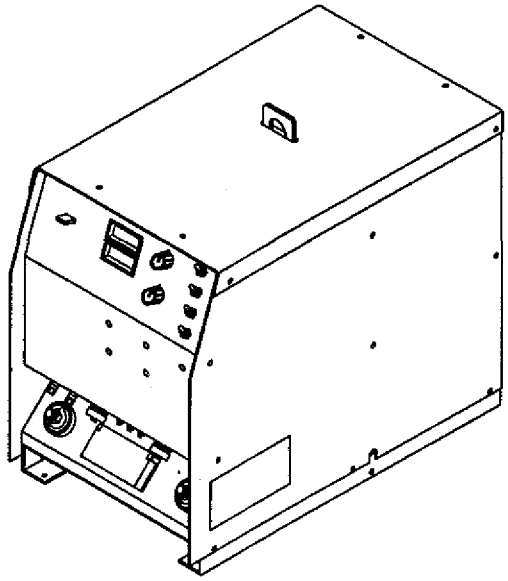
Miller®

April 1996 Form: OM-2206G
Effective With Serial No. KG111783

OWNER'S MANUAL



Maxtron™ 450

CC/CV DC Welding Power Source For GMAW, GTAW, SMAW, FCAW, CAC-A, GMAW-P, GTAW-P, And SAW Welding

Input Power	Rated Welding Output	Voltage Range In CV Mode	Amperage Range In CC Mode	Maximum Open-Circuit Voltage DC	Amperes Input At Rated Load Output 60 Hz, Three-Phase				
					230 V	460 V	575 V	KVA	KW
Three Phase	450 A @ 38 Volts DC, 100% Duty Cycle; 565 A, 43 Volts DC, 60% Duty Cycle	10 – 38	5 – 565	80	72 (2.0)*	36 (1.0)*	29 (0.8)*	28 (0.23)*	20 (0.17)*
Single Phase	325 A @ 33 Volts DC, 100% Duty Cycle; 325 A, 33 Volts DC, 60% Duty Cycle	10 – 38	5 – 325	80	89.6 (2.0)*	47.2 (1.0)*	37.7 (0.8)*	18 (0.23)*	13 (0.17)*

*While idling

MILLER'S TRUE BLUE® LIMITED WARRANTY

Effective February 7, 1996
(Equipment with a serial number preface of "KD" or newer)

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

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

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

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

1. *5 Years Parts – 3 Years Labor*
   - *Original main power rectifiers*
   - Inverters (input and output rectifiers only)
2. 3 Years — Parts and Labor
   - Transformer/Rectifier Power Sources
   - Plasma Arc Cutting Power Sources
   - Semi-Automatic and Automatic Wire Feeders
   - *Inverter Power Supplies*
   - Intellitig
   - Robots (1 year labor)
3. 2 Years — Parts and Labor
   - Engine Driven Welding Generators
     (*NOTE*: Engines are warranted separately by the engine manufacturer.)
   - Air Compressors
4. 1 Year — Parts and Labor
   - Motor Driven Guns
   - Process Controllers
   - IHPS Power Sources
   - Water Coolant Systems
   - HF Units
   - Grids
   - Spot Welders
   - *Load Banks*
   - SDX Transformers
   - Miller Cyclomatic Equipment
   - Running Gear/Trailers
   - Plasma Cutting Torches (except APT, ZIPCUT & PLAZCUT Models)
   - Tecumseh Engines
   - Deutz Engines (outside North America)
   - Field Options
     (NOTE: Field options are covered under True Blue® for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)
5. 6 Months — Batteries
6. 90 Days — Parts and Labor
   - MIG Guns/TIG Torches
   - APT, ZIPCUT & PLAZCUT Model Plasma Cutting Torches
   - Remote Controls
   - *Accessory Kits*
   - Replacement Parts

MILLER'S True Blue® Limited Warranty shall not apply to:

1. 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.
2. Consumable components; such as contact tips, cutting nozzles, contactors and relays or parts that fail due to normal wear.
3. Equipment that has been modified by any party other than MILLER, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

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

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

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

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

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

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

WHO DO I CONTACT?

For help,
- contact your distributor

For *additional information, such as*
- Technical Manuals (Service And Parts)
- Engine Manuals
- Circuit And Wiring Diagrams
- Process Handbooks
- User's Guides
- Distributor Directories

- contact your distributor

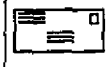
To file a claim for loss or damage during shipment,
- contact the delivering carrier

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

Miller Electric Mfg. Co.

- CALL:
  414-735-4505

- FAX:
  800-637-2348 (in USA), or
  414-735-4136 (outside USA)



- WRITE:
  Miller Electric Mfg. Co.
  P.O. Box 1079
  Appleton, WI 54912 USA

Always provide Model Name and Serial or Style Number

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SECTION 1 – SAFETY PRECAUTIONS FOR ARC WELDING

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1-1. Symbol Usage

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

▲ **Marks a special safety message.**

☞ *Means NOTE; not safety related.*

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

1-2. Arc Welding Hazards

⚠ WARNING

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 1-4. Read and follow all Safety Standards.

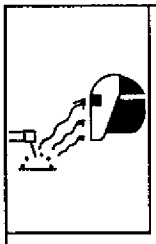
Only qualified persons should install, operate, maintain, and repair this unit.

During operation, keep everybody, especially children, away.

ELECTRIC SHOCK can kill.

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

1. Do not touch live electrical parts.
2. Wear dry, hole-free insulating gloves and body protection.
3. Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.
4. 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).
5. Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
6. 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.
7. When making input connections, attach proper grounding conductor first – double-check connections.
8. Frequently inspect input power cord for damage or bare wiring – replace cord immediately if damaged – bare wiring can kill.
9. Turn off all equipment when not in use.
10. Do not use worn, damaged, undersized, or poorly spliced cables.
11. Do not drape cables over your body.
12. If earth grounding of the workpiece is required, ground it directly with a separate cable – do not use work clamp or work cable.
13. Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.
14. Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.
15. Wear a safety harness if working above floor level.
16. Keep all panels and covers securely in place.
17. Clamp work cable with good metal-to-metal contact to workpiece or worktable as near the weld as practical.



ARC RAYS can burn eyes and skin; NOISE can damage hearing; FLYING SLAG OR SPARKS can injure eyes.

Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Noise from some processes can damage hearing. Chipping, grinding, and welds cooling throw off pieces of metal or slag.

NOISE

1. Use approved ear plugs or ear muffs if noise level is high.

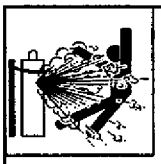
ARC RAYS

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

FUMES AND GASES can be hazardous to your health.

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

1. Keep your head out of the fumes. Do not breathe the fumes.
2. If inside, ventilate the area and/or use exhaust at the arc to remove welding fumes and gases.
3. If ventilation is poor, use an approved air-supplied respirator.
4. Read the Material Safety Data Sheets (MSDSs) and the manufacturer's instruction for metals, consumables, coatings, cleaners, and degreasers.
5. Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watchperson nearby. Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
6. 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.
7. 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 if necessary, while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.



CYLINDERS can explode if damaged.

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

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

WELDING can cause fire or explosion.

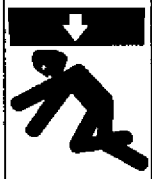
Welding on closed containers, such as tanks, drums, or pipes, can cause them to blow up. Sparks can fly off from the welding arc. The flying sparks, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode to metal objects can cause sparks, explosion, overheating, or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

1. Protect yourself and others from flying sparks and hot metal.
2. Do not weld where flying sparks can strike flammable material.
3. Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
4. Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
5. Watch for fire, and keep a fire extinguisher nearby.
6. Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
7. Do not weld on closed containers such as tanks, drums, or pipes, unless they are properly prepared according to AWS F4.1 (see Safety Standards).
8. 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 and fire hazards.
9. Do not use welder to thaw frozen pipes.
10. Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
11. Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.
12. Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding.

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

FIRE OR EXPLOSION can result from placing unit on, over, or near combustible surfaces.

1. Do not locate unit on, over, or near combustible surfaces.
2. Do not install unit near flammables.



FALLING EQUIPMENT can cause serious personal injury and equipment damage.

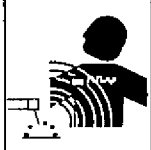
1. Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories.
2. Use equipment of adequate capacity to lift unit.
3. If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.

HOT PARTS can cause severe burns.

1. Do not touch hot parts bare handed.
2. Allow cooling period before working on gun or torch.

MOVING PARTS can cause injury.

1. Keep away from moving parts such as fans.
2. Keep all doors, panels, covers, and guards closed and securely in place.



MAGNETIC FIELDS FROM HIGH CURRENTS can affect pacemaker operation.

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

MOVING PARTS can cause injury.

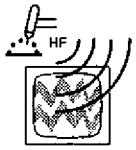
1. Keep away from moving parts.
2. Keep away from pinch points such as drive rolls.

FLYING PIECES OF METAL or DIRT can injure eyes.

1. Wear safety glasses with side shields or face shield.

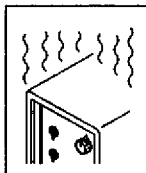
WELDING WIRE can cause puncture wounds.

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



HIGH-FREQUENCY RADIATION can interfere with radio navigation, safety services, computers, and communications equipment.

1. Have only qualified persons familiar with electronic equipment perform this installation.
2. The user is responsible for having a qualified electrician promptly correct any interference problem resulting from the installation.
3. If notified by the FCC about interference, stop using the equipment at once.
4. Have the installation regularly checked and maintained.
5. 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.

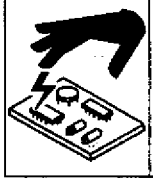


OVERUSE can cause OVERHEATED EQUIPMENT.

1. Allow cooling period.
2. Reduce current or reduce duty cycle before starting to weld again.
3. Follow rated duty cycle.

SIGNIFICANT DC VOLTAGE exists after removal of input power on inverters.

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



STATIC ELECTRICITY can damage parts on circuit boards.

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

BUILDUP OF SHIELDING GAS can harm health or kill.

1. Shut off shielding gas supply when not in use.

1-4. Principal Safety Standards

Safety in Welding and Cutting, ANSI Standard Z49.1, from American Welding Society, 550 N.W. LeJeune Rd, Miami FL 33126

Safety and Health Standards, OSHA 29 CFR 1910, from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, American Welding Society Standard AWS F4.1, from American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices For Occupation And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 1430 Broadway, New York, NY 10018.

Cutting And Welding Processes, NFPA Standard 51B, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

1-5. EMF Information

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

The following is a quotation from the General Conclusions Section of the U.S. Congress, Office of Technology Assessment, *Biological Effects of Power Frequency Electric & Magnetic Fields – Background Paper*, OTA-BP-E-53 (Washington, DC: U.S. Government Printing Office, May 1989): ". . . there is now a very large volume of scientific findings based on experiments at the cellular level and from studies with animals and people which clearly establish that low frequency magnetic fields can interact with, and produce changes in, biological systems. While most of this work is of very high quality, the results are complex. Current scientific understanding does not yet allow us to interpret the evidence in a single coherent framework. Even more frustrating, it does not yet allow us to draw definite conclusions about questions of possible risk or to offer clear science-based advice on strategies to minimize or avoid potential risks."

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

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

About Pacemakers:

The above procedures are also recommended for pacemaker wearers. Consult your doctor for complete information.

SECTION 1 – CONSIGNES DE SÉCURITÉ POUR LE SOUDAGE À L'ARC

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1-1. Signification des symboles

Signifie Mise en garde! Soyez vigilant! Cette procédure présente des risques de danger! Ceux-ci sont identifiés par des symboles adjacents aux directives.

▲ **Identifie un message de sécurité particulier.**

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

Ce groupe de symboles signifie Mise en garde! Soyez vigilant! Il y a des risques de danger reliés aux CHOCS ÉLECTRIQUES, aux PIÈCES EN MOUVEMENT et aux PIÈCES CHAUDES. Reportez-vous aux symboles et aux directives ci-dessous afin de connaître les mesures à prendre pour éviter tout danger.

1-2. Dangers relatifs au soudage à l'arc

⚠ MISE EN GARDE

Les symboles présentés ci-après sont utilisés tout au long du présent manuel pour attirer votre attention et identifier les risques de danger. Lorsque vous voyez un symbole, soyez vigilant et suivez les directives mentionnées afin d'éviter tout danger. Les consignes de sécurité présentées ci-après ne font que résumer l'information contenue dans les normes de sécurité énumérées à la section 1-4. Veuillez lire et respecter toutes ces normes de sécurité.

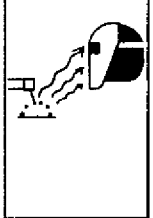
L'installation, l'utilisation, l'entretien et les réparations ne doivent être confiés qu'à des personnes qualifiées.

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

UN CHOC ÉLECTRIQUE peut tuer.

Un simple contact avec des pièces électriques peut provoquer une électrocution ou des blessures graves. L'électrode et le circuit de soudage sont sous tension dès que l'appareil est sur ON. Le circuit d'entrée et les circuits internes de l'appareil sont également sous tension à ce moment-là. En soudage semi-automatique ou automatique, le fil, le dévidoir, le logement des galets d'entraînement et les pièces métalliques en contact avec le fil de soudage sont sous tension. Des matériels mal installés ou mal mis à la terre présentent un danger.

1. Ne jamais toucher les pièces électriques sous tension.
2. Porter des gants et des vêtements de protection secs ne comportant pas de trous.
3. S'isoler de la pièce et de la terre au moyen de tapis ou d'autres moyens isolants suffisamment grands pour empêcher le contact physique éventuel avec la pièce ou la terre.
4. Couper l'alimentation ou arrêter le moteur avant de procéder à l'installation, à la réparation ou à l'entretien de l'appareil. Déverrouiller l'alimentation selon la norme OSHA 29 CFR 1910.147 (voir normes de sécurité).
5. Installer et mettre à la terre correctement cet appareil conformément à son manuel d'utilisation et au codes nationaux, provinciaux et municipaux.
6. 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.
7. En effectuant les raccordements d'entrée fixer d'abord le conducteur de mise à la terre approprié et contre-vérifier les connexions.
8. Vérifier fréquemment le cordon d'alimentation pour voir s'il n'est pas endommagé ou dénudé – remplacer le cordon immédiatement s'il est endommagé – un câble dénudé peut provoquer une électrocution.
9. Mettre l'appareil hors tension quand on ne l'utilise pas.
10. Ne pas utiliser des câbles usés, endommagés, de grosseur insuffisante ou mal épissés.
11. Ne pas enrouler les câbles autour du corps.
12. Si la pièce soudée doit être mise à la terre, le faire directement avec un câble distinct – ne pas utiliser le connecteur de pièce ou le câble de retour.
13. Ne pas toucher l'électrode quand on est en contact avec la pièce, la terre ou une électrode provenant d'une autre machine.
14. N'utiliser qu'un matériel en bon état. Réparer ou remplacer sur-le-champ les pièces endommagées. Entretenir l'appareil conformément à ce manuel.
15. Porter un harnais de sécurité quand on travaille en hauteur.
16. Maintenir solidement en place tous les panneaux et capots.
17. 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.



LE RAYONNEMENT DE L'ARC peut brûler les yeux et la peau. Le BRUIT peut endommager l'ouïe; les PROJECTIONS DE LAITIER OU LES ÉTINCELLES peuvent blesser les yeux.

L'arc de soudage produit des rayons visibles et invisibles intenses (ultraviolets et infrarouges) qui peuvent brûler les yeux et la peau. Le bruit produit par certains procédés peut endommager l'ouïe. Des projections de métal ou de laitier sont produites par le piquage, le meulage ou le refroidissement des soudures.

BRUIT

1. Utiliser des bouche-oreilles ou des serre-tête antibruit approuvés si le niveau de bruit est élevé.

RAYONNEMENT DE L'ARC

2. Porter un masque à serre-tête muni d'un verre filtrant de nuance appropriée pour protéger le visage et les yeux quand on soude ou observe la travail de soudage (voir les normes ANSI Z49.1 et Z87.1 données sous la rubrique Principales normes de sécurité).
3. Porter des lunettes de sécurité approuvées avec écrans latéraux.
4. Utiliser des paravents ou des barrières de protection pour protéger les personnes à proximité contre les coups d'arc et l'éblouissement; avertir les autres personnes de ne pas regarder l'arc.
5. Porter des vêtements de protection en tissu ignifuge durable (laine et cuir) et des chaussures de sécurité.

LES VAPEURS ET LES FUMÉES peuvent être dangereuses pour la santé.

Le soudage produit des vapeurs et des fumées qu'il est dangereux de respirer.

1. Garder la tête à l'extérieur des vapeurs et des fumées et ne pas les respirer.
2. À l'intérieur, ventiler le poste de travail ou utiliser un dispositif placé au niveau de l'arc pour évacuer les vapeurs et fumées de soudage.
3. Si la ventilation est mauvaise, utiliser un appareil respiratoire à adduction d'air pur approuvé.
4. Consulter les fiches signalétiques et les consignes du fabricant relatives au métaux, produits d'apport, revêtements, nettoyants et dégraissants.
5. Ne travailler dans un espace confiné que s'il est bien ventilé, ou en portant un appareil respiratoire à adduction d'air pur. Demander à un observateur ayant reçu la bonne formation de toujours se tenir à proximité. Les vapeurs et fumées de soudage peuvent déplacer l'air et abaisser le niveau d'oxygène et causer des blessures graves voire mortelles. S'assurer que l'air est propre à la respiration.
6. Ne pas souder à proximité d'opérations de dégraissage, de nettoyage ou de pulvérisation. La chaleur et les rayons de l'arc peuvent réagir avec les vapeurs pour former des gaz hautement toxiques et irritants.
7. Ne pas souder sur des métaux revêtus comme l'acier galvanisé, au plomb ou cadmié à moins que la pièce n'ait été entièrement décapée, que le poste de travail soit bien ventilé. S'il y a lieu, porter un appareil respiratoire à adduction d'air pur. Les revêtements et les métaux qui contiennent de tels éléments peuvent dégager des vapeurs toxiques lors du soudage.

LES BOUTEILLES peuvent exploser si elles sont endommagées.

Les bouteilles contenant des gaz de protection sont à haute pression. Une bouteille endommagée peut exploser. Étant donné que les bouteilles de gaz font normalement partie du matériel de soudage, les traiter avec le plus grand soin.

1. Protéger les bouteilles de gaz comprimé contre la chaleur intense, les chocs, le laitier, les flammes nues, les étincelles et l'arc.
2. Placer les bouteilles à la verticale en les fixant à un support fixe ou à un chariot pour éviter qu'elles ne tombent ou ne basculent.
3. Tenir les bouteilles à l'écart du poste de soudage ou d'autres circuits électriques.
4. Ne jamais poser un chalumeau soudeur sur une bouteille de gaz.
5. Ne jamais laisser une électrode de soudage toucher une bouteille.
6. Ne jamais souder sur une bouteille sous pression : elle exploserait.
7. N'utiliser que des bouteilles de gaz de protection, des détendeurs, des tuyaux souples et des raccords appropriés conçus pour l'application particulière; conserver ces matériels et leurs pièces en bon état.
8. Éloigner le visage de la sortie du robinet de la bouteille quand on l'ouvre.
9. Replacer le chapeau sur la bouteille après utilisation.
10. Lire et suivre les consignes relatives aux bouteilles de gaz comprimé, au matériel connexe ainsi que la publication P-1 de la CGA donnée sous la rubrique Principales normes de sécurité.

LE SOUDAGE peut causer un incendie ou une explosion.

Ne pas souder sur des récipients fermés comme des réservoirs, des fûts ou des tuyaux : ils peuvent exploser. L'arc de soudage peut produire des étincelles. Des étincelles, une pièce chaude et un matériel chaud peuvent provoquer des incendies et des blessures. Le contact accidentel de l'électrode sur des objets métalliques peut produire des étincelles, l'explosion, la surchauffe ou un incendie. S'assurer que le lieu ne présente pas de danger avant d'effectuer le soudage.

1. Se protéger et protéger les personnes à proximité des étincelles et du métal chaud.
2. Ne pas souder dans un endroit où les étincelles peuvent atteindre des matériaux inflammables.
3. Enlever toutes les matières inflammables dans un rayon de moins de 10 m de l'arc. Si cela n'est pas possible, bien les recouvrir en utilisant des bâches approuvées.
4. Prendre garde que les étincelles et les projections ne pénétrent dans des zones adjacentes en s'infiltrant dans des petites fissures et ouvertures.
5. Prendre garde aux incendies et toujours avoir un extincteur à proximité.
6. Se rappeler que si l'on soude sur un plafond, un plancher, une cloison ou autre, le feu peut prendre de l'autre côté.
7. Ne pas souder sur des récipients fermés comme des réservoirs, des fûts ou des tuyaux à moins qu'ils ne soient préparés de façon appropriée conformément à la norme F4.1 de l'AWS (voir la rubrique Principales normes de sécurité).
8. Raccorder le câble de retour à la pièce, le plus près possible de la zone de soudage, pour empêcher que le courant de soudage ne suive une trajectoire longue et éventuellement inconnue et qu'il ne provoque des risques d'électrocution et d'incendie.
9. Ne pas utiliser le chalumeau soudeur pour dégeler des tuyaux.
10. Enlever l'électrode enrobée du porte-électrode ou couper le fil de soudage au ras du bec contact quand on ne l'utilise pas.
11. Porter des vêtements de protection non huileux comme des gants en cuir, une chemise épaisse, des pantalons sans revers, des chaussures montantes et un casque.
12. Ne pas porter des matières combustibles sur soi comme un briquet à gaz ou des allumettes quand on soude.

1-3. Autres dangers relatifs à l'installation, l'utilisation et l'entretien

UN INCENDIE OU UNE EXPLOSION peut être causé par un appareil placé au contact, au-dessus ou à côté d'une surface combustible.

1. Ne pas placer l'appareil au contact, au-dessus ou près de surfaces combustibles.
2. Ne pas installer l'appareil à côté d'un objet ou d'un produit inflammable.

LES CHUTES D'OBJETS peuvent causer des blessures graves et endommager l'équipement.

1. N'utiliser l'anneau de levage que pour soulever l'appareil lui-même; sans train de roulement, de bouteilles de gaz ou autres accessoires.
2. Pour soulever l'appareil, utiliser des équipements de puissance suffisante.
3. Si un chariot-élévateur est utilisé pour déplacer l'appareil, les fourches doivent être plus longues que la largeur de l'appareil.

LES PIÈCES CHAUDES peuvent causer des brûlures graves.

1. Ne pas toucher aux pièces chaudes les mains nues.
2. Laisser le pistolet ou la torche refroidir avant d'y toucher.

LES PIÈCES EN MOUVEMENT peuvent causer des blessures.

1. Rester à l'écart des pièces en mouvement comme les ventilateurs.
2. S'assurer que les portes, les panneaux, les capots et les protecteurs sont bien fermés et bien à leur place.

LES PARTICULES DE MÉTAL OU DE SALETÉ peuvent provoquer des blessures aux yeux.

1. Porter des lunettes de sécurité avec écrans latéraux ou un écran facial.

LES CHAMPS MAGNÉTIQUES PRODUITS PAR LES COURANTS MAGNÉTIQUES ÉLEVÉS peuvent nuire au fonctionnement d'un stimulateur cardiaque.

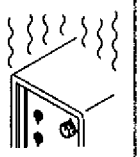
1. Les personnes qui portent un stimulateur cardiaque doivent se tenir éloignées des postes de soudage.
2. Elles devraient consulter leur médecin avant de s'approcher d'un poste de soudage à l'arc, de gougeage ou de soudage par points.

LES PIÈCES EN MOUVEMENT peuvent causer des blessures.

1. Rester à l'écart des pièces en mouvement.
2. Éviter les risques de pincement reliés par exemple aux galets d'entraînement.

LE FIL DE SOUDAGE peut percer la peau.

1. Attendre les instructions avant d'appuyer sur la gâchette.
2. Ne pas pointer le pistolet vers vous, ou vers toute autre personne ou pièce métallique au moment d'enfiler le fil de soudage.

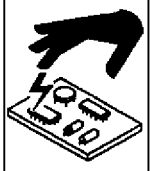


UNE SURUTILISATION peut SURCHAUFFER L'APPAREIL.

1. Laisser l'appareil refroidir.
2. Réduire le courant ou le facteur de marche avant de poursuivre le soudage.
3. Respecter le facteur de marche nominal.

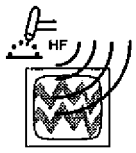
L'ACCUMULATION DE GAZ DE PROTECTION peut être nocif à la santé ou mortelle.

1. Fermer l'alimentation du gaz de protection lorsqu'on ne l'utilise pas.



L'ÉLECTRICITÉ STATIQUE peut endommager les pièces des cartes PC.

1. Porter un bracelet antistatique AVANT de manipuler une carte ou une pièce.
2. Utiliser des sacs et des boîtes antistatiques appropriés pour ranger, déplacer ou expédier des cartes PC.



LE RAYONNEMENT À HAUTE FRÉQUENCE peut perturber le fonctionnement de la radionavigation, de services de sécurité, d'ordinateurs et d'appareils de communications.

1. L'installation de matériel électronique doit être effectuée par des personnes qualifiées.
2. Si des problèmes d'interférence surviennent après l'installation, l'utilisateur de l'appareil doit avoir recours immédiatement au service d'un électricien afin de les corriger.
3. Si un avis de la Commission fédérale des communications vous est transmis concernant votre appareil, arrêtez de l'utiliser sur-le-champ.
4. Faire vérifier et entretenir l'appareil périodiquement.
5. Tenir les portes et les panneaux de la source de haute fréquence bien fermés, maintenir l'écartement des électrodes à une position appropriée, et utiliser une mise à la terre et un écran de protection pour réduire les interférences.

UNE TENSION CC IMPORTANTE est toujours présente même après que l'onduleur ait été débranché.

1. Avant de toucher à une pièce, mettre hors tension l'onduleur, débrancher l'appareil et décharger les condensateurs selon les directives de la section Entretien.

1-4. Principales normes de sécurité

Safety in Welding and Cutting, norme ANSI Z49.1, de l'American Welding Society, 550 N.W. Lejeune Rd, Miami FL 33126

Safety and Health Sandards, OSHA 29 CFR 1910, du Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Recommended Safe Practice for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, norme AWS F4.1, de l'American Welding Society, 550 N.W. Lejeune Rd, Miami FL 33126

National Electrical Code, NFPA Standard 70, de la National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, de la Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Règles de sécurité en soudage, coupage et procédés connexes, norme CSA W117.2, de l'Association canadienne de normalisation, vente de normes, 178 Rexdale Boulevard, Rexdale (Ontario) Canada M9W 1R3.

Safe Practices For Occupation And Educational Eye And Face Protection, norme ANSI Z87.1, de l'American National Standards Institute, 1430 Broadway, New York, NY 10018.

Cutting and Welding Processes, norme NFPA 51B, de la National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

1-5. Information sur les champs électromagnétiques

Données sur le soudage électrique et sur les effets, pour l'organisme, des champs magnétiques basse fréquence

L'extrait suivant est tiré des conclusions générales du document intitulé *Biological Effects of Power Frequency Electric & Magnetic Fields – Background Paper, OTA-BP-E-53 (Washington DC : U.S. Government Printing Office, mai 1989),* publié par le Office of Technology Assessment du Congrès américain : «... il existe maintenant d'abondantes données scientifiques compilées à la suite d'expériences sur la cellule ou d'études sur des animaux et des humains, qui montrent clairement que les champs électromagnétiques basse fréquence peuvent avoir des effets sur l'organisme et même y produire des transformations. Même s'il s'agit de travaux de très grande qualité, les résultats sont complexes. Cette démarche scientifique ne nous permet pas d'établir un tableau d'ensemble cohérent. Pire encore, elle ne nous permet pas de tirer des conclusions finales concernant les risques éventuels, ni d'offrir des conseils sur les mesures à prendre pour réduire sinon éliminer les risques éventuels». (Traduction libre)

Afin de réduire les champs électromagnétiques dans l'environnement de travail, respectez les consignes suivantes :

1. Gardez les câbles ensembles en les torsadant ou en les attachant avec du ruban adhésif.
2. Mettre tous les câbles du côté opposé de l'opérateur.
3. Ne courbez pas et n'entourez pas les câbles autour de vous.
4. Gardez le poste de soudage et les câbles le plus loin possible de vous.
5. Reliez la pince de masse le plus près possible de la zone de soudure.

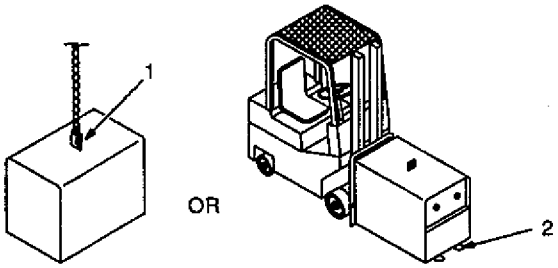
Consignes relatives aux stimulateurs cardiaques :

Les consignes mentionnées précédemment font partie de celles destinées aux personnes ayant recours à un stimulateur cardiaque. Veuillez consulter votre médecin pour obtenir plus de détails.

SECTION 2 – INSTALLATION

2-1. Selecting A Location

Movement



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 Rating Label

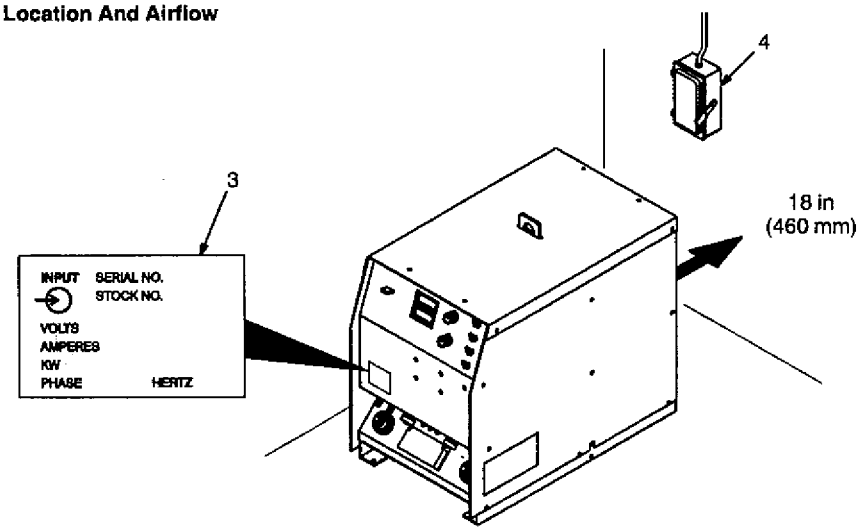
Use rating label to determine input power needs. Label is on nameplate.

4 Line Disconnect Device

Locate unit near correct input power supply.

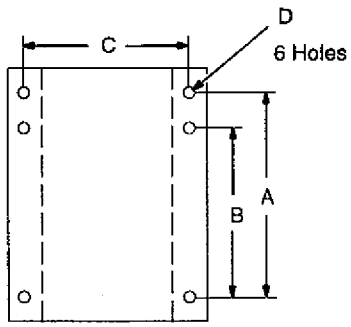
▲ **Special installation may be required where gasoline or volatile liquids are present – see NEC Article 511 or CEC Section 20.**

Location And Airflow



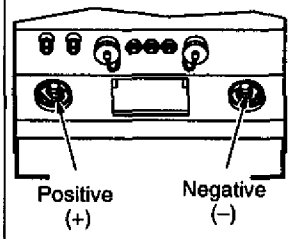
ST-800 611 / ST-150 171-C

2-2. Dimensions And Weights



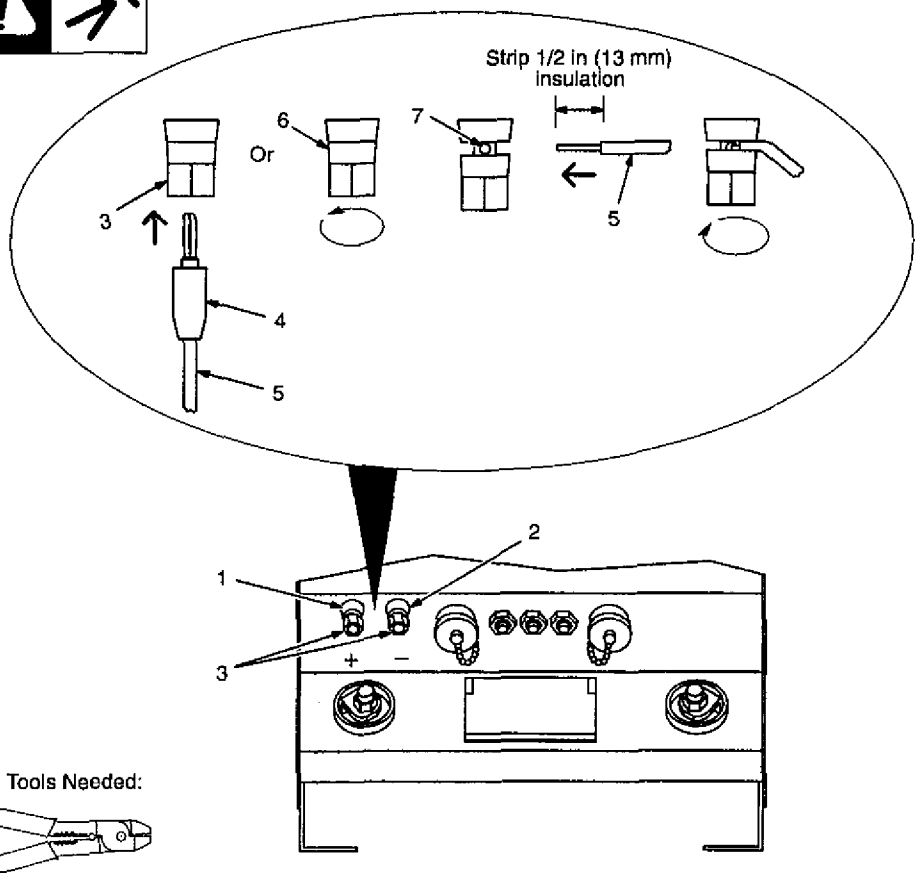
Dimensions	
Height	23 in (584 mm)
Width	15-1/2 in (394 mm)
Depth	26-1/8 in (664 mm)
A	24-1/16 in (611 mm)
B	20-3/4 in (527 mm)
C	12-3/8 in (314 mm)
D	9/32 in (7 mm) Dia
Weight	
165 lbs (75 kg)	

2-3. Weld Output Terminals And Selecting Cable Sizes

Weld Output Terminals	Welding Amperes	Total Cable (Copper) Length In Weld Circuit Not Exceeding							
		100 ft (30 m) Or Less		150 ft (45 m)	200 ft (60 m)	250 ft (70 m)	300 ft (90 m)	350 ft (105 m)	400 ft (120 m)
		10 – 60% Duty Cycle	60 – 100% Duty Cycle	10 – 100% Duty Cycle					
	100	4	4	4	3	2	1	1/0	1/0
	150	3	3	2	1	1/0	2/0	3/0	3/0
	200	3	2	1	1/0	2/0	3/0	4/0	4/0
	250	2	1	1/0	2/0	3/0	4/0	2-2/0	2-2/0
	300	1	1/0	2/0	3/0	4/0	2-2/0	2-3/0	2-3/0
	350	1/0	2/0	3/0	4/0	2-2/0	2-3/0	2-3/0	2-4/0
	400	1/0	2/0	3/0	4/0	2-2/0	2-3/0	2-4/0	2-4/0
	500	2/0	3/0	4/0	2-2/0	2-3/0	2-4/0	3-3/0	3-3/0
	600	3/0	4/0	2-2/0	2-3/0	2-4/0	3-3/0	3-4/0	3-4/0
	700	4/0	2-2/0	2-3/0	2-4/0	3-3/0	3-4/0	3-4/0	4-4/0
	800	4/0	2-2/0	2-3/0	2-4/0	3-4/0	3-4/0	4-4/0	4-4/0

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. S-0007-D

2-4. Voltage Sensing Terminal Connections



Tools Needed:

The voltage sensing terminals provide exact voltage measurement at the welding arc.

1 Positive (+) Voltage Sensing Terminal

2 Negative (–) Voltage Sensing Terminal

3 Receptacle

4 Proper Plug (Not Supplied)

5 18 Gauge Lead (Not Supplied)

6 Nut

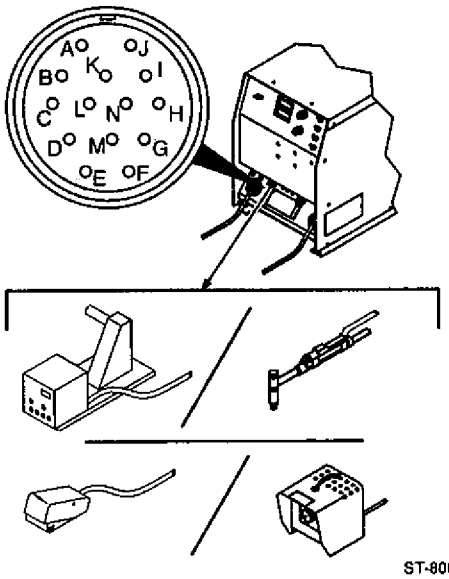
7 Lead Hole

For Electrode Positive (DCEP), connect remaining end of negative (–) terminal lead to work. Connect remaining end of positive (+) terminal lead to weld cable conductor at – electrode holder end of weld cable.

For Electrode Negative (DCEN), reverse terminal lead connections.

Ref. ST-152 069-C / Ref. ST-152 885-A

2-5. Remote 14 Receptacle Information

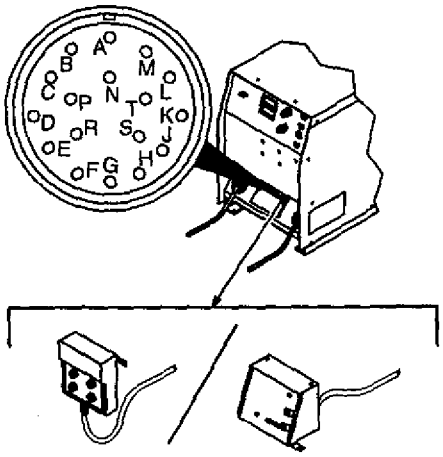


ST-800 617

REMOTE 14	Socket*	Socket Information
24 VOLTS AC OUTPUT (CONTACTOR)	A	24 volts ac. Protected by circuit breaker CB2.
	B	Contact closure to A completes 24 volts ac contactor control circuit.
115 VOLTS AC OUTPUT (CONTACTOR)	I	115 volts ac. Protected by circuit breaker CB1.
	J	Contact closure to I completes 115 volts ac contactor control circuit.
REMOTE OUTPUT CONTROL	C	Output to remote control; +10 volts dc in CV, 0 to +10 volts dc in CC.
	D	Remote control circuit common.
	E	0 to +10 volts dc input command signal from remote control.
A/V AMPERAGE VOLTAGE	F	Current feedback; +1 volt dc per 100 amperes.
	H	Voltage feedback; +1 volt dc per 10 arc volts.
GND	G	Circuit common for 24 and 115 volts ac circuits.
	K	Chassis common.

*The remaining sockets are not used.

2-6. Remote 17 Receptacle Information

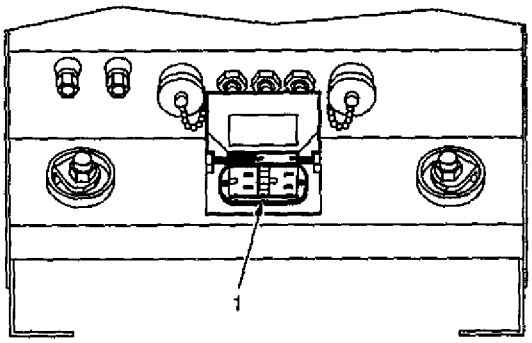


ST-800 617

REMOTE 17	Socket*	Socket Information
OUTPUT (CONTACTOR)	D	Contactor on/off signal; +13 to +24 volts dc contactor On, 0 volts dc contactor Off.
REMOTE OUTPUT CONTROL	A	+10 volts dc output to remote control.
	B	0 to +10 volts dc input command signal from remote control; full control of A/V output from remote control.
	H	+24 volts dc; fused at 1 ampere.
	K	0 to +10 volts dc set by panel A/V control; remote control percent of panel A/V control.
	L	–24 volts dc; fused at 1 ampere.
METER	E	Current feedback; +1 volt dc per 100 amperes.
	M	Voltage feedback; +1 volt dc per 10 arc volts.
CV/CC	C	CV/CC select; +13 to +24 volts dc selects CV, 0 volts dc selects CC.
ARC CONTROL	G	Arc force (dig)/inductance control; 0 to +10 volts dc set by panel Arc Force (Dig)/Inductance control.
GND	F	Circuit common for sockets A, B, D, E, K, and M.
	P	Circuit common for sockets H and L.
	S	Chassis common.

*The remaining sockets are not used.

2-7. 115 Volt AC Duplex Receptacle



1 115 Volt AC Duplex Receptacle RC10

This receptacle supplies up to 10 amperes of 115 volt ac power.

This receptacle has GFI (Ground Fault Interrupters). If a ground current is sensed at RC10, output to RC10 stops. Check tools connected to RC10 for damage, and press Reset button.

Power output is shared between this receptacle and the Remote 14 receptacle (see Section 2-5).

Ref. ST-153 999

2-8. Electrical Service Guide

	Three-Phase			Single-Phase		
Input Voltage	230	460	575	230	460	575
Input Amperes At Rated Output	72	36	29	89.6	47.2	37.7
Max Recommended Standard Fuse Or Circuit Breaker Rating In Amperes	110	50	40	125	60	45
Min Input Conductor Size In AWG/Kcmil	4	8	10	4	8	8
Max Recommended Input Conductor Length In Feet (Meters)	179 (54)	309 (94)	322 (98)	160 (49)	277 (85)	433 (132)
Min Grounding Conductor Size In AWG/Kcmil	6	10	10	6	10	10

Reference: 1993 National Electrical Code (NEC). S-0092J

2-9. Placing Jumper Links

▲ **Turn Off welding power source, disconnect input power, and check voltage on input capacitors according to Section 4-2 before proceeding.**

Check input voltage available at site.

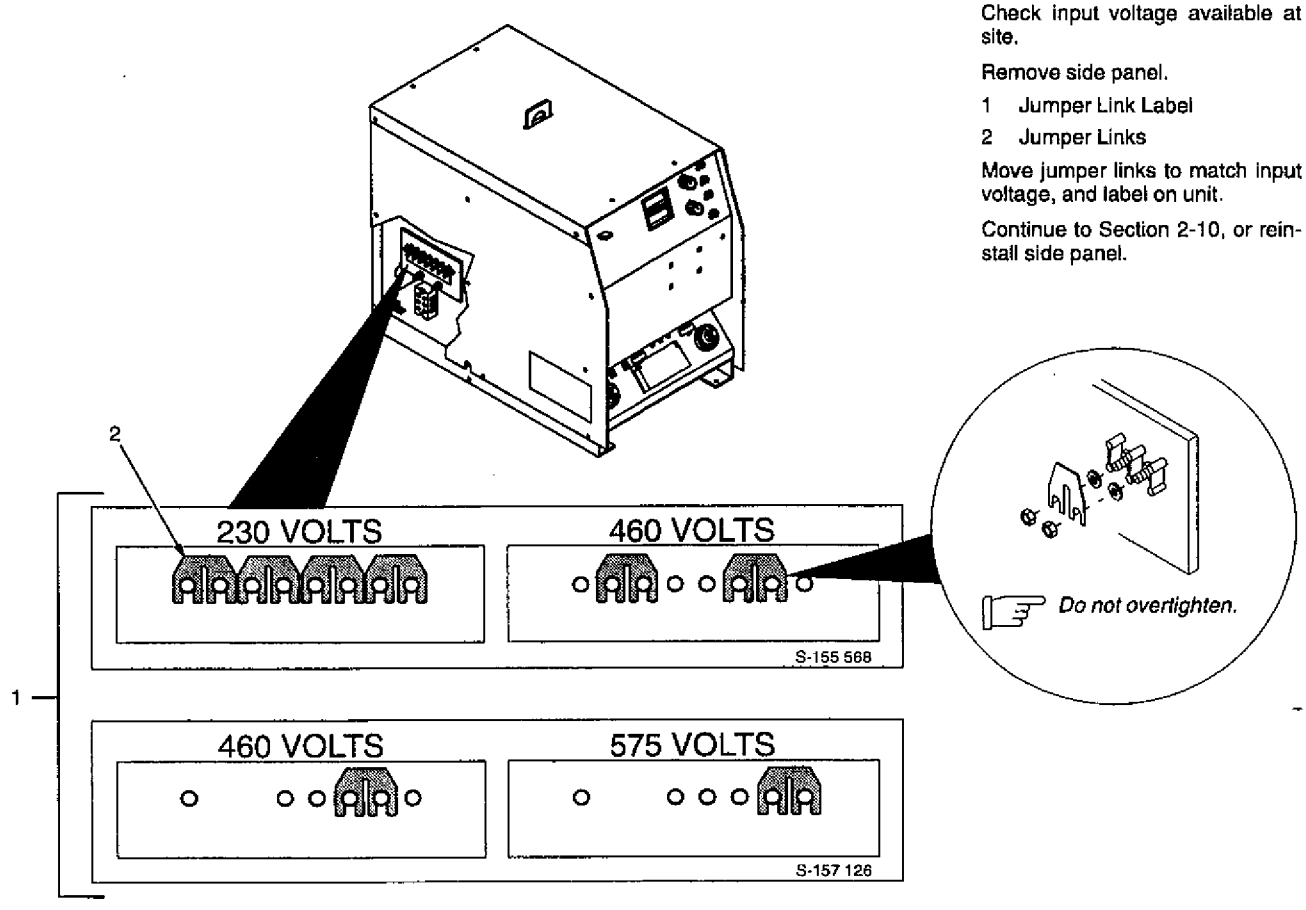
Remove side panel.

1 Jumper Link Label

2 Jumper Links

Move jumper links to match input voltage, and label on unit.

Continue to Section 2-10, or reinstall side panel.



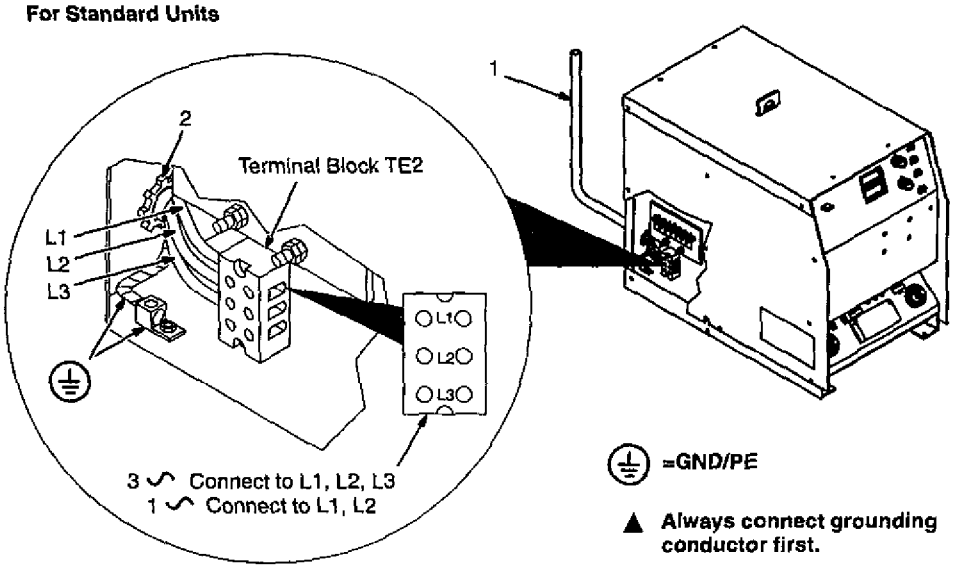
Tools Needed:

3/8 in

Ref. ST-160 172-D

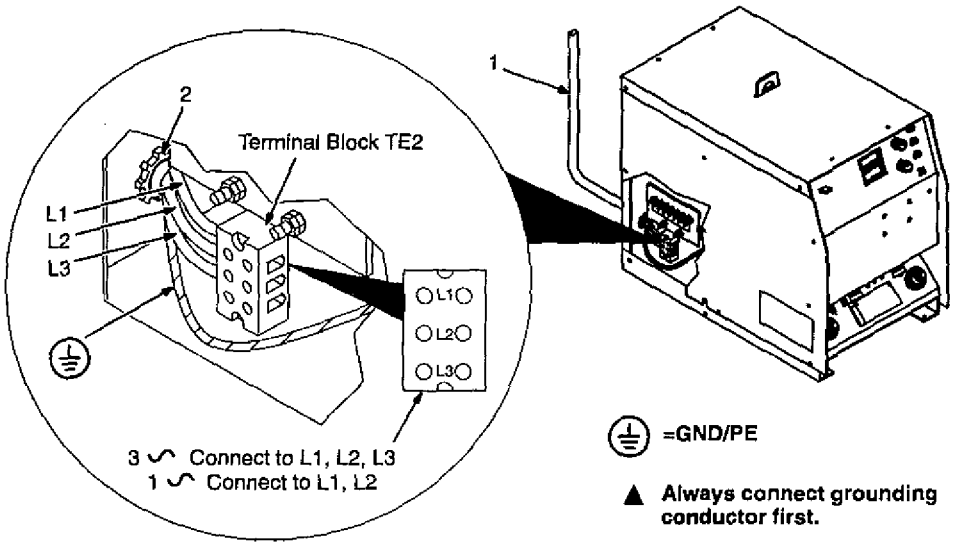
2-10. Connecting Input Conductors To Unit

For Standard Units

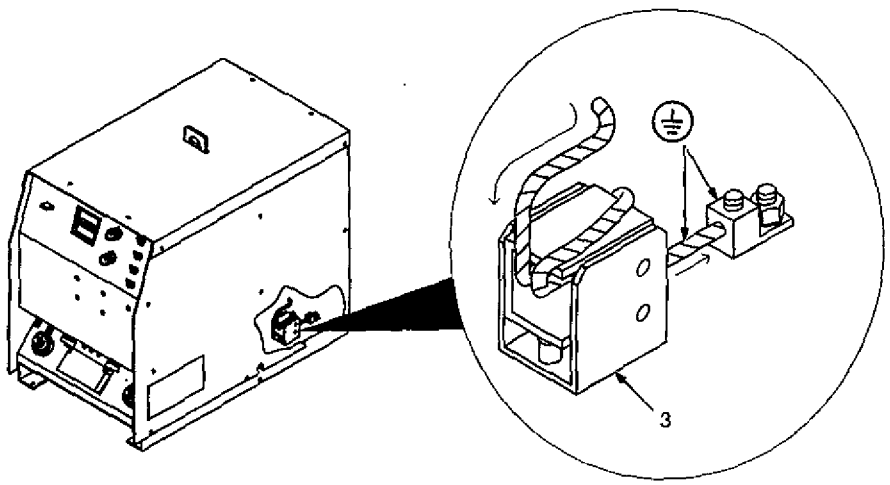


▲ **Always connect grounding conductor first.**

For Units With Optional Ground Current Sensor



▲ **Always connect grounding conductor first.**



▲ **Turn Off welding power source, disconnect input power, and check voltage on input capacitors according to Section 4-2 before proceeding.**

1 Input And Grounding Conductors

See Section 2-8.

2 Strain Relief Connector

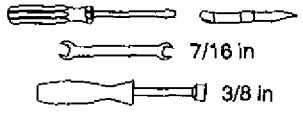
Obtain and install. Hole in rear panel is 1-3/4 in (44 mm).

3 Reed Relay (Ground Current Sensor – Optional)

If unit is equipped with optional ground current sensor, route grounding conductor through reed switch two times and connect to grounding terminal as shown.

Reinstall side panel(s).

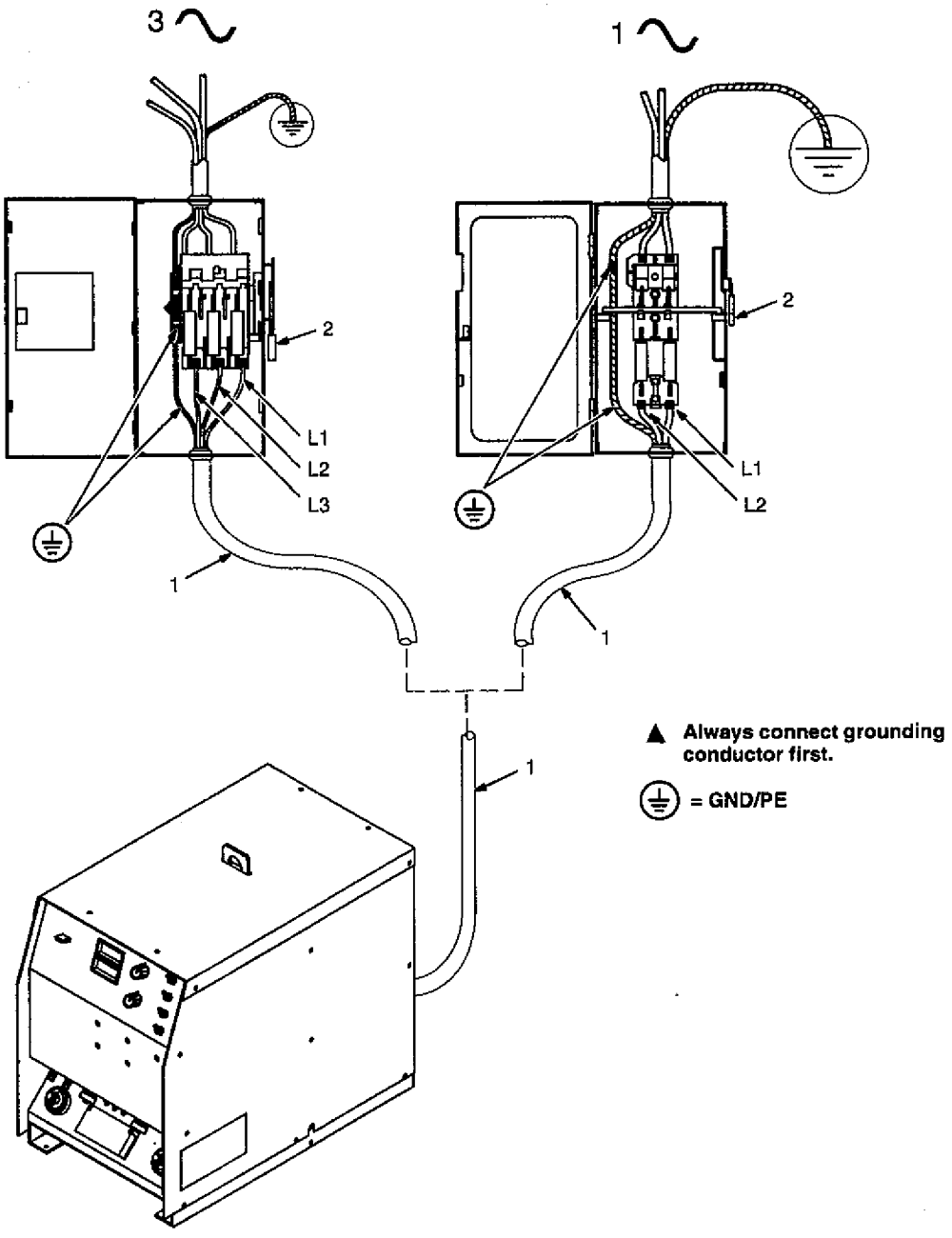
Tools Needed:



ssb2.4* 1/94 – ST-150 172-D / ST-156 172-D

2-11. Connecting Input Power

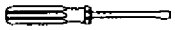
1 Input And Grounding Conductors
2 Line Disconnect Device
See Section 2-8.



▲ **Always connect grounding conductor first.**

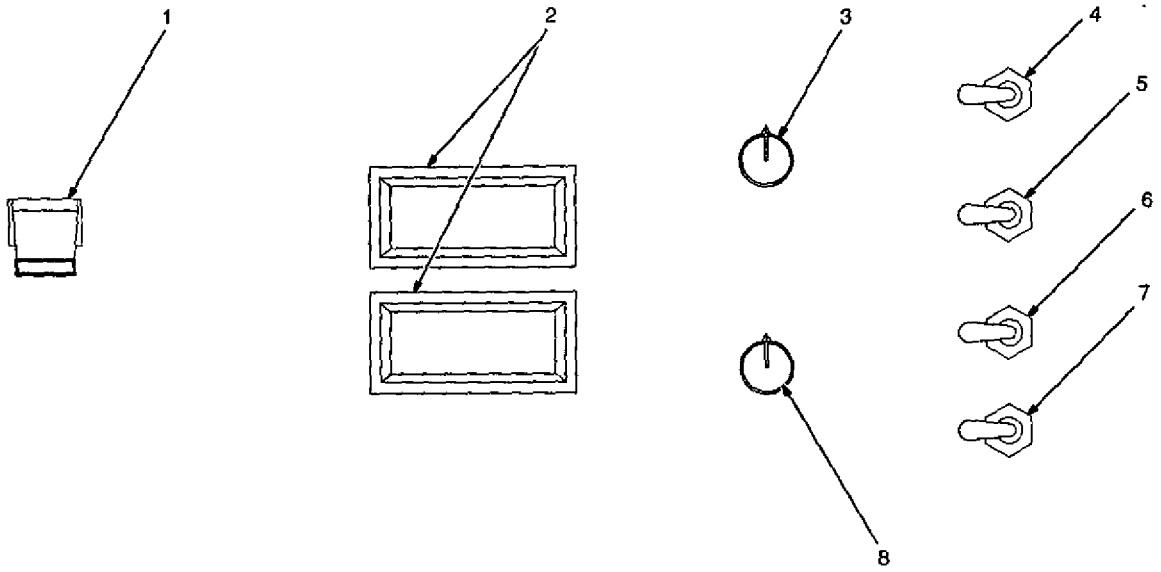
⏚ **= GND/PE**

Tools Needed:



input_2 – 3/96 / Ref. ST-144 221 / Ref. ST-070 399-C / ST-150 171-C

3-1. Controls



1 Power Switch

2 Digital Meters

When the contactor is not energized, preset amperage is displayed in SMAW and GTAW modes, and preset voltage is displayed in GMAW mode.

3 Amperage/Voltage Adjustment Control

Control adjusts voltage with process switch in GMAW position, and adjusts amperage in SMAW and GTAW positions.

This is a ten turn control. When contactor is not energized, control presets output.

4 Process Switch

Switch selects type of weld output. Use SMAW position for SMAW. Use GTAW position for GTAW, GMAW-P, and CAC-A. Use GMAW position for GMAW, and FCAW.

5 Amperage/Voltage Control Switch

For front panel control, place switch in Panel position. For remote control, place switch in Remote 14 position (see Section 2-5), or Remote 17 position (see Section 2-6), and connect remote device.

6 Output (Contactor) Control Switch

For front panel control of output, place switch in On position. For remote control of output, place switch in Remote 17/14 position, and connect remote device (see Sections 2-5 and 2-6).

▲ **Weld output terminals are energized when Output switch is On and Power is On.**

7 Arc Force/Inductance Control Switch

Switch selects panel or remote control of arc force/inductance.

8 Dig/Inductance Control

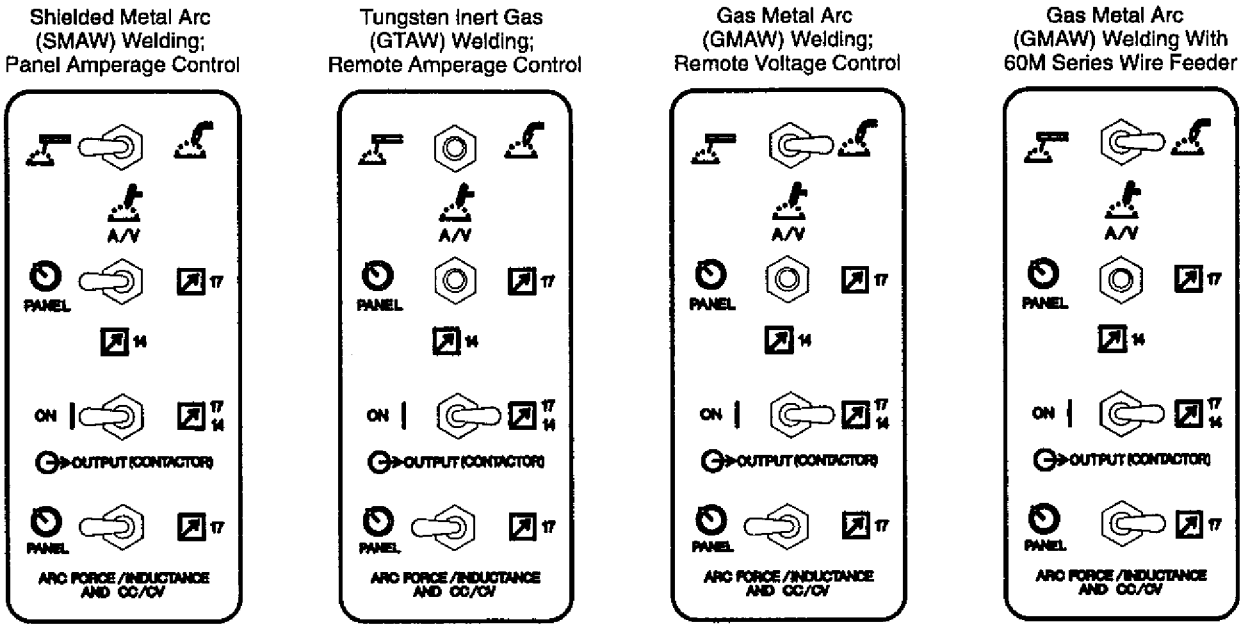
With process switch in SMAW position, control increases short-circuit amperage which allows the operator to use a very short arc length without sticking the electrode. When set towards 0 (zero), short-circuit amperage at low arc voltage is the same as normal welding amperage. When set towards 100, short-circuit amperage is increased at low arc voltage.

Control adjusts inductance with process switch in GMAW. Inductance determines the "wetness" of the weld puddle. When set towards 100, "wetness" (puddle fluidity) increases.

This control is not functional with process switch in GTAW.

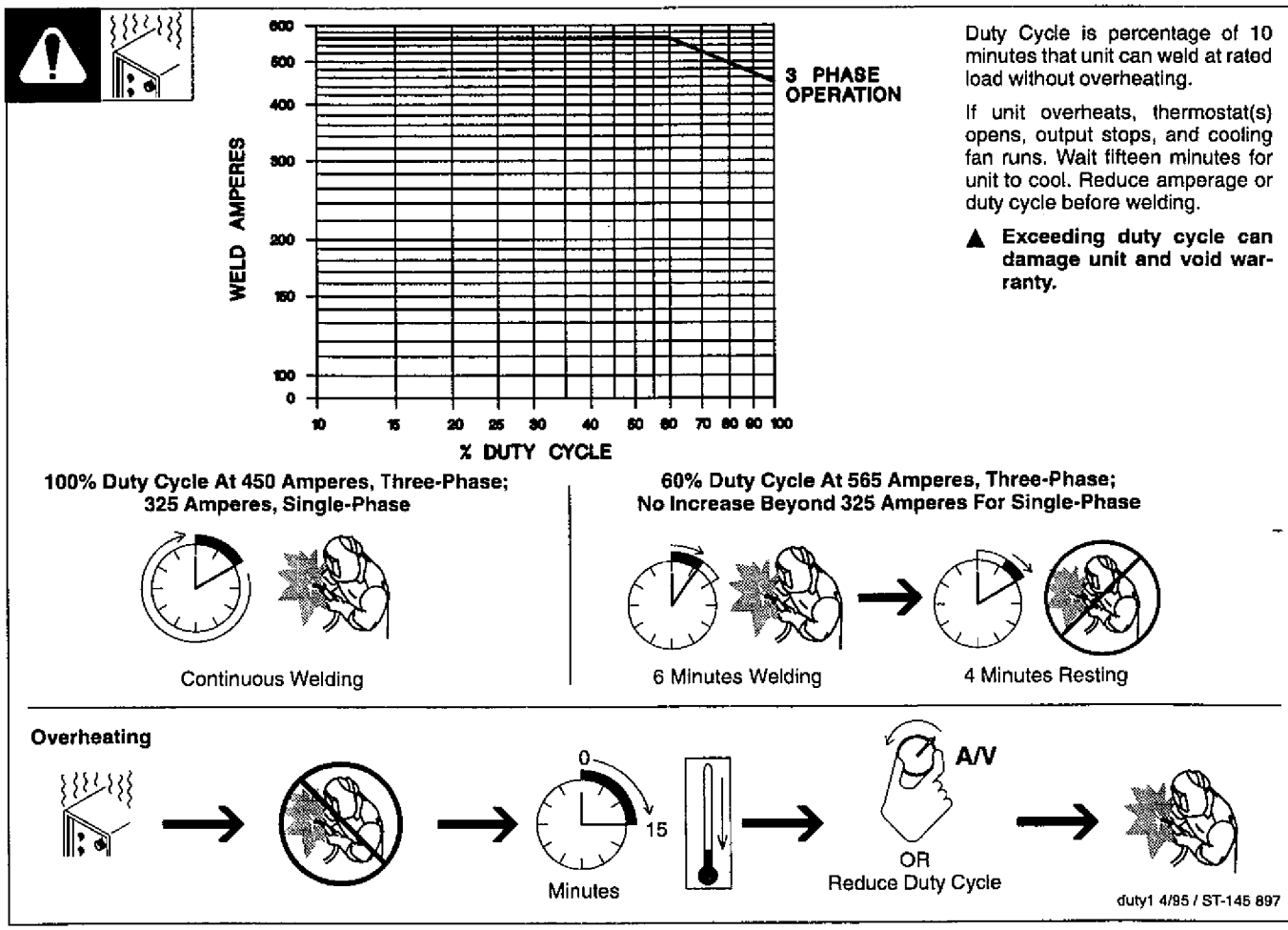
Numbers around control are for reference only.

3-2. Process Switch Settings



Ref. ST-165 852-B

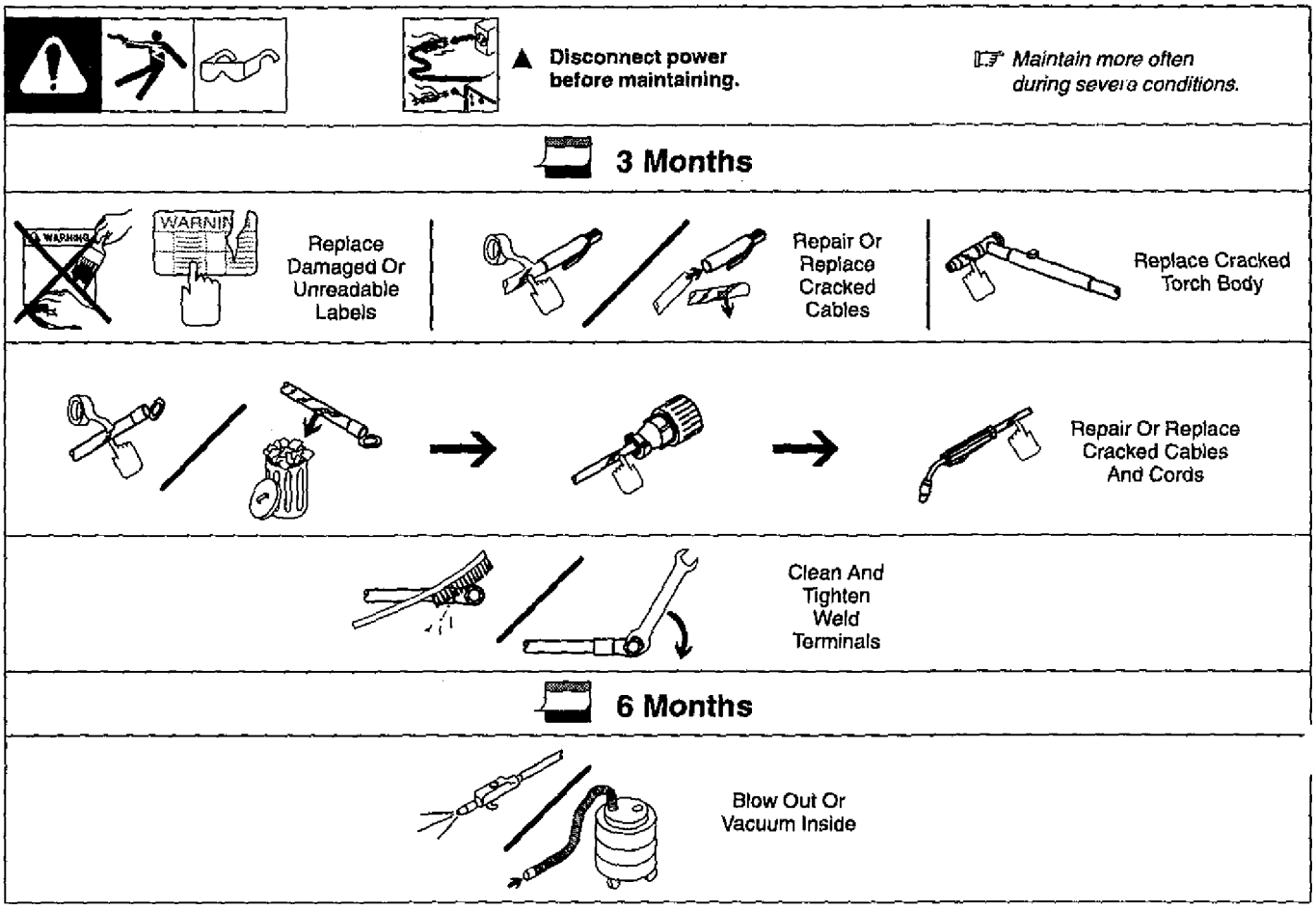
3-3. Duty Cycle And Overheating



duty1 4/95 / ST-145 897

SECTION 4 – MAINTENANCE & TROUBLESHOOTING

4-1. Routine Maintenance



4-2. Measuring Input Capacitor Voltage

Significant DC voltage can remain on capacitors after unit is Off. The input capacitor voltage can be measured across terminals on input rectifier SR1. Always check the voltage as shown to be sure the input capacitors have discharged before working on unit.

Turn Off welding power source, and disconnect input power.

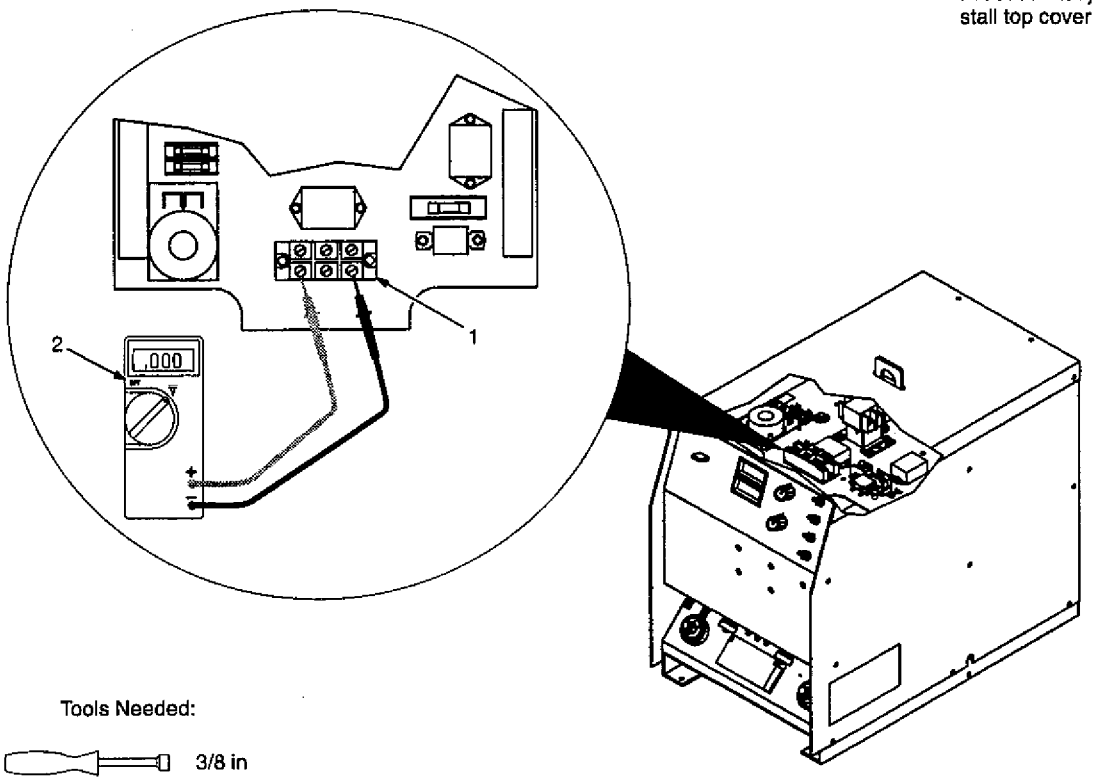
Remove top cover.

1 Input Rectifier SR1

2 Voltmeter

Measure the dc voltage across the positive (+) and negative (–) terminals until voltage drops to near 0 (zero) volts.

Proceed with job inside unit. Reinstall top cover when finished.

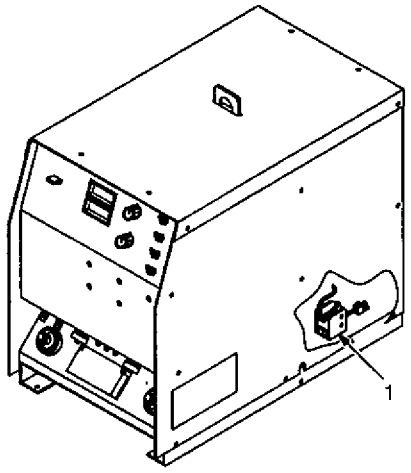


Tools Needed:

3/8 in

ST-150 222-F / ST-150 173-C

4-3. Optional Ground Current Sensor



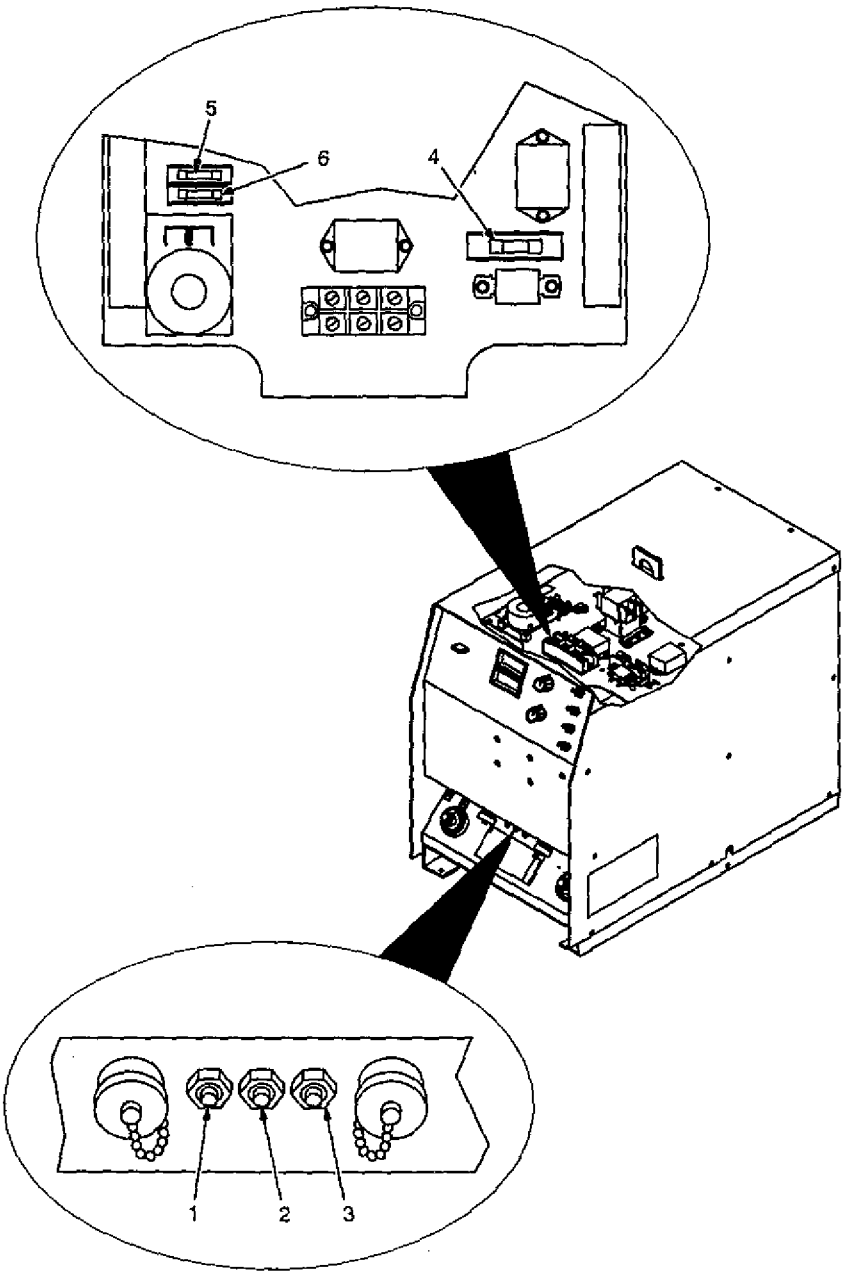
1 Reed Relay (Ground Current Sensor – Optional)

Defects in external electrical circuitry may cause the ground wire to conduct welding current. Relays CR1 and CR2 sense excessive current in the ground conductor and open the solid state contactor, shutting down weld output.

Open circuit voltage is not available, but the fan motor FM runs and the pilot light PL1 stays on. If the welding power source shuts down due to the ground current sensor, disconnect all power, and correct the problem before welding again.

ST-156 172-D

4-4. Circuit Breakers And Fuses



▲ Turn Off welding power source, disconnect input power, and check voltage on input capacitors according to Section 4-2 before proceeding.

1 Circuit Breaker CB1

If CB1 opens, remote devices using 115 volts from Remote 14 receptacle stop. Manually reset CB1.

2 Circuit Breaker CB2

If CB2 opens, remote devices using 24 volts from Remote 14 receptacle stop. Manually reset CB2.

3 Circuit Breaker CB3

If CB3 opens, devices connected to the 115 volt duplex receptacle and remote devices using 115 volts from Remote 14 receptacle stop. Manually reset CB3.

4 Fuse F1

If F1 opens, the welding power source shuts down.

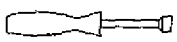
5 Fuse F3

6 Fuse F4

If F3 or F4 opens, remote control devices connected to Remote 17 receptacle RC1 may shut down.

See Parts List for fuse ratings. Use proper tool when removing fuses.

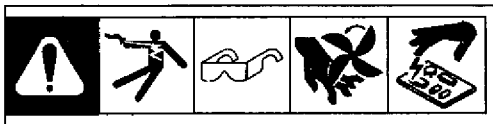
Tools Needed:



3/8 in

ST-150 222-F / Ref. ST-152 069-C / ST-150 173-C

4-5. Troubleshooting



Trouble	Remedy
No weld output; unit completely inoperative.	Place line disconnect switch in On position (see Section 2-11).
	Check fuse F1, and replace if necessary (see Section 4-4).
	Check and replace line fuse(s), if necessary, or reset circuit breaker (see Section 2-11).
	Check for proper input power connections (see Sections 2-10 and 2-11).
	Check for proper jumper link position (see Section 2-9).
No weld output; Power switch on; fan on.	If using remote control, place Output (Contactor) switch in Remote 17/14 position, and connect remote control to Remote 14 or Remote 17 receptacle (see Sections 2-5 and 2-6). If remote is not being used, place Output (Contactor) switch in On position.
	Check, repair, or replace remote control.
	Unit overheated. Allow unit to cool with fan On (see Section 3-3).
	Have Factory Authorized Service Agent check unit.
Low weld output with no control.	Check position of Amperage/Voltage Control switch.
	Have Factory Authorized Service Agent check control board PC1.
Limited output and low open-circuit voltage.	Check incoming power for correct voltage. Check and replace line fuse(s), if necessary, or reset circuit breaker (see Section 2-11).
	Check for proper jumper link position (see Section 2-9).
	Check for proper input and output connections (see Sections 2-3, 2-10 and 2-11).
Erratic or improper weld output.	Use proper size and type of weld cable (see Section 2-3).
	Clean and tighten all weld connections.
	Check for proper input and output connections (see Sections 2-3, 2-10 and 2-11).
	Replace electrode.
Remote device completely inoperative.	Check remote control connections (see Sections 2-5 and 2-6).
	If remote device connected to Remote 14 receptacle, reset circuit breaker CB1, CB2, and/or CB3 (see Section 4-4)
	If remote device connected to Remote 17 receptacle, check fuses F3 and/or F4 and replace if needed (see Section 4-4).
Fan not operating.	Check for and remove anything blocking fan movement.
	Have Factory Authorized Service Agent check fan motor.
No 115 volts ac output at duplex receptacle.	Reset circuit breaker CB3 (see Section 4-4).

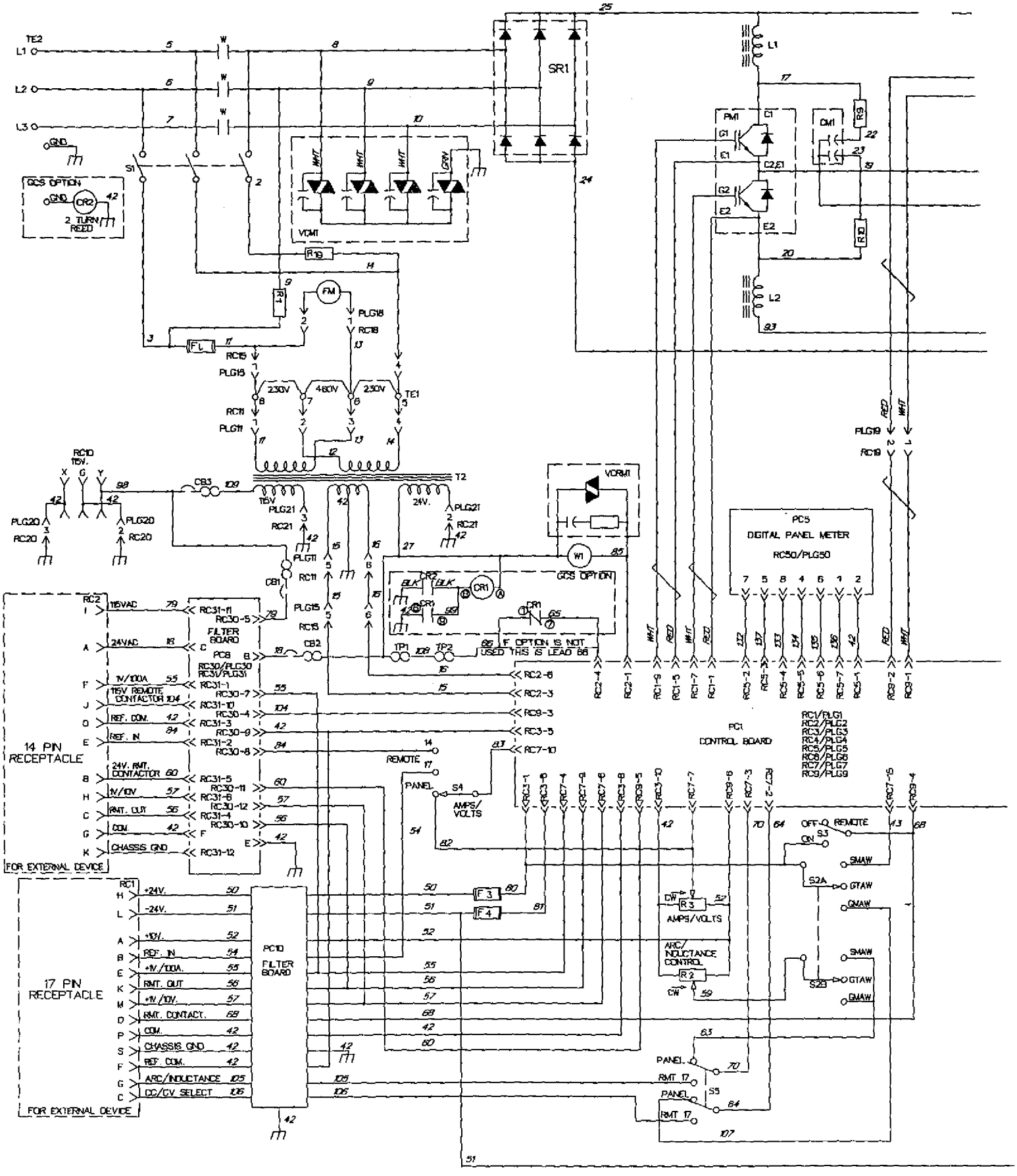
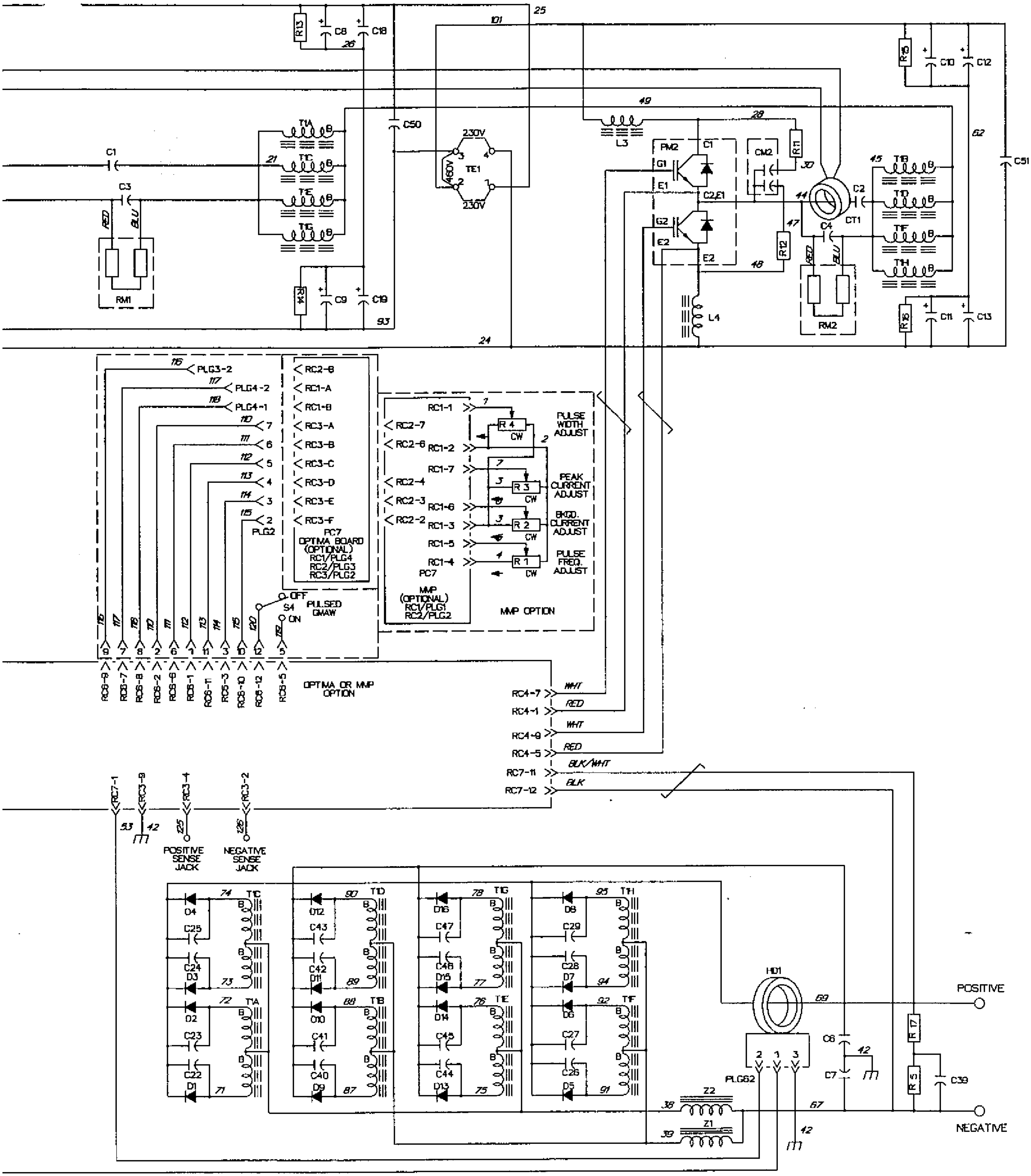


Figure 5-1. Circuit Diagram For 230/460 Volt Models


PULSE WIDTH ADJUST
PEAK CURRENT ADJUST
BKGD. CURRENT ADJUST
PULSE FREQ. ADJUST
PC7 OPTIMA BOARD (OPTIONAL) RC1/PLG4 RC2/PLG3 RC3/PLG2
PC7 MMP (OPTIONAL) RC1/PLG1 RC2/PLG2
MMP OPTION
OPTIMA OR MMP OPTION
PULSED GMAW
POSITIVE SENSE JACK
NEGATIVE SENSE JACK
POSITIVE
NEGATIVE

SD-167 529-A

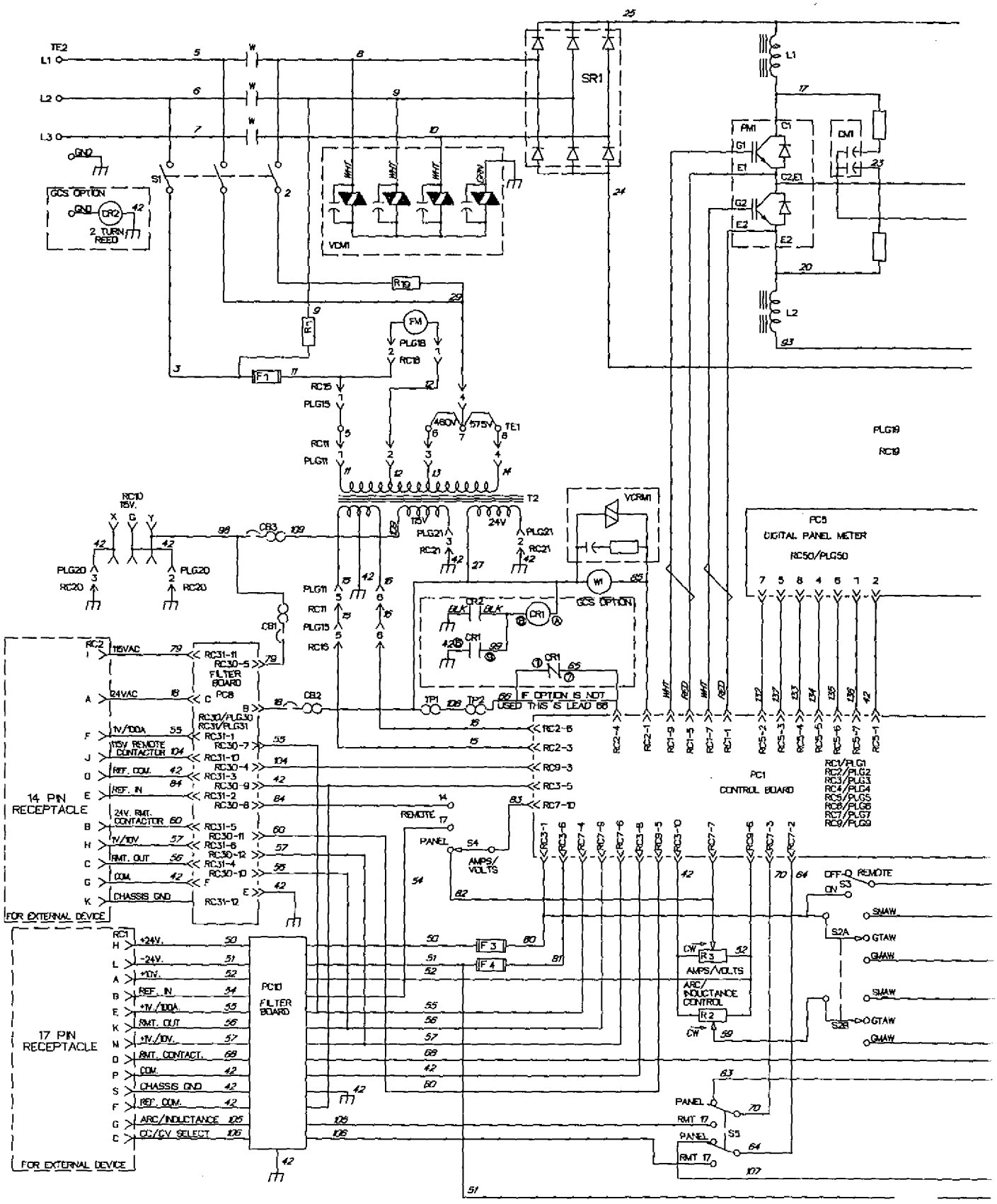
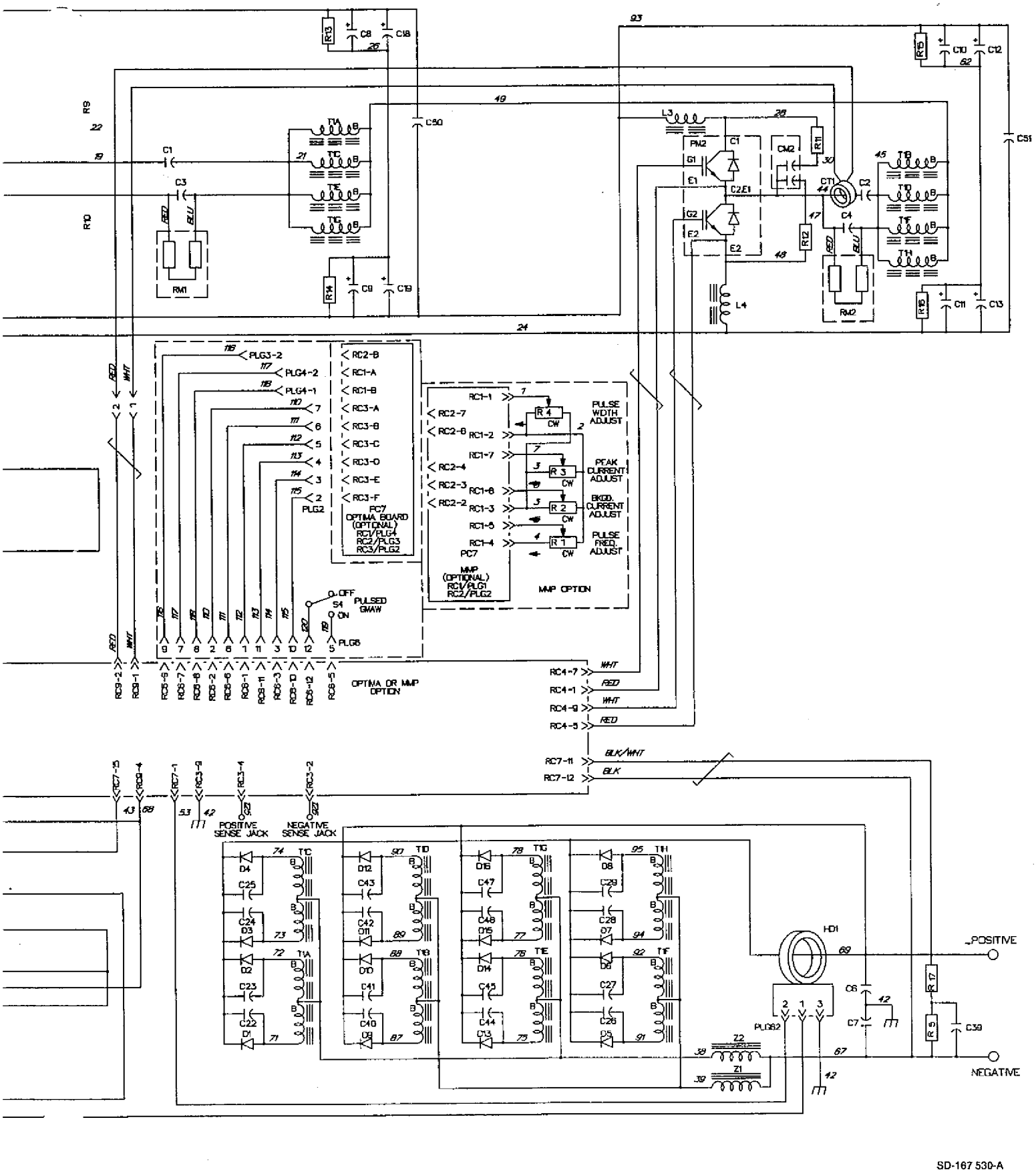


Figure 5-2. Circuit Diagram For 460/575 Volt Models


PLUG3-2
PLUG4-2
PLUG4-1
PLUG2
PC7
OPTIMA BOARD
(OPTIONAL)
RC1/PLG4
RC2/PLG3
RC3/PLG2
RC2-B
RC1-A
RC1-B
RC3-A
RC3-B
RC3-C
RC3-D
RC3-E
RC3-F
PULSE WDTH ADJUST
PEAK CURRENT ADJUST
BKGD. CURRENT ADJUST
PULSE FREQ. ADJUST
MMP (OPTIONAL) RC1/PLG1 RC2/PLG2
MMP OPTION
O-OFF
S4
PULSED GMAW
O ON
PLG6
OPTIMA OR MMP OPTION
POSITIVE SENSE JACK
NEGATIVE SENSE JACK
HD1
PLG62
POSITIVE
NEGATIVE
L3
L4
Z1
Z2
RM1
RM2

SD-167 530-A

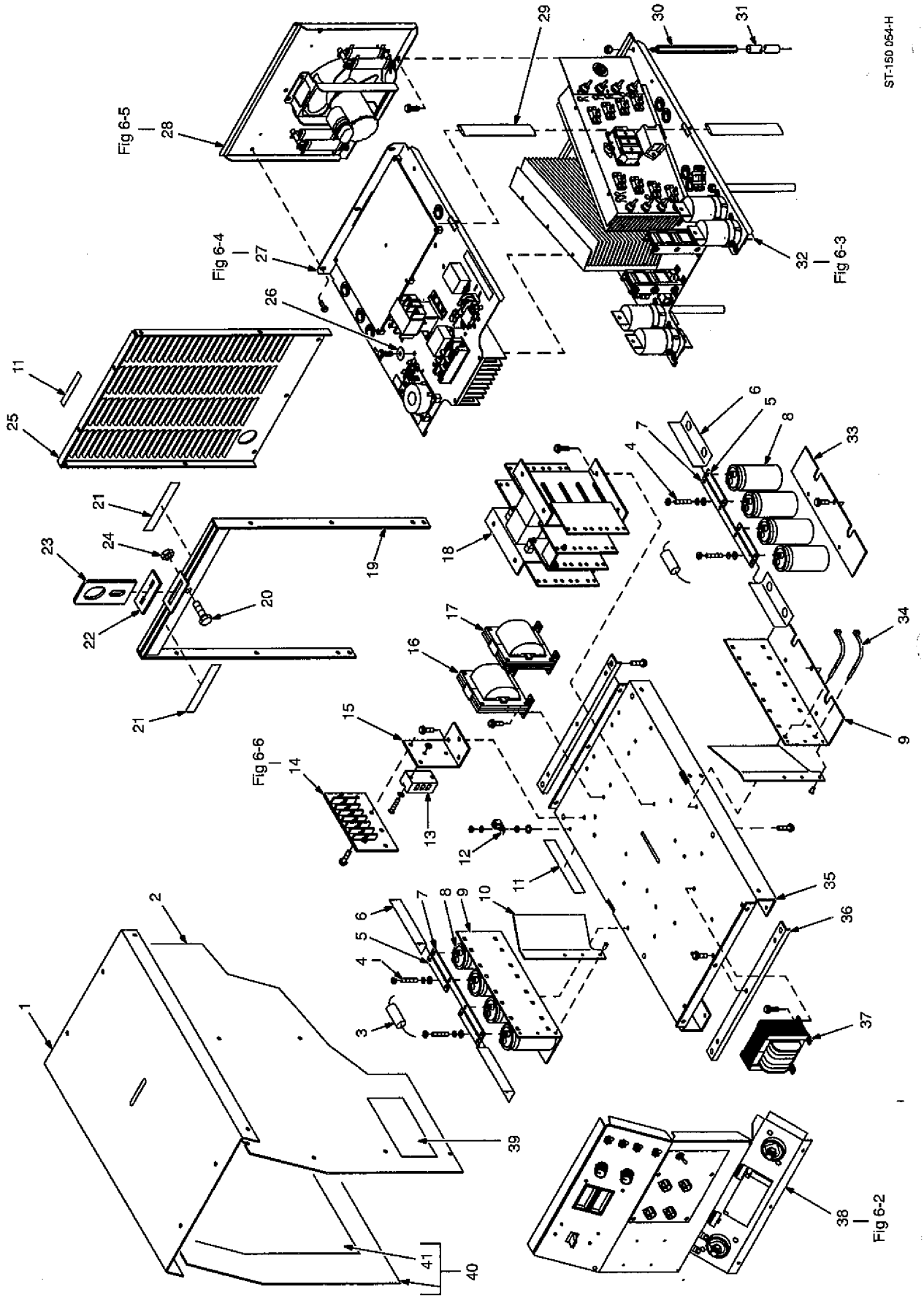


Figure 6-1. Main Assembly

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
			Figure 6-1. Main Assembly	
1		152 346	COVER, top w/insulation (consisting of)	1
		155 653	INSULATOR, top	1
2		+147 962	PANEL, side RH w/insulator (consisting of)	1
		155 652	INSULATOR, side RH	1
3	C50,51	164 812	CAPACITOR	2
4		155 642	SCREW, set .250-28 x 1.000 cup pt sch stl	16
5		143 748	BUS BAR, (across front of C8,9,18,19 & C10-13)	4
6		145 245	INSULATOR, elctlt	4
7		143 749	BUS BAR, (across back of C8,9,18,19 & C10-13)	2
8	C8-13,18,19	135 786	CAPACITOR, elctlt 4000uf 250VDC (230/460V)	8
8	C8-13,18,19	140 891	CAPACITOR, elctlt 2800uf 300VDC (460/575V)	8
9		148 556	BRACKET, mtg capacitor	2
10		148 553	BAFFLE, air	2
11		126 026	LABEL, warning general precautionary	2
12		145 743	LUG, univ w/scr 600V 2-14 wire .250 stud	1
13	TE2	147 386	BLOCK, term 70A 3P	1
14	TE1	148 446	TERMINAL ASSEMBLY, pri (230/460V) (Fig 6-6)	1
14	TE1	157 322	TERMINAL ASSEMBLY, pri (460/575V) (Fig 6-6)	1
		010 913	WASHER, flat brs .218 ID (230/460V)	8
		010 913	WASHER, flat brs .218 ID (460/575V)	6
		601 835	NUT, brs hex 10-32 (230/460V)	8
		601 835	NUT, brs hex 10-32 (460/575V)	6
15		147 899	BRACKET, mtg term block	1
16	Z1	144 050	STABILIZER, left	1
17	Z2	147 901	STABILIZER, right	1
18	T1	157 501	TRANSFORMER, HF	1
19		143 731	LIFT EYE, upright	1
20		604 126	SCREW, cap stl hexhd .500-13 x 1.000	1
21		153 178	LABEL, warning exploding parts can seriously injure	2
22		144 929	GASKET, lift eye	1
23		143 732	LIFT EYE	1
24		088 058	NUT, locking .500-13	1
25		+143 746	PANEL, rear	1
26		145 053	WASHER, shldr nyl .298 OD x .203 ID x 1.000	12
27		Fig 6-4	CHASSIS, mid upper	1
28		Fig 6-5	FAN MOTOR/MOUNTING BRACKET	1
	PLG18	131 054	CONNECTOR & SOCKETS, (part of FM) (consisting of)	1
		113 746	CONNECTOR, rect skt 24-18ga Molex 39-00-0038	2
	RC18	135 635	CONNECTOR & PINS, (consisting of)	1
		114 656	CONNECTOR, rect pin 24-18ga Molex 39-00-0040	2
29		605 603	TUBING, gl acryl 1.000-1.036 ID (order by ft)	3ft
30		143 741	SPACER	4
31		070 592	TUBING, gl acryl .500-.524 ID (order by ft)	3ft
32		Fig 6-3	CHASSIS, mid lower	1
33		154 066	INSULATOR, capacitor	2
34		605 538	CABLE TIE, 0-4.500 bundle	16
35		+157 427	BASE	1
36		145 477	STIFFENER, base	2
37	T2	167 521	TRANSFORMER, kVA 1.5 115/230/230-18-18-24 (230/460V)	1
37	T2	167 522	TRANSFORMER, kVA 1.5 115-230/460/575-18/18-24 (460/575V)	1
	PLG21	168 165	CONNECTOR & SOCKETS, (consisting of)	1
		114 066	CONNECTOR, rect skt 20-14ga	3
	RC21	130 204	CONNECTOR & PINS, (consisting of)	1
		113 633	CONNECTOR, rect pin 20-14ga	3
38		Fig 6-2	PANEL, front w/components	1
	RC11,15	116 045	CONNECTOR & PINS, (consisting of)	2
		113 633	CONNECTOR, rect pin 20-14ga Amp 350218-1	6
	PLG11,15	135 556	CONNECTOR & SOCKETS, (consisting of)	2
		114 066	CONNECTOR, rect skt 20-14ga Amp 350536-1	6
39		134 327	LABEL, warning general precautionary	2

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

Figure 6-1. Main Assembly (Continued)

...40		+147 961	.. PANEL, side LH w/insulator (consisting of)	1
...41		155 651	.... INSULATOR, side LH	1
		134 756	.. LABEL, warning electric shock can kill (on LH panel)	1
	CR2	♦155 757	.. SWITCH, reed	1
		010 014	.. CLAMP, stl cush .750dia x .203mtg hole	4
		010 143	.. CLAMP, nyl .375clp dia	2

+When ordering a component originally displaying a precautionary label, the label should also be ordered.
♦Part of 042 779 (230/460V) and 042 961 (460/575V) Ground Current Sensor Option.
BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

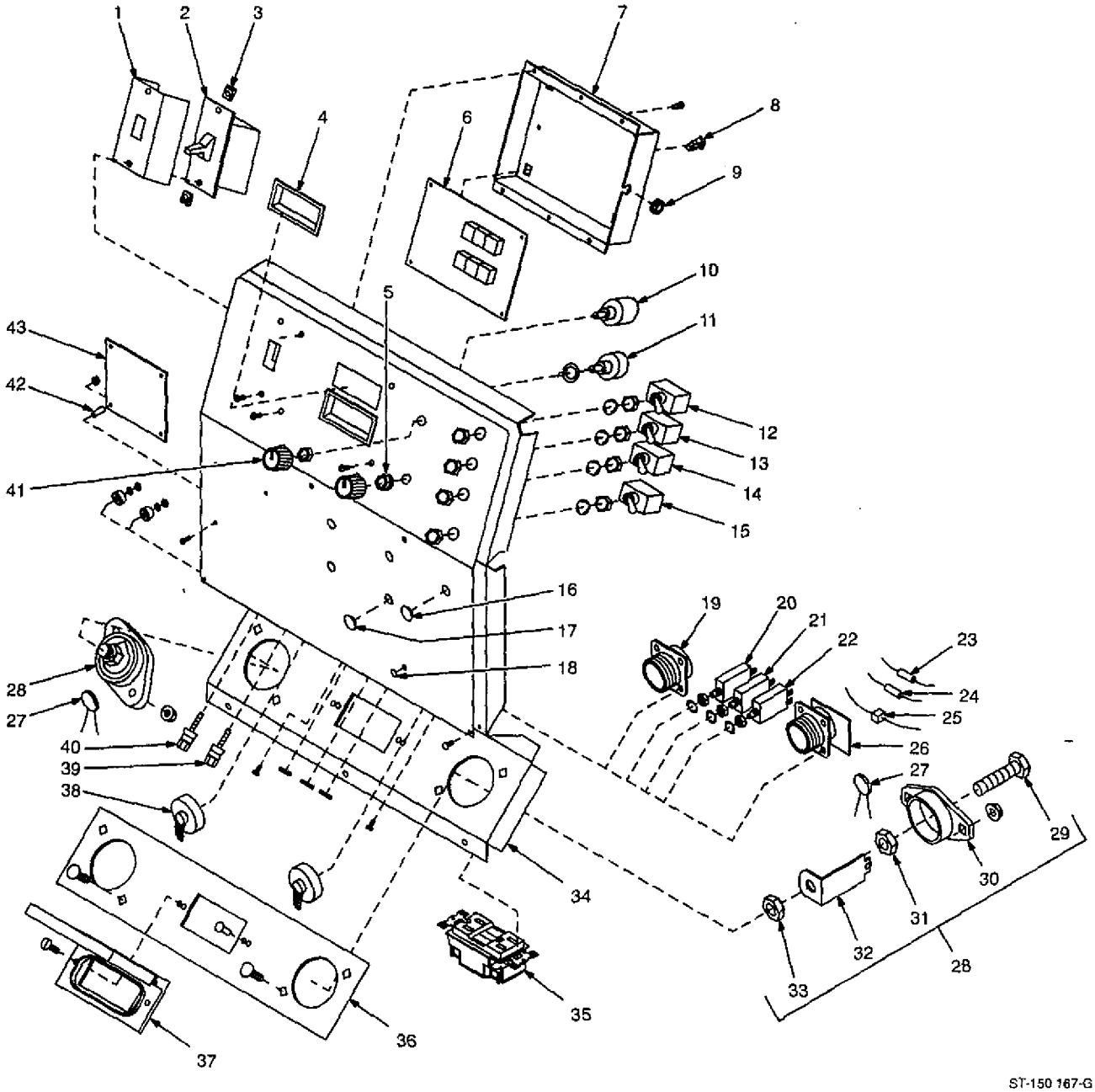


Figure 6-2. Panel, Front w/Components

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
			Figure 6-2. Panel, Front w/Components (Fig 6-1 Item 38)	
1		146 684	INSULATOR, switch pwr	1
2	S1	128 756	SWITCH, tgl 3PST 40A 600VAC	1
3		148 297	NUT, speed U type 10-32	2
4		071 230	BEZEL/FILTER, blk bezel/red filter 2.000 viewing	2
5		135 299	LOCK, shaft pot .375-32 x .250dia shaft	1
6	PC5	150 331	CIRCUIT CARD, amp/volt meter	1
	PLG50	089 222	CONNECTOR, rect 11skt plug Amp 1-640440-1	1
7		153 374	ENCLOSURE, PC card	1
8		134 201	STAND-OFF SUPPORT, PC card .312/.375	4
9		604 311	GROMMET, rbr .250 ID x .375mtg hole	1
10	R3	030 856	POTENTIOMETER, WW sltd sft 10/T 2W 1K ohm	1
11	R2	035 897	POTENTIOMETER, C sltd sft 1/T 2W 1K ohm	1
12	S2	088 409	SWITCH, tgl DPDT 15A 125VAC	1
13	S4	128 808	SWITCH, tgl SPTT 15A 125VAC	1
14	S3	011 609	SWITCH, tgl SPDT 15A 125VAC	1
15	S5	011 611	SWITCH, tgl DPDT 15A 125V	1
16		107 983	BLANK, snap-in nyl .500mtg hole	1
17		119 951	BLANK, snap-in nyl .437mtg hole	4
18		117 860	BLANK, snap-in nyl .187mtg hole	4
19	RC2	143 976	CONNECTOR w/SOCKETS, (consisting of)	1
		079 534	CONNECTOR, circ skt push-in 14-18ga Amp 66358-6	14
		134 734	CONNECTOR, circ 14 pin plug Amp 213571-2	
		134 731	CONNECTOR, circ pin push-in 14-18ga Amp 213603-1	
		079 739	CONNECTOR, circ clamp str rlf sz 17-20 Amp 206322-2 (or)	
		143 922	CONNECTOR, circ clamp str rlf sz 17-20 Amp 206070-3	
20	CB1	089 807	CIRCUIT BREAKER, man reset 1P 2.5A 250V	1
21	CB2	083 432	CIRCUIT BREAKER, man reset 1P 10A 250V	1
22	CB3	083 432	CIRCUIT BREAKER, man reset 1P 10A 250V	1
23	R17	030 945	RESISTOR, C 2W 4.7K ohm	1
24	R5	028 271	RESISTOR, C .5W 100K ohm	1
25	C39	074 200	CAPACITOR, polye film .047uf 400VDC	1
26	PC10,RC1	137 542	CIRCUIT CARD, connector 17skt	1
		097 866	CONNECTOR, circ 17 pin plug Amphenol MS-3106A-20-29P	
		073 296	CONNECTOR, circ clamp str rlf sz 20-22 Amphenol 97-3057-12-6	
27	C6,7	138 115	CAPACITOR	2
28	Neg	039 046	TERMINAL, pwr output black (consisting of)	1
28	Pos	039 047	TERMINAL, pwr output red (consisting of)	1
29		604 467	SCREW, .500-13 x 1.500hexhd stl	1
30		039 045	TERMINAL BOARD, black	1
30		039 049	TERMINAL BOARD, red	1
31		601 880	NUT, stl hex jam .500-13	1
32		039 044	BUS BAR, term bd	1
33		601 879	NUT, stl hex full .500-13	1
34		143 747	PANEL, front	1
35	RC10	147 939	RECEPTACLE, str dx grd 2P3W 15A 125V GFCI	1
		073 690	PLUG, str grd armd 2P3W 15A 125V P & S 5266DF	
	PLG20	168 165	CONNECTOR & SOCKETS, (consisting of)	1
		114 066	CONNECTOR, rect skt 20-14ga	3
	RC20	130 204	CONNECTOR & PINS, (consisting of)	1
		113 633	CONNECTOR, rect skt 20-14ga	3
36			NAMEPLATE, (order by model and serial number)	1
37		154 022	COVER, receptacle duplex GFCI weather proof	1
38		039 885	CONNECTOR, circ protective cap Amphenol 9760-20	2
39		039 654	POST, bdg black	1
40		039 655	POST, bdg red	1
41		097 922	KNOB, pointer	2
42		143 797	SPACER, nyl .312 OD x .194 ID x .437 lg	4
43	PC8	167 679	CIRCUIT CARD, receptacle bypass	1
	PLG30,31	130 203	CONNECTOR & SOCKETS, (consisting of)	2
		113 746	CONNECTOR, rect skt 24-18ga Molex 39-00-0038	12

BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

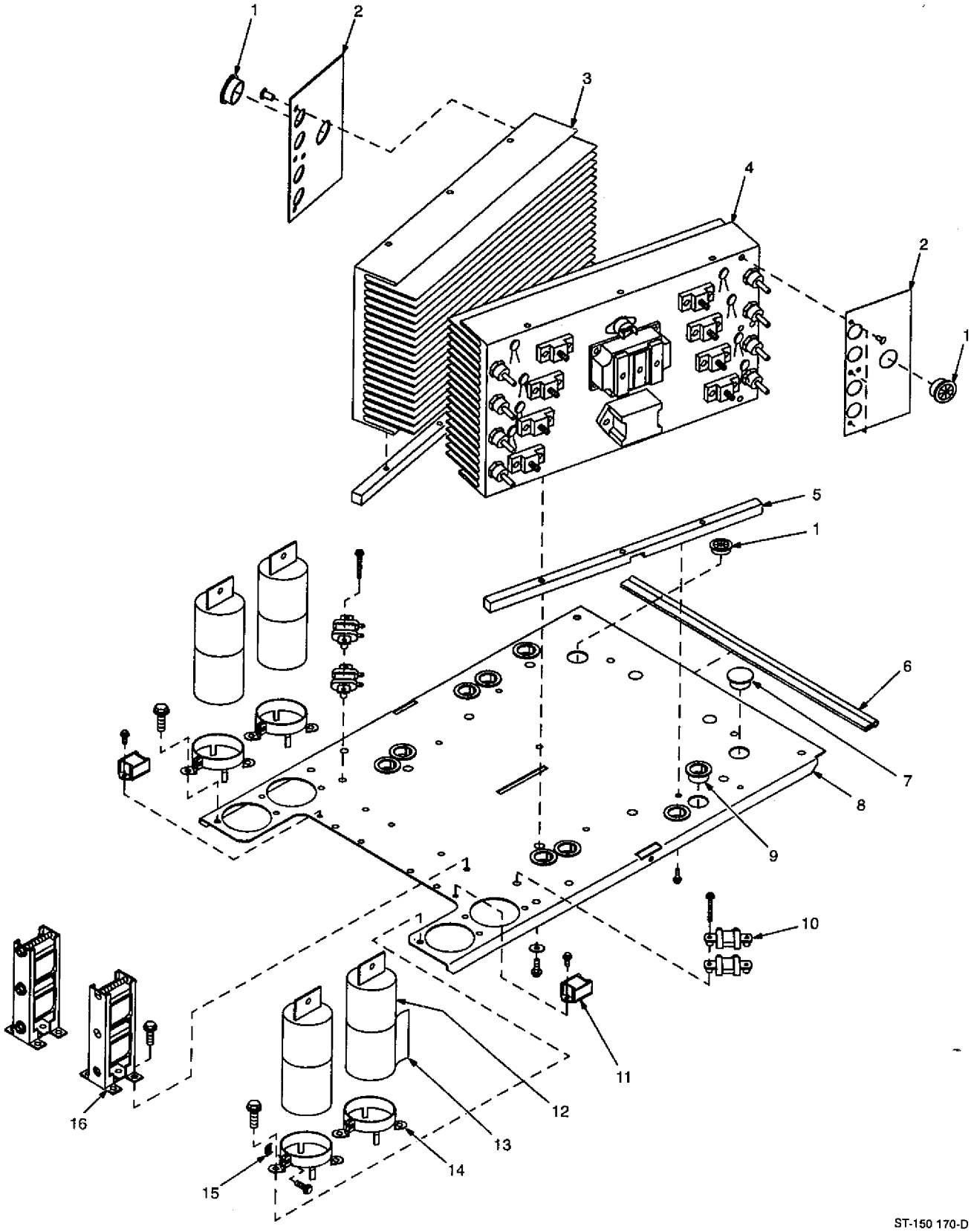


Figure 6-3. Chassis, Mid Lower

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
			Figure 6-3. Chassis, Mid Lower (Fig 6-1 Item 32)	
1		153 403	BUSHING, snap-in nyl .750 ID x 1.000mtg hole	3
2		157 425	BAFFLE, air	2
3		160 765	MODULE, pwr LH (230/460V) (consisting of)	1
3		157 571	MODULE, pwr LH (460/575V) (consisting of)	1
4		160 766	MODULE, pwr RH (230/460V) (consisting of)	1
4		157 572	MODULE, pwr RH (460/575V) (consisting of)	1
	C22-29,40-47	031 689	CAPACITOR	8
	CM1,2	157 497	MODULE, capacitor	1
	D1-16	149 209	KIT, diode fast recovery	8
	PM1,2	149 238	KIT, transistor IGBT module (230/460V)	1
	PM1,2	157 566	KIT, transistor IGBT module (460/575V)	1
	TP1,2	006 334	THERMOSTAT, NC	1
		072 253	STUD, connection single 10-32 x .500 x 1.250	8
		143 722	HEAT SINK, pwr module	1
5		142 592	BAR, support heat sink	2
6		135 661	EDGE TRIM, style 3100-1/16 (order by ft)	2ft
7		047 838	BLANK, snap-in nyl 1.000mtg hole	1
8		157 426	TRAY, mtg cmpts lower	1
9		057 358	BUSHING, snap-in nyl 1.000 ID x 1.375mtg hole	9
10	R13-16	147 902	RESISTOR, WW fxd 30W 2500 ohm (230/460V)	4
10	R13-16	139 812	RESISTOR, WW fxd 30W 5K ohm (460/575V)	4
11	RM1,2	153 336	MODULE, resistor 2 2W 100K ohm	2
12	C1-4	143 359	CAPACITOR, polyp film .6uf 1000VDC	4
13		145 162	STRIP, comb mrm .007 x 3.000 x 7.000	4
14		006 426	CLAMP, capacitor 2.000dia	4
15		148 297	NUT, 10-32 push-on stl	4
16	L1-4	144 325	CHOKE, DVDT	2

BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

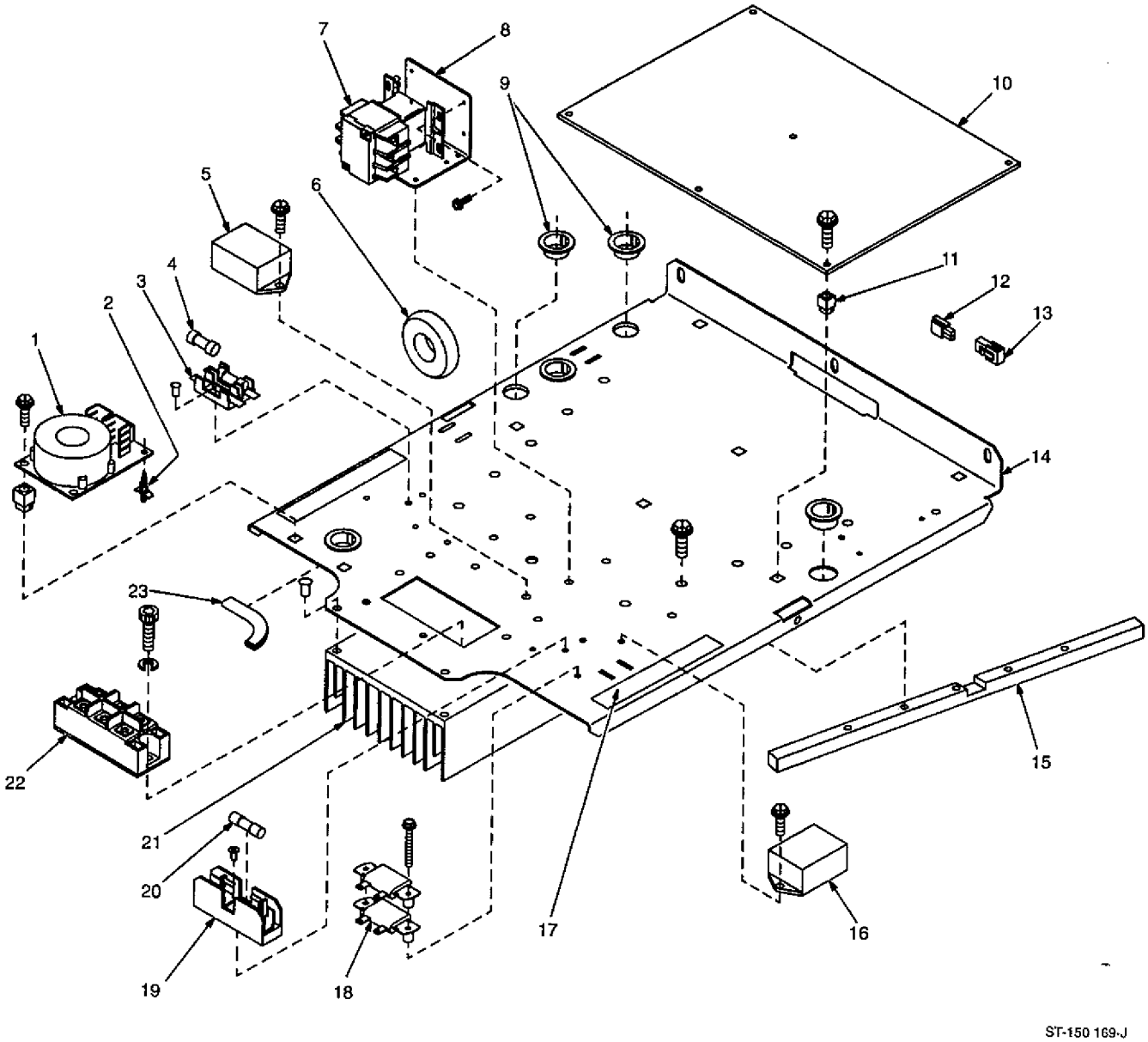


Figure 6-4. Chassis, Mid Upper

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
			Figure 6-4. Chassis, Mid Upper (Fig 6-1 Item 27)	
1	HD1	156 313	TRANSDUCER, current 300A	1
	PLG62	130 204	CONNECTOR & SOCKETS, (consisting of)	1
		114 066	CONNECTOR, rect skt 20-14ga Amp 350536-1	3
2		134 058	STAND-OFF SUPPORT, PC card .156dia	2
3		098 376	HOLDER, fuse mintr	1
4	F3,4	*012 643	FUSE, mintr gl slo-blo 1A	2
5	VCRM1	153 289	MODULE, capacitor/varistor/resistor	1
6	CT1	157 568	TRANSFORMER, current	1
7	W1	132 889	CONTACTOR, def prp 40A 3P 24VAC	1
8		170 626	BRACKET, mtg contactor	1
9		057 358	BUSHING, snap-in nyl 1.000 ID x 1.375mtg hole	5
10	PC1	180 868	CIRCUIT CARD, control	1
	PLG1,3-5,9	148 439	CONNECTOR & SOCKETS, (consisting of)	5
		147 995	CONNECTOR, rect skt 22-18ga Amp 170362-3	10
	PLG2	153 501	CONNECTOR & SOCKETS, (consisting of)	1
		147 995	CONNECTOR, rect skt 22-18ga Amp 170362-3	6
	PLG7	152 249	CONNECTOR & SOCKETS, (consisting of)	1
		147 995	CONNECTOR, rect skt 22-18ga Amp 170362-3	15
11		083 147	GROMMET, scr No. 8/10 panel hole .312sq .500 high	8
12	PLG19	131 054	CONNECTOR & SOCKETS, (part of CT1) (consisting of)	1
		113 746	CONNECTOR, rect skt 24-18ga Molex 39-00-0038	2
13	RC19	135 635	CONNECTOR & PINS, (consisting of)	1
		114 656	CONNECTOR, rect pin 24-18ga Molex 39-00-0040	2
14		+157 549	TRAY, mtg cmpts upper	1
15		142 592	BAR, support heat sink	2
16	VCM1	164 849	MODULE, varistor/capacitor 4 400 joule	1
17		126 026	LABEL, warning electric shock can kill	2
18	R1,19	141 424	RESISTOR, WW fxd 30W 25 ohm (230/460V)	2
18	R1,19	136 076	RESISTOR, WW fxd 30W 200 ohm (460/575V)	2
19		095 847	HOLDER, fuse crtg 30A 600V	1
20	F1	*148 524	FUSE, crtg 9A 500V time delay (230/460V)	1
20	F1	*162 312	FUSE, crtg 5A 600V time delay (460/575V)	1
21		143 723	HEAT SINK, rectifier	1
22	SR1	141 317	RECTIFIER, integ 110A 1600V 3ph	1
23		148 001	EDGE TRIM, style 62-3/32 (order by ft)	1ft
	CR1	♦110 386	RELAY, encl 24VAC DPDT	1

*Recommended Spare Parts.
+When ordering a component originally displaying a precautionary label, the label should also be ordered.
♦Part of 042 779 (230/460V) and 042 961 (460/575V) Ground Current Sensor Option.
BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

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

Figure 6-5. Fan Motor/Mounting Bracket (Fig 6-1 Item 28)

1	R9-12	157 297	RESISTOR, WW fxd 55W 25 ohm	4
2		143 797	SPACER, *nylon .312 OD x .194 ID x .437 lg*	4
3		157 429	INLET, fan	1
4		135 661	EDGE TRIM, style 3100-1/16 (order by ft)	2ft
5		107 983	BLANK, *snap-in nyl .500mtg hole*	1
6		153 219	BLADE, fan 7.600 in 5wg 24deg .312 bore CCW	1
7		143 729	BRACKET, fan	1
8	FM	153 280	MOTOR, fan 230V 3000RPM .312dia shaft	1

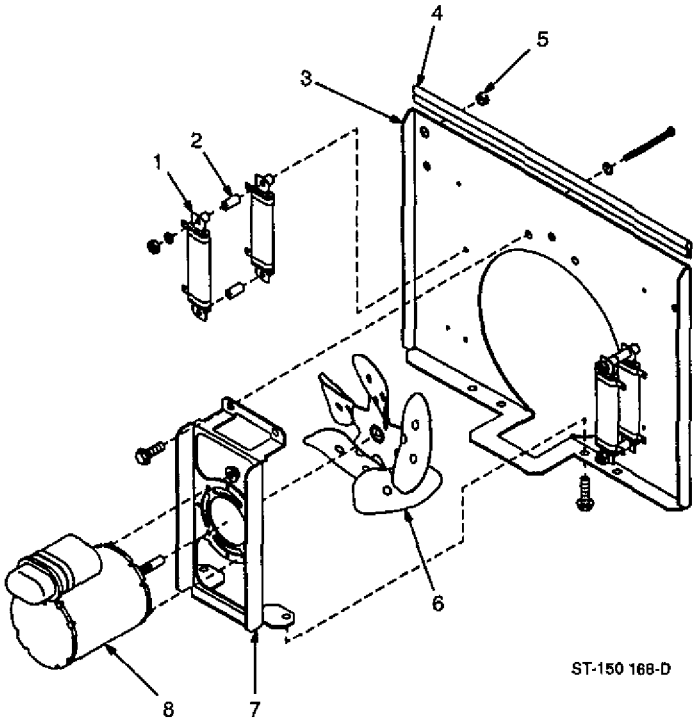


Figure 6-5. Fan Motor/Mounting Bracket

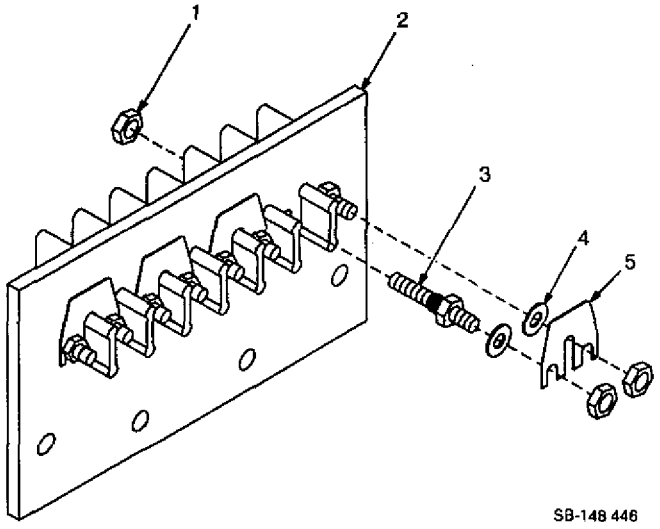


Figure 6-6. Terminal Assembly, Pri

Item No.	Part No.	Description	Quantity

Figure 6-6. Terminal Assembly, Pri (Fig 6-1 Item 14)

			148 446	157 322
1	601 835	NUT, brs hex 10-32	16	9
2	083 426	TERMINAL BOARD, pri	1	1
3	038 887	STUD, pri bd brs 10-32 x 1.375	8	6
4	010 913	WASHER, flat brs .218 ID x .460 OD x .031thk	8	3
5	038 618	LINK, jumper term bd pri	4	1

BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

OPTIONS AND ACCESSORIES

PC–300 PULSED GTAW (DC–TIG) CONTROL (#042 297)

The PC–300 provides two internally switchable scales. The pulsing frequencies are limited by the type of power source. A non–inverter power source is capable of responding to the 0.5 to 20 pulses–per–second scale. An inverter power source can utilize the 0.5 to 20 pulses–per–second scale or the 10 to 300 pulses–per–second scale.

The PC–300 can be used with welding power sources with, or without, built–in high–frequency or with external high–frequency units (for example, HF–251D–1).

Front panel controls provide:

- Peak Amperage Adjustment
- Background Amperage Adjustment
- Pulses–Per–Second Adjustment
- Percent On–Time Adjustment
- Amperage REMOTE/PANEL
- Output Contactor ON/OFF
- Pulser ON/OFF
- Power ON/OFF

A remote control receptacle is also included for use with a remote hand or foot control.

An 8 ft. (2.4 m) interconnecting cord and 115 VAC power cord are provided.

MMP MANUAL MIG PULSING CONTROL PENDANT (#042 727)

The MMP Manual MIG (GMAW) Pulsing control allows manual control of the pulse wave form. The MMP gives the operator independent control of the four parameters affecting the pulse process:

- Frequency: Pulse rate adjusts from 20 to 200 pulses per second.
- Pulse Width: Adjusts "on" time from 1 to 5 milliseconds. Maintains arc stability.
- Peak Current Level: Sets the "peak" current from 25% to 100% of maximum output of power source. Helps "pinch" off the electrode droplet.
- Background Current Level: Sets the background current to sustain the arc (3% to 25% of maximum output of power source).

Includes 25 ft. (7.6 m) connector cord and a 17-pin Amphenol for direct connection to the front of the power source.

PANEL–MOUNTED MMP (#042 742 Field)

Allows the MMP to be mounted in the front panel of the Maxtron 450 power source.

OPTIMA™ 450 PULSING CONTROL PENDANT (#042 728)

A cost-effective way to add synergic Pulsed GMAW (MIG) capabilities when using an inverter power source. Because this control provides a synergic pulse spray transfer, it virtually eliminates spatter associated with the short circuit transfer process. Provides precise pulsing using nine selectable weld schedules, including programs for aluminum, stainless and mild steel. Includes 25 ft. (7.6 m) cord with 17-pin plug for direct connection to the front of the Maxtron 450 power source.

PANEL-MOUNTED OPTIMA 450 (#042 636 Field)

Allows the Optima 450 to be mounted in the front panel of the Maxtron 450 power source.

CYLINDER CART (#042 537)

Has adjustable handles and is slanted for convenient access to power source front panel controls. Carries two 160 lb. (72.6 kg) gas bottles or one gas bottle and one coolant system for TIG (GTAW) welding. Feeder mounted to tray above power source. Can be used with the Maxtron™, Miller Arc Pak™, or XMT® inverter power sources. Also accommodates Radiator, Watermate™, or Coolmate™ coolant systems.

LOCKABLE SWITCH BOX (#043 060)

Ensures switches are kept in correct positions. Lock not included.

AIR FILTER KIT (#043 059)

Mounts to rear of Maxtron 450. Easily removable for cleaning and reuse.

HF–251D–1 HIGH–FREQUENCY ARC STARTER/STABILIZER (#042 388)

See literature Index No. AY/5.1.

REMOTE CONTROLS AND SWITCHES

RMLS–14 (#129 337)

Momentary– and maintained–contact rocker switch for contactor control. Push forward for maintained contact and back for momentary contact. Includes 20 ft. (6 m) cord and 14–pin plug.

RHC–14 HAND CONTROL (#129 340)

4 in. x 4 in. x 3–1/4 in. Remote hand current and contactor control. Includes 20 ft. (6 m) cord and 14–pin plug.

RFC–14 FOOT CONTROL (#129 339)

Foot current and contactor control. Includes 20 ft. (6 m) cord and 14–pin plug.

VIDEOTAPE PACKAGES FOR WELDING PROCESS TRAINING

For GMAW Plate Welding (#105 773)

For SMAW Plate Welding

(#093 125) for Beginner Welder
(#093 127) for Advanced Welder

Each package includes one student text and instructor package.