device grounding terminal first.

11 Disconnect Device Line Terminals
Connect input conductors L1 (U), L2 (V) And L3 (W) to disconnect device line terminals.

12 Over-Current Protection
Select type and size of over-current protection using Section 5-14 (fused disconnect switch shown).

Close and secure door on line disconnect device. Follow established lockout/tagout procedures to put unit in service.
C. 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. Follow established procedures regarding the installation and removal of lockout/tagout devices.

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 5-1).

1 Input Power Conductors (Customer Supplied Cord)

Select size and length of conductors using Section 5-14. 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 5-14 (fused disconnect switch shown).

Close and secure door on line disconnect device. Follow established lockout/tagout procedures to put unit in service.
For all front panel switch pad controls: press switch pad to turn on light and enable normal function.

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

1. Encoder Control
2. Ammeter And Parameter Display
3. Voltmeter And Selected Parameter Display
4. Polarity Control (Dynasty Only) See Section 6-5.
5. Process Controls See Section 6-6.
6. Output Controls See Section 6-8.
7. Pulser Controls See Section 6-9.
8. Sequencer Controls See Section 6-10.
10. AC Waveshape (Dynasty Only) See Section 6-12.
11. Amperage And Spot Time Control For Amperage Control see Section 6-3. For Spot Time Control see Section 7-7.
13. Memory Display Displays active memory.
14. Power Switch Use switch to turn unit On/Off.
6-2. Encoder Control

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

6-3. Amperage Control

Press Amperage switch pad, and turn Encoder control to set weld amperage, or peak amperage when Pulser function is active (see Section 6-9).

See Section 6-12 for AC functions.

6-4. Ammeter And Parameter Display And Voltmeter And Selected Parameter Display

1 Ammeter displays actual amperage while welding. It also displays adjustable parameters for all functions
2 Volt Meter
Displays output or open circuit voltage. Also displays word abbreviations for selected parameters.

6-5. Polarity Control (Dynasty Models Only)

Press switch pad until desired LED is illuminated.
DC - Select DC for DC welding. Machines electrode output is DCEN for TIG, and DCEP for Stick.
AC - Select AC for AC welding.
6-6. Process Control

1 Process Control
Press switch pad until desired process LED is illuminated:

**TIG HF Impulse** - is a pulsed HF (see Section 6-7) arc starting method that can be used with either AC or DC TIG welding. Make connections according to Section 5-10.

**TIG Lift-Arc** - is an arc starting method in which the electrode must come in contact with the workpiece (see Section 6-7). This method can be used with either AC or DC TIG welding. Make connections according to Section 5-10.

**Stick (SMAW)** - This method can be used with either AC or DC Stick welding. Make connections according to Section 5-12.

<table>
<thead>
<tr>
<th>1</th>
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</tr>
</thead>
<tbody>
<tr>
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<td><strong>TIG Lift-Arc</strong></td>
</tr>
<tr>
<td><strong>STICK</strong></td>
<td><strong>PROCESS</strong></td>
</tr>
</tbody>
</table>

6-7. 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 a properly prepared electrode (see Section 12-2) 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, or the AC GTAW process when a non-contact arc starting method is required.
6-8. 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 7-47-4A).

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 7-4B).

This switch function can be reconfigured for 3T, 4T, 4T Momentary, or Mini Logic control. See Sections 7-4C, D, E, or F.

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 7-4G).

2. On LED
   Blue On LED is lit whenever Output is on.

Notes
6-9. 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 6-14 for all Pulser parameter ranges.

PPS - Pulse frequency or pulses per second, is the number of pulse cycles per second. Pulse frequency helps reduce heat input, part warpage, and helps weld bead cosmetics. The higher the PPS setting, the smoother the ripple effect, the narrower the weld bead, and the more cooling you get. By setting PPS on the lower end, the pulse is slower, and the weld bead wider. This slow pulsing helps agitate the weld puddle to help release gas trapped in the weldment, and help reduce porosity (very useful in aluminum welding). Some beginners use a slower pulse rate (2-4 pps) to help them with their timing on adding filler material. An experienced welder may have the PPS setting much higher, depending on their personal preferences, and on what they are trying to accomplish.

PEAK t - (PEAK t) is the percentage of time in each cycle, spent at peak amperage (main amperage). Peak amperage is set with the Amperage control (see Section 6-3). If one pulse per second is being used, and peak time is set at 50%, one-half second is spent at peak amperage, and the other 50%, or one-half second, is spent at the background amperage. Increasing peak time increases time spent at peak amperage, which increases heat input into the part. A good starting point for peak time is about 50-60%. To find a good ratio, you will have to experiment a bit, but the idea is to decrease heat input into the part, and increase the cosmetics of the weld.

BKGND A - (Background amps) is set as a percentage of the peak amps setting. If peak amps is set at 200, and background amps at 50%, your background amps is 100 amps when the machine pulses on the background side of the cycle. The lower background amperage helps reduce heat input. Increasing or decreasing background amps increases or decreases the overall average amperage, which helps determine how fluid your puddle is on the background side of the pulse cycle. Overall, you want your puddle to shrink to about one-half the size, but still remain fluid. To start with, set background amps at about 20-30% for stainless/carbon steel, or at about 35-50% for aluminum alloys.

4 Pulsed Output Waveforms
Example shows affect changing the Peak Time control has on the pulsed output waveform.

Application:
Pulsing refers to 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 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 the operator better control of penetration, bead width, crowning, undercutting, and heat input. Controls can be adjusted while welding.
Pulsing can also be used for filler material addition technique training.

Function is enabled, when LED is lit
6-10. 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)
Turn control to set values for the sequencer parameters.

3 Ammeter (Displays Value)
See Section 6-14 for all Sequencer parameter ranges.

4 Voltmeter
Displays word abbreviations of selected parameters.

INITIAL A (Initial Amperage) [INTL]
- 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) [INTL] (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) [ISLP] Use control to set amount of time that it takes to slope from initial amperage to weld amperage. To disable, set to 0.

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

Spot Time - Press amperage switch twice. Set desired spot time.

FINAL SLOPE t (Final Slope Time) [FSLP] - 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) [FNL] - Used to set amperage to which weld amperage slopes to.

FINAL t (Final Time) [FNL] (Available with Automation option Only) - Press control again and turn Encoder to set Final Amperage time.
6-11. Gas/DIG Controls (Preflow/Post Flow/DIG/Purge)

1. Gas/DIG Controls
   Press switch pad until desired function LED is illuminated.

2. Encoder Control (Set Value)
3. Ammeter (Displays Value)
   See Section 6-14 for all Adjust parameter ranges.

4. Voltmeter
   Displays word abbreviations of selected parameters.

**PREFLOW** [PRE] - If the TIG HF process is active (see Section 6-6) 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** [POST] - If the TIG process is active (see Section 6-6), use control to set length of time gas flows after welding stops.

**AUTO POST FLOW** - Creates a post flow time scaled at 1 second per 10 amps of the peak weld amperage for a given weld cycle. Auto post flow is limited to a 8 second minimum, or to the maximum preset post flow time.

**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 Stick process is active (see Section 6-6), 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** [PURG] - 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, [PURG] 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.
6-12. 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 6-14 for all AC Waveshape parameter ranges.

**EN Amperage** [EN] - Use with AC TIG only to select electrode negative amperage value.

**EP Amperage** [EP] - Use with AC TIG only to select electrode positive amperage value.

Note: See Section 7-1 to set same Amplitude control [ENEP].

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 1.5 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.

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.

**Balance** [BAL] - AC Balance control is enabled only in AC TIG to set percentage of time polarity is electrode negative. Set control at about 75%, and fine tune from there.

5 Voltmeter
Displays word abbreviations of selected parameters.

**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** [FREQ] - 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.
6-13. Memory (Program Storage Locations 1-9)

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

First, press Memory switch pad until the desired program storage location (1-9) is displayed.

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 6-14 for parameters).

For Dynasty Models, each memory location (1 thru 9) can store parameters for both polarities (AC and DC), and each polarity can store parameters for both process (TIG and Stick) for a total of 36 programs.

For Maxstar Models, each memory location (1 thru 9) can store parameters for both process (TIG and Stick) for a total of 18 programs.
### 6-14. Factory Parameter Defaults And Range And Resolution For 350 Models

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Range And Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEMORY</td>
<td>1</td>
<td>1−9</td>
</tr>
<tr>
<td>(DYNASTY ONLY) POLARITY</td>
<td>AC</td>
<td>AC / DC</td>
</tr>
<tr>
<td>(DYNASTY ONLY) PROCESS</td>
<td>TIG HF Impulse</td>
<td>TIG HF Impulse / TIG Lift / Stick</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>RMT STD</td>
<td>RMT STD / RMT 2T / ON</td>
</tr>
<tr>
<td><strong>RMT 2T</strong></td>
<td>2T</td>
<td>RMT 2T can be reconfigured for: 2T / 3T / 4T / Mini Logic / 4T Momentary (see Section 7-4)</td>
</tr>
<tr>
<td>(DYNASTY ONLY) A MAIN / PEAK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC TIG</td>
<td>150 A</td>
<td>3 – 350 Amps</td>
</tr>
<tr>
<td>DC TIG</td>
<td>150 A</td>
<td>3 – 350 Amps</td>
</tr>
<tr>
<td>(DYNASTY ONLY) AC STICK</td>
<td>110 A</td>
<td>3 – 350 Amps</td>
</tr>
<tr>
<td>(DYNASTY ONLY) DC STICK</td>
<td>110 A</td>
<td>3 – 350 Amps</td>
</tr>
<tr>
<td>*Spot</td>
<td>OFF</td>
<td>ON/OFF</td>
</tr>
<tr>
<td>*Spot Time</td>
<td>0 T</td>
<td>0 – 999 Seconds</td>
</tr>
<tr>
<td>**Weld Time</td>
<td>0T</td>
<td>0 – 999 Seconds</td>
</tr>
<tr>
<td>PULSER</td>
<td>Off</td>
<td>ON / OFF</td>
</tr>
<tr>
<td>PPS</td>
<td>100 Hz</td>
<td>DC: 0.1 - 5000 PPS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AC: 0.1 – 500 PPS</td>
</tr>
<tr>
<td>PEAK t</td>
<td>40%</td>
<td>5 – 95 Percent</td>
</tr>
<tr>
<td>BKGND A</td>
<td>25%</td>
<td>5 – 95 Percent</td>
</tr>
<tr>
<td>SEQUENCER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INITIAL A</td>
<td>20 A</td>
<td>3 – 350 Amps</td>
</tr>
<tr>
<td>**Initial Time</td>
<td>0 T</td>
<td>0.0 – 25.0 Seconds</td>
</tr>
<tr>
<td>INITIAL SLOPE t</td>
<td>0 T</td>
<td>0.0 – 50.0 Seconds</td>
</tr>
<tr>
<td>FINAL SLOPE t</td>
<td>0 T</td>
<td>0.0 – 50.0 Seconds</td>
</tr>
<tr>
<td>FINAL A</td>
<td>5 A</td>
<td>3 – 350 Amps</td>
</tr>
<tr>
<td>**Final Time</td>
<td>0 T</td>
<td>0.0 – 25.0 Seconds</td>
</tr>
<tr>
<td>ADJUST</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PREFLOW</td>
<td>0.2 T</td>
<td>0.0 – 25.0 Seconds</td>
</tr>
<tr>
<td>POST FLOW</td>
<td>Auto</td>
<td>Auto 1 – 50 Seconds</td>
</tr>
<tr>
<td>DIG</td>
<td>30%</td>
<td>0 – 100 Percent</td>
</tr>
<tr>
<td>(DYNASTY ONLY) AC WAVESHAPE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Waveform</td>
<td>Soft Square</td>
<td>Soft Square, Advanced Square, Sine, Triangle</td>
</tr>
<tr>
<td>EN Amps</td>
<td>150A</td>
<td>3 - 350 Amps</td>
</tr>
<tr>
<td>EP Amps</td>
<td>150A</td>
<td>3 - 350 Amps</td>
</tr>
<tr>
<td>BALANCE</td>
<td>75%</td>
<td>30 – 99 Percent</td>
</tr>
<tr>
<td>FREQUENCY</td>
<td>120 Hz</td>
<td>20 – 400 Hertz</td>
</tr>
<tr>
<td>EN/EP</td>
<td>Independent</td>
<td>Same/Independent</td>
</tr>
</tbody>
</table>
Factory Parameter Defaults And Range And Resolution For 350 Models (Continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Range And Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TIG Start parameters for each program (1-9)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC:</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Tungsten</em></td>
<td>.094</td>
<td>GEN, .020, .040, .062, .094, .125, .156, .187</td>
</tr>
<tr>
<td>*<strong>Polarity (DYNASTY ONLY)</strong></td>
<td>EN</td>
<td>EP / EN</td>
</tr>
<tr>
<td>*<strong>Amperage</strong></td>
<td>60 A</td>
<td>3 – 200 Amps</td>
</tr>
<tr>
<td>*<strong>Time</strong></td>
<td>1 ms</td>
<td>1 – 200 Milliseconds</td>
</tr>
<tr>
<td>*<strong>Start Slope Time</strong></td>
<td>40 ms</td>
<td>0 – 250 Milliseconds</td>
</tr>
<tr>
<td>*<strong>Preset Amperage Minimum</strong></td>
<td>5 A</td>
<td>3 – 25 Amps</td>
</tr>
<tr>
<td>AC: (DYNASTY ONLY)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Tungsten</em></td>
<td>.094</td>
<td>GEN, .020, .040, .062, .094, .125, .156, .187</td>
</tr>
<tr>
<td>*<strong>Polarity</strong></td>
<td>EP</td>
<td>EP / EN</td>
</tr>
<tr>
<td>*<strong>Amperage</strong></td>
<td>130 A</td>
<td>3 – 200 Amps</td>
</tr>
<tr>
<td>*<strong>Time</strong></td>
<td>20 ms</td>
<td>1 – 200 Milliseconds</td>
</tr>
<tr>
<td>*<strong>Start Slope Time</strong></td>
<td>20 ms</td>
<td>0 – 250 Milliseconds</td>
</tr>
<tr>
<td>*<strong>Preset Amperage Minimum</strong></td>
<td>5 A</td>
<td>3 – 25 Amps</td>
</tr>
</tbody>
</table>

| **TIG Start parameters for Advanced Automation** |
| DC:       |         |                      |
| **OFF** | OFF | ON |
| **Amperage** | 50 A | 3 – 200 Amps |
| **Time** | 30 ms | 10 – 200 Milliseconds |
| AC: (DYNASTY ONLY) |         |                      |
| **OFF/ON** | OFF | ON |
| **Amperage** | 30 A | 3 – 200 Amps |
| **Time** | 30 ms | 10 – 200 Milliseconds |

* Parameter adjusted using an Advanced Function configuration only (See Section 7).
** Parameter used with the automation option only.
*** Parameter adjust in GEN setting only (see Section 7-2).

6-15. Factory Parameter Defaults And Range And Resolution For 700 Models

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Range And Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEMORY</td>
<td>1</td>
<td>1–9</td>
</tr>
<tr>
<td>POLARITY</td>
<td>AC</td>
<td>AC / DC</td>
</tr>
<tr>
<td>PROCESS</td>
<td>TIG HF Impulse</td>
<td>TIG HF Impulse / TIG Lift / Stick</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>RMT STD</td>
<td>RMT STD / RMT 2T / ON</td>
</tr>
<tr>
<td><strong>RMT 2T</strong></td>
<td>2T</td>
<td>RMT 2T can be reconfigured for: 2T / 3T / 4T / Mini Logic / 4T Momentary / Spot (see Section 7-4)</td>
</tr>
<tr>
<td>A MAIN / PEAK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(DYNASTY ONLY) AC TIG</td>
<td>500 A</td>
<td>5 – 700 Amps</td>
</tr>
<tr>
<td>(DYNASTY ONLY) AC STICK</td>
<td>110 A</td>
<td>5 – 700 Amps</td>
</tr>
<tr>
<td>(DYNASTY ONLY) DC TIG</td>
<td>500 A</td>
<td>5 – 700 Amps</td>
</tr>
<tr>
<td>(DYNASTY ONLY) DC STICK</td>
<td>110 A</td>
<td>5 – 700 Amps</td>
</tr>
<tr>
<td><em>Spot</em></td>
<td>Off</td>
<td>On/Off</td>
</tr>
<tr>
<td>Spot Time</td>
<td>0 T</td>
<td>0.0 – 999 Seconds</td>
</tr>
<tr>
<td><strong>Weld Time</strong></td>
<td>0T</td>
<td>0.0 – 999 Seconds</td>
</tr>
<tr>
<td>PULSER</td>
<td>Off</td>
<td>ON / OFF</td>
</tr>
<tr>
<td>PPS</td>
<td>100 Hz</td>
<td>DC: 0.1 – 5000 PPS AC: 0.1 – 500 PPS</td>
</tr>
<tr>
<td>PEAK t</td>
<td>40%</td>
<td>5 – 95 Percent</td>
</tr>
<tr>
<td>BKGND A</td>
<td>25%</td>
<td>5 – 95 Percent</td>
</tr>
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</table>
## Factory Parameter Defaults And Range And Resolution For 700 Models (Continued)

<table>
<thead>
<tr>
<th>SEQUENCER</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>INITIAL A</td>
<td>20 A</td>
<td>5 – 700 Amps</td>
</tr>
<tr>
<td><strong>Initial Time</strong></td>
<td>0 T</td>
<td>0.0 – 25.0 Seconds</td>
</tr>
<tr>
<td>INITIAL SLOPE t</td>
<td>0 T</td>
<td>0.0 – 50.0 Seconds</td>
</tr>
<tr>
<td>FINAL SLOPE t</td>
<td>0 T</td>
<td>0.0 – 50.0 Seconds</td>
</tr>
<tr>
<td>FINAL A</td>
<td>5 A</td>
<td>5 – 700 Amps</td>
</tr>
<tr>
<td><strong>Final Time</strong></td>
<td>0 T</td>
<td>0.0 – 25.0 Seconds</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADJUST</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PREFLOW</td>
<td>0.2 T</td>
<td>0.0 – 25.0 Seconds</td>
</tr>
<tr>
<td>POST FLOW</td>
<td>Auto</td>
<td>Auto 1 – 50.0 Seconds @ 1 Second Resolution</td>
</tr>
<tr>
<td>DIG</td>
<td></td>
<td>0 – 100 Percent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(DYNASTY ONLY) AC WAVESHAPE</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Waveform</em></td>
<td>Soft Square</td>
<td>Soft Square, Advanced Square, Sine, Triangle</td>
</tr>
<tr>
<td>EN Amps</td>
<td>500A</td>
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</tr>
<tr>
<td>EP Amps</td>
<td>500A</td>
<td>5 - 700 Amps</td>
</tr>
<tr>
<td>BALANCE</td>
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<td>30 – 99 Percent</td>
</tr>
<tr>
<td>FREQUENCY</td>
<td>120 Hz</td>
<td>20 – 400 Hertz</td>
</tr>
<tr>
<td><em>EN/EP</em></td>
<td>Independent</td>
<td>Same/Independent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><em>TIG Start parameters for each program (1-9)</em></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Tungsten</em></td>
<td>.094</td>
<td>GEN, .040, .062, .094, .125, .156, .187, .250</td>
</tr>
<tr>
<td>**<em>Polarity (DYNASTY ONLY)</em></td>
<td>EN</td>
<td>EP / EN</td>
</tr>
<tr>
<td>**<em>Amperage</em></td>
<td>60 A</td>
<td>5 – 200 Amps</td>
</tr>
<tr>
<td>**<em>Time</em></td>
<td>1 ms</td>
<td>1 – 200 Milliseconds</td>
</tr>
<tr>
<td>*<em>Start Slope Time</em></td>
<td>40 ms</td>
<td>0 – 250 Milliseconds</td>
</tr>
<tr>
<td>**<em>Preset Amperage Minimum</em></td>
<td>5 A</td>
<td>5 – 25 Amps</td>
</tr>
<tr>
<td><strong>AC:</strong> (DYNASTY ONLY)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Tungsten</em></td>
<td>.094</td>
<td>GEN, .040, .062, .094, .125, .156, .187, .250</td>
</tr>
<tr>
<td>**<em>Polarity</em></td>
<td>EP</td>
<td>EP / EN</td>
</tr>
<tr>
<td>**<em>Amperage</em></td>
<td>130 A</td>
<td>5 – 200 Amps</td>
</tr>
<tr>
<td>**<em>Time</em></td>
<td>20 ms</td>
<td>1 – 200 Milliseconds</td>
</tr>
<tr>
<td>**<em>Start Slope Time</em></td>
<td>20 ms</td>
<td>0 – 250 Milliseconds</td>
</tr>
<tr>
<td>**<em>Preset Amperage Minimum</em></td>
<td>5 ms</td>
<td>5 – 25 Amps</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><em>TIG Start parameters for Advanced Automation</em></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OFF</strong></td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td><strong>Amperage</strong></td>
<td>50 A</td>
<td>5 – 200 Amps</td>
</tr>
<tr>
<td><strong>Time</strong></td>
<td>30 ms</td>
<td>10 – 200 Milliseconds</td>
</tr>
<tr>
<td><strong>AC:</strong> (DYNASTY ONLY)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OFF/ON</strong></td>
<td>OFF</td>
<td>ON</td>
</tr>
<tr>
<td><strong>Amperage</strong></td>
<td>30 A</td>
<td>5 – 200 Amps</td>
</tr>
<tr>
<td>Time</td>
<td>30 ms</td>
<td>10 – 200 Milliseconds</td>
</tr>
</tbody>
</table>

* Parameter adjusted using an Advanced Function configuration only (See Section 7).
** Parameter used with the automation option only
*** Parameter adjust in GEN setting only (see Section 7-2).
6-16. Resetting Unit To Factory Default Settings

To reset the active memory, polarity, and process to original factory settings, lockout feature must be off (see Section 7-10). Turn power on and then press and hold the Process, Output, and Gas/DIG switch pads before the machine name clears the meters.

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

6-17. Software And Revision Viewing

To access software numbers, turn power on and then press and hold Process switch pad until machine name clears. First [SOFT][NUM] will appear for two seconds followed by the software number for five seconds.
6-18. Arc Timer/Counter Display

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 machine name clears the meters.

3. Arc Timer Display
   The arc time will be displayed for 5 seconds as [0-9999][Hours] then [0-59][Mins].

4. Arc Counter
   After 5 seconds, the arc count will be displayed for the next 5 seconds as [0cy] to [9999][99cy].
SECTION 7 – ADVANCED FUNCTIONS

7-1. Accessing Advanced Functions

To access the advanced functions, press and hold the Amperage (A) switch pad and then press the Gas/Dig switch pad. To scroll through the advanced functions, press and release the Gas/Dig switch pad. Use the Encoder control to change parameters for each function.

Advanced Functions:

- Programmable TIG Start Parameters (see Section 7-2 or 7-3) – Allows you to set tungsten size, amps, time, polarity, and preset amperage minimum to customize arc starts for different tungstens.
- Output Remote Hold And Trigger Functions (see Section 7-4) – For reconfiguring RMT 2T Hold for 3T, 4T Momentary, or Mini Logic
- AC Waveshape Selection with Dynasty models only (see Section 7-5) – Allows you to set a soft, sine, triangle, or advanced AC waveshape for each memory location if desired.
- Independent Amplitude Selection with Dynasty models only (see Section 7-6) – Allows you to set the amplitude of the AC waveshape equal for both the positive and negative half of the weld cycle, or have independent settings.
- Spot Enable (see Section 7-7) – Allows you to turn the spot function on and be available for all programs.
- Stick OCV Selection (see Section 7-8) – Allows you to select either low or normal OCV (open circuit voltage).
- Stick Stuck Check Selection (See Section 7-9) – With Stick Stuck Check on and the welding electrode (rod) stuck, output is turned off in an attempt to save the rod for reuse.
- Lockout Functions (see Section 7-10) – Allows you to turn the lockout function on and off and adjust the lockout levels.
- Meter Displays (see Section 7-11) – Allows you to set meters to display weld voltage and amperage, or blank meters while pulse welding. Also allows you to select amperage preset of peak or average amperage for DC TIG pulse.
- DC Meter Calibration (See Section 7-12) – Allows voltage/amperage calibration of DC meter.

To exit advanced functions, press and hold the Amperage (A) switch pad and then press the Gas/Dig switch pad.
7-2. Programmable TIG Start Parameters

Each memory and polarity TIG Start Parameters has their own programmable parameters.

A. Tungsten Selection

1. Amperage Switch Pad
2. Encoder Control
3. Amps Meter

Preset TIG Start Parameters

Use Encoder control to select a tungsten size from the following: .020, .040, .062, .094 (1/16 in.), .125 (1/8 in.), .156 (5/32 in.), .187 (3/16 in.), .250 (1/4 in.) 700 Models only], .094 (3/32 in.), or .125 (1/8 in.).

When one of the listed tungsten sizes is selected, the following TIG starting parameters are preset: Amperage, Start Time, Start Slope Time, and Preset Amperage Minimum. There are a separate set of parameters for AC and DC (to select polarity see Section C).

If it is necessary or desired to manually set the TIG starting parameters, turn the encoder until GEN is displayed on the amps meter and Amperage (A) switch pad LED turns on (see Section B).

B. Selecting GEN

1. Encoder Control
2. Amps Meter
3. Amperage Switch Pad

If GEN is selected and displayed on the amps meter, the TIG starting parameters for a .094 tungsten are the default, and for AC polarity they are: Start Polarity = EP, Start Amperage = 120 A, Start Time = 20 ms, Start Slope Time = 10 ms, Preset Minimum Amps = 5 A. For DC polarity they are: Start Polarity = EN, Start Amperage = 60 A, Start Time = 1 ms, Start Slope Time = 40 ms, Preset Minimum Amps = 5 A. These parameters can be manually changed by pressing the Amperage switch pad to step through each adjustable parameter. To change parameters, see Sections C, D, E, F, and G.
c. Changing Programmable TIG Start Polarity (Dynasty Models Only)

1 Amperage Switch Pad
2 Encoder Control
3 Amps Meter

To adjust TIG Start Polarity proceed as follows:
Press Amperage switch pad until the current Start Polarity, (SEL) [E−] or [SEL](EP), is displayed on meters, and can be adjusted (see Section 6-14) by turning the Encoder control.

To change Start Amperage, proceed to Section D.

D. Changing Programmable TIG Start Amperage

1 Amperage Switch Pad
2 Encoder Control
3 Amps Meter

To adjust TIG Start Amperage proceed as follows:
Press Amperage switch pad until the current Start Amperage is displayed on the amps meter, and can be adjusted (see Section 6-14) by turning the Encoder control.

To change Start Time, proceed to Section D.
E. Changing Programmable Start Time

1. Amperage Switch Pad
2. Encoder Control
3. Amps Meter

To adjust Programmable Start Time proceed as follows:

Press Amperage switch pad until the current Start Time is displayed in milliseconds on the amps meter, and can be adjusted by turning the Encoder control (see Section 6-14).

To change Start Slope Time, proceed to Section F.

F. Changing Start Slope Time

1. Amperage Switch Pad
2. Encoder Control
3. Amps Meter

To adjust Start Slope Time proceed as follows:

Press Amperage switch pad until the Start Slope Time is displayed in milliseconds on the amps meter, and can be adjusted (see Section 6-14) by turning the Encoder control.

To change Preset Amperage Minimum, proceed to Section G.

G. Changing Preset Amperage Minimum

1. Amperage Switch Pad
2. Encoder Control
3. Amps Meter

Press Amperage switch pad until the Preset Minimum Amperage is displayed on the amps meter, and can be adjusted (see Section 6-14) by turning the Encoder control. The preset amperage minimum can be independently set for AC and DC.

Whatever amperage is selected as the preset amperage minimum, is the minimum amperage that the machine will provide in either AC or DC.
7-3. Programmable TIG Start Parameters For Models With Advanced Automation Capabilities

A. OFF/ON (Start Amperage And Time) For Models W/Advanced Automation Capabilities

When pin 25 of the 28-pin automation connection receptacle (see Section 5-5) is selected, Advanced Automation TIG Start Amperage and Start Time may be turned on. Off is the default setting. Use Encoder control to select On. When On is selected, the Amperage switch pad LED turns on. Dynasty models have a separate set of parameters for AC and DC. The AC and DC parameters are selected remotely through pin 28 of the 28-pin automation receptacle where EP (electrode positive = AC, and EN (electrode negative) = DC.

Preset Advanced Automation TIG Start Parameters
Default values for Advanced Automation TIG Start Amperage and Start Time are as follows: AC Start Amperage = 50A, AC Start Time = 30ms. DC Start Amperage = 30A and DC Start Time = 30ms.

If it is necessary or desired to change the Advanced Automation TIG Start Amperage and Start Time values from the default values, press the amperage switch pad to step through each adjustable parameter (see Sections B and C).

B. Changing Programmable TIG Start Amperage For Models With Advanced Automation Capabilities

To adjust TIG Start Amperage proceed as follows:
Press Amperage switch pad until the current start amperage is displayed. The current Start Amperage is displayed on the amps meter, and can be adjusted (see Section 6-14) by turning the Encoder control.

To change Start Time, proceed to Section C.
C. Changing Programmable Start Time For Models With Advanced Automation Capabilities

1. Amperage Switch Pad
2. Encoder Control
3. Amps Meter

To adjust Programmable Start Time proceed as follows:
Press Amperage switch pad until the current start time is displayed. The current Start Time is displayed in milliseconds on the amps meter, and can be adjusted by turning the Encoder control (see Section 6-14).

7-4. Output Control And Trigger Functions

A. Remote (Standard) Torch Trigger Operation

P/H = Push trigger and hold
R = Release trigger.

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.

If torch trigger is held more than 3 seconds, operation reverts to RMT STD (Remote Standard) mode.
**C. 3T Specific Trigger Method**

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.

   **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.

   ![Remote Trigger Operation Diagram](image)

**D. 4T Specific Trigger Method**

1. **4T (Specific Trigger Operation)**
2. **Encoder Control**
   - To select 4T, turn Encoder control.
   - Torch trigger operation is as shown.
   - 4T allows the operator to toggle between weld current and final current.

   **Diagram:**
   - ![Torch Trigger Operation Diagram](image)

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

   - 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 any time by pressing and releasing both initial and final switches, or by lifting the torch and breaking the arc.
E. Mini Logic Operation

1. Mini Logic Meter Display
2. Encoder Control

To select Mini Logic, turn Encoder control.

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.

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.

F. 4T Momentary Operation

1. 4T Momentary Meter Display
2. Encoder Control

To select 4T Momentary, turn Encoder control.

4T Momentary torch trigger operation is as shown.

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.
G. On Trigger Operation

Voltage (V)

ON

2 Sec

Current (A)

Stick

Initial Amperage

Initial Slope

Main Amperage

Lift

Initial Amperage

Initial Slope

Main Amperage

*Final Amperage

*Final Slope

Touch Stick Electrode

Lift Stick Electrode

Touch Current

Touch Tungsten

Lift Tungsten Slightly

Lift Tungsten

*Becomes active with Spot Time enabled.
7-5. AC Waveshape Selection (Dynasty Models Only)

1 Memory Switch Pad
Each memory location can select any of four wave shapes.

2 Encoder
Use the Encoder, at any of the nine memory locations, to select between advanced squarewave [ADVS], soft squarewave [SOFT] (default), sine wave [Sine], or triangle wave [TRI].

Application: Use advanced 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.

During normal operation, when EN or EP Amperage is selected, the left parameter screen will display the active waveshape [ADVS], [Soft], [Sine], or [TRI] and the independent amplitude selection (see Section 7-6) as a reminder.

7-6. Independent Amplitude Selection

1 Encoder Control
2 Ammeter Parameter Selection
To change between same [Same] and independent [INDP] amplitude adjustment, turn encoder control.

Application: Use same if it is desired to have the same amperage set for both the electrode negative (EN) and electrode positive (EP) halves of the cycle. Use independent if you wish to set a different amperage for each half of the weld cycle for more control of the cleaning action and longer tungsten life (see Section 6-12).

7-7. Spot Enable

1 Encoder
2 Ammeter Parameter Selection
3 Amperage Switch Pad
Turn Encoder control to turn Spot on and off. Once on, exit set-up and press Amperage control switch pad twice and turn Encoder control to set spot time. The spot time default is zero for each program. Spot Enable works in RMT STD and RMT 2T Hold only. When a foot control is connected, amperage is controlled at the machine, not by a remote control.

Application: Used for tacking and thin sheet joining.
7-8. Stick Open-Circuit Voltage (OCV) Selection

<table>
<thead>
<tr>
<th>Encoder Control</th>
<th>OCV</th>
<th>LOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn Encoder to change between low OCV and normal OCV. 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 72 volts.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

7-9. Stick Stuck Check Selection

<table>
<thead>
<tr>
<th>Encoder Control</th>
<th>STUC</th>
<th>ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn Encoder to change between Stick Stuck Check [ON and [OFF] meter display. When Stick Stuck Check is on and the welding electrode (rod) is stuck, output is turned off.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Application: For most Stick applications, use Stick Stuck Check off. With Stick Stuck Check on and the welding electrode (rod) stuck, output is turned off in an attempt to save the rod for reuse. This allows the operator time to un-stick the rod, or disconnect the rod holder from the rod without arc occurring. Turn Stick Stuck Check on when this function is desired.

Some applications may require Stick Stuck Check to be turned off. For example: Large stick electrodes operating at high amperages would require Stick Stuck Check to be turned off.

7-10. Lockout Functions

A. Accessing Lockout Capability

See Section 6-1 for explanation of controls referred to in all of Section 7-10.

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

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

To turn On the lockout feature, proceed as follows:

1 Encoder Control
2 Amperage (A) Switch Pad
Press Amperage (A) switch pad to toggle between the lock and code displays. Toggle switch pad until code is displayed.
Turn Encoder control to select a lockout code number. The code number will appear on the amp meter. Select any number from 1 thru 999. IMPORTANT: remember this code number, as you will need it to turn the lockout feature off.

To turn Off the lockout feature, proceed as follows:

1 Encoder Control
2 Amperage (A) Switch Pad
Press the Amperage (A) switch pad. The amperage (right) meter display will change to [OFF]. The lockout feature is now off.
B. Lockout Levels

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

Level 1

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 6-6) 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 6-8). The On function is also available if TIG Lift Arc was active.

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, [LOCK][LEV1] is displayed as a reminder.

Level 2

Remote amperage control is not available in level 2.

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

When parameter change or selection is limited by lock level 2, [LOCK][LEV2] is displayed as a reminder.

Level 3

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 [LOCK][LEV3] 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, [LOCK][LEV3] 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 5-4.

When parameter change or selection is limited by lock level 4, [LOCK][LEV4] is displayed as a reminder.
7-11. Pulse Welding Display Options

1 Encoder Control
2 Ammeter Parameters Select Display
   Turn Encoder to change between [V/A], [OFF], and [AVG] pulse welding display options.
   [V/A] Amperage preset displays peak amperage for both AC and DC TIG pulser. While pulse welding at one pulse per second and above in DC TIG, meters display average voltage and amperage. While pulse welding in AC TIG, meter display may not be stable, and are for reference only.
   [OFF] Amperage preset displays peak amperage for both AC and DC TIG pulser. Meters display [PULS] [WELD] while pulse welding. Meter Hold function is disabled. While in a non-pulse welding mode, weld voltage and amperage display and meter hold capabilities are not effected.
   [AVG] Amperage preset displays average amperage for DC TIG pulser, and peak amperage for AC TIG pulser. While pulse welding at one pulse per second and above in DC TIG, meters display average voltage and amperage. While pulse welding in AC TIG, meter display may not be stable, and are for reference only.

7-12. DC Meter Calibration

1 Encoder Control
2 Ammeter Parameters Select Display
3 Amperage Switch Pad
4 Voltage Parameters Select Display
   Voltage Calibration:
   Voltage Calibration:
   The voltage calibration range is ±9.9 volts.

   To calibrate the machine's voltage meter to a load bank's voltage meter, add or subtract the difference between the voltage found on the machine's voltage meter and the voltage meter on the load bank. For example:
   MachineMeter LoadBankMeter SetMCAL
   Amps
   100 A  105 A  +5 A
   100 A  95 A  −5 A

   To calibrate the machine's voltage meter to a load bank's voltage meter, add or subtract the difference between the voltage found on the machine's voltage meter and the voltage meter on the load bank. For example:
   MachineMeter LoadBankMeter SetMCAL
   Volts
   10.0 V  10.5 V  +0.5 V
   10.0 V  9.5 V  −0.5 V
SECTION 8 – MAINTENANCE AND TROUBLESHOOTING

8-1. Routine Maintenance

**Disconnect power before maintaining.**

### A. Welding Power Source

<table>
<thead>
<tr>
<th>Task</th>
<th>Action</th>
<th>Frequency</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weld Terminals</td>
<td><img src="#" alt="Check" /></td>
<td>Every 3 Months</td>
<td><img src="#" alt="Repair" /></td>
</tr>
<tr>
<td>Labels</td>
<td><img src="#" alt="Check" /></td>
<td>Every 3 Months</td>
<td><img src="#" alt="Change" /></td>
</tr>
<tr>
<td>Gas Hoses</td>
<td><img src="#" alt="Check" /></td>
<td>Every 3 Months</td>
<td><img src="#" alt="Replace" /></td>
</tr>
<tr>
<td>Cables and Cords</td>
<td><img src="#" alt="Check" /></td>
<td>Every 6 Months</td>
<td><img src="#" alt="Repair" /></td>
</tr>
</tbody>
</table>

*To be done by Factory Authorized Service Agent*

### B. Cooler

<table>
<thead>
<tr>
<th>Task</th>
<th>Action</th>
<th>Frequency</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coolant Strainer</td>
<td><img src="#" alt="Check" /></td>
<td>Every 3 Months</td>
<td>Blow out heat exchanger fins. Check coolant level. Top off with distilled or deionized water if necessary.</td>
</tr>
<tr>
<td>Hoses</td>
<td><img src="#" alt="Check" /></td>
<td>Every 6 Months</td>
<td><img src="#" alt="Replace" /></td>
</tr>
<tr>
<td>Labels</td>
<td><img src="#" alt="Check" /></td>
<td>Every 12 Months</td>
<td><img src="#" alt="Replace" /></td>
</tr>
</tbody>
</table>

*To be done by Factory Authorized Service Agent*

**Replace coolant.**
8-2. Blowing Out Inside of Unit

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

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

8-3. Coolant Maintenance

**Warning:** Disconnect input power before maintaining.

1. Coolant Filter

Unscrew housing to clean filter.

Changing coolant: Drain coolant by tipping unit to rear, or use suction pump. Fill with clean water and run for 10 minutes. Drain and refill with coolant (see section 5-11).

**Tip:** If replacing hoses, use hoses compatible with ethylene glycol, such as Buna-n, Neoprene, or Hypalon. Oxy-acetylene hoses are not compatible with any product containing ethylene glycol.

Tools Needed:

- m30 Torx
8-4. Troubleshooting

A. Voltmeter/Ammeter And Cooler Help Displays

![HELP 1 30]

- **Help 30 Display**
  Indicates a short or open 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 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 Display**
  Indicates a short or open 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 34 Display**
  Indicates a short or open 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 8 Display**
  Indicates an open circuit condition. Contact a Factory Authorized Service Agent if this display is shown.

- **Help 14 Display**
  Unit not ready. Primary circuit bus not up to full power.

- **Help 16 Display**
  Secondary clamp voltage too high. Straighten out or shorten weld cables. If this does not correct the problem, contact a Factory Authorized Service Agent.

- **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 supply to the control and interface board PC6 failure. Possible cause is a short in Pin A or Pin B of the remote control.

2 Typical Voltmeter/Ammeter Worded Help Displays. [TOP] or [BOT] will display after the message to identify the affected engine on 700 models.

- **[Over][Temp]**
  On for two seconds then flashes:
  - [Sec] – Indicates the left side of the unit has overheated. The unit has shut down to allow the fan to cool it (see Section 4-5). Operation will continue when the unit has cooled.
  - [PRI] – Indicates the right side of the unit has overheated. The unit has shut down to allow the fan to cool it (see Section 4-5). Operation will continue when the unit has cooled.
  - [Ind] – Indicates that the input inductor has overheated. The unit has shut down to allow the fans to cool it (see Section 4-5). Operation will continue when the unit has cooled.
  - [Low][Line]
    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.
  - [High][Line]
    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.
  - [Rel][RMT]
    Indicates that the torch trigger is depressed. Release trigger to continue.
  - [Not][Vald]
    Indicates a non-allowable set-up on the front panel.
  - [Auto][Stop]
    Output disable open causing weld output to stop, but gas continues to flow.
  - [Out][Lmt]
    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.
  - [Adv][Auto]
    Indicates a non-allowable setup on the front panel due to an Advanced Automation selection being active (see Section 7).
  - [Lock][Lev 1] 2, 3, or 4
    Indicates a non-allowable setup on the front panel due to the current lockout selection (see Section 7-10).
  - [Err][Gnd]
    Turn Off input power and have qualified persons inspect unit. To clear error, turn power Off and back On.
    Error is displayed only if option is installed and error occurs.
    Err GND indicates current is present on green or green/yellow grounding conductor.
    As a result, machine weld output is disabled.
    ERR GND may be caused by a live conductor contacting the chassis.
    ERR GND may be caused by work clamp not connected to work piece.
B. Troubleshooting Table

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>No weld output; unit completely inoperative.</td>
<td>Place line disconnect switch in On position (see Section 5-15).</td>
</tr>
<tr>
<td></td>
<td>Check and replace line fuse(s), if necessary, or reset circuit breaker (see Section 5-15).</td>
</tr>
<tr>
<td></td>
<td>Check for proper input power connections (see Section 5-15).</td>
</tr>
<tr>
<td>No weld output; meter display On.</td>
<td>If using remote control, be sure correct process is enabled to provide output control at Remote 14 receptacle (see Sections 6-1 and 5-4).</td>
</tr>
<tr>
<td></td>
<td>Input voltage outside acceptable range of variation (see Section 5-14).</td>
</tr>
<tr>
<td></td>
<td>Check, repair, or replace remote control.</td>
</tr>
<tr>
<td></td>
<td>Unit overheated and [Over][Temp] is displayed. Allow unit to cool with fan On (see Section 4-5).</td>
</tr>
<tr>
<td>Erratic or improper weld output.</td>
<td>Use proper size and type of weld cable (see Section 5-2).</td>
</tr>
<tr>
<td></td>
<td>Clean and tighten all weld and gas connections.</td>
</tr>
<tr>
<td>No 115 volts AC output at cooler receptacle.</td>
<td>Reset circuit breaker CB1 (see Section 5-8).</td>
</tr>
<tr>
<td>Fan not operating. Fan only runs when cooling is necessary.</td>
<td>Check for and remove anything blocking fan movement.</td>
</tr>
<tr>
<td></td>
<td>Have Factory Authorized Service Agent check fan motor.</td>
</tr>
<tr>
<td>Wandering arc</td>
<td>Use proper size tungsten (see Section 12-1).</td>
</tr>
<tr>
<td></td>
<td>Use properly prepared tungsten (see Section 12-2).</td>
</tr>
<tr>
<td></td>
<td>Reduce gas flow rate.</td>
</tr>
<tr>
<td>Tungsten electrode oxidizing and not remaining bright after conclusion of weld.</td>
<td>Shield weld zone from drafts.</td>
</tr>
<tr>
<td></td>
<td>Increase postflow time (see Section 6-11).</td>
</tr>
<tr>
<td></td>
<td>Check and tighten all gas fittings.</td>
</tr>
<tr>
<td></td>
<td>Water in torch. Refer to torch manual.</td>
</tr>
</tbody>
</table>

SECTION 9 – PARTS LIST

9-1. Recommended Spare Parts

<table>
<thead>
<tr>
<th>Description</th>
<th>Dia.</th>
<th>Mkgs.</th>
<th>Part No.</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen, Filter</td>
<td>257415</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A complete Parts List is available on-line at www.MillerWelds.com
Figure 10-1. Circuit Diagram For Dynasty 350 Models
Figure 10-4. Circuit Diagram For Dynasty 700 Models (Part 2 of 2)
Figure 10-7. Circuit Diagram For Cooler
11-1. Welding Processes Requiring High Frequency

1 High-Frequency Voltage
TIG – helps arc jump air gap between torch and workpiece and/or stabilize the arc.

11-2. Installation Showing Possible Sources Of HF Interference

Best Practices Not Followed

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
Recommended Installation To Reduce HF Interference

1. High-Frequency Source (welding power source with built-in HF or separate HF unit)
   Ground metal machine case (clean paint from around hole in case, and use case screw), 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.

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.

Best Practices Followed

Metal Building Requirements

Metal Building

Nonmetal Building

Ground workpiece if required by codes.

Ground all metal objects and all wiring in welding zone using #12 AWG wire.

Ref. S-0695 / Ref. S-0695
SECTION 12 – SELECTING AND PREPARING A TUNGSTEN FOR DC OR AC WELDING WITH INVERTER MACHINES

12-1. Selecting Tungsten Electrode (Wear Clean Gloves To Prevent Contamination Of Tungsten)

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

Not all tungsten electrode manufacturers use the same colors to identify tungsten type. Contact the tungsten electrode manufacturer or reference the product packaging to identify the tungsten you are using.

<table>
<thead>
<tr>
<th>Electrode Diameter</th>
<th>Amperage Range - Gas Type - Polarity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(DCEN) – Argon</td>
</tr>
<tr>
<td></td>
<td>Direct Current Electrode Negative</td>
</tr>
<tr>
<td></td>
<td>(For Use With Mild Or Stainless Steel)</td>
</tr>
<tr>
<td></td>
<td>AC – Argon</td>
</tr>
<tr>
<td></td>
<td>Balance Control @ 65% Electrode Negative</td>
</tr>
<tr>
<td></td>
<td>(For Use With Aluminum)</td>
</tr>
<tr>
<td>.010 in. (.25 mm)</td>
<td>Up to 25</td>
</tr>
<tr>
<td>.020 in. (.50 mm)</td>
<td>15-40</td>
</tr>
<tr>
<td>.040 in. (1 mm)</td>
<td>25-85</td>
</tr>
<tr>
<td>1/16 in. (1.6 mm)</td>
<td>50-160</td>
</tr>
<tr>
<td>3/32 in. (2.4 mm)</td>
<td>130-250</td>
</tr>
<tr>
<td>1/8 in. (3.2 mm)</td>
<td>250-400</td>
</tr>
<tr>
<td>5/32 in. (4.0 mm)</td>
<td>400-500</td>
</tr>
<tr>
<td>3/16 in (4.8 mm)</td>
<td>500-750</td>
</tr>
<tr>
<td>1/4 in. (6.4 mm)</td>
<td>750-1000</td>
</tr>
<tr>
<td>2% Ceria, 1.5% Lanthanum, Or 2% Thorium Alloy Tungstens</td>
<td>Up to 20</td>
</tr>
<tr>
<td></td>
<td>15-35</td>
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<tr>
<td></td>
<td>20-80</td>
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<td>50-150</td>
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<td>300-450</td>
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<td></td>
<td>400-500</td>
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<td></td>
<td>600-800</td>
</tr>
</tbody>
</table>

Typical argon shielding gas flow rates are 11 to 35 CFH (cubic feet per hour).

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

12-2. Preparing Tungsten Electrode For DC Electrode Negative (DCEN) Welding Or AC Welding With Inverter Machines

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.

Ideal Tungsten Preparation – Stable Arc

1 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 A 2% ceriated tungsten is recommended.
3 Diameter of this flat determines amperage capacity.
4 Grind lengthwise, not radial.
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. If notification is submitted as an online warranty claim, the claim must include a detailed description of the fault and the troubleshooting steps taken to identify failed components and the cause of their failure.

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

1. 5 Years Parts — 3 Years Labor
   - Original Main Power Rectifiers Only to Include SCRs, Diodes, and Discrete Rectifier Modules
2. 3 Years — Parts and Labor
   - Auto-Darkening Helmet Lenses (Except Classic Series) (No Labor)
   - Engine Driven Welder/Generators

   (NOTE: Engines are Warranted Separately by the Engine Manufacturer.)
   - Inverter Power Sources (Unless Otherwise Stated)
   - Plasma Arc Cutting Power Sources
   - Process Controllers
   - Semi-Automatic and Automatic Wire Feeders
   - Transformer/Rectifier Power Sources
3. 2 Years — Parts and Labor
   - Auto-Darkening Helmet Lenses – Classic Series Only (No Labor)
   - Fume Extractors – Capture 5, Filtar 400 and Industrial Collector Series
4. 1 Year — Parts and Labor Unless Specified
   - Automatic Motion Devices
   - CoolBelt and CoolBand Blower Unit (No Labor)
   - Desiccant Air Dryer System
   - External Monitoring Equipment and Sensors
   - Field Options

   (NOTE: Field options are covered for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)
   - RFCS Foot Controls (Except RFCS-RJ4S)
   - Fume Extractors – Filtar 130, MWX and SWX Series
   - HF Units
   - ICE/XT Plasma Cutting Torches (No Labor)
   - Induction Heating Power Sources, Coolers

   (NOTE: Digital Recorders are Warranted Separately by the Manufacturer.)
   - LiveArc Welding Performance Management System
   - Load Banks
   - Motor-Driven Guns (except Spoolmate Spoolguns)
   - PAPR Blower Unit (No Labor)
   - Positioners and Controllers
   - Racks
   - Running Gear/Trailers
   - Spot Welders
   - Subarc Wire Drive Assemblies
   - Water Coolant Systems
   - TIG Torches (No Labor)
   - Wireless Remote Foot/Hand Controls and Receivers
   - Work Stations/Weld Tables (No Labor)

5. 6 Months — Parts
   - Batteries
   - Bernard Guns (No Labor)
   - Tregaskiss Guns (No Labor)
6. 90 Days — Parts
   - Accessories (Kits)
   - Canvas Covers
   - Induction Heating Coils and Blankets, Cables, and Non-Electronic Controls
   - M-Guns
   - MIG Guns and Subarc (SAW) Torches
   - Remote Controls and RFCS-RJ4S
   - Replacement Parts (No labor)
   - Roughneck Guns
   - Spoolmate Spoolguns

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

1. Consumable components; such as contact tips, cutoff nozzles, contactors, brushes, relays, work station table tops and welding curtains, or parts that fail due to normal wear. (Exception: brushes and relays are covered on all engine-driven products.)
2. Items furnished by Miller, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer’s warranty, if any.
3. Equipment that has been modified by any party other than Miller, or 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, GUARANTEE 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.

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Serial/Style Number</th>
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<table>
<thead>
<tr>
<th>Purchase Date</th>
<th>(Date which equipment was delivered to original customer.)</th>
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<table>
<thead>
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<th>Distributor</th>
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</table>

<table>
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<table>
<thead>
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<table>
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<tr>
<th>State</th>
<th>Zip</th>
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</table>

# For Service

*Contact a DISTRIBUTOR or SERVICE AGENCY near you.*

Always provide Model Name and Serial/Style Number.

<table>
<thead>
<tr>
<th>Contact your Distributor for:</th>
<th>Welding Supplies and Consumables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Options and Accessories</td>
</tr>
<tr>
<td></td>
<td>Personal Safety Equipment</td>
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<tr>
<td></td>
<td>Service and Repair</td>
</tr>
<tr>
<td></td>
<td>Replacement Parts</td>
</tr>
<tr>
<td></td>
<td>Training (Schools, Videos, Books)</td>
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<tr>
<td></td>
<td>Technical Manuals (Servicing Information and Parts)</td>
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<tr>
<td></td>
<td>Circuit Diagrams</td>
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<tr>
<td></td>
<td>Welding Process Handbooks</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Contact the Delivering Carrier to:</th>
<th>File a claim for loss or damage during shipment.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For assistance in filing or settling claims, contact your distributor and/or equipment manufacturer’s Transportation Department.</td>
</tr>
</tbody>
</table>