MEGA-ARC® Constant Current Welding Machine

For the Following Specs:

-

200 Amp (3)
- 6028A-1, -3
- 6029A-1
- 6030A-1
- 6031A-1, -2
- 6032A-1, -2

300 Amp (4)
- 6033A-1, -3
- 6034A-1
- 6034B-1
- 6035A-1
- 6035B-1
- 6036A-1, -2
- 6037A-1, -2
- 6597-1

400 Amp (5)
- 6038A-1, -3
- 6039A-1
- 6040A-1
- 6041A-1, -2
- 6042A-1, -2
- 6633-1

600 Amp (7)
- 6043A-1
- 6044A-1
- 6045A-1
- 6046A-1, -2
- 6047A-1, -2

500 Amp (6)
- 6619-1
- 6620-1
- 6621-1
- 6622-1, -2
- 6623-1, -2

THERMAL ARC®

A THERMADYNE® Company

OWNER'S MANUAL Number **430429-125** (Rev B)
Revised September 30, 1998

IMPORTANT: Read these instructions before installing, operating, or servicing this system.

THERMAL ARC INC., TROY, OHIO 45373-1085, U.S.A.

INTRODUCTION

How To Use This Manual

This Owner's Manual usually applies to just the underlined specification or part numbers listed on the cover. If none are underlined, they are all covered by this manual.

To ensure safe operation, read the entire manual, including the chapter on Safety Instructions and Warnings.

Throughout this manual, the words **WARNING**, **CAUTION**, and **NOTE** may appear. Pay particular attention to the information provided under these headings. These special annotations are easily recognized as follows:

WARNING gives information regarding possible personal injury. Warnings will be enclosed in a box such as this.

CAUTION refers to possible equipment damage. Cautions will be shown in bold type.

NOTE offers helpful information concerning certain operating procedures. Notes will be shown in italics.

Equipment Identification

The unit's identification number (specification or part number), model, and serial number usually appear on a nameplate attached to the control panel. In some cases, the nameplate may be attached to the rear panel. Equipment which does not have a control panel such as gun and cable assemblies are identified only by the specification or part number printed on the shipping container. Record these numbers for future reference.

Receipt Of Equipment

When you receive the equipment, check it against the invoice to make sure it is complete and inspect the equipment for possible damage due to shipping. If there is any damage, notify the carrier immediately to file a claim. Furnish complete information concerning damage claims or shipping errors to Thermal Arc, Order Department, 2200 Corporate Drive, Troy, Ohio 45373-1085. Include all equipment identification numbers as described above along with a full description of the parts in error.

Move the equipment to the installation site before uncrating the unit. A lifting handle on the top of the case has been provided so that the equipment may be carried or lifted with a crane or hoist. Use care to avoid damaging the equipment when using bars, hammers, etc., to uncrate the unit.

WARNING: Falling machine due to lifting eye failure may cause death or serious injury.

- Lifting device may fail when overloaded.
- This lifting device is designed to lift the power source **ONLY**. If the machine is equipped with a trailer or accessories over 100 pounds, **DO NOT LIFT** by lifting eyes.
- Avoid sudden jerks, drops, or swinging.
- Check lifting device components visually for looseness and signs of metal fatigue.
- Before changing any hardware, check grade and size of bolts, and replace with bolts of equal or higher size and grade.

Additional copies of this manual may be purchased by contacting Thermal Arc at the address given above. Include the Owner's Manual number and equipment identification numbers.

ARC WELDING SAFETY INSTRUCTIONS AND WARNINGS

⚠ WARNING

ARC WELDING can be hazardous.

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS KEEP AWAY UNTIL CONSULTING YOUR DOCTOR. DO NOT LOSE THESE INSTRUCTIONS. READ OPERATING/INSTRUCTION MANUAL BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

Welding products and welding processes can cause serious injury or death, or damage to other equipment or property, if the operator does not strictly observe all safety rules and take precautionary actions.

Safe practices have developed from past experience in the use of welding and cutting. These practices must be learned through study and training before using this equipment. Anyone not having extensive training in welding and cutting practices should not attempt to weld. Certain of the practices apply to equipment connected to power lines; other practices apply to engine driven equipment.

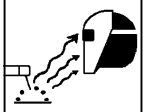
Safe practices are outlined in the American National Standard Z49.1 entitled: SAFETY IN WELDING AND CUTTING. This publication and other guides to what you should learn before operating this equipment are listed at the end of these safety precautions.

HAVE ALL INSTALLATION, OPERATION, MAINTENANCE, AND REPAIR WORK PERFORMED ONLY BY QUALIFIED PEOPLE.

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.
4. Disconnect input power or stop engine before installing or servicing this equipment. Lock input power disconnect switch open, or remove line fuses so power cannot be turned on accidentally.
5. Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
6. Turn off all equipment when not in use. Disconnect power to equipment if it will be left unattended or out of service.
7. Use fully insulated electrode holders. Never dip holder in water to cool it or lay it down on the ground or the work surface. Do not touch holders connected to two welding machines at the same time or touch other people with the holder or electrode.
8. Do not use worn, damaged, undersized, or poorly spliced cables.
9. Do not wrap cables around your body.
10. Ground the workpiece to a good electrical (earth) ground.
11. Do not touch electrode while in contact with the work (ground) circuit.
12. Use only well-maintained equipment. Repair or replace damaged parts at once.
13. In confined spaces or damp locations, do not use a welder with AC output unless it is equipped with a voltage reducer. Use equipment with DC output.
14. Wear a safety harness to prevent falling if working above floor level.
15. Keep all panels and covers securely in place.



ARC RAYS can burn eyes and skin; NOISE can damage hearing.

Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin. Noise from some processes can damage hearing.

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

Eye protection filter shade selector for welding or cutting (goggles or helmet), from AWS A6.2-73.

Welding or Cutting Operation	Electrode Size Metal Thickness or Welding Current	Filter Shade No.
Torch soldering	—	2
Torch brazing	—	3 or 4
Oxygen cutting		
Light	Under 1 in., 25 mm	3 or 4
Medium	1 to 6 in., 25-150 mm	4 or 5
Heavy	Over 6 in., 150 mm	5 or 6
Gas welding		
Light	Under 1/8 in., 3 mm	4 or 5
Medium	1/8 to 1/2 in., 3-12 mm	5 or 6
Heavy	Over 1/2 in., 12 mm	6 or 8
Shielded metal-arc welding (stick) electrodes	Under 5/32 in., 4 mm	10
	5/32 to 1/4 in., 4 to 6.4 mm	12
	Over 1/4 in., 6.4 mm	14

Welding or Cutting Operation	Electrode Size Metal Thickness or Welding Current	Filter Shade No.
Gas metal-arc welding (MIG)		
Non-ferrous base metal	All	11
Ferrous base metal	All	12
Gas tungsten arc welding (TIG)	All	12
Atomic hydrogen welding	All	12
Carbon arc welding	All	12
Plasma arc welding	All	12
Carbon arc air gouging		
Light		12
Heavy		14
Plasma arc cutting		
Light	Under 300 Amp	9
Medium	300 to 400 Amp	12
Heavy	Over 400 Amp	14

FUMES AND GASES can be hazardous to your health.

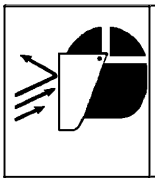
Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

1. Keep your head out of the fumes. Do not breath 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, and cleaners.
5. Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Shielding gases used for welding can displace air 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.

WELDING can cause fire or explosion.

Sparks and spatter fly off from the welding arc. The flying sparks and hot metal, weld spatter, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode or welding wire to metal objects can cause sparks, overheating, or fire.

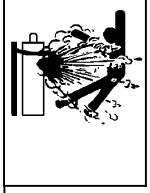
1. Protect yourself and others from flying sparks and hot metal.
2. Do not weld where flying sparks can strike flammable material.
3. Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
4. Be alert that welding sparks and hot 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 or drums.
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.



FLYING SPARKS AND HOT METAL can cause injury.

Chipping and grinding cause flying metal. As welds cool, they can throw off slag.

1. Wear approved face shield or safety goggles. Side shields recommended.
2. Wear proper body protection to protect skin.



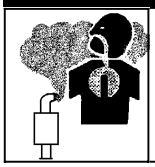
CYLINDERS can explode if damaged.

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

⚠ WARNING

ENGINES can be hazardous.



ENGINE EXHAUST GASES can kill.

Engines produce harmful exhaust gases.

1. Use equipment outside in open, well-ventilated areas.
2. If used in a closed area, vent engine exhaust outside and away from any building air intakes.

ENGINE FUEL can cause fire or explosion.

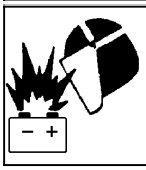
Engine fuel is highly flammable.

1. Stop engine before checking or adding fuel.
2. Do not add fuel while smoking or if unit is near any sparks or open flames.
3. Allow engine to cool before fueling. If possible, check and add fuel to cold engine before beginning job.
4. Do not overfill tank — allow room for fuel to expand.
5. Do not spill fuel. If fuel is spilled, clean up before starting engine.

MOVING PARTS can cause injury.

Moving parts, such as fans, rotors, and belts can cut fingers and hands and catch loose clothing.

1. Keep all doors, panels, covers, and guards closed and securely in place.
2. Stop engine before installing or connecting unit.
3. Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary.
4. To prevent accidental starting during servicing, disconnect negative (-) battery cable from battery.
5. Keep hands, hair, loose clothing, and tools away from moving parts.
6. Reinstall panels or guards and close doors when servicing is finished and before starting engine.



SPARKS can cause BATTERY GASES TO EXPLODE; BATTERY ACID can burn eyes and skin.

Batteries contain acid and generate explosive gases.

1. Always wear a face shield when working on a battery.
2. Stop engine before disconnecting or connecting battery cables.
3. Do not allow tools to cause sparks when working on a battery.
4. Do not use welder to charge batteries or jump start vehicles.
5. Observe correct polarity (+ and –) on batteries.

STEAM AND PRESSURIZED HOT COOLANT can burn face, eyes, and skin.

The coolant in the radiator can be very hot and under pressure.

1. Do not remove radiator cap when engine is hot. Allow engine to cool.
2. Wear gloves and put a rag over cap area when removing cap.
3. Allow pressure to escape before completely removing cap.

WARNING: This product, when used for welding or cutting, 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 Sec. 25249.5 et seq.)

NOTE: 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-63 (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 from body as practical.

About Pacemakers:

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

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.

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PRECAUTIONS DE SECURITE EN SOUDAGE A L´ARC

MISE EN GARDE

LE SOUDAGE A L´ARC EST DANGEREUX

PROTEGEZ-VOUS, AINSI QUE LES AUTRES, CONTRE LES BLESSURES GRAVES POSSIBLES OU LA MORT. NE LAISSEZ PAS LES ENFANTS S'APPROCHER, NI LES PORTEURS DE STIMULATEUR CARDIAQUE (A MOINS QU'ILS N'AIENT CONSULTE UN MEDECIN). CONSERVEZ CES INSTRUCTIONS. LISEZ LE MANUEL D'OPERATION OU LES INSTRUCTIONS AVANT D'INSTALLER, UTILISER OU ENTRETENIR CET EQUIPEMENT.

Les produits et procédés de soudage peuvent sauser des blessures graves ou la mort, de même que des dommages au reste du matériel et à la propriété, si l'utilisateur n'adhère pas strictement à toutes les règles de sécurité et ne prend pas les précautions nécessaires.

En soudage et coupage, des pratiques sécuritaires se sont développées suite à l'expérience passée. Ces pratiques doivent être apprises par étude ou entraînement avant d'utiliser l'equipement. Toute personne n'ayant pas suivi un entraînement intensif en soudage et coupage ne devrait pas tenter de souder. Certaines pratiques concernent les équipements raccordés aux lignes d'alimentation alors que d'autres s'adressent aux groupes électrogènes.

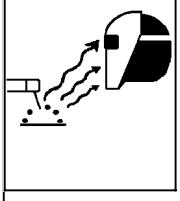
La norme Z49.1 de l'American National Standard, intitulée "SAFETY IN WELDING AND CUTTING" présente les pratiques sécuritaires à suivre. Ce document ainsi que d'autres guides que vous devriez connaître avant d'utiliser cet équipement sont présentés à la fin de ces instructions de sécurité.

SEULES DES PERSONNES QUALIFIEES DOIVENT FAIRE DES TRAVAUX D'INSTALLATION, DE REPARATION, D'ENTRETIEN ET D'ESSAI.

L'ELECTROCUTION PEUT ETRE MORTELLE.

Une décharge électrique peut tuer ou brûler gravement. L'électrode et le circuit de soudage sont sous tension dès la mise en circuit. Le circuit d'alimentation et les circuits internes de l'équipement sont aussi sous tension dès la mise en marche. En soudage automatique ou semi-automatique avec fil, ce dernier, le rouleau ou la bobine de fil, le logement des galets d'entrainement et toutes les pièces métalliques en contact avec le fil de soudage sont sous tension. Un équipement inadéquatement installé ou inadéquatement mis à la terre est dangereux.

1. Ne touchez pas à des pièces sous tension.
2. Portez des gants et des vêtements isolants, secs et non troués.
3. Isolez-vous de la pièce à souder et de la mise à la terre au moyen de tapis isolants ou autres.
4. Déconnectez la prise d'alimentation de l'équipement ou arrêtez le moteur avant de l'installer ou d'en faire l'entretien. Bloquez le commutateur en circuit ouvert ou enlevez les fusibles de l'alimentation afin d'éviter une mise en marche accidentelle.
5. Veuillez à installer cet équipement et à le mettre à la terre selon le manuel d'utilisation et les codes nationaux, provinciaux et locaux applicables.
6. Arrêtez tout équipement après usage. Coupez l'alimentation de l'équipement s'il est hors d'usage ou inutilisé.
7. N'utilisez que des porte-électrodes bien isolés. Ne jamais plonger les porte-électrodes dans l'eau pour les refroidir. Ne jamais les laisser traîner par terre ou sur les pièces à souder. Ne touchez pas aux porte-électrodes raccordés à deux sources de courant en même temps. Ne jamais toucher quelqu'un d'autre avec l'électrode ou le porte-électrode.
8. N'utilisez pas de câbles électriques usés, endommagés, mal épissés ou de section trop petite.
9. N'enroulez pas de câbles électriques autour de votre corps.
10. N'utilisez qu'une bonne prise de masse pour la mise à la terre de la pièce à souder.
11. Ne touchez pas à l'électrode lorsqu'en contact avec le circuit de soudage (terre).
12. N'utilisez que des équipements en bon état. Réparez ou remplacez aussitôt les pièces endommagées.
13. Dans des espaces confinés ou mouillés, n'utilisez pas de source de courant alternatif, à moins qu'il soit muni d'un réducteur de tension. Utilisez plutôt une source de courant continu.
14. Portez un harnais de sécurité si vous travaillez en hauteur.
15. Fermez solidement tous les panneaux et les capots.



LE RAYONNEMENT DE L´ARC PEUT BRÛLER LES YEUX ET LA PEAU; LE BRUIT PEUT ENDOMMAGER L´OUIE.

L'arc de soudage produit une chaleur et des rayons ultraviolets intenses, susceptibles de brûler les yeux et la peau. Le bruit causé par certains procédés peut endommager l'ouïe.

1. Portez une casque de soudeur avec filtre oculaire de nuance appropriée (consultez la norme ANSI Z49 indiquée ci-après) pour vous protéger le visage et les yeux lorsque vous soudez ou que vous observez l'exécution d'une soudure.
2. Portez des lunettes de sécurité approuvées. Des écrans latéraux sont recommandés.
3. Entourez l'aire de soudage de rideaux ou de cloisons pour protéger les autres des coups d'arc ou de l'éblouissement; avertissez les observateurs de ne pas regarder l'arc.
4. Portez des vêtements en matériaux ignifuges et durables (laine et cuir) et des chaussures de sécurité.
5. Portez un casque antibruit ou des bouchons d'oreille approuvés lorsque le niveau de bruit est élevé.

SELECTION DES NUANCES DE FILTRES OCULAIRES POUR LA PROTECTION DES YEUX EN COUPAGE ET SOUDAGE
(selon AWS A 8.2-73)

Opération de Coupage ou soudage	Dimension d'électrode ou Epaisseur de métal ou Intensité de courant	Nuance de de filtre oculaire
Brasage tendre au chalumeau	toutes conditions	2
Brasage fort au chalumeau	toutes conditions	3 ou 4
Oxycoupage		
mince	moins de 1 po. (25 mm)	2 ou 3
moyen	de 1 à 6 po. (25 à 150 mm)	4 ou 5
épais	plus de 6 po. (150 mm)	5 ou 6
Soudage aux gaz		
mince	moins de 1/8 po. (3 mm)	4 ou 5
moyen	de 1/8 à 1/2 po. (3 à 12 mm)	5 ou 6
épais	plus de 1/2 po. (12 mm)	6 ou 8
Soudage à l'arc avec	moins de 5/32 po. (4 mm)	10
electrode enrobées (SMAW)	de 5/32 à 1/4 po. (4 à 6.4 mm)	12
	plus de 1/4 po. (6.4 mm)	14
Soudage à l'arc sous gaz avec fil plein (GMAW)		
métaux non-ferreux	toutes conditions	11
métaux ferreux	toutes conditions	12
Soudage à l'arc sous gaz avec électrode de tungstène (GTAW)	toutes conditions	12
Soudage à l'hydrogène atomique (AHW)	toutes conditions	12
Soudage à l'arc avec électrode de carbone (CAW)	toutes conditions	12
Soudage à l'arc Plasma (PAW)	toutes dimensions	12
Gougeage Air-Arc avec électrode de carbone		
mince		12
épais		14
Coupage à l'arc Plasma (PAC)		
mince	moins de 300 ampères	9
moyen	de 300 à 400 ampères	12
épais	plus de 400 ampères	14

LES VAPEURS ET LES FUMEES SONT DANGEREUSES POUR LA SANTE.

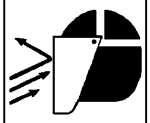
Le soudage dégage des vapeurs et des fumées dangereuses à respirer.

1. Eloignez la tête des fumées pour éviter de les respirer.
2. A l'intérieur, assurez-vous que l'aire de soudage est bien ventilée ou que les fumées et les vapeurs sont aspirées à l'arc.
3. Si la ventilation est inadequate, portez un respirateur à adduction d'air approuvé.
4. Lisez les fiches signalétiques et les consignes du fabricant relatives aux métaux, aux produits consummables, aux revêtements et aux produits nettoyants.
5. Ne travaillez dans un espace confiné que s'il est bien ventilé; sinon, portez un respirateur à adduction d'air. Les gaz protecteurs de soudage peuvent déplacer l'oxygène de l'air et ainsi causer des malaises ou la mort. Assurez-vous que l'air est propre à la respiration.
6. Ne soudez pas à proximité d'opérations de dégraissage, de nettoyage ou de pulvérisation. La chaleur et les rayons de l'arc peuvent réagir avec des vapeurs et former des gaz hautement toxiques et irritants.
7. Ne soudez des tôles galvanisées ou plaquées au plomb ou au cadmium que si les zones à souder ont été grattées à fond, que si l'espace est bien ventilé; si nécessaire portez un respirateur à adduction d'air. Car ces revêtements et tout métal qui contient ces éléments peuvent dégager des fumées toxiques au moment du soudage.

LE SOUDAGE PEUT CAUSER UN INCENDIE OU UNE EXPLOSION

L'arc produit des étincellies et des projections. Les particules volantes, le métal chaud, les projections de soudure et l'équipement surchauffé peuvent causer un incendie et des brûlures. Le contact accidentel de l'électrode ou du fil-électrode avec un objet métallique peut provoquer des étincelles, un échauffement ou un incendie.

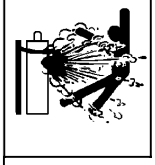
1. Protégez-vous, ainsi que les autres, contre les étincelles et du métal chaud.
2. Ne soudez pas dans un endroit où des particules volantes ou des projections peuvent atteindre des matériaux inflammables.
3. Enlevez toutes matières inflammables dans un rayon de 10, 7 mètres autour de l'arc, ou couvrez-les soigneusement avec des bâches approuvées.
4. Méfiez-vous des projections brulantes de soudage susceptibles de pénétrer dans des aires adjacentes par de petites ouvertures ou fissures.
5. Méfiez-vous des incendies et gardez un extincteur à portée de la main.
6. N'oubliez pas qu'une soudure réalisée sur un plafond, un plancher, une cloison ou une paroi peut enflammer l'autre côté.
7. Ne soudez pas un récipient fermé, tel un réservoir ou un baril.
8. Connectez le câble de soudage le plus près possible de la zone de soudage pour empêcher le courant de suivre un long parcours inconnu, et prévenir ainsi les risques d'électrocution et d'incendie.
9. Ne dégelez pas les tuyaux avec un source de courant.
10. Otez l'électrode du porte-électrode ou coupez le fil au tube-contact lorsqu'inutilisé après le soudage.
11. Portez des vêtements protecteurs non huileux, tels des gants en cuir, une chemise épaisse, un pantalon revers, des bottines de sécurité et un casque.



LES ETINCELLES ET LES PROJECTIONS BRULANTES PEUVENT CAUSER DES BLESSURES.

Le piquage et le meulage produisent des particules métalliques volantes. En refroidissant, la soudure peut projeter du éclats de laitier.

1. Portez un écran facial ou des lunettes protectrices approuvées. Des écrans latéraux sont recommandés.
2. Portez des vêtements appropriés pour protéger la peau.



LES BOUTEILLES ENDOMMAGEES PEUVENT EXPLOSER

Les bouteilles contiennent des gaz protecteurs sous haute pression. Des bouteilles endommagées peuvent exploser. Comme les bouteilles font normalement partie du procédé de soudage, traitez-les avec soin.

1. Protégez les bouteilles de gaz comprimé contre les sources de chaleur intense, les chocs et les arcs de soudage.
2. Enchainez verticalement les bouteilles à un support ou à un cadre fixe pour les empêcher de tomber ou d'être renversées.
3. Eloignez les bouteilles de tout circuit électrique ou de tout soudage.
4. Empêchez tout contact entre une bouteille et une électrode de soudage.
5. N'utilisez que des bouteilles de gaz protecteur, des détendeurs, des boyauxs et des raccords conçus pour chaque application spécifique; ces équipements et les pièces connexes doivent être maintenus en bon état.
6. Ne placez pas le visage face à l'ouverture du robinet de la bouteille lors de son ouverture.
7. Laissez en place le chapeau de bouteille sauf si en utilisation ou lorsque raccordé pour utilisation.
8. Lisez et respectez les consignes relatives aux bouteilles de gaz comprimé et aux équipements connexes, ainsi que la publication P-1 de la CGA, identifiée dans la liste de documents ci-dessous.

MISE EN GARDE

LES MOTEURS PEUVENT ETRE DANGEREUX

LES GAZ D'ECHAPPEMENT DES MOTEURS PEUVENT ETRE MORTELS.

Les moteurs produisent des gaz d'échappement nocifs.

1. Utilisez l'équipement à l'extérieur dans des aires ouvertes et bien ventilées.
2. Si vous utilisez ces équipements dans un endroit confiné, les fumées d'échappement doivent être envoyées à l'extérieur, loin des prises d'air du bâtiment.

LE CARBURANT PEUR CAUSER UN INCENDIE OU UNE EXPLOSION.

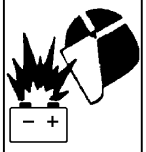
Le carburant est hautement inflammable.

1. Arrêtez le moteur avant de vérifier le niveau de carburant ou de faire le plein.
2. Ne faites pas le plein en fumant ou proche d'une source d'étincelles ou d'une flamme nue.
3. Si c'est possible, laissez le moteur refroidir avant de faire le plein de carburant ou d'en vérifier le niveau au début du soudage.
4. Ne faites pas le plein de carburant à ras bord: prévoyez de l'espace pour son expansion.
5. Faites attention de ne pas renverser de carburant. Nettoyez tout carburant renversé avant de faire démarrer le moteur.

DES PIECES EN MOUVEMENT PEUVENT CAUSER DES BLESSURES.

Des pièces en mouvement, tels des ventilateurs, des rotors et des courroies peuvent couper doigts et mains, ou accrocher des vêtements amples.

1. Assurez-vous que les portes, les panneaux, les capots et les protecteurs soient bien fermés.
2. Avant d'installer ou de connecter un système, arrêtez le moteur.
3. Seules des personnes qualifiées doivent démonter des protecteurs ou des capots pour faire l'entretien ou le dépannage nécessaire.
4. Pour empêcher un démarrage accidentel pendant l'entretien, débranchez le câble d'accumulateur à la borne négative.
5. N'approchez pas les mains ou les cheveux de pièces en mouvement; elles peuvent aussi accrocher des vêtements amples et des outils.
6. Réinstallez les capots ou les protecteurs et fermez les portes après des travaux d'entretien et avant de faire démarrer le moteur.



DES ETINCELLES PEUVENT FAIRE EXPLOSER UN ACCUMULATEUR; L'ELECTROLYTE D'UN ACCUMULATEUR PEUT BRULER LA PEAU ET LES YEUX.

Les accumulateurs contiennent de l'électrolyte acide et dégagent des vapeurs explosives.

1. Portez toujours un écran facial en travaillant sur un accumulateur.
2. Arrêtez le moteur avant de connecter ou de déconnecter des câbles d'accumulateur.
3. N'utilisez que des outils anti-étincelles pour travailler sur un accumulateur.
4. N'utilisez pas une source de courant de soudage pour charger un accumulateur ou survolter momentanément un véhicule.
5. Utilisez la polarité correcte (+ et –) de l'accumulateur.

LA VAPEUR ET LE LIQUIDE DE REFROIDISSEMENT BRULANT SOUS PRESSION PEUVENT BRULER LA PEAU ET LES YEUX.

Le liquide de refroidissement d'un radiateur peut être brûlant et sous pression.

1. N'ôtez pas le bouchon de radiateur tant que le moteur n'est pas refroidi.
2. Mettez des gants et posez un torchon sur le bouchon pour l'ôter.
3. Laissez la pression s'échapper avant d'ôter complètement le bouchon.

PRINCIPALES NORMES DE SECURITE

Safety in Welding and Cutting, norme ANSI Z49.1, American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33128.

Safety and Health Standards, OSHA 29 CFR 1910, 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, norme AWS F4.1, American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33128.

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

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

Code for Safety in Welding and Cutting, norme CSA W117.2 Association canadienne de normalisation, Standards Sales, 276 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices for Occupation and Educational Eye and Face Protection, norme ANSI Z87.1, American National Standards Institute, 1430 Broadway, New York, NY 10018.

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

DESCRIPTION OF EQUIPMENT

General

The Mega-Arc® welding machines are constant-current transformer type DC units that provide volt-ampere curves that are basically drooping with a slight slope.

See Table 3-1 for rated output of the models covered by this manual.

Spec No.	Amps	Load Volts	No Load Volts	kW	Duty Cycle
Model No. Mega-Arc® 200 (R-200-S)					
6028A-1,-3	200	28	80	5.6	60%
6029A-1	200	28	83	5.6	60%
6030A-1	200	28	80	5.6	60%
6031A-1	200	28	80	5.6	60%
6032A-1	200	28	80	5.6	60%
Model No. Mega-Arc® 300 (R-300-S)					
6033A-1,-3	300	32	80	9.6	60%
6034A-1	300	32	83	9.6	60%
6034B-1	300	32	83	9.6	60%
6035A-1	300	32	80	9.6	60%
6035B-1	300	32	80	9.6	60%
6036A-1	300	32	80	9.6	60%
6037A-1	300	32	80	9.6	60%
6597-1	300	32	80	9.6	60%
Model No. Mega-Arc® 400 (R-400-S)					
6038A-1,-3	400	36	85	14.4	60%
6039A-1	400	36	88	14.4	60%
6040A-1	400	36	85	14.4	60%
6041A-1	400	36	85	14.4	60%
6042A-1	400	36	85	14.4	60%
6633-1	400	36	85	14.4	60%
Model No. Mega-Arc® 600 (R-600-S)					
6043A-1	600	44	85	26.4	60%
6044A-1	600	44	85	26.4	60%
6045A-1	600	44	85	26.4	60%
6046A-1	600	44	85	26.4	60%
6047A-1	600	44	85	26.4	60%
Model No. Mega-Arc® —3 (R-200-S)					
6031A-2	300	32	80	9.6	35%
6032A-2	300	32	80	9.6	35%
Model No. Mega-Arc® —4 (R-300-S)					
6036A-2	400	32	80	12.8	35%
6037A-2	400	32	80	12.8	35%
Model No. Mega-Arc® —5 (R-400-S)					
6041A-2	500	40	85	14.4	40%
6042A-2	500	40	85	14.4	40%

Table 3-1 (Part 1)

Spec No.	Amps	Load Volts	No Load Volts	kW	Duty Cycle
Model No. Mega-Arc® —7 (R-600-S)					
6046A-2	750	44	85	33	40%
6047A-2	750	44	85	33	40%
Model No. Mega-Arc® 500 (R-500-S)					
6619-1	500	40	85	20	60%
6620-1	500	40	85	20	60%
6621-1	500	40	85	20	60%
6622-1	500	40	85	20	60%
6623-1	500	40	85	20	60%
Model No. Mega-Arc® —6 (R-500-S)					
6622-2	625	44	85	27.5	40%
6623-2	625	44	85	27.5	40%

Table 3-1 (Part 2)

Controls and Connections

Input Connector "ON" Pilot Light — Indicates when the connector is closed for power ON mode of the unit.

Input Connector Control ON/OFF Switch — This toggle switch is the master power switch for the welding machine, and must be in the ON position before any other section will operate. The primary circuit of the control transformer is energized whenever line voltage is present at the input terminals. This switch closes the secondary circuit of the control transformer, energizing the connector, which energizes the power transformer. See "DANGER" located in Safety Warning chapter.

Remote Amperage Control "Local-Remote" Switch — Selects either the LOCAL (panel mounted) current control, or some control device to control welding current.

Remote Connector Control "Local-Remote" Switch — In LOCAL (DOWN) position, the SCRs (Silicon Controlled Rectifiers) are energized, and open-circuit voltage (OCV) is applied to welding output terminals. In REMOTE (UP) position, a remote switch must be used.

Range Switch, Low/High Range — The welding current range suitable for the work application and electrode selection will be chosen by this switch. See Table 3-2 for current ranges.

Arc Force Ampere Control — Varies the short-circuit (welding arc) current and produces an increase of amperage when arc length is shortened, such as in a tight groove. This control provides more arc force and eliminates the tendency of snuffing out the arc, when using electrode manipulation. The control is especially suited for use with E-6010 and E-7018 electrodes for pipe welding applications. See NOTE in Operation chapter.

Current Control — Adjusts the welding current. See Table 3-2 for ranges of control.

Voltmeter (Optional) — Indicates the OCV or welding voltage of the arc, if welding arc is established.

Ammeter (Optional) — Indicates the amperage of the welding arc, when an arc is established.

Positive Terminal (+) — Serves as connection point for the welding lead to the workpiece when straight polarity is used.

Negative Terminal (—) — Serves as connection point for the electrode lead when straight polarity is used.

Remote Control Receptacle — Serves as connection point for the Remote Control Pendant.

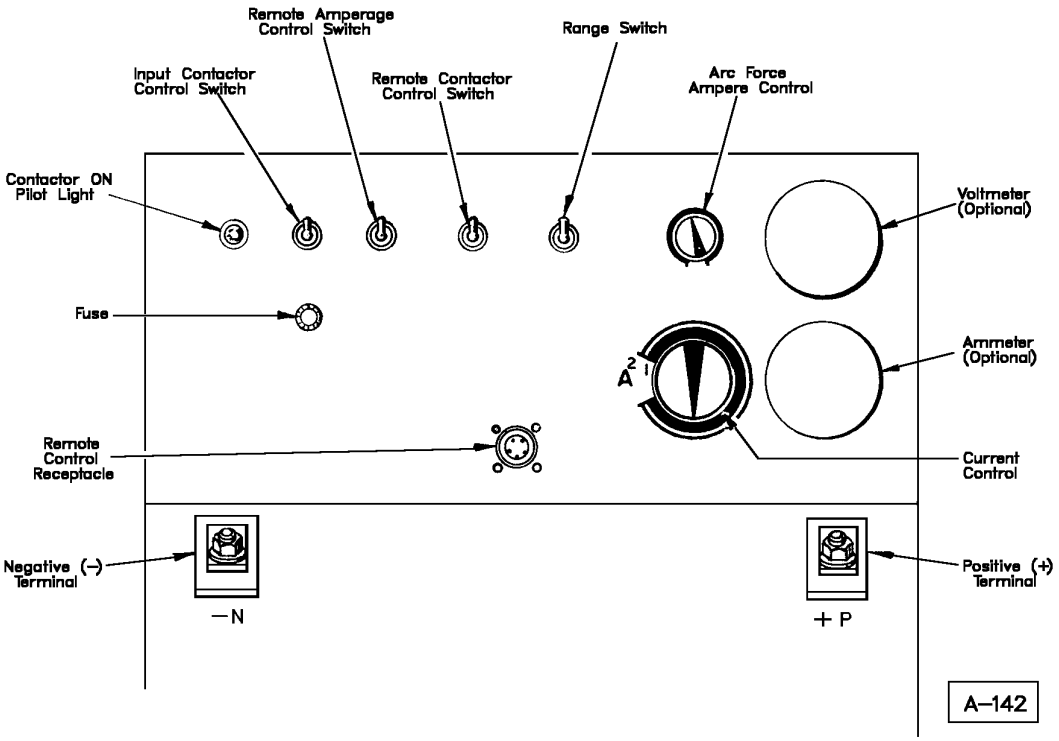
Fuse — 3 A.

Voltage Changeover Switch (Not on all models) — On Spec Numbers 6028A-3, 6033A-3, and 6038A-3 units, a voltage changeover switch will be installed on the rear panel. The switch will permit selection of either 230-volt or 460-volt input line voltage, without changing the position of the links. To select voltage, open door on switch box and place switch in desired position. Refer to Voltage Changeover Diagram in Diagrams chapter.

Welding Current Ranges

Model	Range 1 (Low)	Range 2 (High)
Mega-Arc® 200 (3)	10 to 120 A	20 to 300 A
Mega-Arc® 300 (4)	15 to 185 A	30 to 400 A
Mega-Arc® 400 (5)	20 to 240 A	40 to 500 A
Mega-Arc® 500 (6)	30 to 350 A	60 to 750 A
Mega-Arc® 600 (7)	30 to 350 A	60 to 750 A

Table 3-2



See Addendum O-229 for Spec 6597-1 and Spec 6633-1

Figure 3-1 Control Panel

INSTALLATION

Location

For best operating characteristics and longest unit life, take care in selecting an installation site. Avoid locations exposed to high humidity, dust, high ambient temperature, or corrosive fumes. Moisture can condense on electrical components, causing corrosion or shorting of circuits. Dirt on components helps retain this moisture.

Adequate air circulation is needed at all times in order to assure proper operation. Provide a minimum of 12 inches (305 mm) of free air space at both front and rear of the unit. Make sure that the ventilator openings are not obstructed.

Internal Wiring Check

Refer to the product identification plate (nameplate) on the welding machine's control panel to determine the power input voltages and frequency at which it will be operated.

Remove cabinet top for access Line Voltage Changeover circuitry. Check line voltage connections against instructions on Voltage Changeover Diagram supplied with this manual. If necessary, rearrange internal wiring and/or link connections.

Connecting Welding Machine to Line Voltage

The input power should be connected to the unit through a fused disconnect switch, or other suitable disconnecting means furnished by the used. A hole is provided in the rear panel of the machine, near to the input connections, for the entry of the input conductors.

DANGER: ELECTRIC SHOCK CAN KILL. Open the disconnect switch, or breaker, and determine that no voltage is present, before connecting wires between welding machine and power supply.

CAUTION: The method of installation, conductor size, and overcurrent protection shall conform to the requirements of the local electrical code, the National Electrical Code, or other national codes, as applicable. All installation wiring and machine reconnection shall be done by qualified persons.

Table 4-2 or 4-3 provides minimal information for selection of line conductors, fuses, and the equipment grounding conductor. This information is from the National Electrical Code NFPA 70-1981 Edition. Install this equipment per the latest edition, available from the National Fire Protection Association, 470 Atlantic Avenue, Boston, MA 02210. See CAUTION above.

Connect the three-phase line leads to terminals L1, L2, and L3 on the line contactor inside the welding machine cabinet.

Grounding

The frame of this welding machine should be grounded for personnel safety, and to assure operation of the overcurrent protection. The grounding method, and the equipment grounding conductor size and type shall conform to local and national codes.

For the National Electrical Code, the equipment grounding conductor shall be green, green with a yellow stripe, or bare.

If flexible power cable is used, use a cable assembly which includes the equipment grounding conductor. If metallic armored cable or conduit is used, the metal sheathing or conduit must be effectively grounded per local and national codes.

Rubber-tire mounted equipment shall be grounded to conform to local and national codes. The grounding assists in provide protection against line voltage electrical shock and static shock. The grounding serves to discharge the static electric charge which tends to build up on rubber-tire mounted equipment. This static charge can cause painful shock and lead to the erroneous conclusion that an electrical fault exists in the equipment.

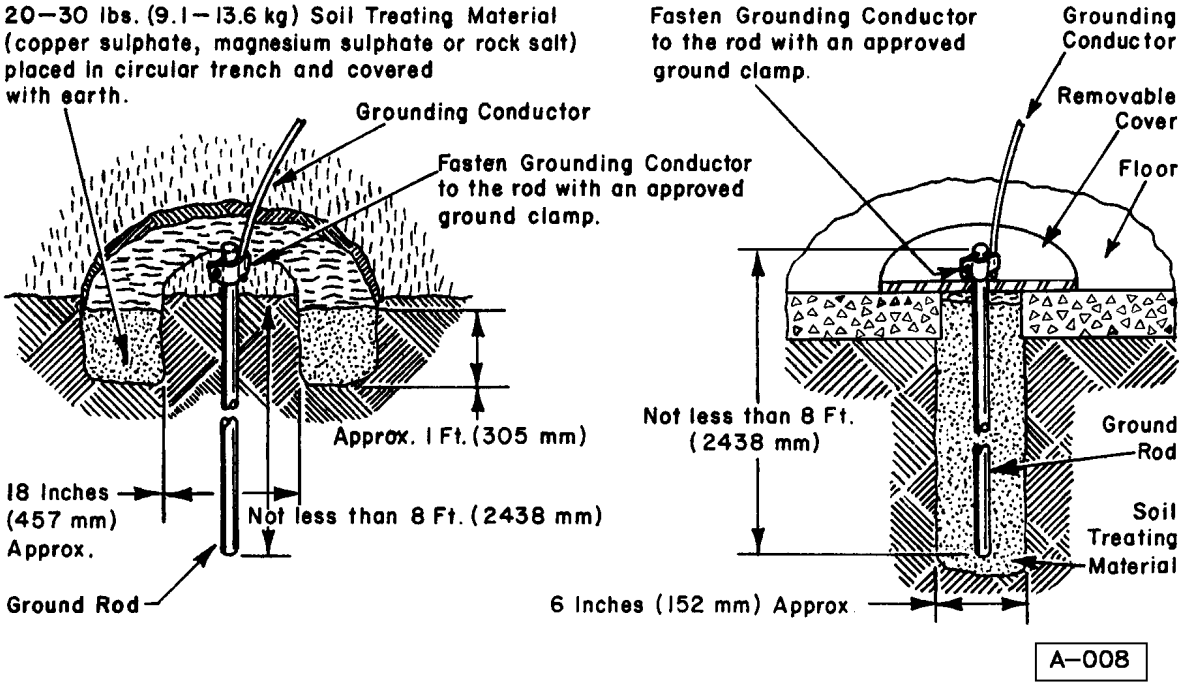


Figure 4-1

If a system ground is not available, consult the electrical code enforcement body for instructions. The welding machine should be connected to an adequate driven ground rod, or to a water pipe that enters the ground not more than 10 feet (30 meters) from the machine.

The equipment grounding conductor size is listed in Table 4-2 or 4-3 as a guide, if no local or national code is applicable.

Attach the equipment grounding conductor to the stud provided adjacent to the contactor. Determine that the ground wire size is adequate before the machine is operated.

CAUTION: Be sure to replace the cabinet top to assure adequate internal ventilation and prevent component failure.

Welding Leads

Use Table 4-4 for selection of the proper size copper welding leads.

INPUT VOLTAGE DATA					
Spec No.	Line Volts	Line Amps	Phase	Hz.	kW
6028A-1,-3	230/460	41/20.5	3	60	9.0
6029A-1	200-208/230/460	47/41/20.5	3	60	9.0
6030A-1	230/460/575	41/20.5/16.4	3	60	9.0
6031A-1	220/380/415	43/25/23	3	50	9.0
6031A-2	220/380/415	64.5/37.5/34.5	3	50	14.3
6032A-1	380/500	25/19	3	50	9.0
6032A-2	380/500	37.5/28.5	3	50	14.3
6033A-1,-3	230/460	62/31	3	60	14.0
6034A-1	200-208/230/460	71/62/31	3	60	14.0
6034B-1	200-208/230/460	71/62/31	3	60	14.0
6035A-1	230/460/575	62/31/25	3	60	14.0
6035B-1	230/460/575	62/31/25	3	60	14.0
6036A-1	220/380/415	63/36/33	3	50	14.0
6036A-2	220/380/415	84/48/44	3	50	18.5
6037A-1	380/500	36/27	3	50	14.0
6037A-2	380/500	48/36.5	3	50	18.5
6597-1	230/460	62/31	3	60	14.0
6038A-1,-3	230/460	87/43.5	3	60	20.5
6039A-1	200-208/230/460	100/87/43.5	3	60	20.5
6040A-1	230/460/575	87/43.5/35	3	60	20.5
6041A-1	220/380/415	91/53/48	3	50	20.5
6041A-2	220/380/415	114/66/60	3	50	24.9
6042A-1	380/500	53/40	3	50	20.5
6042A-2	380/500	66/50	3	50	24.9
6633-1	230/460	87/43.5	3	60	20.5
6043A-1	230/460	132/66	3	60	35
6044A-1	200/230/460	152/132/66	3	60	35
6045A-1	230/460/575	132/66/53	3	60	35
6046A-1	220/380/415	138/80/73	3	50	35
6046A-2	220/380/415	172/100/91	3	50	38
6047A-1	380/500	80/61	3	50	35
6047A-2	380/500	100/76	3	50	38
6619-1	230/460	108/54	3	60	26.5
6620-1	200/208/230/460	124/108/54	3	60	26.5
6621-1	230/460/575	108/54/43	3	60	26.5
6622-1	220/380/415	113/65/60	3	50	26.5
6622-2	220/380/415	141/81/75	3	50	33
6623-1	380/500	65/50	3	50	26.5
6623-2	380/500	81/62.5	3	50	33

Table 4-1

Line Volts	Full Load Amps					Approx. Line Fuse Rating				Copper Line Wire Size**								Copper Grd. Conductor-Min.			
										In Conduit				Flexible Cable							
	200♦	300◊	400*	500•	600••	200	300	400	600	200	300	400	600	200	300	400	600	200	300	400	600
200	47	69	100	124	152	60	90	125	200	#8	#6	#4	#2	#8	#8	#6	#4	#10	#8	#6	#6
208	47	69	100	124	152	60	90	125	200	#8	#6	#4	#2	#8	#8	#6	#4	#10	#8	#6	#6
220	43	63	91	113	138	60	90	125	200	#8	#6	#6	#2	#8	#8	#6	#4	#10	#8	#6	#6
230	41	60	87	108	132	60	90	125	200	#8	#6	#6	#2	#8	#8	#6	#4	#10	#8	#6	#6
380	25	36	53	65	80	30	50	70	110	#10	#8	#8	#6	#10	#8	#8	#8	#10	#10	#8	#8
415	23	33	48	60	73	30	50	70	110	#10	#8	#8	#8	#10	#8	#8	#8	#10	#10	#8	#8
460	20.5	30	43.5	54	66	30	50	70	110	#10	#8	#8	#8	#10	#8	#8	#8	#10	#10	#8	#8
500	19	27	40	50	61	25	40	60	110	#12	#8	#8	#8	#12	#10	#8	#8	#10	#10	#8	#8
575	16	24	35	43	53	25	40	60	80	#12	#8	#8	#8	#12	#10	#8	#8	#10	#10	#8	#8

♦ 6028A-1,-3
6029A-1
6030A-1
6031A-1
6032A-1

◊ 6033A-1,-3
6034A-1
6034B-1
6035A-1
6035B-1
6036A-1
6037A-1
6597-1

∗ 6038A-1,-3
6039A-1
6040A-1
6041A-1
6042A-1
6633-1

• 6043A-1
6044A-1
6045A-1
6046A-1
6047A-1

•• 6619-1
6620-1
6621-1
6622-1
6623-1

** Wire size calculated for 60% duty cycle.

Table 4-2 Recommended Wire and Fuse Size Table

Line Volts	Full Load Amps					Approx. Line Fuse Rating				Copper Line Wire Size*								Copper Grd. Conductor-Min.			
										In Conduit				Flexible Cable							
	3♦	4♦♦	5**	6•	7••	3	4	5	7	3 ◊	4 ◊	5 ∇	7 ∇	3 ◊	4 ◊	5 ∇	7 ∇	3 ◊	4 ◊	5 ∇	7 ∇
220	64.5	84	114	113	172	90	125	150	225	#8	#6	#4	#2	#8	#8	#8	#4	#10	#8	#6	#6
380	37.5	48	66	65	100	50	70	90	150	#8	#8	#8	#6	#8	#8	#8	#8	#10	#10	#8	#8
415	34.5	44	60	60	91	50	70	90	125	#8	#8	#8	#6	#8	#8	#8		#10	#10	#8	#8
500	28.5	36.5	50	50	76	40	50	70	110	#8	#8	#8	#6	#10	#8	#8		#10	#10	#10	#8

♦ 6031A-2
6032A-2

♦♦ 6036A-2
6037A-2
6597-1

** 6041A-2
6042A-2
6633-1

• 6046A-2
6047A-2

•• 6622-2
6623-2

◊ 35% duty cycle

∇ 40% duty cycle

* Conductor size shall be modified as required for line voltage drop and ambient temperature. Sizes listed for conduit installation are based on 90° C conductor insulation, designated as FEP, FEPB, RHH, and THHN.

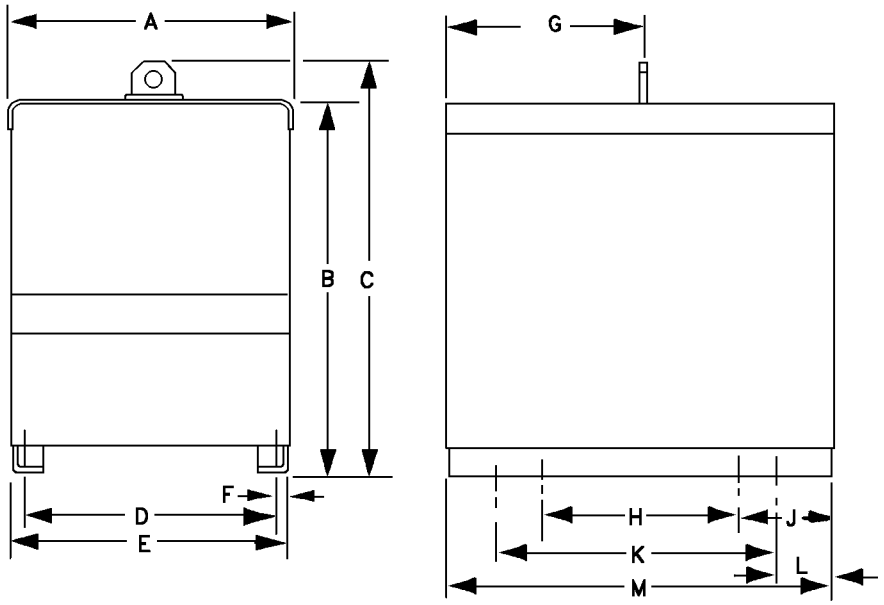
Table 4-3 Recommended Wire and Fuse Size Table

WELDING LEADS

Welding Current Amperes	TOTAL LENGTH OF LEAD CIRCUIT IN FEET (AND METERS) (ELECTRODE LEAD PLUS WORK LEAD)				
	50 (15.2 M)	100 Feet (30.5 M)	150 Feet (45.7 M)	200 Feet (61.0 M)	250 Feet (76.2 M)
100	#4	#4	#2	#1	#1
150	#4	#2	#1	#1/0	#2/0
200	#2	#1	#1/0	#2/0	#3/0
250	#1	#1	#2/0	#3/0	#4/0
300	#1/0	#1/0	#3/0	#4/0	—
350	#1/0	#2/0	#3/0	#4/0	—
400	#2/0	#2/0	#4/0	—	—
450	#2/0	#2/0	#4/0	—	—

Table shows welding lead sizes recommended for various lengths of leads. Footage shown includes complete welding (secondary) circuit, both electrode and work leads. Lead size shown is for 90°C insulation, 30°C (86°F) ambient, and not over 4.5 volts lead drop.

Table 4-4



Mega-Arc®-200, -300, -400, MA-3, MA-4, MA-5		Mega-Arc®-600, MA-7	
A	21-1/2 in. (546 mm)	A	24-1/2 in. (616 mm)
B	26-1/2 in. (673 mm)	B	26-1/2 in. (673 mm)
C	29-1/2 in. (749 mm)	C	29-1/2 in. (749 mm
D	19-3/4 in. (502 mm)	D	22-1/2 in. (572 mm)
E	21-3/8 in. (543 mm)	E	21-0 in. (610 mm)
F	13/16 in. (21 mm)	F	3/4 in. (19 mm)
G	14-9/16 in. (370 mm)	G	16-3/16 in. (411 mm)
H	14-3/4 in. (375 mm)	H	19-3/4 in. (502 mm)
J	7-3/16 in. (183 mm)	J	7-3/16 in. (183 mm)
K	20-3/4 in. (527 mm)	K	25-3/4 in. (654 mm)
L	4-3/16 in. (106 mm)	L	4-3/16 in. (106 mm)
M	29-1/8 in. (738 mm)	M	34-1/8 in. (867 mm)

Figure 4-2 Outline Dimensions

OPERATION

Sequence of Operation

1. Set INPUT CONTACTOR CONTROL Switch to ON (UP) position. The mechanical contactor should close, and the red pilot light on the panel should be illuminated. The mechanical contactor energizes the Main Power Transformer which energizes the fan motor.

2. For LOCAL control, set the REMOTE CONTACTOR CONTROL Switch and the REMOTE AMPERAGE CONTROL Switch to LOCAL (DOWN) position. The REMOTE CONTACTOR CONTROL Switch energizes the SCRs (see Connection Diagram in Diagram chapter) and open-circuit voltage is applied to the output terminals. The REMOTE AMPERAGE CONTROL Switch allows control by the CURRENT CONTROL potentiometer located in the center of the front panel.

3. For REMOTE control, set the above switches to REMOTE (UP) position. For this mode of operation it will be necessary to use a REMOTE CONTROL PENDANT, plugged into the REMOTE CONTROL RECEPTACLE, in order to energize the SCRs and control the current. The two remote switches work independently of each other. The following combinations can be accomplished:

a. Remote welding contactor control.

b. Remote current control.

c. Both of the above at the same time.

4. The RANGE SWITCH setting will be determined by the work application, considering characteristics of the workpiece and electrode. LOW range is designated as number 1 and HIGH range is number 2.

5. The ARC FORCE AMPERE CONTROL potentiometer varies the dynamic slope of the volt-amp curves. It essentially changes the short-circuit (arc) current. Turning the potentiometer knob clockwise causes forceful arc initiation, with a hard-driving arc maintained. Turning the knob counterclockwise creates a softer start, with a smooth arc.

NOTE: When using GTAW (TIG) and Plasma Processes, it is recommended that the Arc Force Control be set to minimum setting.

The setting of the potentiometer is dependent up-on the type of joint and the electrode being used. See paragraph entitled Arc Force Ampere Control in Description of Equipment chapter.

High Frequency Considerations

When operating the unit in a high frequency atmosphere, or with a high frequency attachment, the following guidelines should be adhered to, to minimize interference.

1. Turn the high frequency intensity on machines or attachments to the lowest level which will not interfere with arc starting.

2. Use the shortest possible TIG Torch cable and do not route it with other control cables and power cables.

3. Make certain that all equipment cases are earth grounded. A large ground wire between a high frequency attachment case and ground is helpful.

4. Do not coil power cables on control cables. It is best to route cables on the floor rather than overhead and among other cables. (This minimizes antenna effects.)

5. The input power cable to a high frequency attachment should be as short as possible.

6. The input leads to the power source should be contained in solid metal conduit whenever possible.

When TIG welding at very low current (less than 30 amperes), a jumper plug can be changed on the printed circuit board (369511) to insure that the open-circuit voltage will stay at maximum value. This will reduce the possibility of high frequency interference when operating at low reference voltages. In order to make this change, follow this procedure:

1. Remove the left side panel.

2. At the bottom of the printed circuit board there is a plug labeled J6. (See Figure 7-5 in Troubleshooting chapter.) Remove this plug from pins 1 and 2, and place it on pins 2 and 3.

3. Replace side panel.

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MAINTENANCE

Lubrication

The fan motor incorporates sleeve bearings. You can expect the life of this motor to exceed 50,000 hours without relubrication. Periodically cleaning the motor and lubricating the bearings will extend the life of the motor. The following table will furnish a recommended guide to the frequency of this lubrication if desired.

Type of Duty	Lubrication Interval
Light (up to 6 hrs./day)	Every 12 months
Moderate (7 to 15 hrs./day)	Every 6 months
Heavy (16 to 24 hrs./day)	Every 3 months

NOTE: Apply 1-12 drops of 20W non-detergent oil at each end of bearing.

Inspection and Cleaning

For uninterrupted, satisfactory service from this welding machine, it is necessary to keep the machine clean, dry, and well ventilated. At least every three months, or more often as necessary, wipe and blow out all dirt from the machine's internal components, with air pressure of not over 25 psi (172 kPa). Be sure to wipe the fan blades clean.

Check and tighten all electrical connections as necessary to eliminate unnecessary losses and to avoid subsequent trouble from overheating or open circuits. Check for broken wiring or damaged insulation on wiring.

WARNING: Disconnect line voltage from the unit before attempting any servicing inside unit. Turn off fused disconnect switch that supplies power to welding machine, and remove its fuses.

CAUTION: The flow of air through the welding machine is carefully directed by baffles. Never operate the welding machine with any of the side or top panels removed or open, as serious damage to the rectifiers might result.

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TROUBLESHOOTING

The following chart contains information which can be used to diagnose and correct unsatisfactory operation or failure of various components of the welding machine. Each symptom of trouble is followed by a list of probable causes and the procedure necessary to correct the problem. In addition to the chart, detailed instructions for checking and adjusting and/or setting components on the Printed Circuit Board and SCRs are given.

Troubleshooting Guide

Welding machine will not start.

Power switch OFF

Place power switch in ON position.

Power lines dead

Check voltage.

Broken power lead

Repair.

Wrong line voltage

Check power supply.

Incorrect input power connections at welding machine

Check connections against wiring diagram.

Open circuit to power switch or control transformer

Repair. Check for broken wire or loose connections at terminals.

Fuse on control transformer blown

Remedy cause. Replace fuse.

Line contactor fails to close.

Defective coil

Replace.

Mechanical obstruction on contactor

Remove.

Broken leads at line contactor

Repair.

Contactor chatters.

Line leads too small

Use larger leads.

Low line voltage

Check line voltage.

Contactor operates and blows link fuses.

Wrong line voltage

Check nameplate of welding machine for line voltage to use; check line voltage.

Links on voltage changeover board incorrectly connected

Check wiring diagrams for link positions; connect links correctly.

Line fuse too small

Install proper size fuse.

SCR failure

See Silicon Controlled Rectifier Testing.

Short circuit in primary connections

Remove short circuit.

Transformer failed

Replace transformer.

Unit delivers welding current but soon shuts down

Welding machine overloaded

Reduce load, overload can be carried only for a short time.

Duty cycle too high

Do not operate continually at overload currents.

Power leads too long or too small in cross section

Replace with larger diameter cable.

Ambient temperature too high

Operate at reduced loads when temperature exceeds 104° F (40° C).

Ventilation blocked

Check air intake and exhaust openings to be unobstructed.

Fan not operating

Check bearings, disconnect leads and apply motor nameplate voltage to test.

Contactor operates, but welding machine will not deliver welding current, and open circuit voltage is present at the output when gun switch is depressed.

No ground connections at work

Make connections.

Welding leads not connected

Make connections.

Current control does not control welding current.

Potentiometer burned out

Contact factory.

Loose connections in voltage control circuit

Check connections.

Control circuit board failure

See Detailed Setting and Troubleshooting of PC Board.

Fan not operating (also see causes and remedies under “Welding machine will not start”)

Motor failed

Replace or repair.

Broken lead or connection to fan motor

Repair wiring.

Blown fuse on front panel of welding machine

Replace; 115-volt circuit may be overloaded.

Operator gets shock when welding machine case is touched.

Case of welding machine not grounded

Ground welding machine case.

Abnormal current fluctuation, voltage nearly constant

Loose cable connections

Check for overheated connections and tighten.

Control board failure

See Detailed Setting and Troubleshooting of PC Board

Contactor fails to open.

Contactor contacts sticking

Clean contacts.

Very noticeable, rough, sputtering arc. Loss of control. Minor starting problems.

Control circuit board failure

See Detailed Setting and Troubleshooting of PC Board.

Detailed Troubleshooting Instructions

The Mega-Arc® machines are solid-state welding machines. The method of troubleshooting is different, but is not more difficult than troubleshooting a conventional unit. Do not overlook the obvious. As in the case of all electrical equipment, loose connections are the primary cause of malfunction both internal and external to the power source. Do not overlook bad grounds, shorted control cables, wrong settings, blown fuses, worn contactors, misconnections from auxiliary equipment, misapplications, etc. The only equipment needed to properly detect a problem on this power source is a simple voltohmmeter, although an oscilloscope is the best method to quickly "see" the problem.

Voltages — Refer to Diagram.

1. Across the secondary on all three phases:
120 V AC ±10% R-200-S, R-300-S

130 V AC ±10% R-400-S, R-500-S, R-600-S

2. From the center bus bar on secondaries to the top or bottom of the secondary:
60 V AC ±10% R-200-S, R-300-S

65 V AC ±10% R-400-S, R-500-S, R-600-S

3. X4-X5 on "B" phase: 115 V AC ±10%.

4. Control transformer: 115 V AC ±10%. (See Voltage Changeover Diagram.)

5. X1-X3 on fuse block: 33 V AC ±10%.

6. X1-X2 and X2 to X3 from fuse block to output rectifier: 16.5 V AC ±10%.

NOTE: The ± 10% value indicates the possibility of having a high or low voltage on the input line.

Symptoms

PC Board Failure — If a board failure occurs, the following situations will probably happen:

1. Loss of welding arc completely.

2. Rough, sputtering arc, very noticeable.

3. Loss of welding arc control.

4. Difficulty in starting arc.

Malfunction in SCRs — The following conditions will probably exist:

1. Blown line fuses in the case of a shorted SCR (similar to a shorted diode).

2. One SCR does not turn on [either it is open or gate signal is not being received by the SCR (gate circuit open)] and a very small change will occur at the welding arc, and will be difficult to detect by the average welding operator. Generally when this happens, it will be necessary to adjust the current control on the front of the power source increasing the current to obtain the same welding current that was being produced before the SCR defect occurred.

3. Two SCRs do not turn on, the welding arc becomes more erratic and unstable.

Open Circuit Voltage Test

If the power source is suspected, a very simple test can tell you a great deal about the power source. Observe the open-circuit voltage of the machine by placing a voltmeter across the output terminals. The voltage reading should be approximately 80 V DC on the R-200-S and R-300-S, 85 V DC on the R-400-S, R-500-S, and R-600-S.

If the voltage is not equal or close to this voltage, there is something wrong with the power source. Note that this voltage was observed at normal input line voltage (230 volts, for example). It will vary according to the line voltage. If the 80 or 85 V DC is observed, there is a very good chance that the power source is operating properly. See Open-circuit Voltage vs. Line Voltage Curve, Figure 7-1, for open-circuit voltage variation as a function of line voltage.

NOTE: It is important to note that in the LOW range (see Table 3-2), at minimum setting on the Current Control, the open-circuit voltage will drop to a lower value and possibly appear to be unstable (fluctuate). This is not a malfunction, but a normal situation.

Printed Circuit Board Testing

The next step is to check the Printed Circuit Board inside the unit. For complete details, see Detailed Setting and Troubleshooting of Printed Circuit Board, which follows the next section, and also Figure 7-5.

Silicon Controlled Rectifier (SCR) Testing

In the case of a severe malfunction such as a shorted SCR, do not turn the unit ON. Disconnect the leads from the transformer to the heat sink assembly, and check with VOM for *shorted* SCRs.

An *open* gate or an *open* SCR cannot be checked with a VOM. If an SCR is not firing, the open-circuit

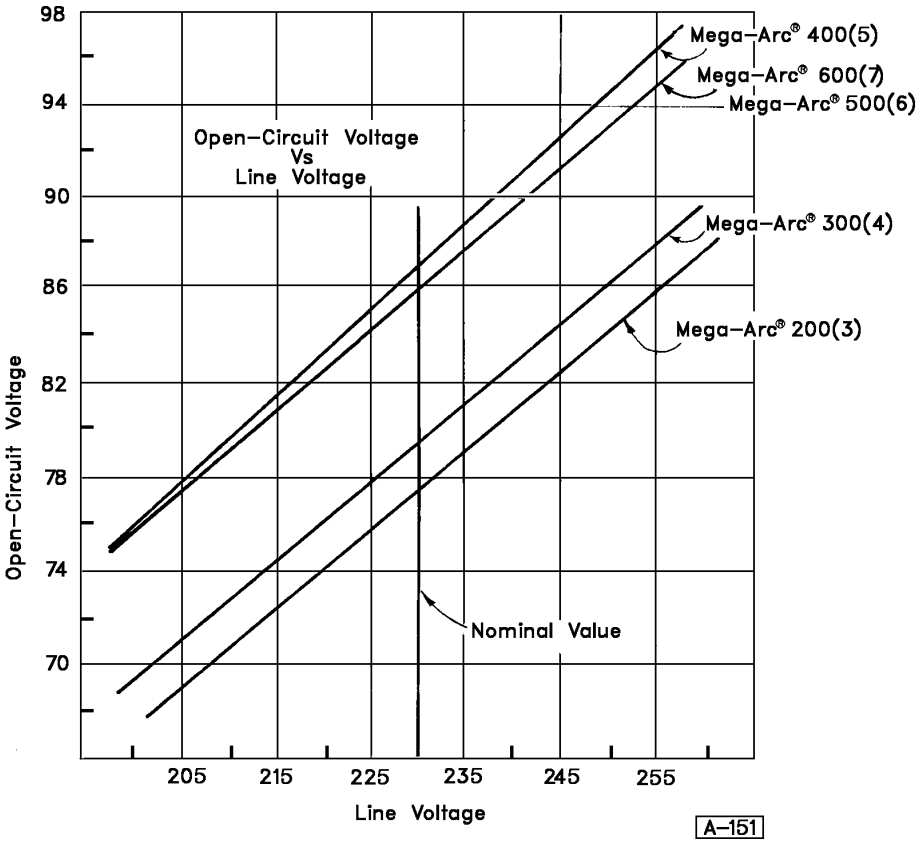


Figure 7-1

voltage will shift down. Check the following table for typical values.

NOTE: The above values in Table 7-1 were recorded at nominal line voltage.

	MAX OCV			
	All SCRs Firing	One Not Firing	Two Not Firing	Three Not Firing
Mega-Arc® 200	80 V DC	73 V DC	66 V DC	53 V DC
Mega-Arc® 300	80 V DC	73 V DC	66 V DC	53 V DC
Mega-Arc® 400	85 V DC	77 V DC	69 V DC	61 V DC
Mega-Arc® 500	85 V DC	77 V DC	69 V DC	61 V DC
Mega-Arc® 600	85 V DC	77 V DC	69 V DC	61 V DC

Table 7-1

Isolating Malfunctioning SCR — This is best done by trial-and-error method. Use Connection Diagram as reference while inspecting the unit. On the output rectifier heat sink there are two surge suppressor boards, each having three terminals. The leads connected to these terminal strips are providing the gate signal to the SCRs. The wires from the other side of the terminal strips to the SCRs are white wires, in all cases.

Turn the Current Control to maximum position (fully clockwise) and begin disconnecting the leads from the terminals, one at a time. As the first lead is disconnected, observe the open-circuit voltage of the machine. If the OCV drops to a lower value, it will indicate that this particular SCR is working properly. Reconnect this lead, and proceed to do the same with the remaining five leads until you discover which disconnection does *not* cause the OCV to drop to a lower level. This will be the SCR which should be changed. See Mounting Procedure for SCRs.

Mounting Procedure for SCRs

1. Thoroughly clean heat sink surface to eliminate any dirt or contamination.

2. Apply a thin coat of Alcoa #2 compound to cleaned surface. Alcoa #2 is available from Thermal Arc, part number 903870.

3. Positively locate the SCR in place in the heat sink. A small spring pin in the extruded heat sink will locate the SCR.

4. Place the clamp in position with the bolts through the holes in the heat sink, and proceed in following manner.

5. Tighten the nuts evenly until finger tight.

6. Tighten each bolt in 1/4 turn increments using correct size hex key.

7. Place the Force Indicator Gauge (903878) firmly against the springs as shown. Be sure both ends and the center are in firm contact with the springs. The gauge notch location will indicate the spring deflection or force. Correct mounting force is indicated as shown below.

8. Spring deflection over 2-1/4 inches of spring is .037" ± .002" for all clamps.

9. All clamps to be set at 4° mark. This corresponds to the VE3000-VE2500 section on the gauge label.

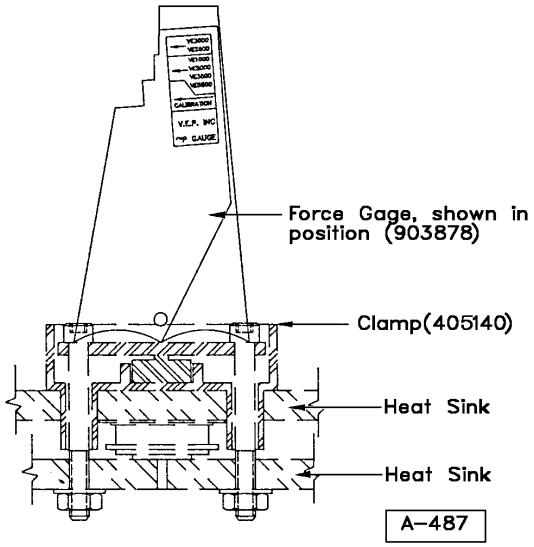
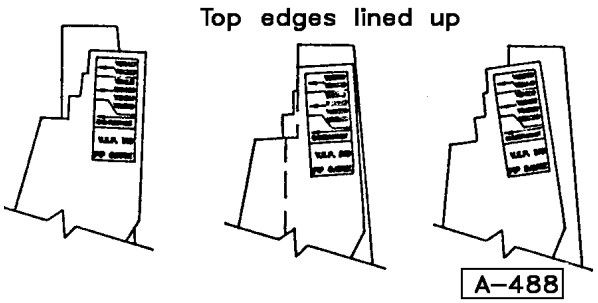


Figure 7-3

Examples:

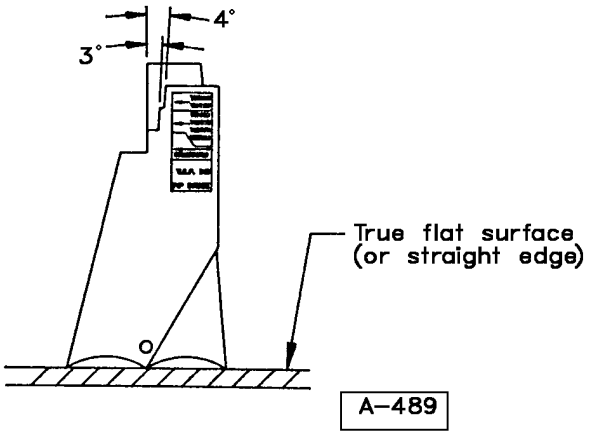


Less than rated force. Tighten nuts alternately 1/4 turn at a time until points coincide.	Correct rated force.	Excessive force. Loosen both nuts and start over. Never adjust force by backing off the nuts. Friction will produce a false reading. Always start from Step 1.

Figure 7-2

To Calibrate Force Gauge:

If the gauge is suspected of being out of calibration due to wear or damage, check it on a flat surface as shown below.



If the calibration edges do not line up, calibrate the gauge by filing the bottom contact points.

Figure 7-4

Detailed Setting and Troubleshooting of Printed Circuit Board (PC Board 369511)

Test Points — There are several test points on the PC Board which will aid in determining if the defect is in the board. First, be certain that all the wiring to the board is in good shape, and input leads (X1-X3) are in place. The voltage checks shown in Table 7-2 should be made in sequence.

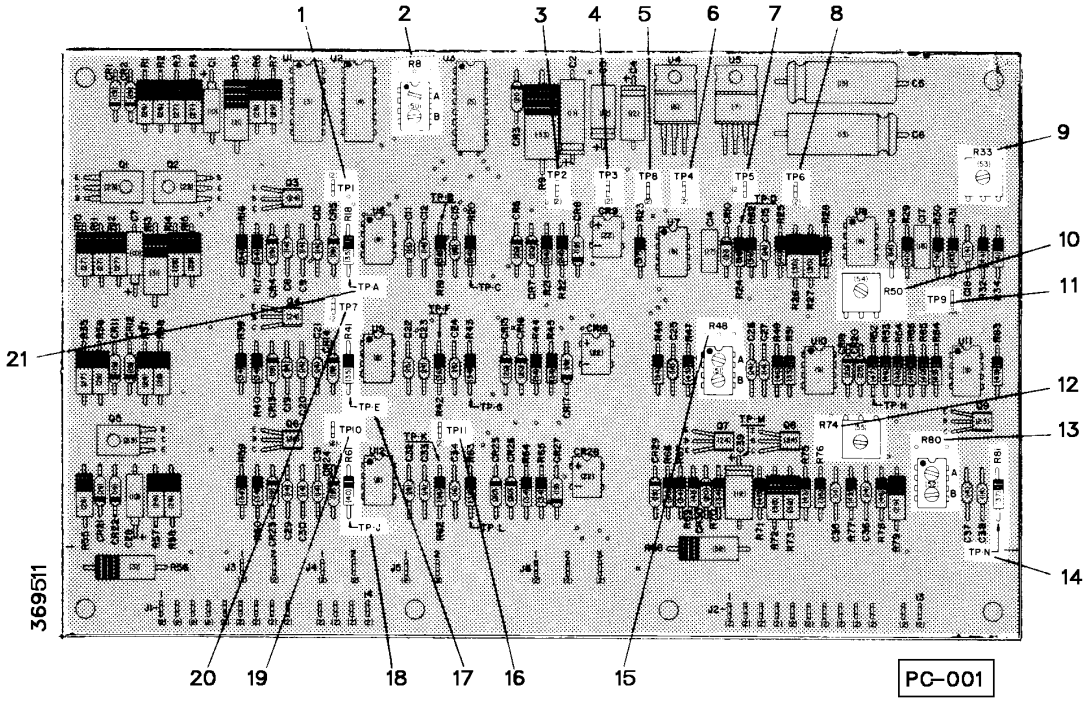


Figure 7-5 Printed Circuit Board

Test	Test Points	Voltage	Conditions	Remarks
1	(6) TP4 to TP6 or 11 (8 or 16)	+15 V DC ± 5%	Open-circuit	Checks output of regulator
2	(7) TP5 to TP6 or 11 (8 or 16)	–15 V DC ± 5%	Open-circuit	Checks output of regulator
3	(3) TP2 to TP6 or 11 (8 or 16)	+22 V DC ± 10%	Open-circuit	Checks solid state contactor control
4	(4) TP3 to TP6 or 11 (8 or 16)	+9.1 V DC ± 10%	Open-circuit	Checks reference voltage
5	(12) TPN to TP6 or 11 (8 or 16)	–10 V DC	Open-circuit	Checks reference voltage
6	(21) TPA to TP6 or 11 (8 or 16) (17) TPE to TP6 or 11 (8 or 16) (18) TPJ to TP6 or 11 (8 or 16)	2.7 V DC ± 10% 2.7 V DC ± 10% 2.7 V DC ± 10%	Open-circuit Open-circuit Open-circuit	Checks timer operation
7	(1) TP1 to TP6 or 11 (8 or 16) (20) TP7 to TP6 or 11 (8 or 16) (19) TP10 to TP6 or 11 (8 or 16)	2.5 V DC ± 10% 2.5 V DC ± 10% 2.5 V DC ± 10%	Open-circuit Current control set @ 50% Current control set @ 50%	Checks timer operation
8	(5) TP8 to TP6 or 11 (8 or 16)	1.6 V DC ± 10%	Minimum output High range	Checks summing Op. Amp.
9	(11) TP9 to TP6 or 11 (8 or 16)	0.4 V DC ± 10%	Short circuit	Checks feedback circuit
10	(11) TP9 to TP6 or 11 (8 or 16)	0 V DC	Open-circuit	Checks zero calibration

NOTE: Locate numbers in parens ( ) on PC Board by callout numbers. It will be necessary to scrape varnish from component lead test points and post test points to get a voltmeter reading.

If any of the above tests fail, there is a high probability of a defective P.C. Board.

Table 7-2

CAUTION: The open-circuit voltage is set on the PC Board. This setting is sensitive to line voltage. Do not connect a machine to a line in which the voltage varies more than ± 10% of nominal line voltage. For example, on a 460-volt line, the operating voltage range is 414 to 504 volts.

Potentiometer Settings — The following is a brief description of the potentiometers and what parameters they control. Callout numbers from Figure 7-5 are in parens ( ).

NOTE: All potentiometer operating values are preset at the factory, and normally should not have to be reset in the field. If a need arises that would indicate the need for field adjustments, please contact the factory.

1. Pot. R80B (13) — Adjusts the output of Feedback Amplifier U8 and eliminates offset voltage values.

2. Pot. R33 (9) — Adjusts the 10-volt DC reference voltage.

3. Pots. R8A and R8B (2) — Adjusts the phase balance output of the SCR rectifier.

4. Pot. R48A (15) — Adjusts the maximum open-circuit voltage.

5. Pot. R48B (15) — Adjusts the voltage point at which the current begins increasing in the arc force circuit.

6. Pot. R74 (12) — Adjusts the maximum short circuit current in the arc force circuit.

7. Pot. R80A (13) — Adjusts the minimum output current.

8. Pot. R50 (10) — Adjusts the maximum output current.

PARTS LIST

Equipment Identification

All identification numbers as described in the Introduction chapter must be furnished when ordering parts or making inquiries. This information is usually found on the nameplate attached to the equipment. Be sure to include any dash numbers following the Specification or Assembly numbers.

How To Use This Parts List

The Parts List is a combination of an illustration (Figure Number) and a corresponding list of parts which contains a breakdown of the equipment into assemblies, subassemblies, and detail parts. All parts of the equipment are listed except for commercially available hardware, bulk items such as wire, cable, sleeving, tubing, etc., and permanently attached items which are soldered, riveted, or welded to another part. The part descriptions may be indented to show part relationships.

To determine the part number, description, quantity, or application of an item, simply locate the item in question from the illustration and refer to that item number in the corresponding Parts List.

An “Application Code” is used to distinguish parts that are applicable only to certain Specifications and/or Assemblies. This code is found in the rightmost column of the Parts List. If an item in the Parts List applies to all Specifications or Assemblies, the word “ALL” will be in the Application Code column. Refer to the following list to determine the appropriate Application Codes for the Specifications or Assemblies covered by this manual. If only the assembly or specification number is listed, the use of an Application Code does not apply to this manual.

SPECIFICATION NUMBER	APPLICATION CODE
6028A-1	A
6029A-1	B
6030A-1	C
6031A-1	D
6032A-1	E
6028A-3	F
6031A-2	G
6032A-2	H

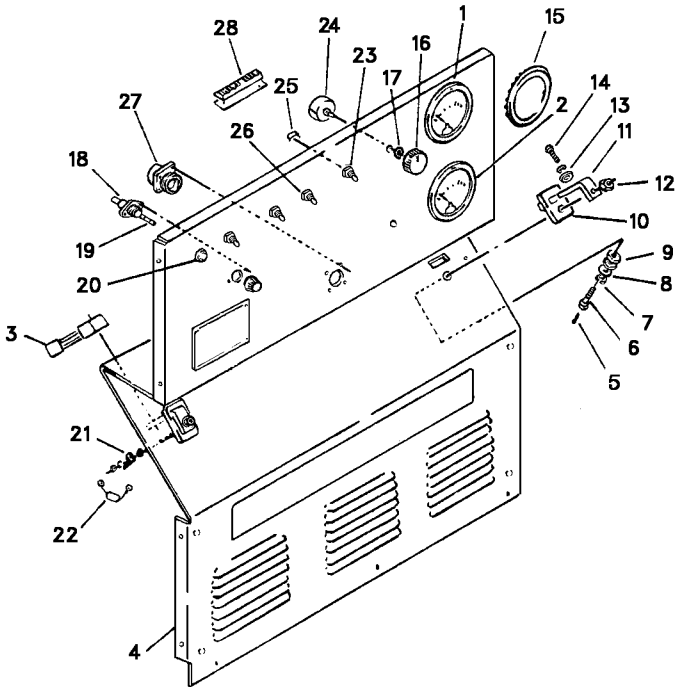


Figure 8-1 Control Panel Group

Parts List for Figure 8-1

Item No	Part Number	Description	Qty per Assy	Application Code
	367845-1	Kit - Meter (Optional)	1	All
1	400641-6	. Ammeter - DC	1	All
2	400642-4	. Voltmeter - DC	1	All
3	CW-1142A	. Shunt	1	All
	369685-1	Panel - Control Assembly	1	All
4	369684-1	. Panel - Control	1	All
5	No Number	. Screw - #6-32 x 3/16 Rd. Hd. MH. ST.	2	All
6	351505	. Screw - 1/2-13 x 1-3/4, HHC (Drilled for Item 5)	2	All
7	No Number	. Washer - LK, ST. 1/2	4	All
8	No Number	. Washer - 1/2, FL, ST.	2	All
9	5CW-976A	. Washer - Insulating	4	All
10	5CW-975	. Bushing - Insulator, Stud	2	All
11	5CW-974	. Bus - Cable, Stud	2	All
12	No Number	. Nut - 1/2-13, Hex, Flanged, ST.	2	All
13	No Number	. Washer - 1/2, Flat ST.	2	All
14	No Number	. Screw - 1/2-13 x 1-1/4, HHC, ST.	2	All
15	405982-1	. Cover - Meter Hole	2	All
16	406161	. Knob - Red	1	All
—	406162	. Knob - Control	1	All
17	402663	. Nut - Pot. Lock	2	All
18	402658	. Fuseholder	1	All
19	W-11166-10	. Fuse - 3 Amp, AGC	1	All
20	402421-2	. Light - Pilot, Red	1	All
21	402900	. Terminal - Quick Connect Tab, Male	2	All
22	368705-8	. Capacitor - W/Lead & Term.	2	All
	369686	. Harness - Wire Assembly	1	All
23	405365-1	. . Switch - Toggle, SPST	2	All
24	401428-8	. . Potentiometer - 2 Watt, 5 K	2	All
25	367703-1	. . Resistor - 1/2 Watt, Assembly	1	All
26	405365-2	. . Switch - Toggle, SPDT	2	All
27	400758	. . Receptacle - 6 Pin, Amphenol	1	All
28	401937-5	. . Block - Terminal	1	All
—	402037-8	. . Grommet - Rubber	1	All
—	402037-13	. . Grommet - Rubber	1	All
—	Not Illustrated			

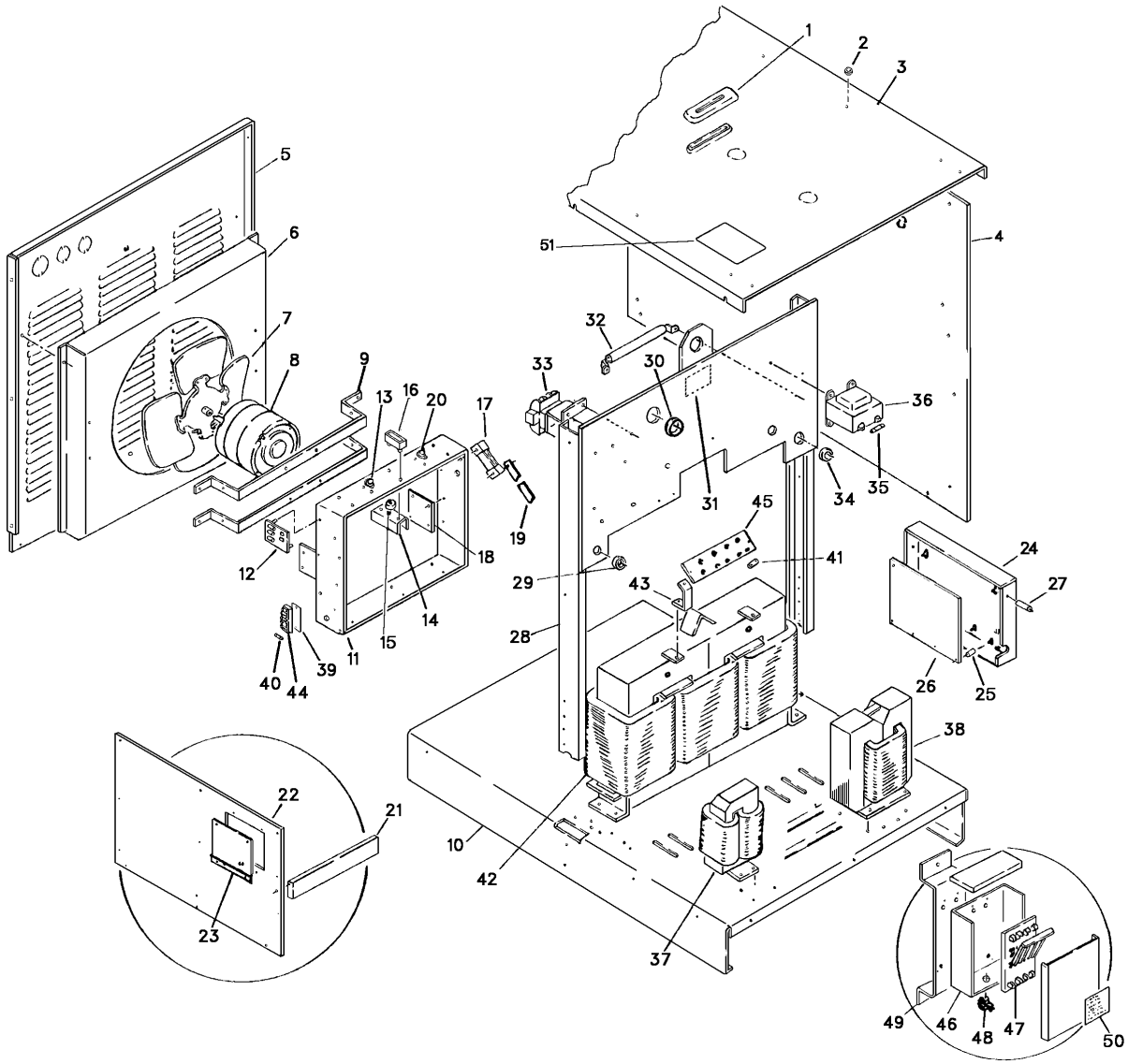


Figure 8-2 Base and Lifting Yoke Group

Parts List for Figure 8-2

Item No	Part Number	Description	Qty per Assy	Application Code
1	12CW-2170	Grommet - Top	1	All
2	403091-4	Plug - Hole, Plastic	8	All
3	369652	Panel - Top	1	All
4	369651	Panel - Sides	2	All
5	369683	Panel - Rear	1	All
6	369650	Shroud - Fan	1	All
7	8RT-609	Blade - Fan	1	All
8	12TW-595-1	Motor - Fan	1	All
9	369640	Bracket - Motor	2	All
10	369653	Base - Mounting Assembly	1	All
	369638-1	Rectifier - Output, Assembly	1	ABCDEF
	369638-11	Rectifier - Output, Assembly	1	GH
11	369639	. Heat Sink - Rect.	1	All
12	367634A-3	. Suppressor - Surge, Assembly	2	All
—	405157	. Label - Fuse	1	All
13	404044-1	. Thermostat - Overload	1	All
14	369642	. Heat Sink - SCR	6	All
15	405139	. Rectifier - Silicon	6	All
16	405140-1	. Clamp - Mounting	6	All
—	16DA-954-12	. Pin - Spring	6	All
17	367731	. Shunt	1	ABCDEF
	201072	. Shunt	1	GH
18	369641	. Insulator - Mtg. Rect.	2	All
19	369703	Bar - Bus, Output Term. to Shunt	1	All
20	200155	Thermostat - Fan Turn On (Optional)	1	All
	200157	Kit - Cover, OSHA (Optional)	1	All
21	200280	. Cover	1	All
	369826	Kit - Side Panel, W/Access Door (Optional)	1	All
22	369827	. Panel - Side	1	All
23	369210	. Door - Access	1	All
—	402549-2	Tag - Line Voltage	1	AFB
—	402549-1	Tag - Line Voltage	1	CDEGH
	369669-2	Panel - PC Board, Assembly	1	All
24	369670	. Panel - PC Board	1	All
25	404915-1	. Spacer - PC Board	6	All
26	369511	. Board - PC Assembly	1	All
27	200114	Spacer - PC Panel	1	All
	369630-1	Yoke - Lifting, Assembly	1	ABF
	369630-2	Yoke - Lifting, Assembly	1	CDEGH
—	Not Illustrated			

Parts List for Figure 8-2

Item No	Part Number	Description	Qty per Assy	Application Code
28	369631	. Yoke - Lifting	1	All
29	405362-1	. Bushing - Snap	2	All
30	405362-2	. Bushing - Snap	1	All
31	405793	. Label - Warning	1	All
—	406484	. Label - Fuse, Control Trans.	1	All
32	406358-2	. Resistor - 50 Ohms	1	All
33	405479	. Contactor	1	All
34	402037-27	. Grommet - Rubber	1	All
35	W-11166-11	. Fuse - 1/2 Amp	1	All
36	406392-1	. Transformer - Control	1	ABF
	406392-2	. Transformer - Control	1	CDEGH
37	367723-2	Reactor - Filter	1	All
38	369672	Transformer - Interface	1	All
39	367579	Insulator - Fuse Block	1	All
40	W-11166-9	Fuse - 1 Amp	6	All
41	CW-811	Link - Voltage Changeover	6	ABCDFGH
	CW-811	Link - Voltage Changeover	3	EH
42	200287	Transformer - Power Assembly	1	AF
	200288	Transformer - Power Assembly	1	B
	200289	Transformer - Power Assembly	1	C
	200290	Transformer - Power Assembly	1	DG
	200291	Transformer - Power Assembly	1	E
43	367690	. Brace - V.C Board	2	All
44	405129-1	. Block - Fuse	1	All
45	367170-5	. Board - V.C. Assembly	1	AF
	367229-6	. Board - V.C. Assembly	1	B
	367229-7	. Board - V.C. Assembly	1	C
	367229-9	. Board - V.C. Assembly	1	DGH
	367229-8	. Board - V.C. Assembly	1	E
	200643	Box - Voltage Changeover, Assembly	1	F
46	365167	. Box - Voltage Changeover	1	F
47	405615	. Switch - VC	1	F
48	W-10862-1	. Connector - Cable	1	F
49	200418	. Bracket - Mtg. Box	1	F
50	361692	. Label - V.C.	1	F
—	W-10080-4	Connector - Straight	1	F
51	204036	Label - Precautionary	1	All
—	Not Illustrated			

PARTS LIST

Equipment Identification

All identification numbers as described in the Introduction chapter must be furnished when ordering parts or making inquiries. This information is usually found on the nameplate attached to the equipment. Be sure to include any dash numbers following the Specification or Assembly numbers.

How To Use This Parts List

The Parts List is a combination of an illustration (Figure Number) and a corresponding list of parts which contains a breakdown of the equipment into assemblies, subassemblies, and detail parts. All parts of the equipment are listed except for commercially available hardware, bulk items such as wire, cable, sleeving, tubing, etc., and permanently attached items which are soldered, riveted, or welded to another part. The part descriptions may be indented to show part relationships.

To determine the part number, description, quantity, or application of an item, simply locate the item in question from the illustration and refer to that item number in the corresponding Parts List.

An “Application Code” is used to distinguish parts that are applicable only to certain Specifications and/or Assemblies. This code is found in the rightmost column of the Parts List. If an item in the Parts List applies to all Specifications or Assemblies, the word “ALL” will be in the Application Code column. Refer to the following list to determine the appropriate Application Codes for the Specifications or Assemblies covered by this manual. If only the assembly or specification number is listed, the use of an Application Code does not apply to this manual.

SPECIFICATION NUMBER	APPLICATION CODE
6033A-1	A
6034A-1	B
6035A-1	C
6036A-1	D
6037A-1	E
6033A-3	F
6036A-2	G
6037A-2	H
6034B-1	J
6035B-1	K

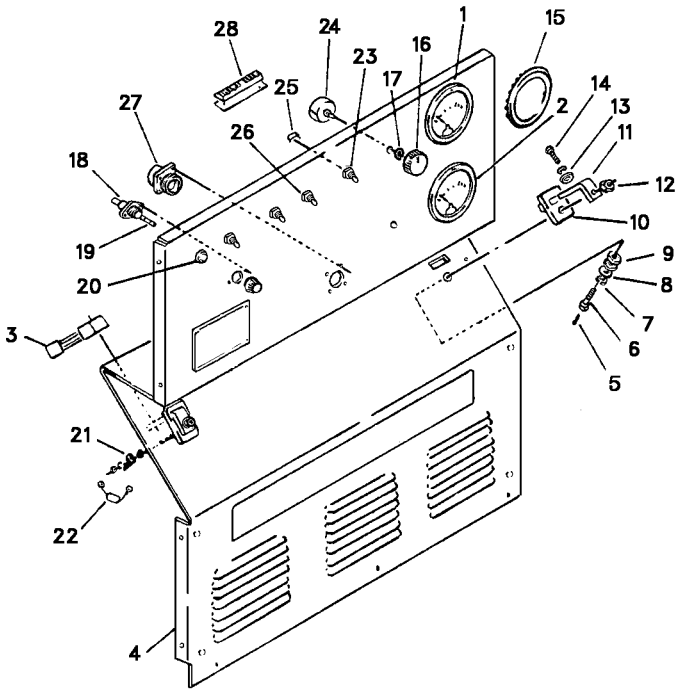


Figure 8-1 Control Panel Group

Parts List for Figure 8-1

Item No	Part Number	Description	Qty per Assy	Application Code
	367845-1	Kit - Meter (Optional)	1	All
1	400641-6	. Ammeter - DC	1	All
2	400642-4	. Voltmeter - DC	1	All
3	CW-1142A	. Shunt	1	All
	369685-2	Panel - Control Assembly	1	ABCD EFGH
	369685-14	Panel - Control Assembly	1	JK
4	369684-2	. Panel - Control	1	ABCD EFGH
	369684-8	. Panel - Control	1	JK
5	No Number	. Screw - #6-32 x 3/16 Rd. Hd. MH. ST.	2	All
6	351505	. Screw - 1/2-13 x 1-3/4, HHC (Drilled for Item 5)	2	All
7	No Number	. Washer - LK, ST. 1/2	4	All
8	No Number	. Washer - 1/2, FL, ST.	2	All
9	5CW-976A	. Washer - Insulating	4	All
10	5CW-975	. Bushing - Insulator, Stud	2	All
11	5CW-974	. Bus - Cable, Stud	2	All
12	No Number	. Nut - 1/2-13, Hex, Flanged, ST.	2	All
13	No Number	. Washer - 1/2, Flat ST.	2	All
14	No Number	. Screw - 1/2-13 x 1-1/4, HHC, ST.	2	All
15	AW-113-3	. Cover - Meter Hole	2	ABCD EFGH
	AW-113-9	. Cover - Meter Hole	2	JK
16	406806-3	. Knob	1	All
—	408850-5	. Knob - Control	1	All
17	402663	. Nut - Pot. Lock	2	All
18	402658	. Fuseholder	1	All
19	W-11166-10	. Fuse - 3 Amp, AGC	1	All
20	402421-2	. Light - Pilot, Red	1	All
21	402900	. Terminal - Quick Connect Tab, Male	2	All
22	368705-8	. Capacitor - W/Lead & Term.	2	All
	369686	. Harness - Wire Assembly	1	All
23	405365-1	. . Switch - Toggle, SPST	2	All
24	401428-8	. . Potentiometer - 2 Watt, 5 K	2	All
25	367703-1	. . Resistor - 1/2 Watt, Assembly	1	All
26	405365-2	. . Switch - Toggle, SPDT	2	All
27	400758	. . Receptacle - 6 Pin, Amphenol	1	All
28	401937-5	. . Block - Terminal	1	All
—	402037-8	. . Grommet - Rubber	1	All
—	402037-13	. . Grommet - Rubber	1	All
—	Not Illustrated			

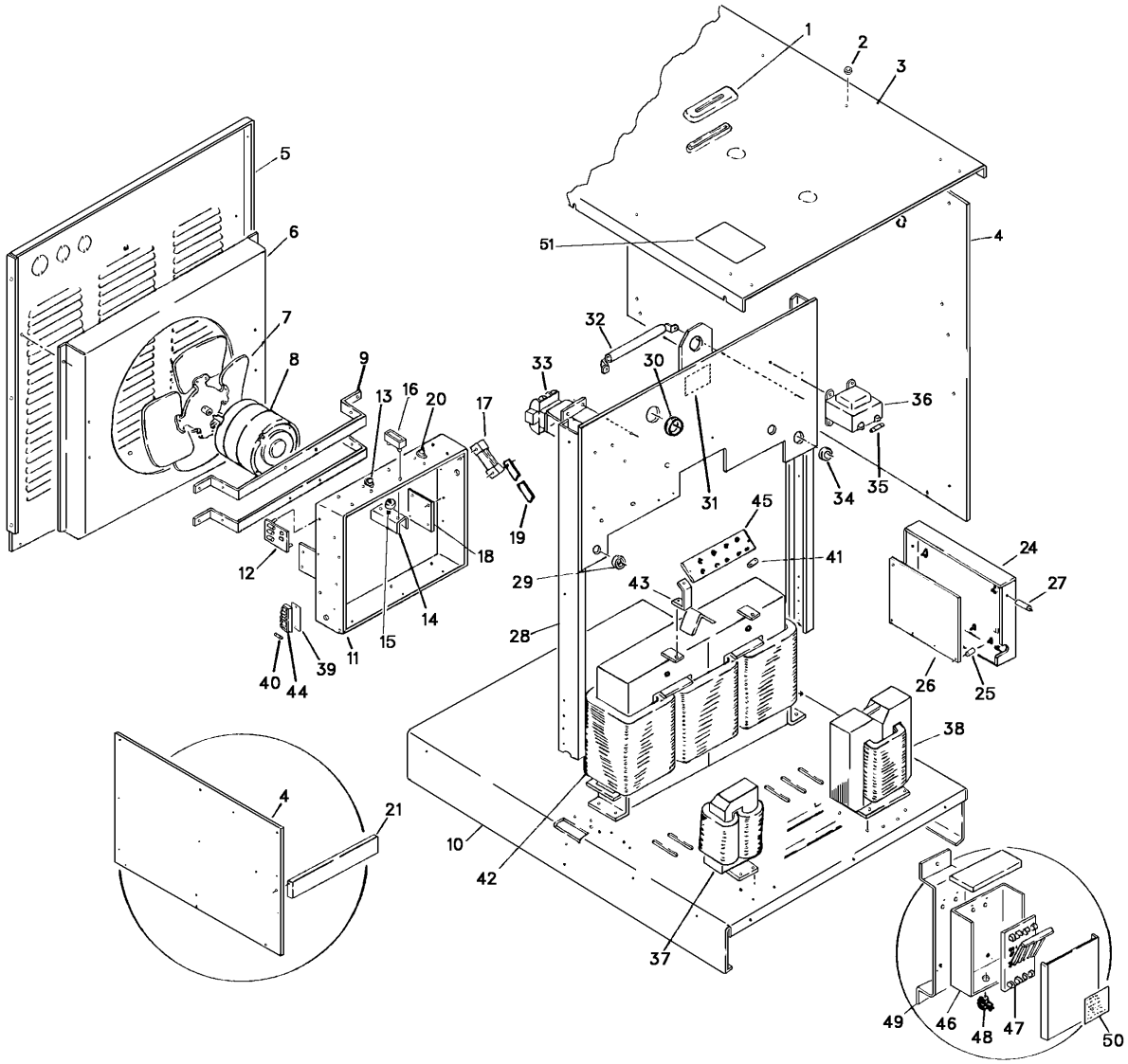


Figure 8-2 Base and Lifting Yoke Group

Parts List for Figure 8-2

Item No	Part Number	Description	Qty per Assy	Application Code
1	12CW-2170	Grommet - Top	1	All
2	403091-4	Plug - Hole, Plastic	8	All
3	369652	Panel - Top	1	ABCD EFGH
	369652-1	Panel - Top	1	JK
4	369651	Panel - Sides	2	ABCD EFGH
	369651-1	Panel - Sides	2	JK
5	369683	Panel - Rear	1	ABCD EFGH
	369683-1	Panel - Rear	1	JK
6	369650	Shroud - Fan	1	ABCD EFGH
	369650-1	Shroud - Fan	1	JK
7	8RT-609	Blade - Fan	1	All
8	12TW-595-1	Motor - Fan	1	All
9	369640	Bracket - Motor	2	ABCD EFGH
	369640-1	Bracket - Motor	2	JK
10	369653	Base - Mounting Assembly	1	ABCD EFGH
	369653-1	Base - Mounting Assembly	1	JK
	369638-2	Rectifier - Output, Assembly	1	ABCD EFJK
	369638-12	Rectifier - Output, Assembly	1	GH
11	369639	. Heat Sink - Rect.	1	All
12	367634A-3	. Suppressor - Surge, Assembly	2	All
—	405157	. Label - Fuse	1	All
13	404044-1	. Thermostat - Overload	1	All
14	369642	. Heat Sink - SCR	6	All
15	405139	. Rectifier - Silicon	6	All
16	405140-1	. Clamp - Mounting	6	All
—	16DA-954-12	. Pin - Spring	6	All
17	367687	. Shunt	1	ABCD EFJK
	201073	. Shunt	1	GH
18	369641	. Insulator - Mtg. Rect.	2	All
19	369703	Bar - Bus, Output Term. to Shunt	1	All
—	Not Illustrated			

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Parts List for Figure 8-2

Item No		Part Number	Description	Qty per Assy	Application Code
20		200155A	Thermostat - Fan Turn On (Optional)	1	All
		200157A	Kit - Cover, OSHA (Optional)	1	All
21		200280-1	. Cover	1	All
22			. Deleted		
23			. Deleted		
		369669-2	Panel - PC Board, Assembly	1	ABCD EFGH
		369669-10	Panel - PC Board, Assembly	1	JK
24		369670	. Panel - PC Board	1	ABCD EFGH
		369670-1	. Panel - PC Board	1	JK
25		404915-1	. Spacer - PC Board	6	All
26		369511	. Board - PC Assembly	1	All
27		200114	Spacer - PC Panel	1	All
		369630-1	Yoke - Lifting, Assembly	1	ABF
		369630-10	Yoke - Lifting, Assembly	1	J
		369630-2	Yoke - Lifting, Assembly	1	CDEGH
		369630-11	Yoke - Lifting, Assembly	1	K
28		369631	. Yoke - Lifting	1	ABCD EFGH
		369631-2	. Yoke - Lifting	1	JK
29		405362-1	. Bushing - Snap	2	All
30		405362-2	. Bushing - Snap	1	All
31		405793	. Label - Warning	1	All
	—	406484	. Label - Fuse, Control, Trans.	1	All
32		406358-2	. Resistor - 50 Ohms	1	All
33		405479	. Contactor	1	All
34		402037-27	. Grommet - Rubber	1	All
35		W-11166-11	. Fuse - 1/2 Amp	1	All
36		406392-1	. Transformer - Control	1	ABFJ
		406392-2	. Transformer - Control	1	CDEGHK
37		367696-2	Reactor - Filter	1	All
38		369672	Transformer - Interface	1	All
39		367579	Insulator - Fuse Block	1	All
40		W-11166-9	Fuse - 1 Amp	6	All
—		Not Illustrated			

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Parts List for Figure 8-2

Item No	Part Number	Description	Qty per Assy	Application Code
41	CW-811	Link - Voltage Changeover	6	ABCD FGHJK
	CW-811	Link - Voltage Changeover	3	E
42	200292	Transformer - Power Assembly	1	AF
	200293	Transformer - Power Assembly	1	BJ
	200294	Transformer - Power Assembly	1	CK
	200295	Transformer - Power Assembly	1	DG
	200296	Transformer - Power Assembly	1	EH
43	367690	. Brace - V.C Board	2	All
44	405129-1	. Block - Fuse	1	All
45	367170-5	. Board - V.C. Assembly	1	AF
	367229-6	. Board - V.C. Assembly	1	BJ
	367229-7	. Board - V.C. Assembly	1	CK
	367229-9	. Board - V.C. Assembly	1	DGH
	367229-8	. Board - V.C. Assembly	1	E
	200643	Box - Voltage Changeover, Assembly	1	F
46	365167	. Box - Voltage Changeover	1	F
47	405615	. Switch - VC	1	F
48	W-10862-1	. Connector - Cable	1	F
49	200418	. Bracket - Mtg. Box	1	F
50	361692	. Label - V.C.	1	F
—	W-10080-4	Connector - Straight	1	F
51	204036	Label - Precautionary	1	All
—		Not Illustrated		

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PARTS LIST

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SPECIFICATION NUMBER	APPLICATION CODE
6038A-1	A
6039A-1	B
6040A-1	C
6041A-1	D
6042A-1	E
6038A-3	F
6041A-2	G
6042A-2	H

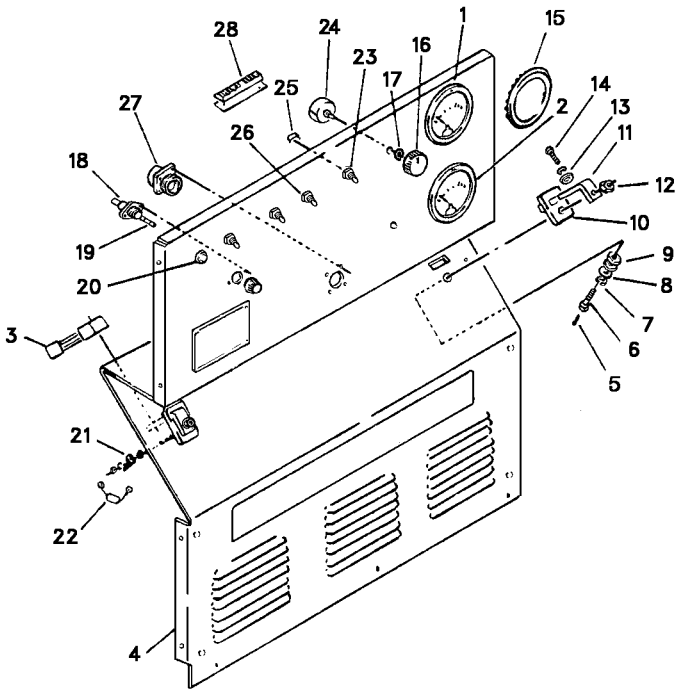

Figure 8-1 Control Panel Group

Parts List for Figure 8-1

Item No	Part Number	Description	Qty per Assy	Application Code
	367845-2	Kit - Meter (Optional)	1	All
1	400641-8	. Ammeter - DC	1	All
2	400642-4	. Voltmeter - DC	1	All
3	4DW-77	. Shunt	1	All
	369685-3	Panel - Control Assembly	1	All
4	369684-3	. Panel - Control	1	All
5	No Number	. Screw - #6-32 x 3/16 Rd. Hd. MH. ST.	2	All
6	351505	. Screw - 1/2-13 x 1-3/4, HHC (Drilled for Item 5)	2	All
7	No Number	. Washer - LK, ST. 1/2	4	All
8	No Number	. Washer - 1/2, FL, ST.	2	All
9	5CW-976A	. Washer - Insulating	4	All
10	5CW-975	. Bushing - Insulator, Stud	2	All
11	5CW-974	. Bus - Cable, Stud	2	All
12	No Number	. Nut - 1/2-13, Hex, Flanged, ST.	2	All
13	No Number	. Washer - 1/2, Flat ST.	2	All
14	No Number	. Screw - 1/2-13 x 1-1/4, HHC, ST.	2	All
15	405982-1	. Cover - Meter Hole	2	All
16	406161	. Knob - Red	1	All
—	406162	. Knob - Control	1	All
17	402663	. Nut - Pot. Lock	2	All
18	402658	. Fuseholder	1	All
19	W-11166-10	. Fuse - 3 Amp, AGC	1	All
20	402421-2	. Light - Pilot, Red	1	All
21	402900	. Terminal - Quick Connect Tab, Male	2	All
22	368705-8	. Capacitor - W/Lead & Term.	2	All
	369686	. Harness - Wire Assembly	1	All
23	405365-1	. . Switch - Toggle, SPST	2	All
24	401428-8	. . Potentiometer - 2 Watt, 5 K	2	All
25	367703-1	. . Resistor - 1/2 Watt, Assembly	1	All
26	405365-2	. . Switch - Toggle, SPDT	2	All
27	400758	. . Receptacle - 6 Pin, Amphenol	1	All
28	401937-5	. . Block - Terminal	1	All
—	402037-8	. . Grommet - Rubber	1	All
—	402037-13	. . Grommet - Rubber	1	All
—	Not Illustrated			

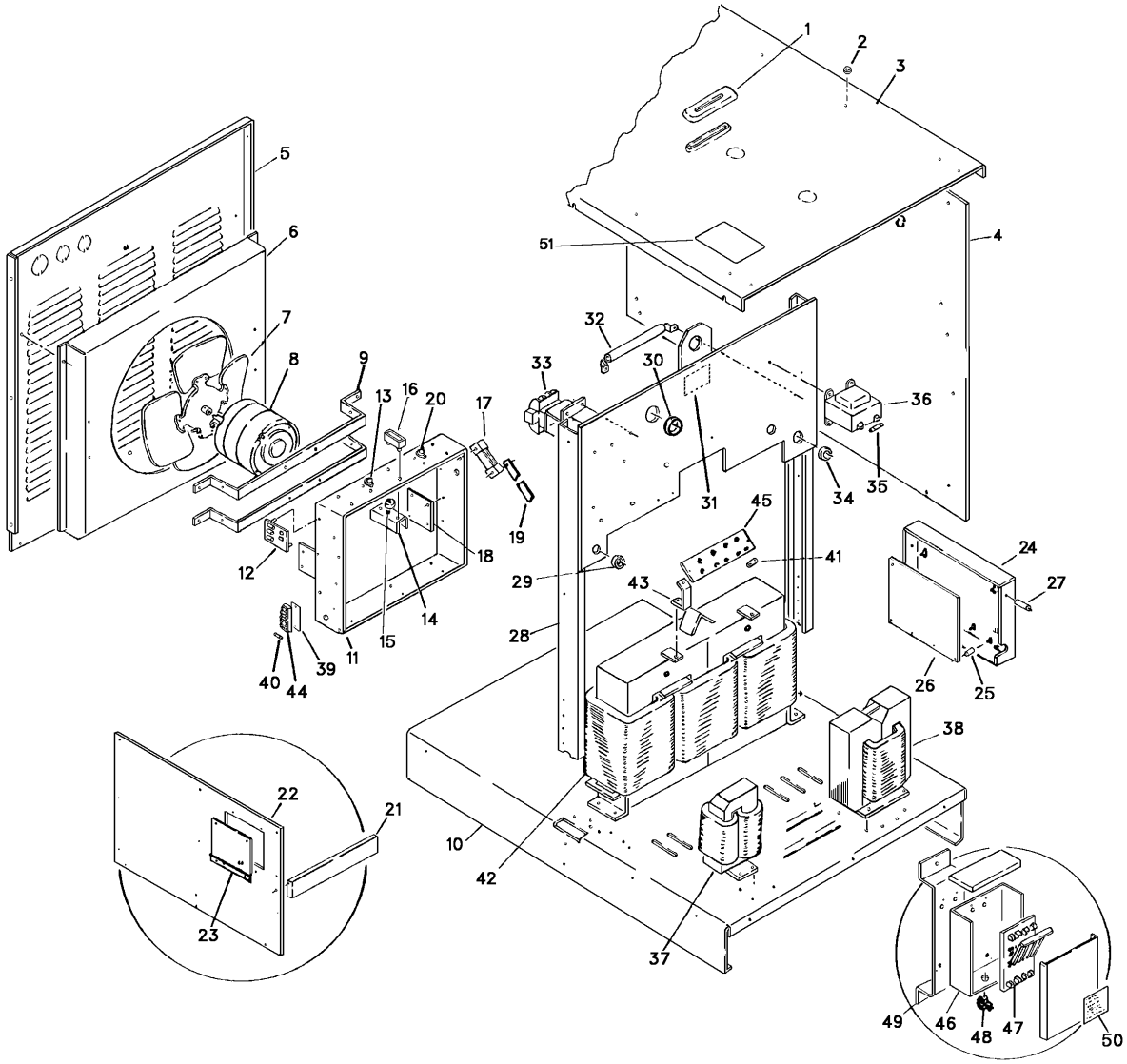

Figure 8-2 Base and Lifting Yoke Group

Parts List for Figure 8-2

Item No	Part Number	Description	Qty per Assy	Application Code
1	12CW-2170	Grommet - Top	1	All
2	403091-4	Plug - Hole, Plastic	8	All
3	369652	Panel - Top	1	All
4	369651	Panel - Sides	2	All
5	369683	Panel - Rear	1	All
6	369650	Shroud - Fan	1	All
7	8RT-609	Blade - Fan	1	All
8	12TW-595-1	Motor - Fan	1	All
9	369640	Bracket - Motor	2	All
10	369653	Base - Mounting Assembly	1	All
	369638-3	Rectifier - Output, Assembly	1	All
11	369639	. Heat Sink - Rect.	1	All
12	367634A-3	. Suppressor - Surge, Assembly	2	All
—	405157	. Label - Fuse	1	All
13	404044-3	. Thermostat - Overload	1	All
14	369642	. Heat Sink - SCR	6	All
15	405139	. Rectifier - Silicon	6	All
16	405140-1	. Clamp - Mounting	6	All
—	16DA-954-12	. Pin - Spring	6	All
17	367732	. Shunt	1	All
18	369641	. Insulator - Mtg. Rect.	2	All
19	369703	Bar - Bus, Output Term. to Shunt	1	All
20	200155	Thermostat - Fan Turn On (Optional)	1	All
	200157	Kit - Cover, OSHA (Optional)	1	All
21	200280	. Cover	1	All
	369826	Kit - Side Panel, W/Access Door (Optional)	1	All
22	369827	. Panel - Side	1	All
23	369210	. Door - Access	1	All
—	402549-2	Tag - Line Voltage	1	AFB
—	402549-1	Tag - Line Voltage	1	CDEGH
	369669-2	Panel - PC Board, Assembly	1	All
24	369670	. Panel - PC Board	1	All
25	404915-1	. Spacer - PC Board	6	All
26	369511	. Board - PC Assembly	1	All
27	200114	Spacer - PC Panel	1	All
	369630-5	Yoke - Lifting, Assembly	1	ABF
	369630-6	Yoke - Lifting, Assembly	1	CDEGH
—	Not Illustrated			

Parts List for Figure 8-2

Item No	Part Number	Description	Qty per Assy	Application Code
28	369631	. Yoke - Lifting	1	All
29	405362-1	. Bushing - Snap	2	All
30	405362-2	. Bushing - Snap	1	All
31	405793	. Label - Warning	1	All
—	406484	. Label - Fuse, Control, Trans.	1	All
32	406358-2	. Resistor - 50 Ohms	1	All
33	405402	. Contactor	1	All
34	402037-27	. Grommet - Rubber	1	All
35	W-11166-11	. Fuse - 1/2 Amp	1	All
36	406392-1	. Transformer - Control	1	ABF
	406392-2	. Transformer - Control	1	CDEGH
37	367718-2	Reactor - Filter	1	All
38	368084-5	Transformer - Interface	1	All
39	367579	Insulator - Fuse Block	1	All
40	W-11166-9	Fuse - 1 Amp	6	All
41	CW-811	Link - Voltage Changeover	6	ABCDFGH
	CW-811	Link - Voltage Changeover	3	EH
42	200297	Transformer - Power Assembly	1	AF
	200298	Transformer - Power Assembly	1	B
	200299	Transformer - Power Assembly	1	C
	200300	Transformer - Power Assembly	1	DG
	200301	Transformer - Power Assembly	1	E
43	367690	. Brace - V.C Board	2	All
44	405129-1	. Block - Fuse	1	All
45	367170-5	. Board - V.C. Assembly	1	A
	367229-6	. Board - V.C. Assembly	1	B
	367229-7	. Board - V.C. Assembly	1	C
	367229-9	. Board - V.C. Assembly	1	DGH
	367229-8	. Board - V.C. Assembly	1	E
	200643	Box - Voltage Changeover, Assembly	1	F
46	365167	. Box - Voltage Changeover	1	F
47	405615	. Switch - VC	1	F
48	W-10862-1	. Connector - Cable	1	F
49	200418	. Bracket - Mtg. Box	1	F
50	361692	. Label - V.C.	1	F
—	W-10080-4	Connector - Straight	1	F
51	204036	Label - Precautionary	1	All
—	Not Illustrated			

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SPECIFICATION NUMBER	APPLICATION CODE
6043A-1	A
6044A-1	B
6045A-1	C
6046A-1	D
6046A-2	E
6047A-1	F
6047A-2	G

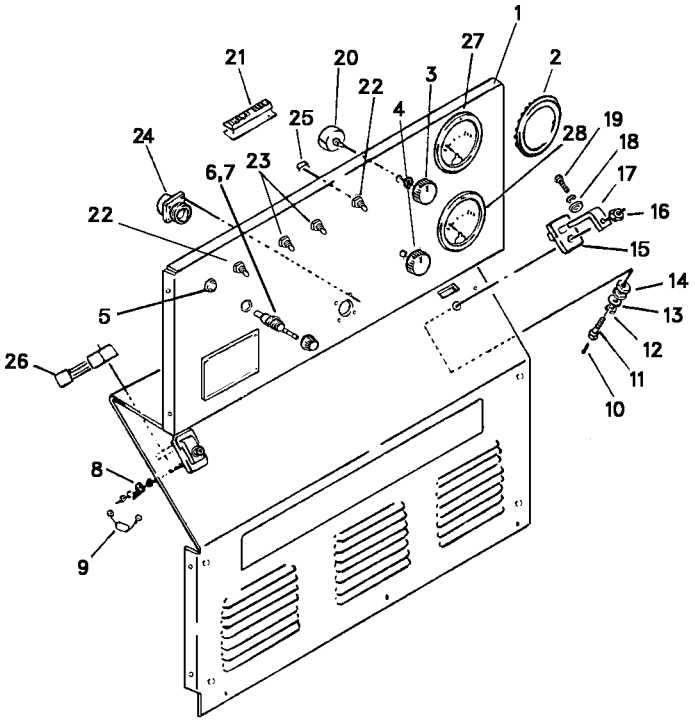

Figure 8-1 Control Panel

Parts List for Figure 8-1

Item No	Part Number	Description	Qty per Assy	Application Code
	200906-1	Control Panel - Assembly	1	ABCDF
	200906-2	Control Panel - Assembly	1	EG
1	200854-1	. Panel - Control, Front	1	All
2	405982-1	. Cover - Meter Hole	2	BCDFG
	AW-113-3	. Cover - Meter Hole	2	AE
3	406806	. Knob - Red	1	All
4	406808-1	. Knob - Control	1	All
5	402421-2	. Light - Pilot, Red	1	All
6	402658	. Fuseholder	1	All
7	W-11166-10	. Fuse - 3 Amp, AGC	1	All
8	402900	. Terminal - Quick Connect Tab, Male	2	All
9	368705-8	. Capacitor - W/Lead & Term.	2	All
10	No Number	. Screw - #6-32 x 3/16, Rd. Hd. MH. ST.	2	All
11	351505	. Screw - 1/2-13 x 1-3/4 HHC (Drilled for Item 10)	2	All
12	No Number	. Washer - 1/2, LK, ST.	4	All
13	No Number	. Washer - 1/2, Flat, ST.	2	All
14	5CW-976A	. Washer - Insulator, Cable Stud	4	All
15	5CW-975	. Bushing - Insulator, Stud	2	All
16	No Number	. Nut - 1/2-13, Hex, Flanged, ST.	2	All
17	5CW-974	. Bus - Cable Stud “L” Shaped	2	All
18	No Number	. Washer - Flat ST	2	All
19	No Number	. Screw - 1/2-13 x 1-1/4 HHC ST.	2	All
	200911	. Harness - Wire Assembly	1	All
20	401428-8	. . Potentiometer - 2 Watt, 5 K	2	All
21	401937-5	. . Block - Terminal	1	All
22	405365-1	. . Switch - Toggle, SPST	2	All
23	405365-2	. . Switch - Toggle, SPDT	2	All
24	400758	. . Receptacle - 6 Pin, Amphenol	1	All
25	367703-1	. . Resistor - 1/2 Watt, Assembly	1	All
—	903914-1	. Cap - Connector	1	All
	367845-2	Kit - Meter (Optional)	1	All
26	4DW-77	. Shunt	1	All
27	400641-8	. Ammeter - DC, Single Scale	1	All
28	400642-4	. Voltmeter - DC, Single Scale	1	All
—	Not Illustrated			

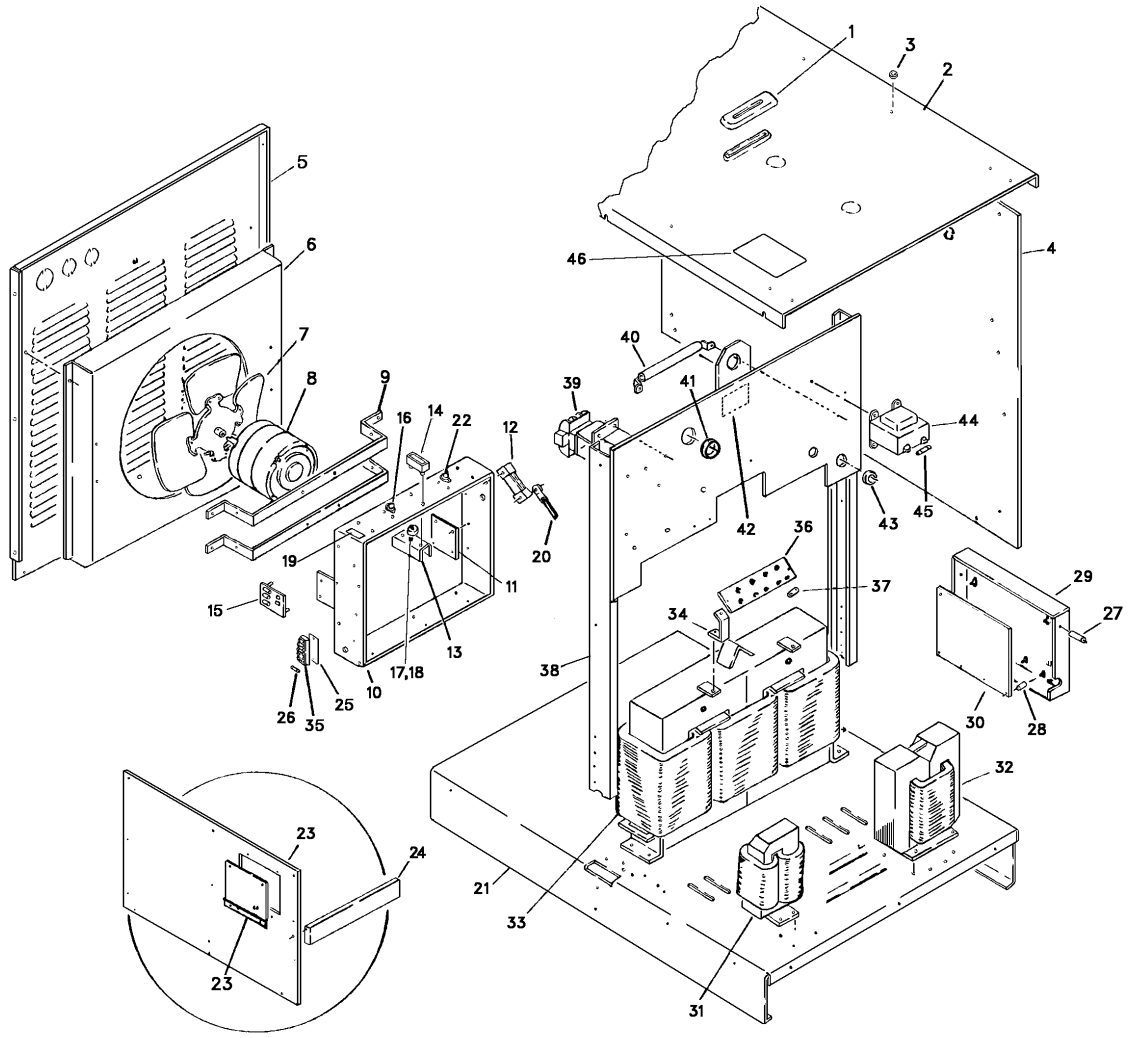

Figure 8-2 Base and Lifting Yoke Group

Parts List for Figure 8-2

Item No	Part Number	Description	Qty per Assy	Application Code
1	12CW-2170	Grommet - Lifting Yoke	1	All
2	200791	Panel - Top	1	All
3	403091-4	Plug - Hole, Plastic	8	All
4	200789	Panel - Side	2	All
5	200793	Panel - Rear	1	All
6	369650	Shroud - Fan	1	All
7	8RT-609	Blade - Fan	1	All
8	12TW-595-1	Motor - Fan	1	All
9	369640	Bracket - Motor	2	All
	369638-10	Rectifier Assembly	1	All
10	369639	. Heat Sink - Rect.	1	All
11	369641	. Insulator - Mtg. Rect.	2	All
12	367733	. Shunt	1	All
13	369642	. Heat Sink - SCR	6	All
14	405140-1	. Clamp - Mounting	6	All
15	367634A-3	. Suppressor - Surge, Assembly	2	All
16	404044-3	. Thermostat - Overload	1	All
17	405139	. Rectifier - Silicon Controlled	6	All
18	16DA-954-12	. Pin - Spring	6	All
19	405157	. Label - Fuse	1	All
20	W-9234-55	Cable - Terminal to Shunt	2	All
21	200879	Base - Assembly	1	All
22	200155	Kit - Thermostat, Fan Turn On (Opt.)	1	All
23	201020	Side Panel - PC Access Door (Opt.)	1	All
24	201019	Cover - OSHA	1	All
25	367579	Insulation - Fuse Block	1	All
26	W-11166-9	Fuse - 1 Amp	6	All
27	200114	Spacer - PC Board	1	All
	200890-1	Panel - PC Board, Assembly	1	All
28	404915-1	. Spacer - PC Board	6	All
29	200891	. Panel - PC Board	1	All
30	369511	. PC Board - Assembly	1	All
31	367718-4	Reactor - Filter, Assembly	1	All
32	368084-6	Transformer - Interphase	1	All
33	200924	Transformer - Power	1	A
	200872	Transformer - Power	1	B
	200925	Transformer - Power	1	C
	200926	Transformer - Power	1	DE
	200927	Transformer - Power	1	FG

Parts List for Figure 8-2

Item No	Part Number	Description	Qty per Assy	Application Code
34	367654	. Brace - Voltage Changeover Board	2	All
35	405129-1	. Block - Fuse	1	All
36	367170-5	. Board - Voltage Changeover	1	A
	367229-6	. Board - Voltage Changeover	1	B
	367229-7	. Board - Voltage Changeover	1	C
	367229-9	. Board - Voltage Changeover	1	DE
	367229-8	. Board - Voltage Changeover	1	FG
37	CW-811	Link - Voltage Changeover	6	All
	200909-1	Yoke - Lifting, Assembly	1	AB
	200909-2	Yoke - Lifting, Assembly	1	CDEFG
38	200886	. Yoke - Lifting	1	All
39	406358-2	. Resistor - Fixed	1	All
41	405362-2	. Bushing - Snap	1	All
42	405793	. Label - Warning	1	All
43	405362-5	. Bushing - Snap	1	All
44	406392-1	. Transformer - Control	1	AB
	406392-2	. Transformer - Control	1	CDEFG
45	W-11166-11	. Fuse - 5 Amp	1	All
—	406484	. Label - Fuse, Trans.	1	All
46	204036	Label - Precautionary	1	All
—	402549-1	Tag - Line Voltage	1	All

— Not Illustrated

PARTS LIST

Equipment Identification

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How To Use This Parts List

The Parts List is a combination of an illustration (Figure Number) and a corresponding list of parts which contains a breakdown of the equipment into assemblies, subassemblies, and detail parts. All parts of the equipment are listed except for commercially available hardware, bulk items such as wire, cable, sleeving, tubing, etc., and permanently attached items which are soldered, riveted, or welded to another part. The part descriptions may be indented to show part relationships.

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SPECIFICATION NUMBER

6597-1

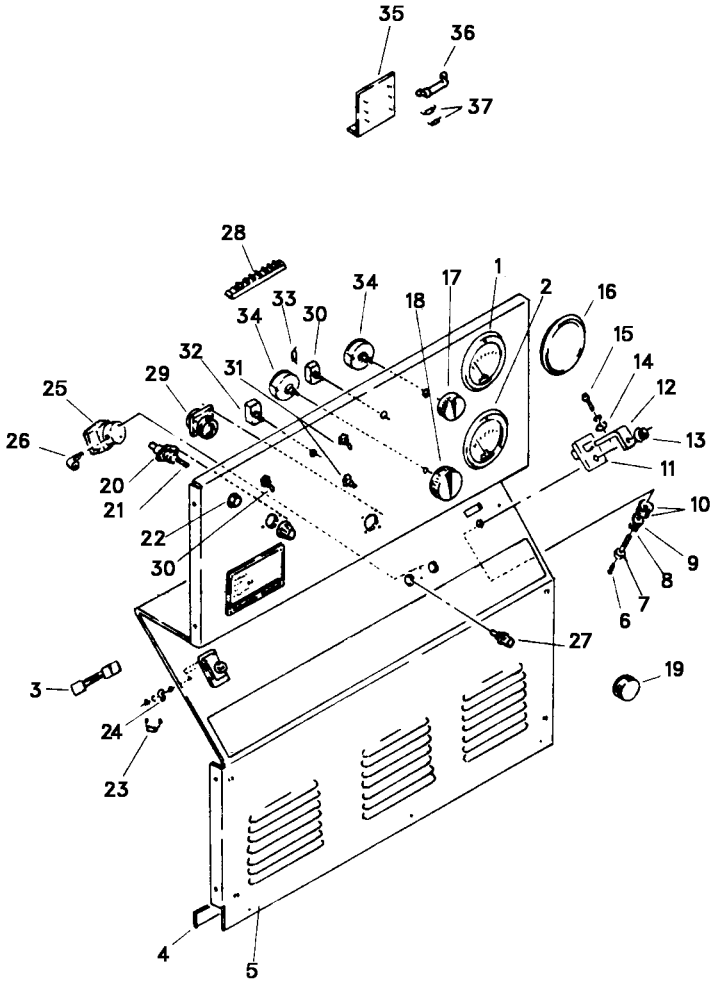

Figure 8-1 Control Panel Group

Parts List for Figure 8-1

Item No	Part Number	Description	Qty per Assy
	367845-1	Kit - Meter (Optional)	1
1	400641-6	. Ammeter - DC	1
2	400642-4	. Voltmeter - DC	1
3	CW-1142A	. Shunt	1
4	40201	Shim - Rubber	22"
	201166-1	Panel - Front, Assembly	1
5	201165	. Panel - Control	1
6	No Number	. Screw - #6-32 x 3/16 Rd. Hd. MH. ST.	2
7	No Number	. Screw - 1/2-13 x 1-3/4, HHC (Drilled for Item 6)	2

Parts List for Figure 8-1

Item No	Part Number	Description	Qty per Assy
8	No Number	. Washer - LK, ST. 1/2	4
9	No Number	. Washer - 1/2, FL, ST.	2
10	5CW-976A	. Washer - Insulating	4
11	5CW-975	. Bushing - Insulator, Stud	2
12	5CW-974	. Bus - Cable, Stud	2
13	No Number	. Nut - 1/2-13, Hex, Flanged, ST.	2
14	No Number	. Washer - 1/2, Flat ST.	2
15	No Number	. Screw - 1/2-13 x 1-1/4, HHC, ST.	2
16	405982-1	. Cover - Meter Hole	2
17	406806	. Knob - Red	1
18	406808-1	. Knob - Control	1
19	903914-1	. Cap - Connector	1
20	402658	. Fuseholder	1
21	W-11166-10	. Fuse - 3 Amp, AGC	1
22	402421-2	. Light - Pilot, Red	1
23	368705-8	. Capacitor - W/Lead & Term.	2
24	402900	. Terminal - Quick Connect Tab, Male	2
25	402882-2	. Valve - Gas	1
26	W-10892-1	. Elbow - Street, 90° Brs.	2
27	370447	. Adapter - Gas Right Hand	2
28*	401937-3	. Block - Terminal, 12 Positions	1
29*	401533	. Receptacle - 10 Pin Amphenol	1
30*	405365-1	. Switch - Toggle, SPST	2
31*	405365-2	. Switch - Toggle, SPDT	1
32*	400400	. Switch - Toggle, DPDT	2
33*	367703-1	. Resistor - 1/2 Watt, Assembly	1
34*	401428-8	. Potentiometer - 2 Watt, 5 K	2
	201170-1	. Board - Voltage Dropping	1
35	201169	. . Bracket - Mtg. Assembly	1
36	W-9746-7	. . Resistor - Fixed Type	1
37	406473-10	. . Capacitor	2

* These parts and their quantities are shown in relationship to their location in the machine, but they are components of Wire Harness Assembly 201164.

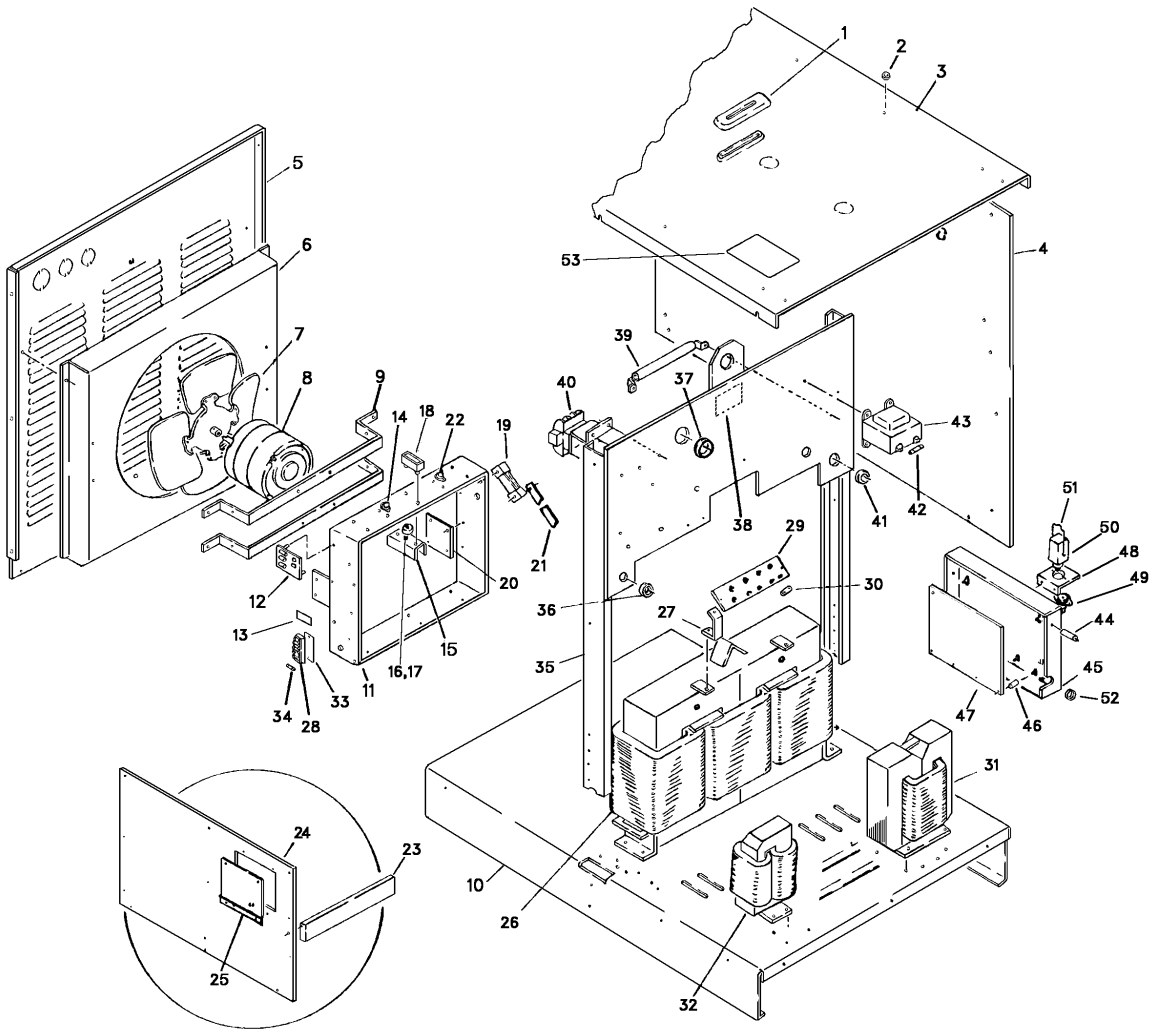

Figure 8-2 Base and Lifting Yoke Group

Parts List for Figure 8-1

Item No	Part Number	Description	Qty per Assy
1	12CW-2170	Grommet - Top	1
2	403091-4	Plug - Hole, Plastic	8
3	369652	Panel - Top	1
4	369651	Panel - Sides	2
5	369683	Panel - Rear	1
6	369650	Shroud - Fan	1
7	8RT-609	Blade - Fan	1
8	12TW-595-1	Motor - Fan	1
9	369640	Bracket - Motor	2
10	369653	Base - Assembly	1
	369638-2	Rectifier - Output, Assembly	1
11	369639	. Heat Sink - Rect.	1
12	367634A-3	. Suppressor - Surge, Assembly	2
13	405157	. Label - Fuse	1
14	404044-1	. Thermostat - Overload	1
15	369642	. Heat Sink - SCR	6
16	405139	. Rectifier - Silicon	6
17	16DA-954-12	. Pin - Spring	6
18	405140-1	. Clamp - Mounting	6
19	367687	. Shunt	1
20	369641	. Insulator - Mtg. Rect.	2
21	369703	Bar - Bus, Output Term. to Shunt	1
22	200155	Thermostat - Fan Turn On (Optional)	1
	200157	Kit - Cover, OSHA (Optional)	1
23	200280	. Cover	1
	369826	Kit - Side Panel, W/Access Door (Optional)	1
24	369827	. Panel - Side	1
25	369210	. Door - Access	1
26	200292	Transformer - Power	1
27	367690	. Brace - V.C Board	2
28	405129-1	. Block - Fuse	1
29	367170-5	. Board - V.C. Assembly	1
30	CW-811	Link - Voltage Changeover	6
31	369672	Transformer - Interface	1
32	367696-2	Reactor - Filter	1
33	367579	Insulator - Fuse Block	1
34	W-11166-9	Fuse - 1 Amp	6
	369630-1	Yoke - Lifting, Assembly	1
35	369631	. Yoke - Lifting	1

Parts List for Figure 8-1

Item No	Part Number	Description	Qty per Assy
36	405362-1	. Bushing - Snap	2
37	405362-2	. Bushing - Snap	1
38	405793	. Label - Warning	1
—	406484	. Label - Fuse, Control, Trans.	1
39	406358-2	. Resistor - 50 Ohms	1
40	405479	. Contactor	1
41	402037-27	. Grommet - Rubber	1
42	W-11166-11	. Fuse - 1/2 Amp	1
43	406392-1	. Transformer - Control	1
—	402549-2	Tag - Line Voltage	1
44	200114	Spacer - PC Panel	1
—	402687-2	Terminal - Trans.	6
	201161-1	Panel - PC Board, Assembly	1
45	201162	. Box - PC Board	1
46	404915-1	. Spacer - PC Board	6
47	369511	. Board - PC	1
48*	16DA-4029	Bracket - Mtg. Relay	1
49*	16DA-4052-1	Socket - Relay	1
50*	16DA-4004A-7	Relay	1
51*	16DA-4253-1	Retainer - Spring, Relay	1
52*	402037-13	Grommet - Rubber	1
—*	406008-4	Housing - Receptacle	1
—*	406008-6	Housing - Receptacle	1
—*	406009-1	Plug - Keying	1
—*	402037-8	Grommet - Rubber	1
53	204036	Label - Precautionary	1

* These parts and their quantities are shown in relationship to their location in the machine, but they are components of Wire Harness Assembly 201164.

— Not Illustrated

PARTS LIST

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SPECIFICATION NUMBER

6633-1

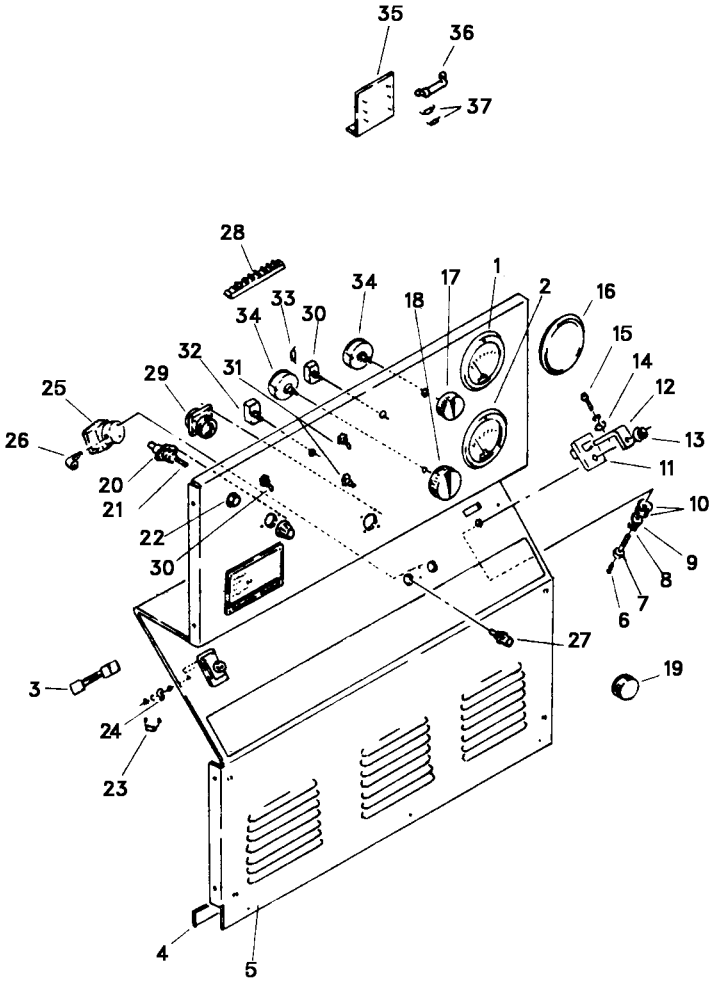

Figure 8-1 Control Panel Group

Parts List for Figure 8-1

Item No	Part Number	Description	Qty per Assy
	367845-2	Kit - Meter (Optional)	1
1	400641-8	. Ammeter - DC	1
2	400642-4	. Voltmeter - DC	1
3	4DW-77	. Shunt	1
4	40201	Shim - Rubber	20"
	201166-2	Panel - Front, Assembly	1
5	201165-2	. Panel - Control	1
6	No Number	. Screw - #6-32 x 3/16 Rd. Hd. MH. ST.	2

Parts List for Figure 8-1

Item No	Part Number	Description	Qty per Assy
7	No Number	. Screw - 1/2-13 x 1-3/4, HHC (Drilled for Item 6)	2
8	No Number	. Washer - LK, ST. 1/2	4
9	No Number	. Washer - 1/2, FL, ST.	2
10	5CW-976A	. Washer - Insulating	4
11	5CW-975	. Bushing - Insulator, Stud	2
12	5CW-974	. Bus - Cable, Stud	2
13	No Number	. Nut - 1/2-13, Hex Flanged, ST.	2
14	No Number	. Washer - 1/2, Flat ST.	2
15	No Number	. Screw - 1/2-13 x 1-1/4, HHC, ST.	2
16	405982-1	. Cover - Meter Hole	2
17	406806	. Knob - Red	1
18	406808-1	. Knob - Control	1
19	903914-1	. Cap - Connector	1
20	402658	. Fuseholder	1
21	W-11166-10	. Fuse - 3 Amp, AGC	1
22	402421-2	. Light - Pilot, Red	1
23	368705-8	. Capacitor - W/Lead & Term.	2
24	402900	. Terminal - Quick Connect Tab, Male	2
25	402882-2	. Valve - Gas	1
26	W-10892-1	. Elbow - Street, 90° Brs.	2
27	370447	. Adapter - Gas Right Hand	2
28*	401937-3	. Block - Terminal, 12 Positions	1
29*	401533	. Receptacle - 10 Pin Amphenol	1
30*	405365-1	. Switch - Toggle, SPST	2
31*	405365-2	. Switch - Toggle, SPDT	1
32*	400400	. Switch - Toggle, DPDT	2
33*	367703-1	. Resistor - 1/2 Watt, Assembly	1
34*	401428-8	. Potentiometer - 2 Watt, 5 K	2
	201170-1	. Board - Voltage Dropping	1
35	201169	. . Bracket - Mtg. Assembly	1
36	W-9746-7	. . Resistor - Fixed Type	1
37	406473-10	. . Capacitor	2

* These parts and their quantities are shown in relationship to their location in the machine, but they are components of Wire Harness Assembly 201164.

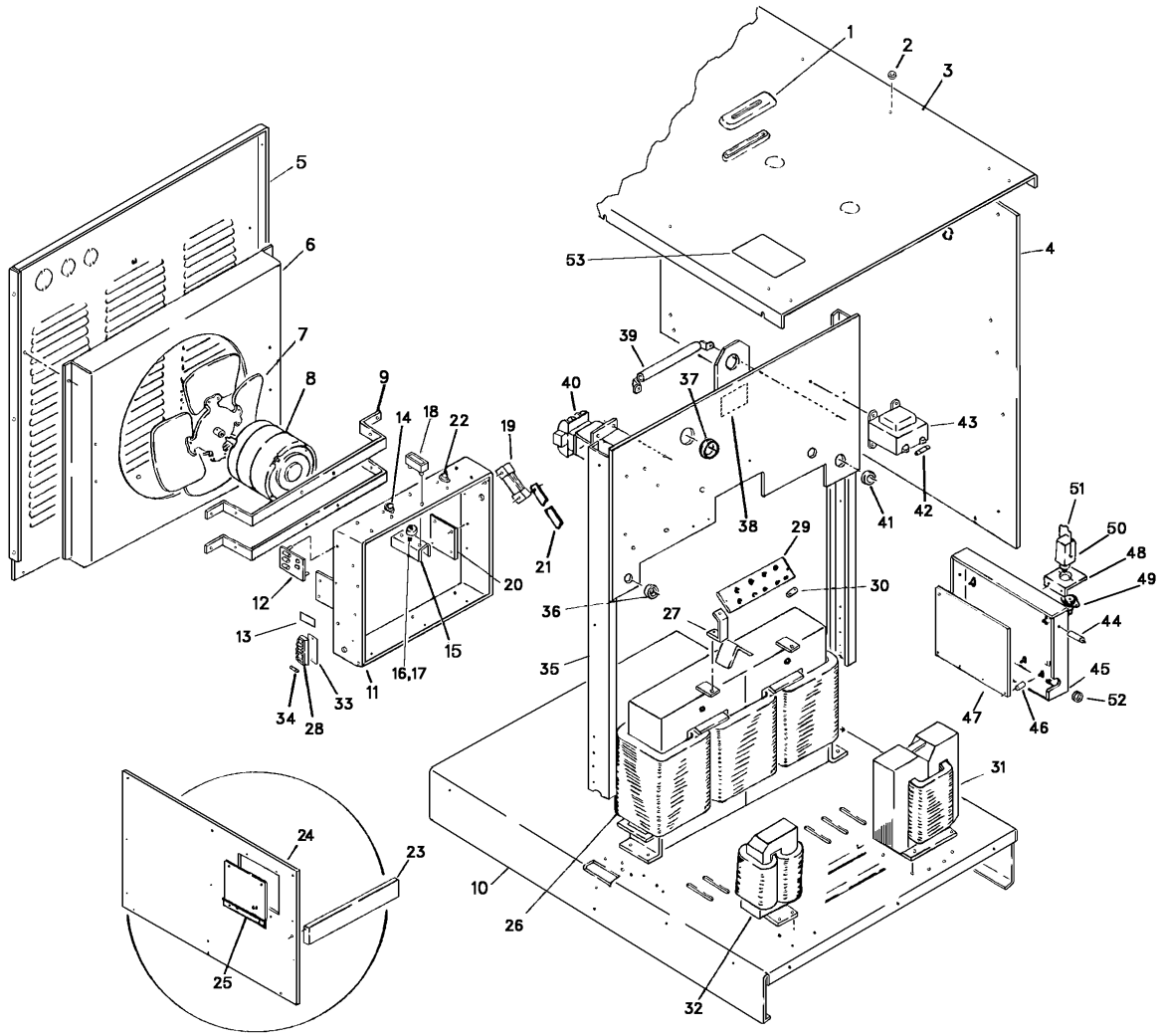

Figure 8-2 Base and Lifting Yoke Group

Parts List for Figure 8-2

Item No	Part Number	Description	Qty per Assy
1	12CW-2170	Grommet - Top	1
2	403091-4	Plug - Hole, Plastic	8
3	369652	Panel - Top	1
4	369651	Panel - Sides	2
5	369683	Panel - Rear	1
6	369650	Shroud - Fan	1
7	8RT-609	Blade - Fan	1
8	12TW-595-1	Motor - Fan	1
9	369640	Bracket - Motor	2
10	369653	Base - Assembly	1
	369638-3	Rectifier - Output, Assembly	1
11	369639	. Heat Sink - Rect.	1
12	367634A-3	. Suppressor - Surge, Assembly	2
13	405157	. Label - Fuse	1
14	404044-3	. Thermostat - Overload	1
15	369642	. Heat Sink - SCR	6
16	405139	. Rectifier - Silicon	6
17	16DA-954-12	. Pin - Spring	6
18	405140-1	. Clamp - Mounting	6
19	367732	. Shunt	1
20	369641	. Insulator - Mtg. Rect.	2
21	369703	Bar - Bus, Output Term. to Shunt	1
22	200155	Thermostat - Fan Turn On (Optional)	1
	200157	Kit - Cover, OSHA (Optional)	1
23	200280	. Cover	1
	369826	Kit - Side Panel W/Access Door (Optional)	1
24	369827	. Panel - Side	1
25	369210	. Door - Access	1
26	200297	Transformer - Power	1
27	200770	. Brace - V.C Board	2
28	405129-1	. Block - Fuse	1
29	367170-5	. Board - V.C. Assembly	1
30	CW-811	Link - Voltage Changeover	6
31	368084-5	Transformer - Interface	1
32	367718-2	Reactor - Filter	1
33	367579	Insulator - Fuse Block	1
34	W-11166-9	Fuse - 1 Amp	6
	369630-5	Yoke - Lifting, Assembly	1
35	369631	. Yoke - Lifting	1
36	405362-1	. Bushing - Snap	2

Parts List for Figure 8-2

Item No	Part Number	Description	Qty per Assy
37	405362-2	. Bushing - Snap	1
38	405793	. Label - Warning	1
—	406484	. Label - Fuse, Control Trans.	1
39	406358-2	. Resistor - 50 Ohms	1
40	405402	. Contactor	1
41	402037-27	. Grommet - Rubber	1
42	W-11166-11	. Fuse - 1/2 Amp	1
43	406392-1	. Transformer - Control	1
—	402549-2	Tag - Line Voltage	1
44	200114	Spacer - PC Panel	1
—	402687-2	Terminal - Trans.	6
	201161-1	Panel - PC Board, Assembly	1
45	201162	. Box - PC Board	1
46	404915-1	. Spacer - PC Board	6
47	369511	. Board - PC	1
48*	16DA-4029	Bracket - Mtg. Relay	1
49*	16DA-4052-1	Socket - Relay	1
50*	16DA-4004A-7	Relay	1
51*	16DA-4253-1	Retainer - Spring, Relay	1
52*	402037-13	Grommet - Rubber	1
—*	406008-4	Housing - Receptacle	1
—*	406008-6	Housing - Receptacle	1
—*	406009-1	Plug - Keying	1
—*	402037-8	Grommet - Rubber	1
53	204036	Label - Precautionary	1

* These parts and their quantities are shown in relationship to their location in the machine, but they are components of Wire Harness Assembly 201164.

— Not Illustrated

PARTS LIST

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How To Select Recommended Spares

The first two columns of the Parts List are used to show the recommended quantity of parts which are typically required for spares or replacement purposes. The quantities under Class 1 are for parts that are consumed or that may need replacement in two years or less depending on operating hours. Class 2 quantities are for parts that may need replacement under unusual service conditions or additional operating hours. These are suggested quantities based on expected usage or the minimum package quantity. Class 1 spares are repeated under Class 2 but the quantities may be larger to allow for additional operating hours. Contact your equipment dealer for assistance in establishing the spare parts program best suited for your needs.

SPECIFICATION NUMBER	APPLICATION CODE
6619-1	A
6620-1	B
6621-1	C
6622-1	D
6623-1	E

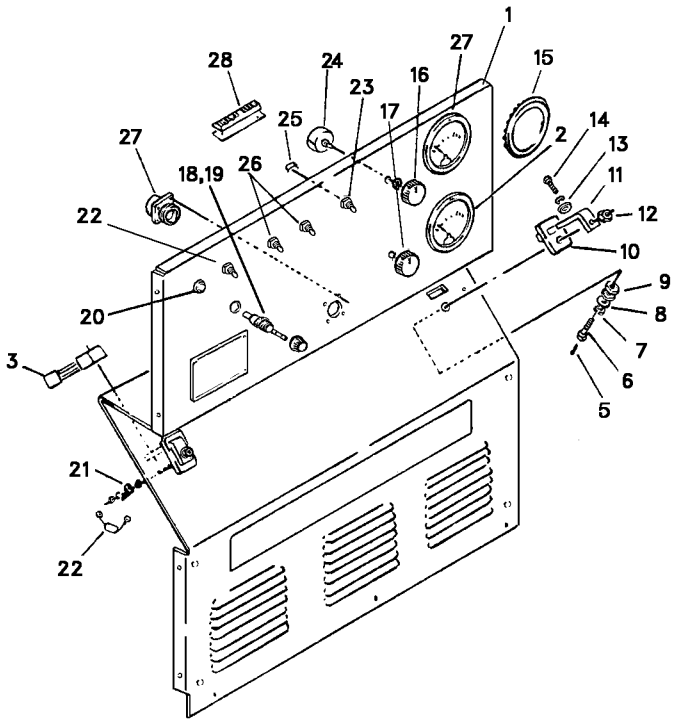


Figure 8-1 Control Panel Group

Parts List for Figure 8-1

Item No	Part Number	Description	Qty per Assy	Application Code
	367845-2	Kit - Meter (Optional)	1	All
1	400641-8	. Ammeter - DC	1	All
2	400642-4	. Voltmeter - DC	1	All
3	4DW-77	. Shunt	1	All
	369685-4	Panel - Control Assembly	1	All
4	369684	. Panel - Control Assembly	1	All
5	No Number	. Screw - #6-32 x 3/16 Rd. Hd. MH. ST.	2	All
6	351505	. Screw - 1/2-13 x 1-3/4, HHC (Drilled for Item 5)	2	All
7	No Number	. Washer - LK, ST. 1/2	4	All
8	No Number	. Washer - 1/2, FL, ST.	2	All
9	5CW-976A	. Washer - Insulating	4	All
10	5CW-975	. Bushing - Insulator, Stud	2	All
11	5CW-974	. Bus - Cable Stud	2	All
12	No Number	. Nut - 1/2-13, Hex Flanged, ST.	2	All
13	No Number	. Washer - 1/2, Flat ST.	2	All
14	No Number	. Screw - 1/2-13 x 1-1/4, HHC, ST.	2	All
15	405982-1	. Cover - Meter Hole	2	All
16	406161	. Knob - Red	1	All
17	406162	. Knob - Control	1	All
18	402658	. Fuseholder	1	All
19	W-11166-10	. Fuse - 3 Amp, AGC	1	All
20	402421-2	. Light - Pilot	1	All
21	402900	. Terminal - Quick Connect Tab, Male	2	All
22	368705-8	. Capacitor - W/Lead & Term.	2	All
—	903914-1	. Cap - Connector	1	All
	369686	. Harness - Wire Assembly	1	All
23	405365-1	. . Switch - Toggle, SPST	2	All
24	401428-8	. . Potentiometer - 2 Watt, 5 K	2	All
25	367703-1	. . Resistor - 1/2 Watt, Assembly	1	All
26	405365-2	. . Switch - Toggle, SPDT	2	All
27	400758	. . Receptacle - 6 Pin, Amphenol	1	All
28	401937-5	. . Block - Terminal	1	All
—	402037-8	. . Grommet - Rubber	1	All
—	402037-13	. . Grommet - Rubber	1	All
—	Not Illustrated			

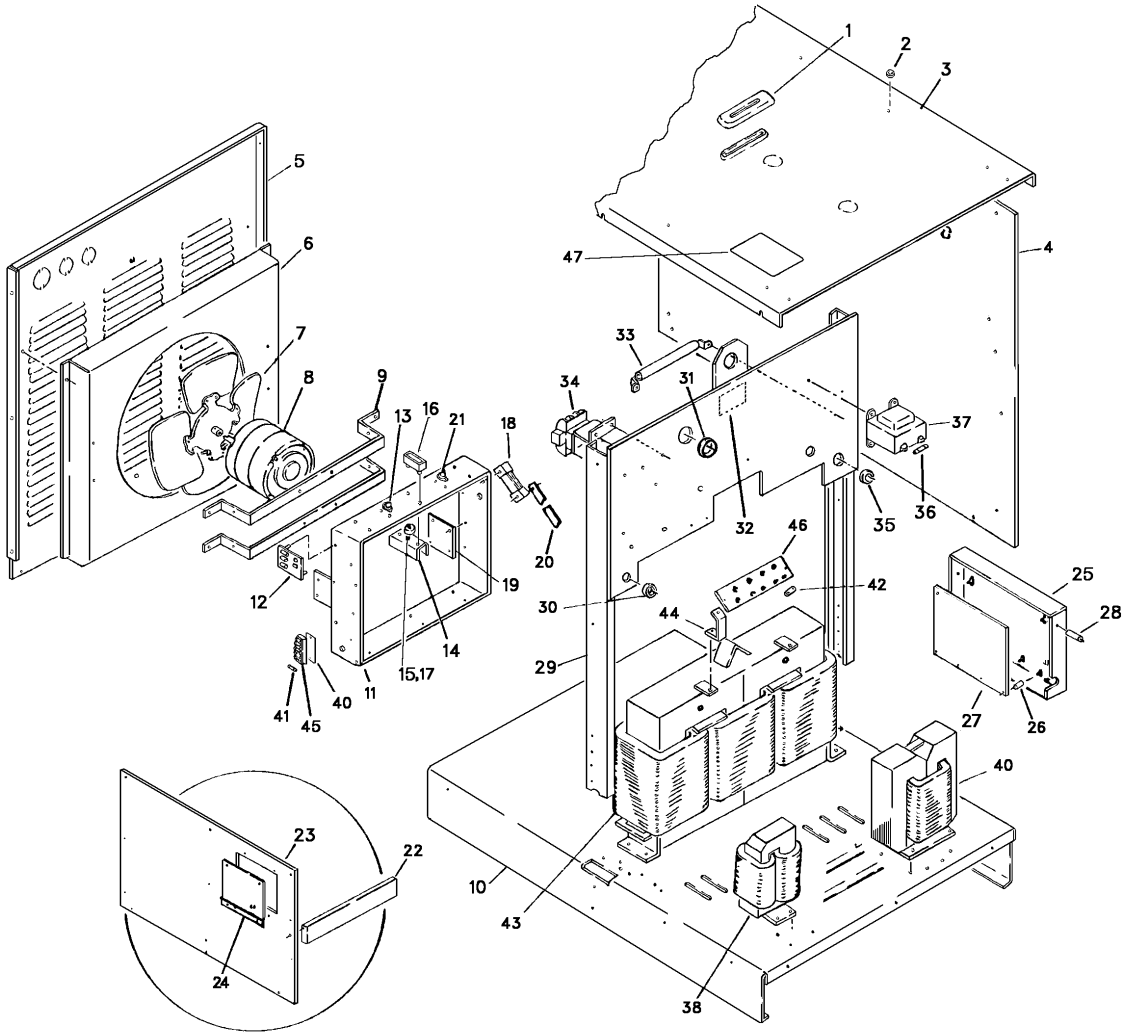


Figure 8-2 Base and Lifting Yoke Group

Parts List for Figure 8-2

Item No	Part Number	Description	Qty per Assy	Application Code
1	12CW-2170	Grommet - Top	1	All
2	403091-4	Plug - Hole, Plastic	8	All
3	369652	Panel - Top	1	All
4	369651	Panel - Side, Left & Right	2	All
5	369683	Panel - Rear	1	All
6	369650	Shroud - Fan	1	All
7	8RT-609	Blade - Fan	1	All
8	12TW-595-1	Motor - Fan	1	All
9	369640	Bracket - Mtg. Fan Motor	2	All
10	369653	Base - Assembly	1	All
	369638-10	Rectifier - Output, Assembly	1	All
11	369639	. Heat Sink	1	All
12	367634A-3	. Suppressor - Surge Assembly	2	All
—	405157	. Label - Fuse	1	All
13	404044-4	. Thermostat - Overload	1	All
14	369642	. Heat Sink - SCR	6	All
15	405139	. Rectifier - Silicon	6	All
16	405140-1	. Clamp - Mounting	6	All
17	16DA-954-12	. Pin - Spring	6	All
18	367733	. Shunt	1	All
19	369641	. Insulator - Mtg. Rect.	2	All
20	369703	Bar - Bus, Output Term. to Shunt	1	All
21	200155	Thermostat - Fan Turn On (Optional)	1	All
22	200157	Kit - Cover, OSHA (Optional)	1	All
	369826	Kit - Side Panel, W/Access Door (Optional)	1	All
23	369827	. Panel - Side	1	All
24	369210	. Door - Access	1	All
—	402549-2	Tag - Line Voltage	1	AB
—	402549-1	Tag - Line Voltage	1	CDE
	369669-2	Panel - PC Board, Assembly	1	All
25	369670	. Panel - PC Board	1	All
26	404915-1	. Spacer - PC Board	6	All
27	369511	. Board - PC Assembly	1	All
28	200114	Spacer - PC Panel	1	All
	369630-5	Yoke - Lifting, Assembly	1	AB
—	Not Illustrated			

Parts List for Figure 8-2

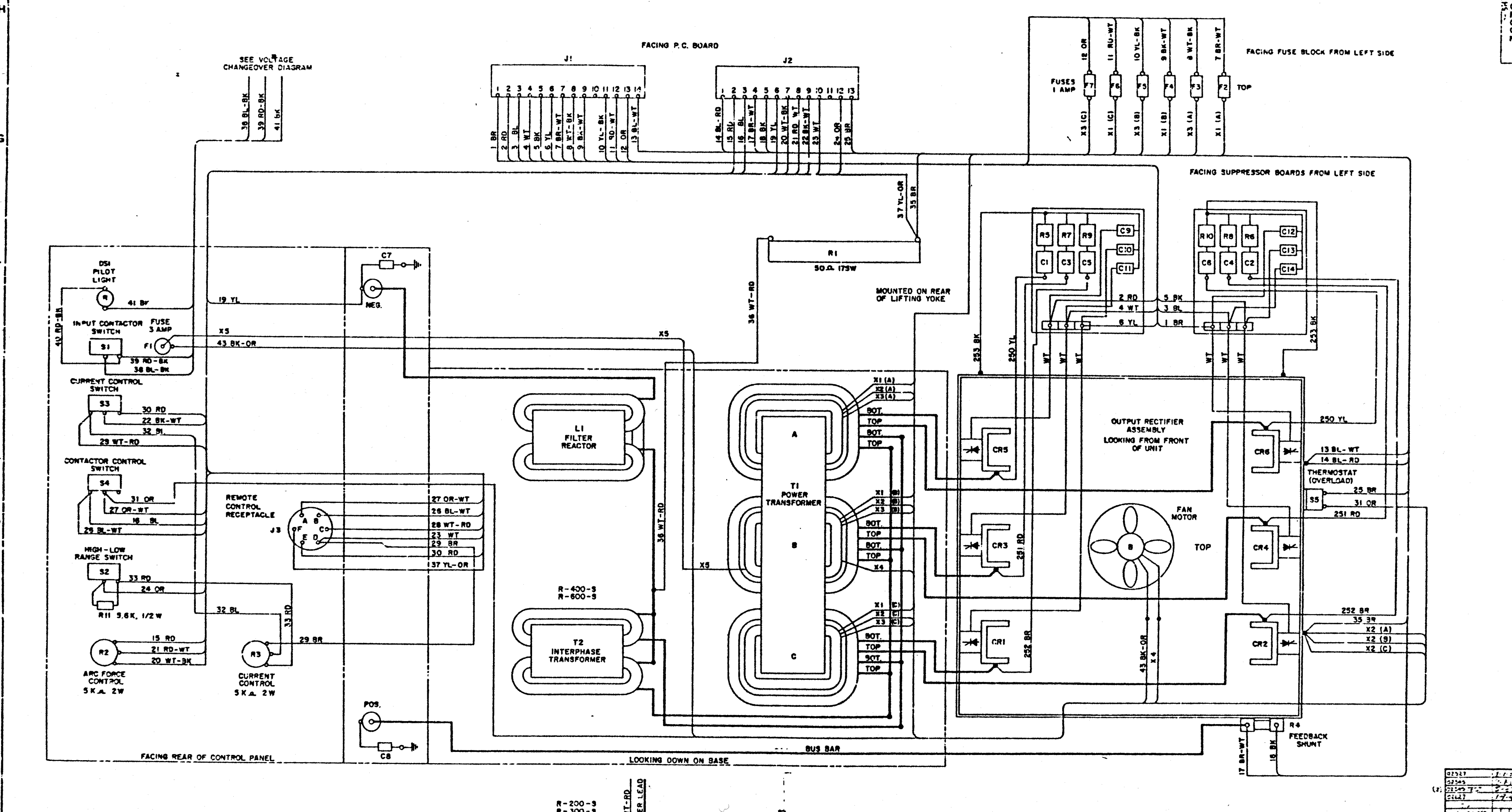
Item No	Part Number	Description	Qty per Assy	Application Code
	369630-6	Yoke - Lifting, Assembly	1	CDE
29	369631	. Yoke - Lifting	1	All
30	405362-1	. Bushing - Snap	2	All
31	405362-2	. Bushing - Snap	1	All
32	405793	. Label - Warning	1	All
—	406484	. Label - Fuse, Control Trans.	1	All
33	406358-2	. Resistor - 50 Ohms	1	All
34	405402	. Contactor	1	All
35	402037-27	. Grommet - Rubber	1	All
36	W-11166-11	. Fuse - 1/2 Amp	1	All
37	406392-1	. Transformer - Control	1	AB
	406392-2	. Transformer - Control	1	CDE
38	367803	Reactor - Filter	1	All
39	368084-4	Transformer - Interphase	1	All
40	367579	Insulator - Fuse Block	1	All
41	W-11166-9	Fuse - 1 Amp	6	All
—	405362-2	Bushing - Snap	1	All
42	CW-811	Link - Voltage Changeover	6	ABCD
	CW-811	Link - Voltage Changeover	3	E
43	201273	Transformer - Power	1	A
	201274	Transformer - Power	1	B
	201275	Transformer - Power	1	C
	201276	Transformer - Power	1	D
	201277	Transformer - Power	1	E
44	200770	. Brace - V.C Board	2	All
45	405129-1	. Block - Fuse	1	All
46	367170-5	. Board - Voltage Changeover	1	A
	367229-6	. Board - Voltage Changeover	1	B
	367229-7	. Board - Voltage Changeover	1	C
	367229-9	. Board - Voltage Changeover	1	D
	367229-8	. Board - Voltage Changeover	1	E
47	204036	Label - Precautionary	1	All

— Not Illustrated

DIAGRAMS

- Note the model and specification number shown on the equipment nameplate.
- Locate these numbers in the model and specification number columns below.
- Use only those diagrams and instructions that are applicable.

MODEL NO.	SPEC NO.	CONNECTION DIAGRAM	VOLTAGE CHANGEOVER DIAGRAM	OUTLINE DIMENSION	PENDANT DIAGRAM
Mega-Arc® 200 R-220-S	6028A-1 6028A-3	369704 369704	369705 200361	369707-1 369707-1	
	6029A-1	369704	200030	369707-1	
	6030A-1	369704	200031	369707-1	
	6031A-1	369704	200032	369707-1	
MA-3	6031A-2	369704	200032	369707-1	
Mega-Arc® 200	6032A-1	369704	200033	369707-1	
MA-3	6032A-2	369704	200033	369707-1	
Mega-Arc® 300 R-300-S	6033A-1 6033A-3	369704 369704	369705 200361	369707-1 369707-1	
	6034A-1 6034B-1	369704 369704	200030 200030	369707-1 369707-1	
	6035A-1 6035B-1	369704 369704	200031 200031	369707-1 369707-1	
	6036A-1	369704	200032	369707-1	
MA-4	6036A-2	369704	200032	369707-1	
Mega-Arc® 300	6037A-1	369704	200033	369707-1	
MA-4	6037A-2	369704	200033	369707-1	
Mega-Arc® 400 R-400-S	6038A-1 6038A-3	369704 369704	369705 200361	369707-1 369707-1	
	6039A-1	369704	200030	369707-1	
	6040A-1	369704	200031	369707-1	
	6041A-1	369704	200032	369707-1	
MA-5	6041A-2	369704	200032	369707-1	
Mega-Arc® 400	6042A-1	369704	200033	369707-1	
MA-5	6042A-2	369704	200033	369707-1	
Mega-Arc® 600 R-600-S	6043A-1	369704	369705	369707-2	
	6044A-1	369704	200030	369707-2	
	6045A-1	369704	200031	369707-2	
	6046A-1	369704	200032	369707-2	
MA-7	6046A-2	369704	200032	369707-2	
Mega-Arc® 600	6047A-1	369704	200033	369707-2	
MA-7	6047A-2	369704	200033	369707-2	
Mega-Arc® 300	6597-1	201167	369705	369707-1	201181
Mega-Arc® 400	6633-1	201167	369705	369707-1	201181
Mega-Arc® 500 R-500-S	6619-1	369704	369705	369707-1	
	6620-1	369704	200030	369707-1	
	6621-1	369704	200031	369707-1	
	6622-1	369704	200032	369707-1	
	6623-1	369704	200033	369707-1	
MA-6	6622-2	369704	200032	369707-1	
	6623-2	369704	200033	369707-1	



COLOR CODE			
BK	BLACK	RD	RED
BR	BROWN	TN	TAN
BL	BLUE	VT	VIOLET(PURPLE)
GN	GREEN	WT	WHITE
GY	GRAY(SLATE)	YL	YELLOW
OR	ORANGE	D	DARK (PREFIX)
PK	PINK	L	LIGHT (PREFIX)

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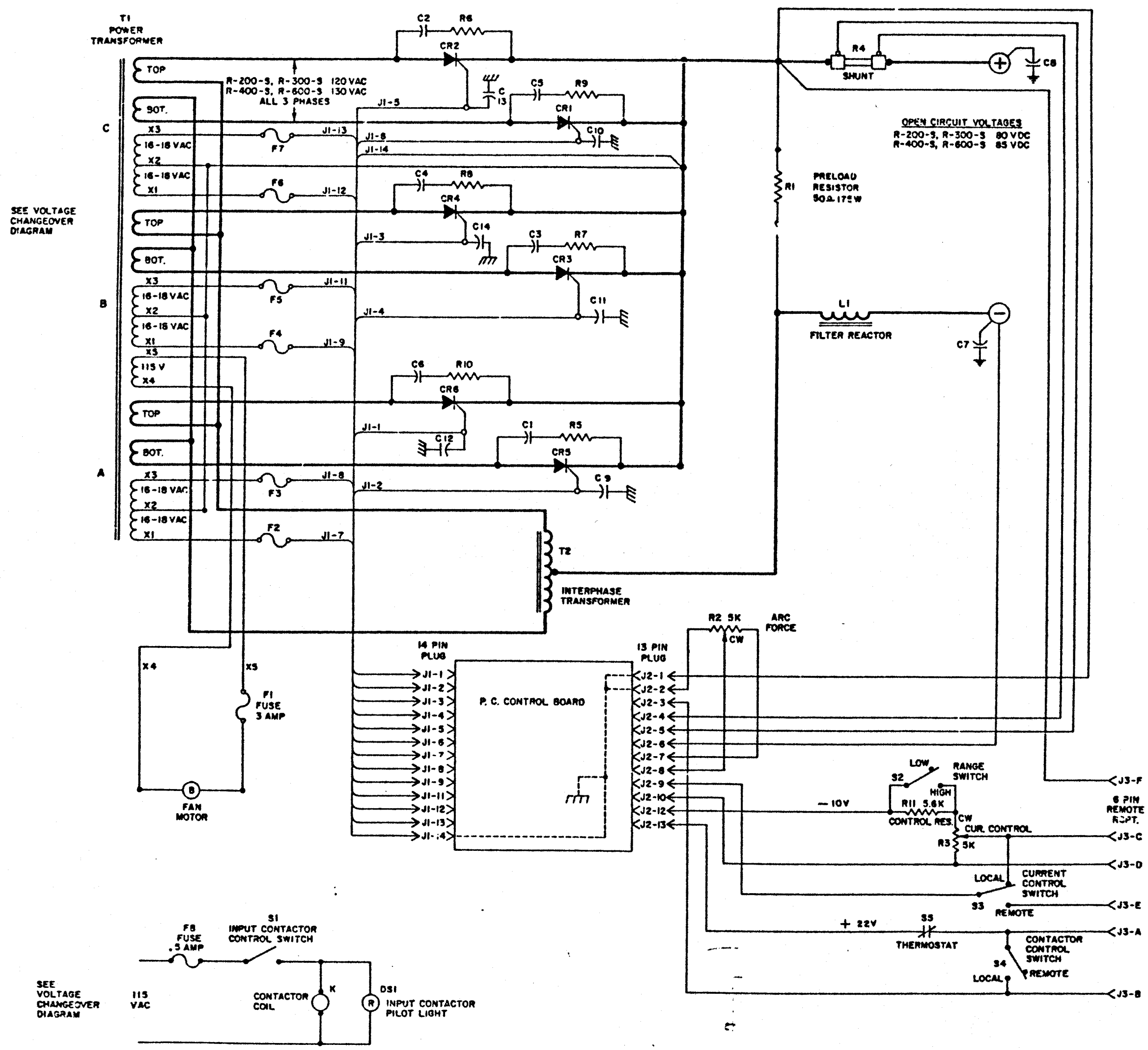

LEGEND

B	FAN MOTOR
C1-6	CAPACITOR, SUPPRESSION, .047 MFD., 400 WVDC
C7,9	CAPACITOR, H.F. SUPPRESSION, .047, 400 WVDC
C9-14	CAPACITOR, HF, SUPPRESSION, .047 MFD
CR1-6	SILICON CONTROLLED RECTIFIER
DS1	INPUT CONTACTOR ON PILOT LIGHT
F1	FUSE, FAN, 3 AMP.
F2-7	FUSE, CONTROL BOARD, 1 AMP.
F8	FUSE, CONTROL TRANSFORMER, .5 AMP.
J1	RECEPTACLE, P.C. BOARD, 14 PIN
J2	RECEPTACLE, P.C. BOARD, 13 PIN
J3	RECEPTACLE, REMOTE CONTROL, 6 PIN
K	COIL, CONTACTOR
L1	REACTOR, FILTER
R1	RESISTORS, PRE LOAD, 50 OHMS, 175 WATTS
R2	POTENTIOMETER, ARC DRIVE, 5K OHM, 2 WATTS
R3	POTENTIOMETER, CURRENT CONTROL, 5K OHM, 2 WATTS
R4	SHUNT
R5-10	RESISTOR, SUPPRESSION, 50 OHMS, 5 WATTS
R11	RESISTOR, CONTROL, 5.6K OHMS, 1/2 WATT
S1	INPUT CONTACTOR CONTROL SWITCH (ON-OFF)
S2	SWITCH, RANGE, HIGH-LOW
S3	SWITCH, CURRENT CONTROL, LOCAL-REMOTE
S4	SWITCH, CONTACTOR, CONTROL, LOCAL-REMOTE
S5	THERMOSTAT, OVERLOAD
T1	TRANSFORMER, POWER
T2	TRANSFORMER, INTERPHASE
TB	TERMINAL STRIP

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PROTECTIVE FINISH

CHANGE RECORD			WHERE USED		
INDEX	DATE	No	NEXT ASSY	NO REQ	USED ON
F3764		1	SPECS	1	9-60294

UNLESS OTHERWISE SPECIFIED

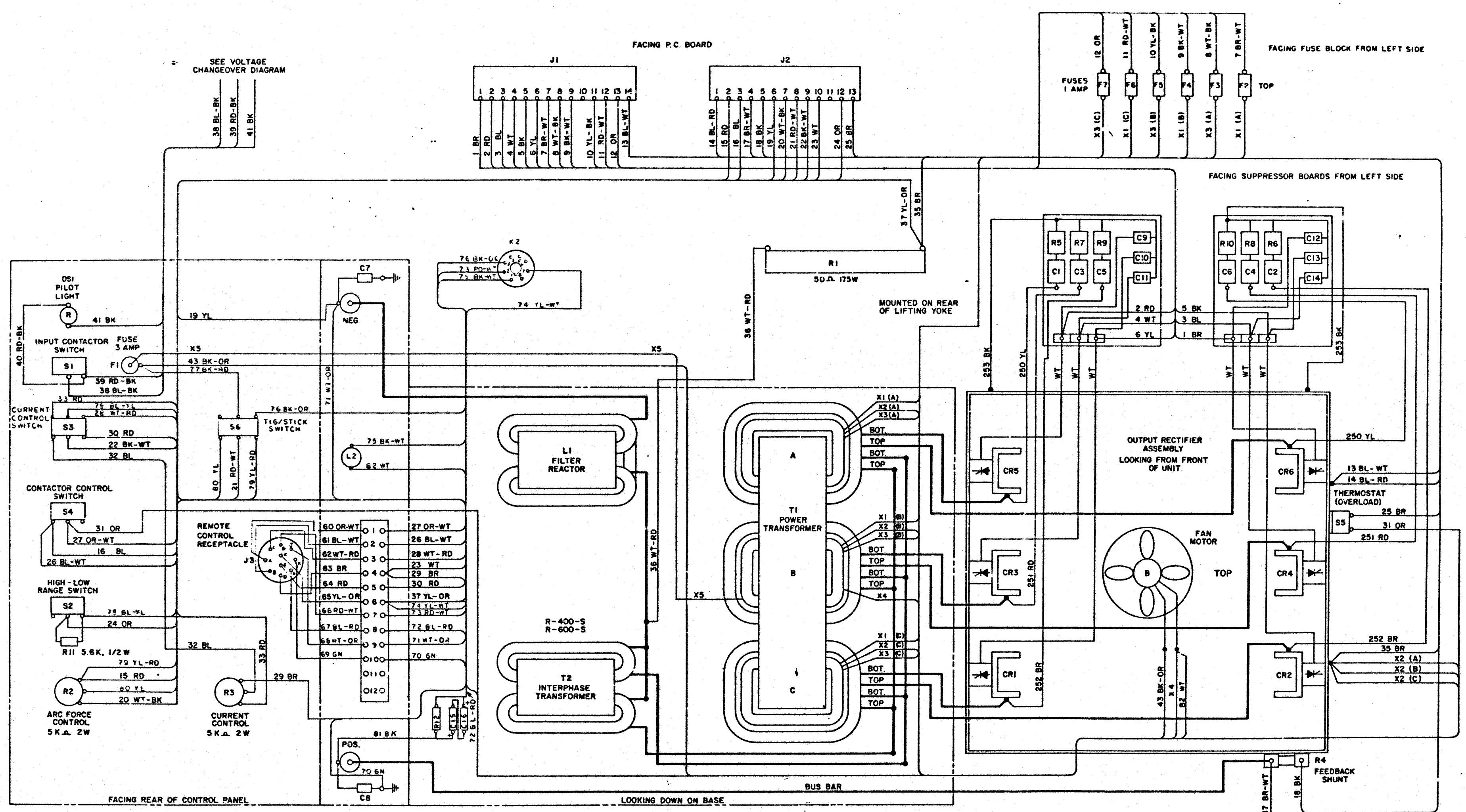
TITLE: DIAGRAM, SCHEMATIC

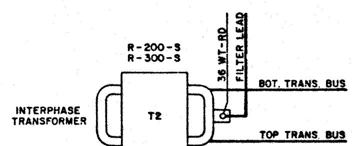
R-S UNITS

WDB — MIH — 9-26-80

SHEET 2

369704





COLOR CODE			
BK	BLACK	RD	RED
BR	BROWN	TN	TAN
BL	BLUE	VT	VIOLET(PURPLE)
GN	GREEN	WT	WHITE
GY	GRAY(SLATE)	YL	YELLOW
OR	ORANGE	D	DARK (PREFIX)
PK	PINK	L	LIGHT(PREFIX)

PROTECTIVE FINISH

CHANGE RECORD

WHERE USED: NEXT ASSY SPECS — NO REQ 1 — USED ON S-6597

UNLESS OTHERWISE SPECIFIED

TITLE: DIAGRAM, CONNECTION R-S UNITS

SIZE D — DWG NO 201167 — SHEET 1 OF 2

201167

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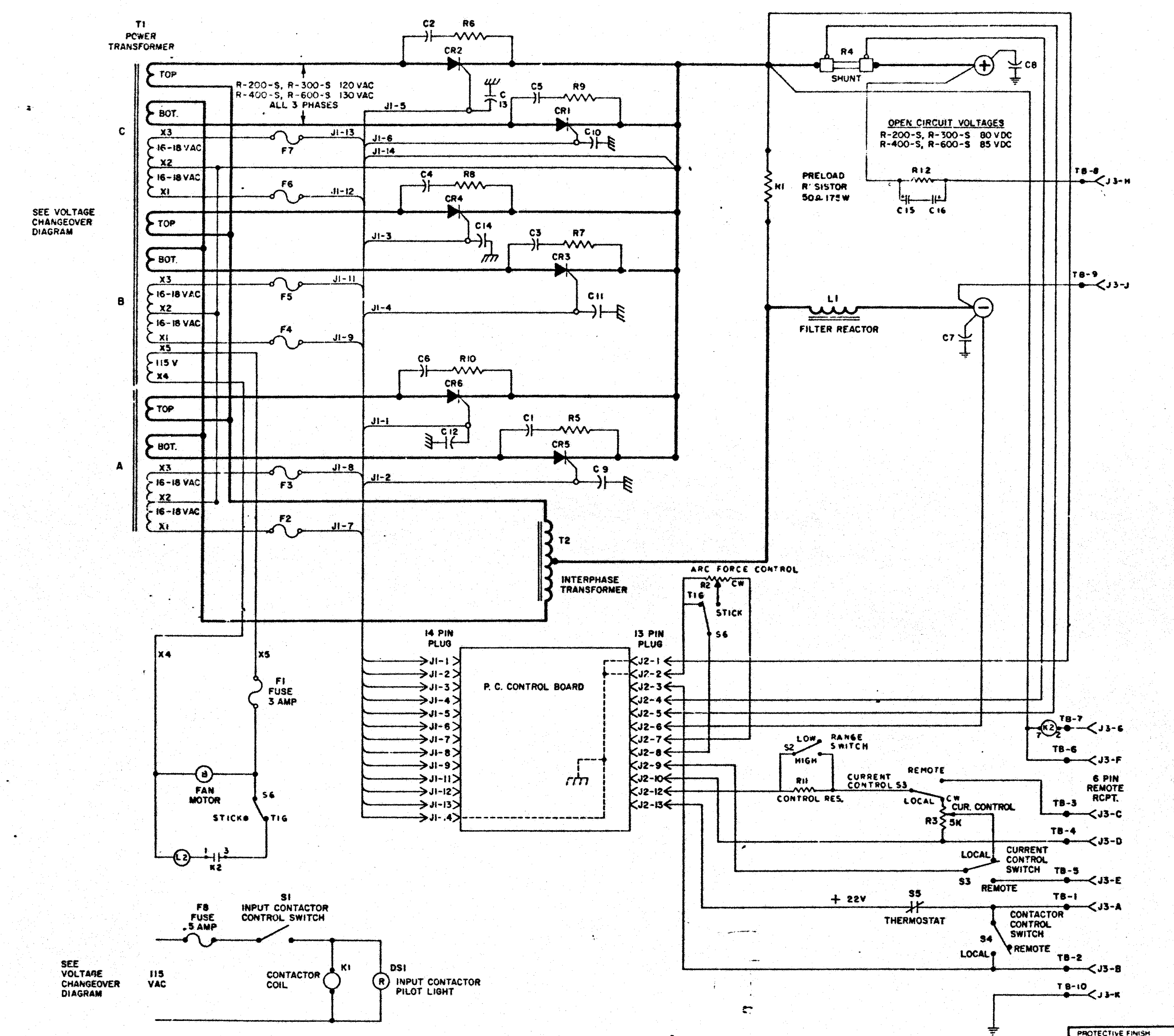

LEGEND

B	FAN MOTOR
C1-6	CAPACITOR, SUPPRESSION, .047 MFD., 400 WVDC
C7,8	CAPACITOR, H.F. SUPPRESSION, .047, 400 WVDC
C9-14	CAPACITOR, H.F. SUPPRESSION, .047 MFD
C15,16	CAPACITOR, 22 uf, 160V
C⁄1-6	SILICON CONTROLLED RECTIFIER
DS1	INPUT CONTACTOR ON PILOT LIGHT
F1	FUSE, FAN, 3 AMP.
F2-7	FUSE, CONTROL BOARD, 1 AMP
F8	FUSE, CONTROL TRANSFORMER, .5 AMP
J1	RECEPTACLE, P.C. BOARD, 14 PIN
J2	RECEPTACLE, P.C. BOARD, 13 PIN
J3	RECEPTACLE, REMOTE CONTROL, 10 PIN
K1	COIL, CONTACTOR
K2	RELAY, GAS VALVE
L1	REACTOR, FILTER
L2	VALVE, GAS
R1	RESISTORS, PRE-LOAD, 50 OHMS, 175 WATTS
R2	POTENTIOMETER, ARC DRIVE, 5K OHM, 2 WATTS
R3	POTENTIOMETER, CURRENT CONTROL, 5K OHM, 2 WATTS
R4	SHUNT
R5-10	RESISTOR, SUPPRESSION, 50 OHMS, 5 WATTS
R11	RESISTOR, CONTROL, 5.6K OHMS, 1/2 WATT
R12	RESISTOR, VOLTAGE, DROPPING, 500 OHMS, 25 WATTS
S1	INPUT CONTACTOR CONTROL SWITCH (ON-OFF)
S2	SWITCH, RANGE, HIGH-LOW
S3	SWITCH, CURRENT CONTROL, LOCAL-REMOTE
S4	SWITCH, CONTACTOR, CONTROL, LOCAL-REMOTE
S5	THERMOSTAT, OVERLOAD
S6	SWITCH, TIG, STICK
T1	TRANSFORMER, POWER
T2	TRANSFORMER, INTERPHASE
TB	TERMINAL STRIP

DIAGRAM, SCHEMATIC
R-S UNITS

ACCESS NO 149H

SIZE D · DWG NO 201167 · SHEET 2

201167 SH. 2

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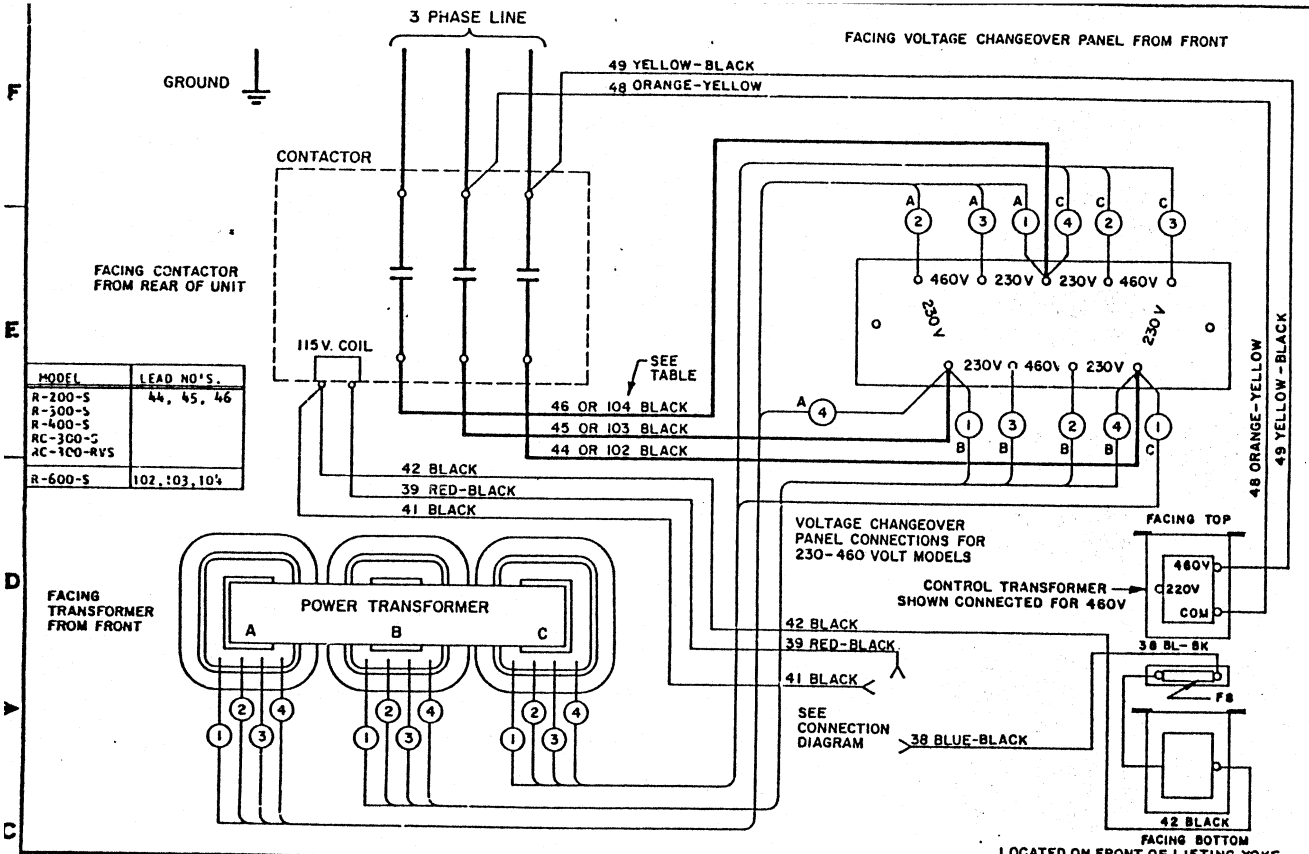
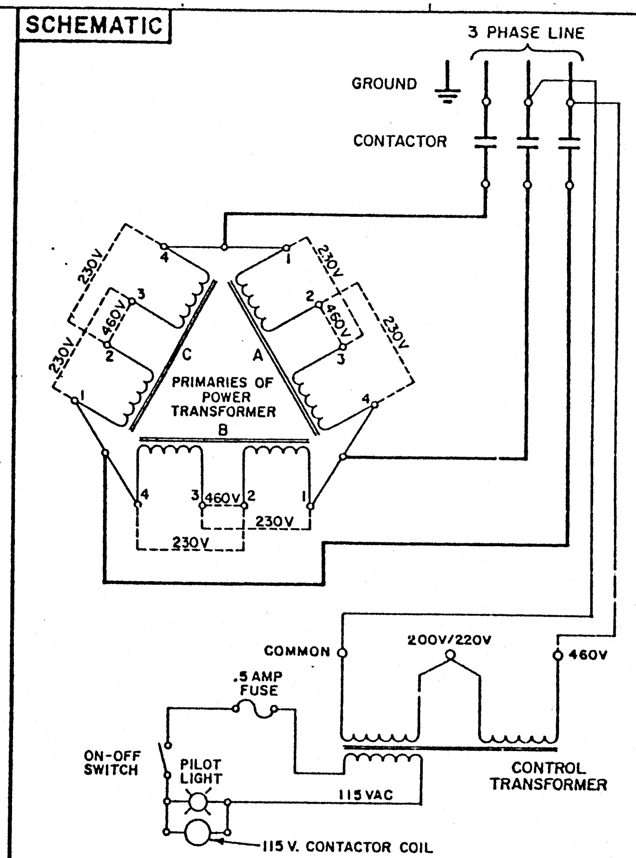
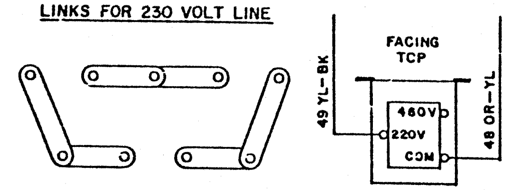


MODEL	LEAD NO'S.
R-200-S R-300-S R-400-S RC-300-S RC-300-RVS	44, 45, 46
R-600-S	102, 103, 104

SCHEMATIC



LINKS FOR 230 VOLT LINE

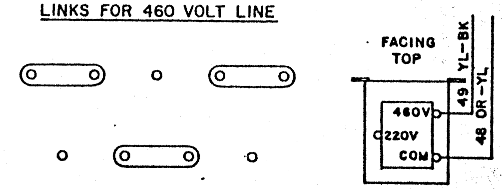


CONTROL TRANSFORMER CONNECTIONS

CONNECT 49 YL-BK TO TERMINAL MARKED 220V

FIG. 1

LINKS FOR 460 VOLT LINE



CONTROL TRANSFORMER CONNECTIONS

CONNECT 49 YL-BK TO TERMINAL MARKED 460V

FIG. 2

INSTRUCTIONS FOR SETTING VOLTAGE CHANGEOVER PANEL AND CONNECTING POWER LINE
(ALSO SEE INFORMATION IN INSTRUCTION MANUAL)

1. CHECK NAMEPLATE OF THE WELDER TO BE CERTAIN IT IS DESIGNED FOR THE LINE VOLTAGE TO WHICH YOU WISH TO CONNECT IT.
2. CONNECT THE LINKS AS SHOWN IN FIG'S. 1 AND 2 AT LEFT, AS APPLICABLE, FOR THE PROPER LINE VOLTAGE.
3. CHECK YOUR LOCAL CODES FOR THE PROPER LINE WIRE SIZE FOR THE LINE CURRENT SHOWN ON THE NAMEPLATE OF THE WELDER. IF NO CODES EXISTS, USE THE CHART IN THE "INSTALLATION" SECTION OF THE MANUAL.
4. CONNECT THE 3 PHASE POWER LINE TO THE TOP OF THE WELDER LINE CONTACTOR AS IN THE DIAGRAM ABOVE. (CAUTION - BE CERTAIN INPUT CIRCUIT IS OPEN BEFORE HANDLING LINE.)
5. CONNECT THE POWER SYSTEM GROUND TO THE SCREW ON THE INTERIOR PANEL MARKED "GROUND".

COLOR CODE

BK	BLACK	RD	RED
BP	BROWN	TN	TAN
BL	BLUE	VT	VIOLET
GN	GREEN	WT	WHITE
GY	GRAY(SLATE)	YL	YELLOW
OR	ORANGE	D	DARK (PREFIX)
PK	PINK	L	LIGHT (PREFIX)

PROTECTIVE FINISH

CHANGE RECORD

No.	INDEX	DATE	No.	INDEX	DATE
1			13		
2			14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

WHERE USED

NEXT ASSY.	NO. REQ	USED ON
SPECS	1	-------

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES/MILLIMETERS TOLERANCES BELOW APPLY EXCEPT FOR VENDOR DESIGNED PARTS AND ITEMS PRODUCED TO RECOGNIZED STANDARDS. DO NOT SCALE DRAWING

FRACTIONAL - INCH ± 1/64 | DECIMAL - INCH .00 ± .01 .000 ± .003 | METRIC 0. ± 1.0 mm 0.0 ± 0.4 mm 0.00 ± 0.1 mm | ANGLES ± 30' | SURFACE TEXTURE

ACTIVITY M | REPLACED BY | ACCESS NO. 1180-06 | REPLACES | QUANTITY U/M

MATERIAL NO | MATERIAL SPEC

TITLE DIAGRAM, VOLTAGE CHANGEOVER
INDEX DATA R-200, 300, 400-S

DESIGNED WDB | DRAWN MIH | DATE 8-26-60 | SCALE
CHECKED | DATE 6-17-81 | APPROVED WDB | BASED ON
RECORDS VSC | DATE 6-19-81 | REVISION 0

SIZE C | DWG NO 369705

OUTSIDE DISTR | DISTRIBUTION TABLE

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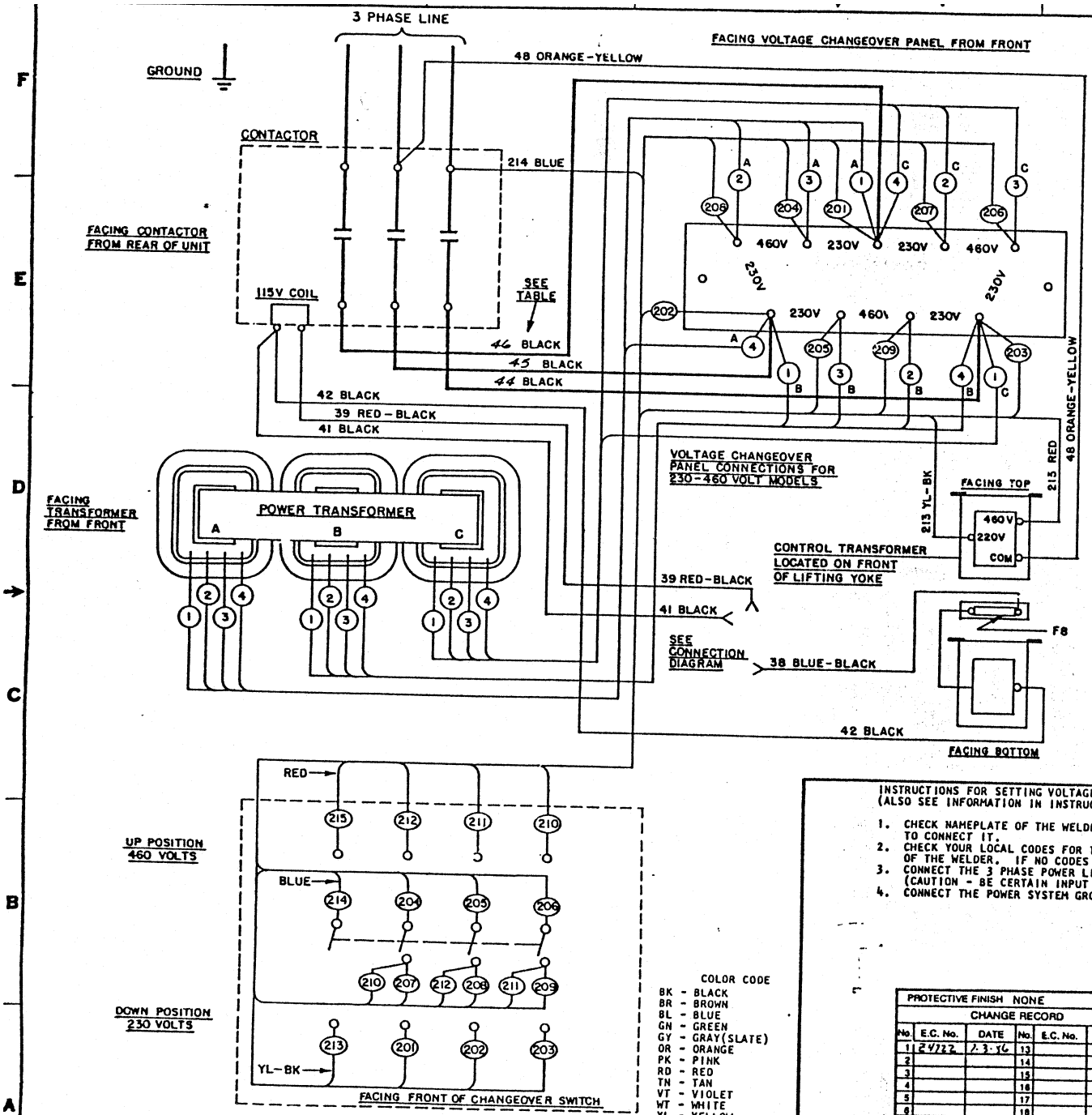
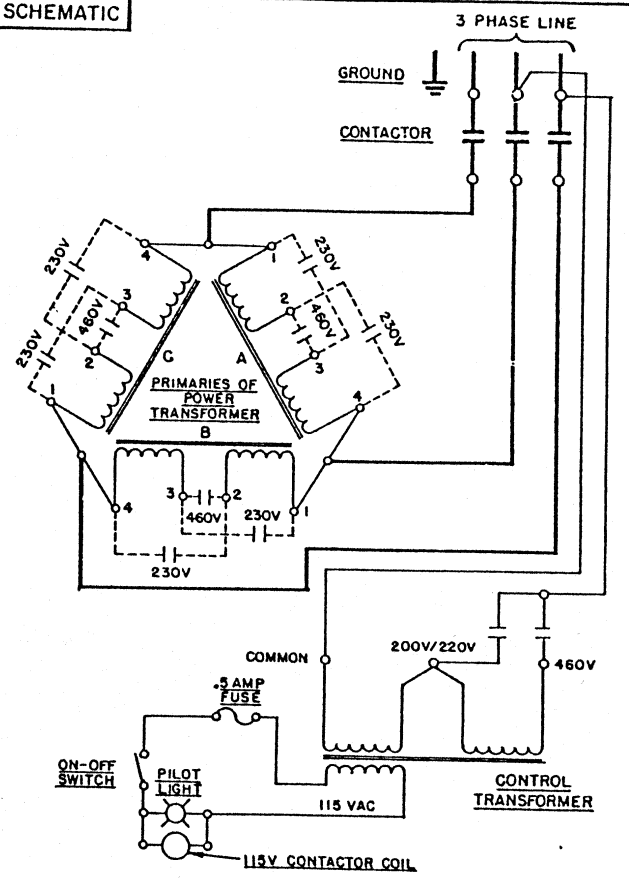


SCHEMATIC



INSTRUCTIONS FOR SETTING VOLTAGE CHANGEOVER PANEL AND CONNECTING POWER LINE
(ALSO SEE INFORMATION IN INSTRUCTION MANUAL)

1. CHECK NAMEPLATE OF THE WELDER TO BE CERTAIN IT IS DESIGNED FOR THE LINE VOLTAGE TO WHICH YOU WISH TO CONNECT IT.
2. CHECK YOUR LOCAL CODES FOR THE PROPER LINE WIRE SIZE FOR THE LINE CURRENT SHOWN ON THE NAMEPLATE OF THE WELDER. IF NO CODES EXISTS, USE THE CHART IN THE "INSTALLATION" SECTION OF THE MANUAL.
3. CONNECT THE 3 PHASE POWER LINE TO THE TOP OF THE WELDER LINE CONTACTOR AS IN THE DIAGRAM ABOVE. (CAUTION - BE CERTAIN INPUT CIRCUIT IS OPEN BEFORE HANDLING LINE.)
4. CONNECT THE POWER SYSTEM GROUND TO THE SCREW ON THE INTERIOR PANEL MARKED "GROUND".

MICRO MATIC

PROTECTIVE FINISH NONE

CHANGE RECORD

No.	E.C. No.	DATE	No.	E.C. No.	DATE
1	24722	1-3-56	13		
2			14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

WHERE USED

NEXT ASSY.	NO. REQ.	USED ON
SPECS	1	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES/MILLIMETERS TOLERANCES BELOW APPLY EXCEPT FOR VENDOR DESIGNED PARTS AND ITEMS PRODUCED TO RECOGNIZED STANDARDS. DO NOT SCALE DRAWING.

FRACTIONAL - INCH ± — — —
DECIMAL - INCH .00 ± .01 .000 ± .003
METRIC 0. ± 1.0 mm .0 ± .04 mm .00 ± .01 mm
ANGLES ± 30'
SURFACE TEXTURE √

ACTIVITY	REPLACED BY	REPLACES	QUANTITY/U M
MATERIAL NO.	MATERIAL SPEC.		

TITLE DIAGRAM, VOLTAGE CHANGEOVER
INDEX DATA (R 200, 300, 400-S, V.C. SWITCH)

DESIGNED	DRAWN	DATE	SCALE
W.O.B.	KEIM	6-16-81	— — — —
CHECKED	DATE	APPROVED	BASED ON
DC	3-3-81	WDB	
RECORDS	MFG. ENGRG.	M. P.	I.T.
1-24-81			

REVISION 1
SIZE C
DWG. NO. 200361

COMM CLS. 1471

PRODUCT CODE
DISTRIBUTION TABLE
OUTSIDE DISTR.

D SEE ECN

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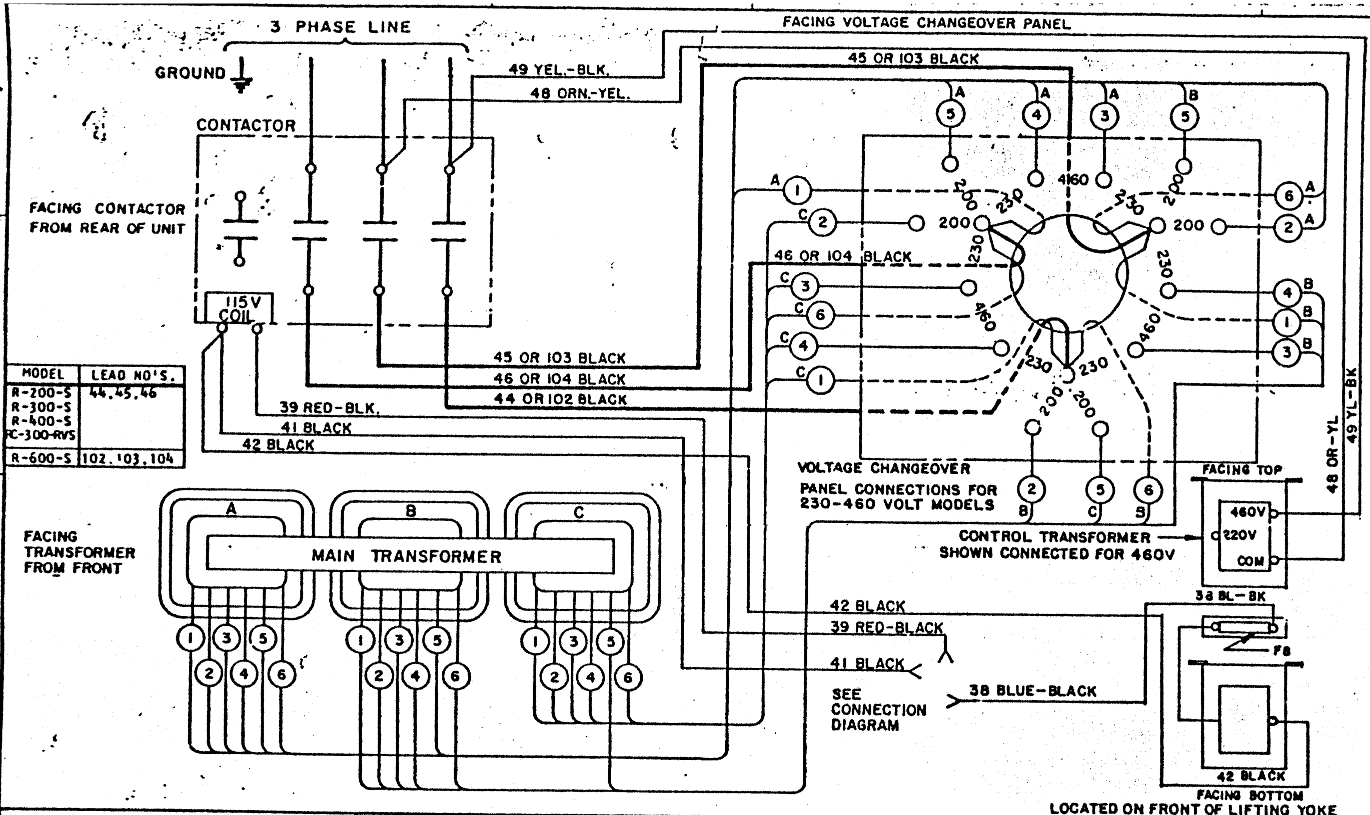
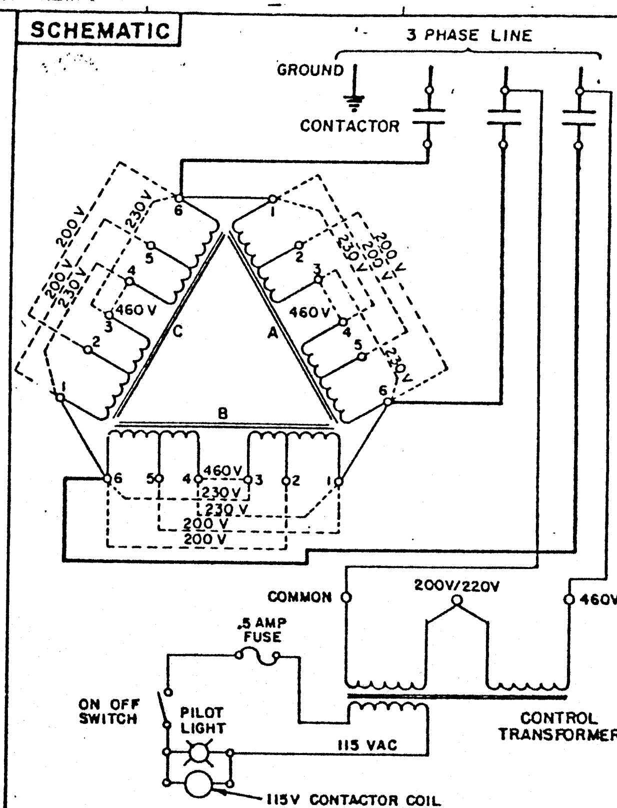
FORM NO. 434070



MODEL	LEAD NO'S.
R-200-S R-300-S R-400-S RC-300-RVS	44,45,46
R-600-S	102,103,104

SCHEMATIC



LINK FOR 200 VOLT LINE

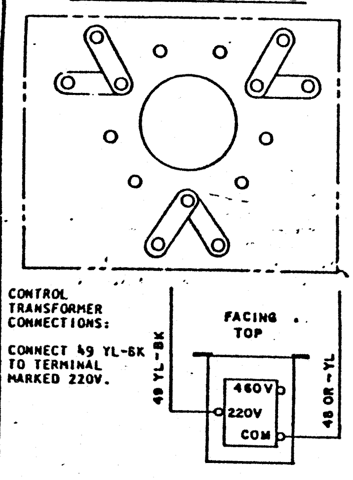


FIG. 1

LINK FOR 230 VOLT LINE

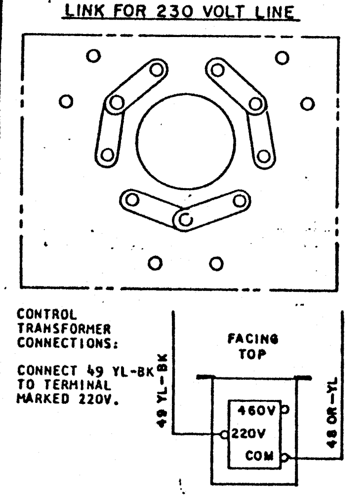


FIG. 2

LINK FOR 460 VOLT LINE

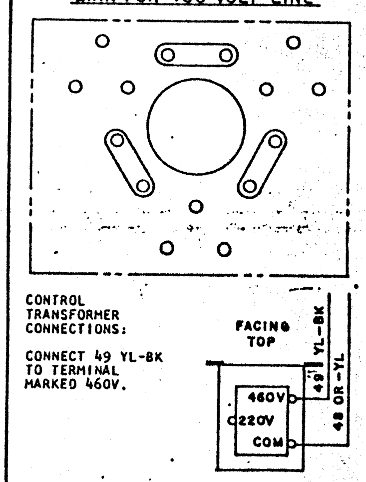


FIG. 3

INSTRUCTIONS FOR SETTING VOLTAGE CHANGEOVER PANEL AND CONNECTING POWER LINE
(ALSO SEE INFORMATION IN INSTRUCTION MANUAL)

1. CHECK NAMEPLATE OF THE WELDER TO BE CERTAIN IT IS DESIGNED FOR THE LINE VOLTAGE TO WHICH YOU WISH TO CONNECT IT.
2. CONNECT THE LINKS AS SHOWN IN FIG'S. 1, 2, AND 3 AT LEFT, AS APPLICABLE, FOR THE PROPER LINE VOLTAGE.
3. CHECK YOUR LOCAL CODES FOR THE PROPER LINE WIPE SIZE FOR THE LINE CURRENT SHOWN ON THE NAMEPLATE OF THE WELDER. IF NO CODES EXISTS, USE THE CHART IN THE "INSTALLATION" SECTION OF THE MANUAL.
4. CONNECT THE 3 PHASE POWER LINE TO THE TOP OF THE WELDER LINE CONTACTOR AS IN THE DIAGRAM ABOVE. (CAUTION - BE CERTAIN INPUT CIRCUIT IS OPEN BEFORE HANDLING LINE.)
5. CONNECT THE POWER SYSTEM GROUND TO THE SCREW ON THE INTERIOR PANEL MARKED "GROUND".

COLOR CODE

BK - BLACK	RD - RED
BR - BROWN	TN - TAN
BL - BLUE	VT - VIOLET
GN - GREEN	WT - WHITE
GY - GRAY(SLATE)	YL - YELLOW
OR - ORANGE	D - DARK(PREFIX)
PK - PINK	L - LIGHT(PREFIX)

(2 copies) MICROFILMED

DISTRIBUTION TABLE	
OUTSIDE DISTR.	
D2-527	9-9-81

PROTECTIVE FINISH NONE.

CHANGE RECORD

No.	INDEX	DATE	No.	INDEX	DATE
1	X0634	6-22-81	13		
2			14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

WHERE USED

NEXT ASSY.	NO. REQ.	USED ON
SPECS		S-6311

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES. DO NOT SCALE DRAWING. TOLERANCES BELOW APPLY EXCEPT FOR VENDOR DESIGNED PARTS AND ITEMS PRODUCED TO RECOGNIZED STANDARDS.
SURFACE TEXTURE
FRACTIONS ± — DECIMALS .00 ± .01, .000 ± .003 ANGLES ± 30'

ACTIVITY	REPLACED BY	REPLACES	QUANTITY/ASM.
	SD/R	ACCESS NO. 1180-06	

MATERIAL NO. / MATERIAL SPEC.

TITLE DIAGRAM, VOLTAGE CHANGEOVER
INDEX DATA RC-300-RVS

DESIGNED	DRAWN	DATE	SCALE
RAS	MIH	2-4-81	—
CHECKED	DATE	APPROVED	REPRO FROM
OPC	2-23-81	RLS	368316
RECORDS	DATE	INDEXED	M.P.
RJSC	2-25-81		

SIZE C DWG. NO. 200030

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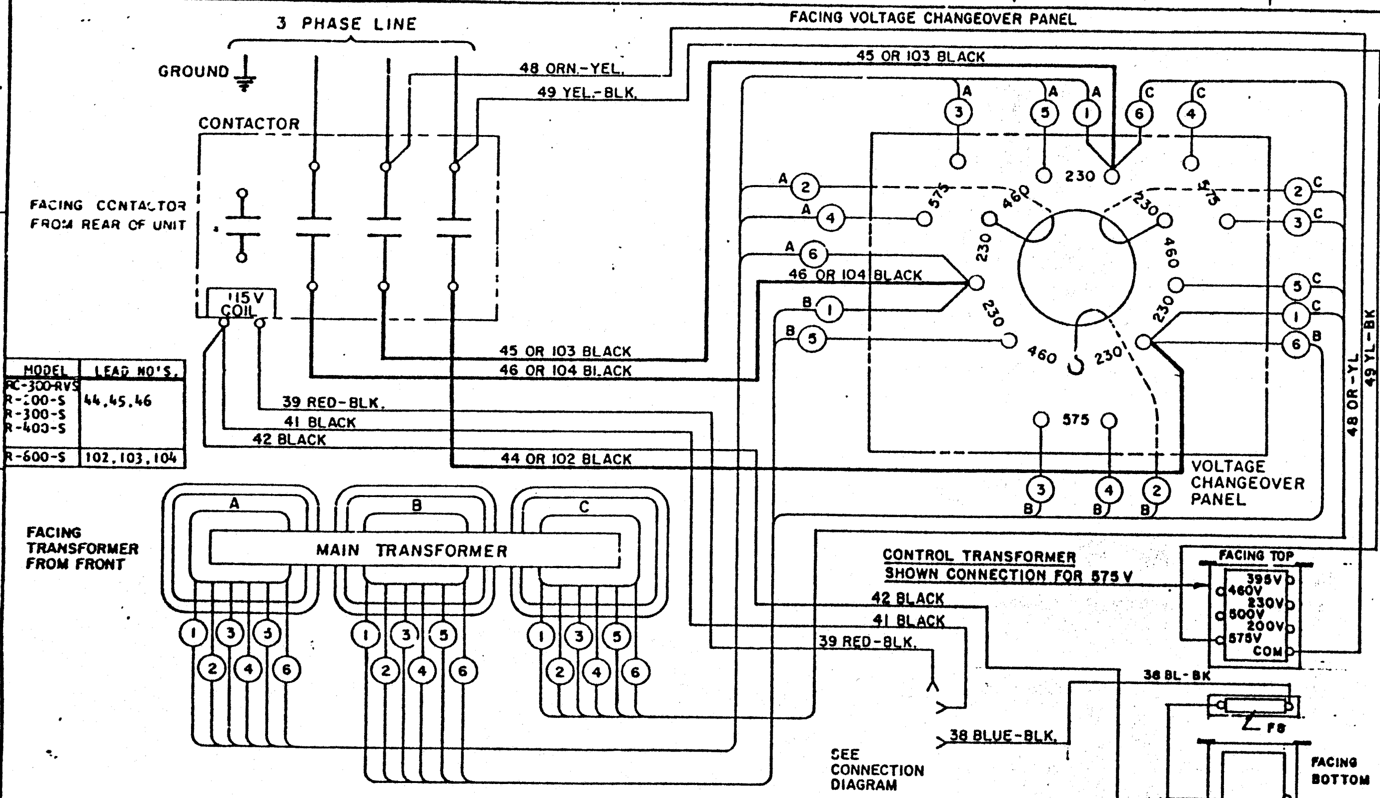
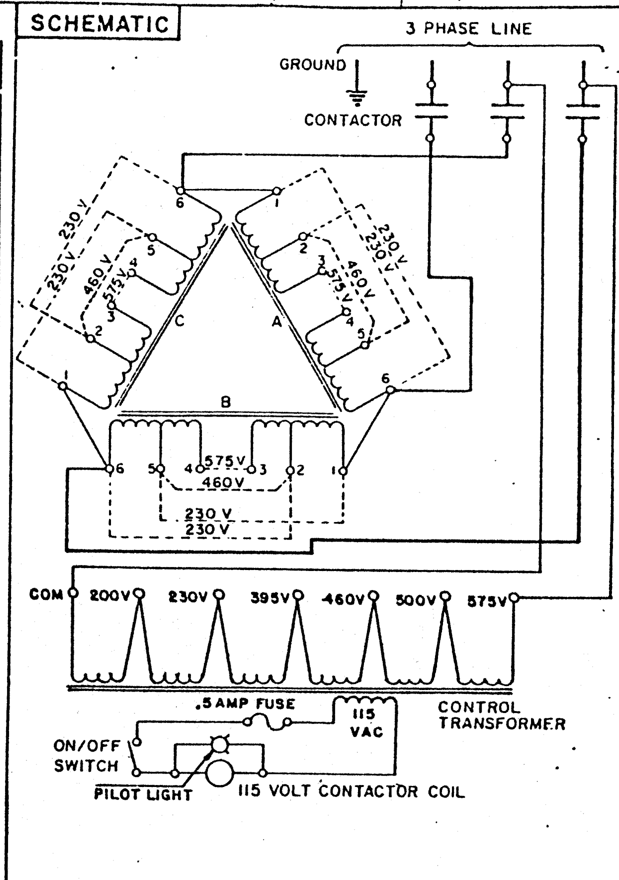
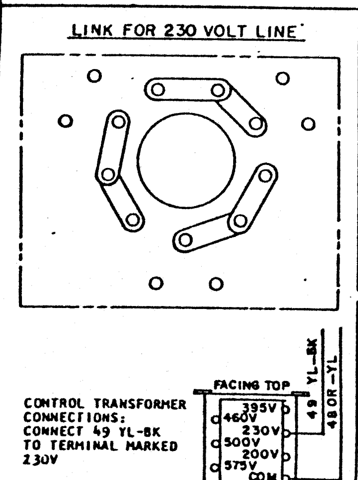
FORM NO. 434070



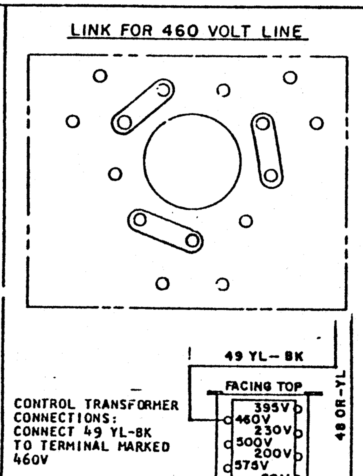
MODEL	LEAD NO'S.
RC-300-RVS R-200-S R-300-S R-400-S	44,45,46
R-600-S	102,103,104





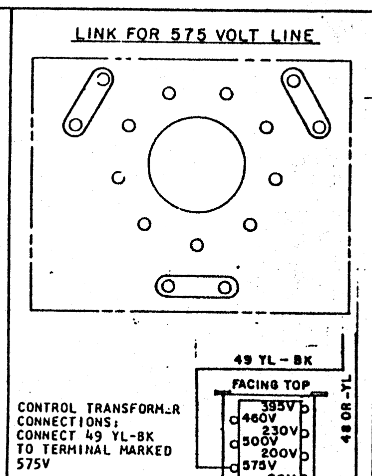
CONTROL TRANSFORMER CONNECTIONS: CONNECT 49 YL-BK TO TERMINAL MARKED 230V

FIG. 1



CONTROL TRANSFORMER CONNECTIONS: CONNECT 49 YL-BK TO TERMINAL MARKED 460V

FIG. 2



CONTROL TRANSFORMER CONNECTIONS: CONNECT 49 YL-BK TO TERMINAL MARKED 575V

FIG. 3

INSTRUCTIONS FOR SETTING VOLTAGE CHANGEOVER PANEL AND CONNECTING POWER LINE
(ALSO SEE INFORMATION IN INSTRUCTIONS MANUAL)

1. CHECK NAMEPLATE OF THE WELDER TO BE CERTAIN IT IS DESIGNED FOR THE LINE VOLTAGE TO WHICH YOU WISH TO CONNECT IT.
2. CONNECT THE LINKS AS SHOWN IN FIG'S. 1,2, AND 3 AT LEFT, AS APPLICABLE, FOR THE PROPER LINE VOLTAGE.
3. CHECK YOUR LOCAL CODES FOR THE PROPER LINE WIRE SIZE FOR THE LINE CURRENT SHOWN ON THE NAMEPLATE. OF THE WELDER. IF NO CODES EXISTS, USE THE CHART IN THE "INSTALLATION" SECTION OF THE MANUAL.
4. CONNECT THE 3 PHASE POWER LINE TO THE TOP OF THE WELDER LINE CONTACTOR AS IN THE DIAGRAM ABOVE. (CAUTION - BE CERTAIN INPUT CIRCUIT IS OPEN BEFORE HANDLING LINE.)
5. CONNECT THE POWER SYSTEM GROUND TO THE SCREW ON THE INTERIOR PANEL MARKED "GROUND".

COLOR CODE

BK	BLACK	RD	RED
BR	BROWN	TN	TAN
BL	BLUE	VT	VIOLET
GN	GREEN	WT	WHITE
GY	GRAY(SLATE)	YL	YELLOW
OR	ORANGE	D	DARK(PREFIX)
PK	PINK	L	LIGHT(PREFIX)

(2 copies)

DISTRIBUTION TABLE	
Trans 4 F	2-27-81
TRANS 4/5	5-92
Au S.	[illegible]
Schure	3-27-1
02-527	9-7-81
OUTSIDE DISTR.	

PROTECTIVE FINISH NONE

CHANGE RECORD					
No.	INDEX	DATE	No.	INDEX	DATE
1	X0436	4-22-81	13		
2			14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

WHERE USED		
NEXT ASSY.	NO REQ.	USED ON
SPECS		S-6312

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DO NOT SCALE DRAWING TOLERANCES BELOW APPLY EXCEPT FOR VENDOR DESIGNED PARTS AND ITEMS PRO-CURED TO RECOGNIZED STANDARDS
SURFACE TEXTURE
FRACTIONS ± — DECIMALS .00 ±.01 .000 ±.003 ANGLES ± 30'

ACTIVITY	REPLACED BY	REPLACES	QUANTITY/U.M.
SDK		ACCESS NO. 1180-06	

MATERIAL NO. | MATERIAL SPEC.

TITLE DIAGRAM, VOLTAGE CHANGEOVER - RC-300-RVS

DESIGNED	DRAWN	DATE	SCALE
RAS	MIH	2-4-81	
CHECKED	DATE	APPROVED	REPRO FROM
OC	2-24-81	RAS	368317
RECORDS	DATE	INDEXED	
MSC	2-25-81		

SIZE C — DWG. NO. 200031

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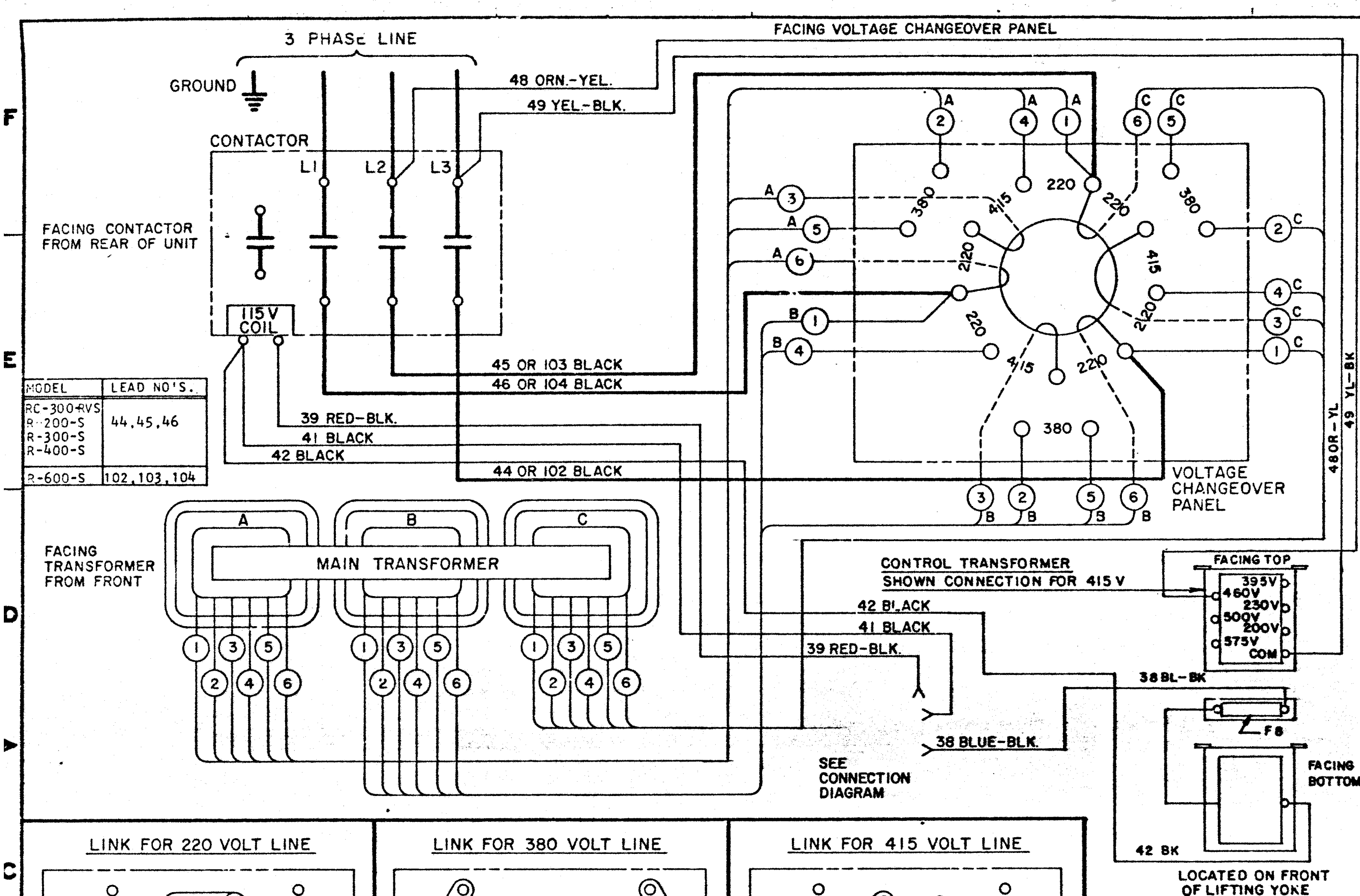
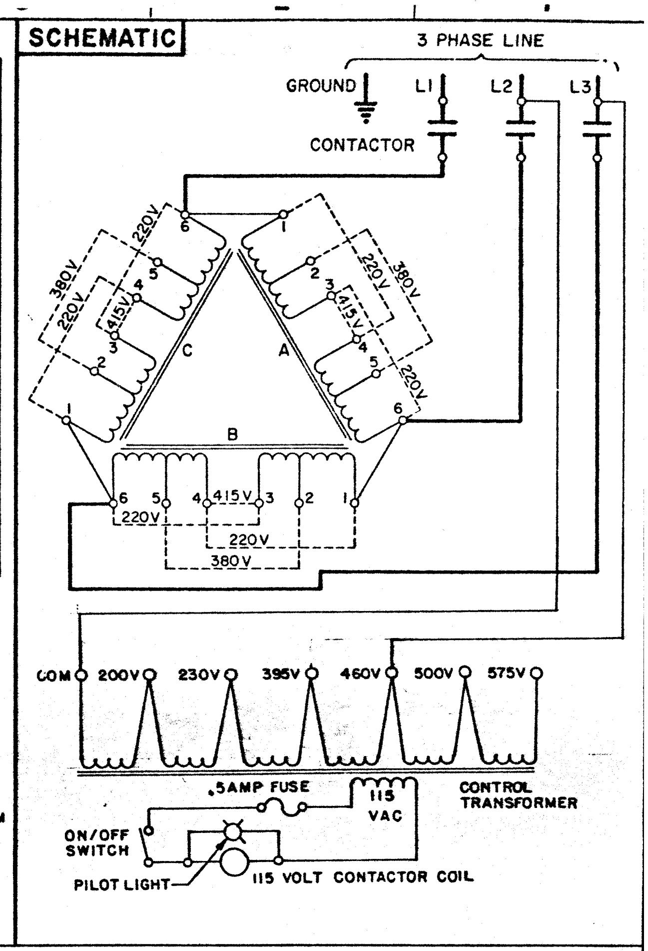
FORM NO. 424070

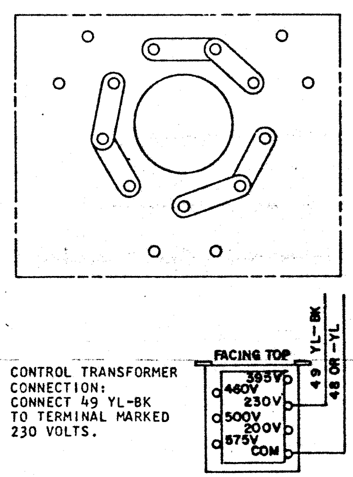


MODEL	LEAD NO'S.
RC-300-RVS R-200-S R-300-S R-400-S	44,45,46
R-600-S	102,103,104

SCHEMATIC



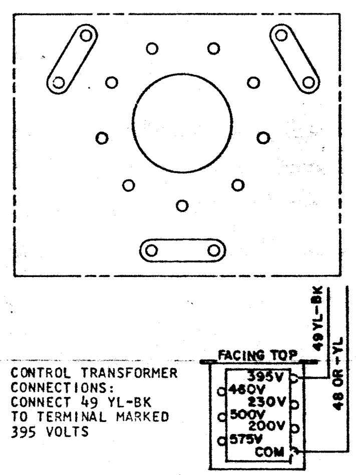
LINK FOR 220 VOLT LINE



CONTROL TRANSFORMER CONNECTION:
CONNECT 49 YL-BK
TO TERMINAL MARKED
230 VOLTS.

FIG. 1

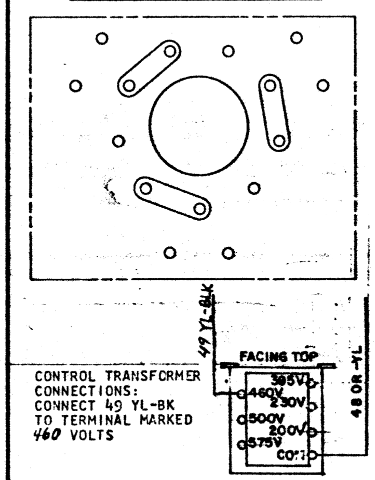
LINK FOR 380 VOLT LINE



CONTROL TRANSFORMER CONNECTIONS:
CONNECT 49 YL-BK
TO TERMINAL MARKED
395 VOLTS

FIG. 2

LINK FOR 415 VOLT LINE



CONTROL TRANSFORMER CONNECTIONS:
CONNECT 49 YL-BK
TO TERMINAL MARKED
460 VOLTS

FIG. 3

INSTRUCTIONS FOR SETTING VOLTAGE CHANGEOVER PANEL AND CONNECTING POWER LINE
(ALSO SEE INFORMATION IN INSTRUCTION MANUAL).

1. CHECK NAMEPLATE OF THE WELDER TO BE CERTAIN IT IS DESIGNED FOR THE LINE VOLTAGE TO WHICH YOU WISH TO CONNECT IT.
2. CONNECT THE LINKS AS SHOWN IN FIG'S. 1,2, AND 3 AT LEFT, AS APPLICABLE, FOR THE PROPER LINE VOLTAGE.
3. CHECK YOUR LOCAL CODES FOR THE PROPER LINE WIRE SIZE FOR THE LINE CURRENT SHOWN ON THE NAMEPLATE OF THE WELDER. IF NO CODES EXISTS, USE THE CHART IN THE "INSTALLATION" SECTION OF THE MANUAL.
4. CONNECT THE 3 PHASE POWER LINE TO THE TOP OF THE WELDER LINE CONTACTOR AS IN THE DIAGRAM ABOVE. (CAUTION - BE CERTAIN INPUT CIRCUIT IS OPEN BEFORE HANDLING LINE.)
5. CONNECT THE POWER SYSTEM GROUND TO THE SCREW ON THE INTERIOR PANEL MARKED "GROUND".

COLOR CODE

BK - BLACK	RD - RED
BR - BROWN	TN - TAN
BL - BLUE	VT - VIOLET(PURPLE)
GN - GREEN	WT - WHITE
GY - GRAY(SLATE)	YL - YELLOW
OR - ORANGE	D - DARK(PREFIX)
PK - PINK	L - LIGHT(PREFIX)

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DISTRIBUTION TABLE	
A.S	2-27-81
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TRANS. Tech	5-82
Service	2-27-81
OUTSIDE DISTR	

PROTECTIVE FINISH

No	INDEX	DATE	No	INDEX	DATE
1	XO636	6-22-81	13		
A	2150	5-19-98	14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

WHERE USED

NEXT ASSY.	NO REQ.	USED ON
SPECS	1	S-6313

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES/MILLIMETERS TOLERANCES BELOW APPLY EXCEPT FOR VENDOR DESIGNED PARTS AND ITEMS PRODUCED TO RECOGNIZED STANDARDS DO NOT SCALE DRAWING

FRACTIONAL INCH	DECIMAL INCH	METRIC
±	.00 ± .01 / .000 ± .005	0 ± .10mm / 0.0 ± .04mm / 0.00 ± .01mm

ANGLES ± 30' SURFACE TEXTURE

ACTIVITY	REPLACED BY	REPLACES	QUANTITY U/M
SDXR		ACCESS NO 1180-06	

MATERIAL NO | MATERIAL SPEC

TITLE: DIAGRAM, VOLTAGE CHANGEOVER
INDEX DATA: RC-300-RVS

DESIGNED	DRAWN	DATE	SCALE
RAS	MIH	2-5-81	—
CHECKED	DATE	APPROVED	BASED ON
OFC	2-24-81	RAS	369374
RECORDS	DATE	MF / PI	REVISION
NSC	2-25-81	—	1

SIZE C — DWG NO 200032

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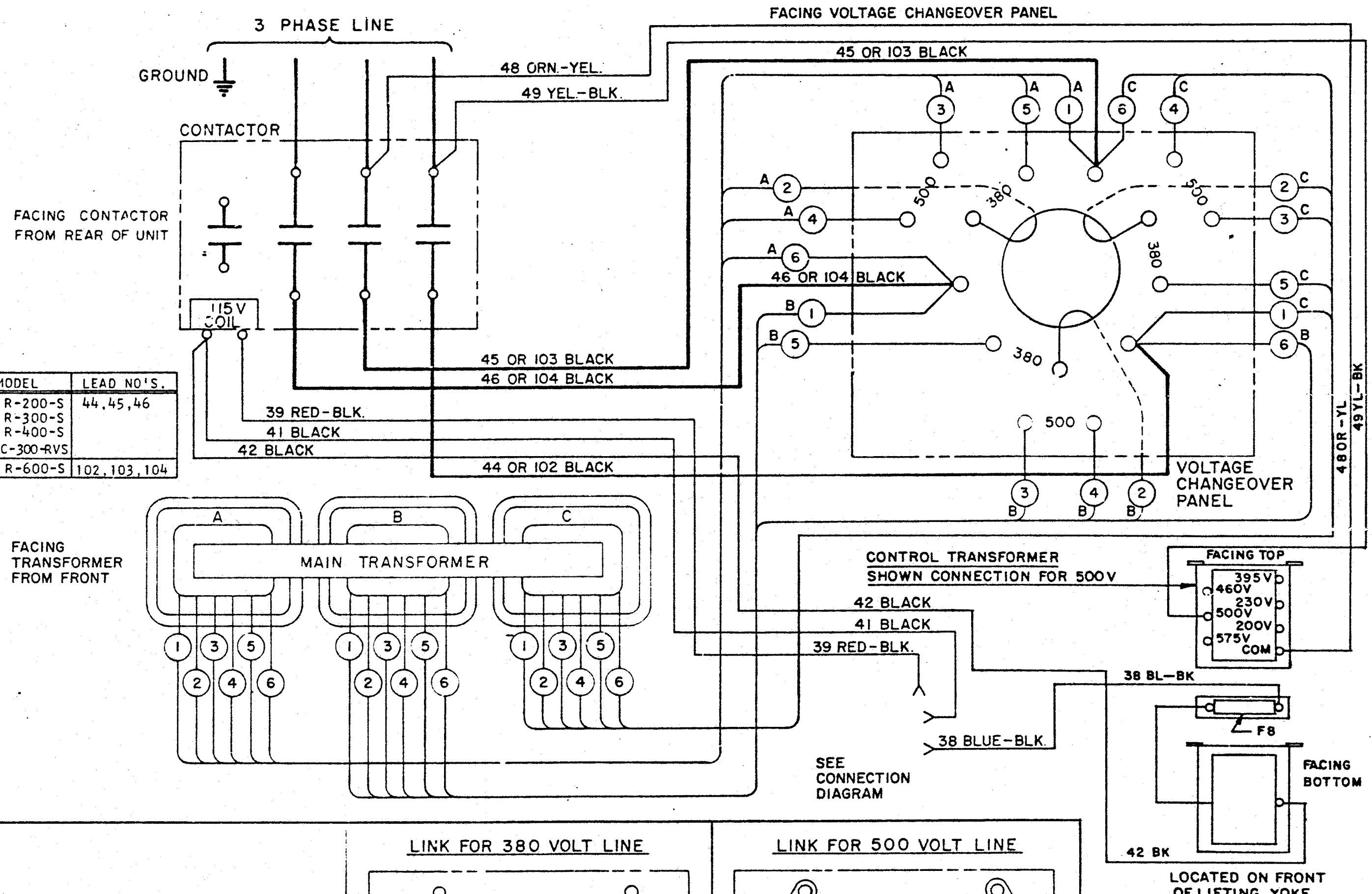
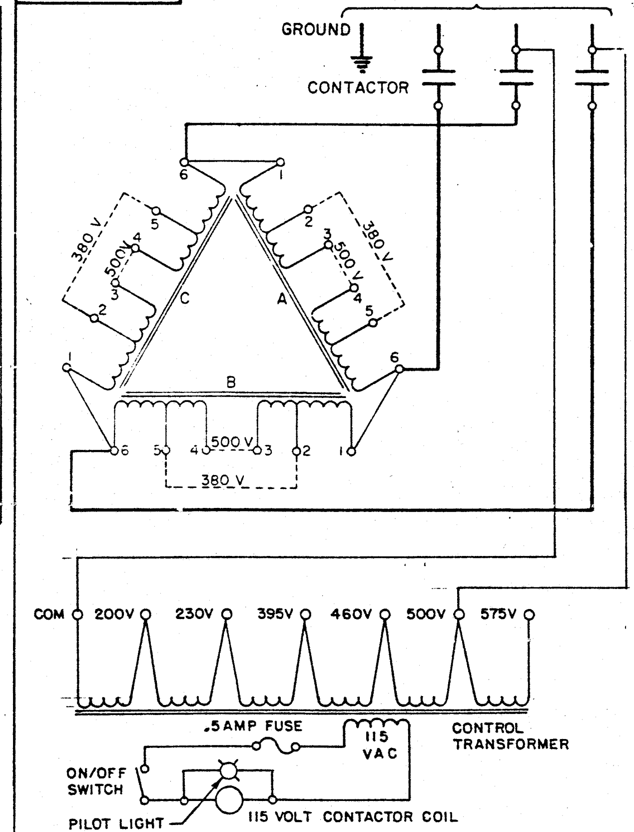
FORM NO. 424070



MODEL	LEAD NO'S.
R-200-S R-300-S R-400-S RC-300-RVS	44,45,46
R-600-S	102,103,104

SCHEMATIC



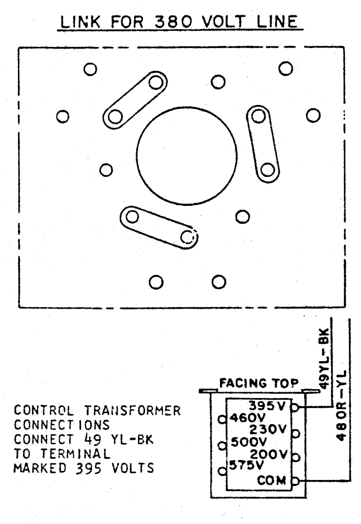


FIG. 1

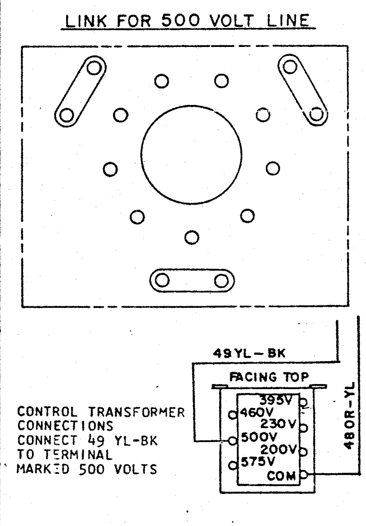


FIG. 2

INSTRUCTIONS FOR SETTING VOLTAGE CHANGEOVER PANEL AND CONNECTING POWER LINE
(ALSO SEE INFORMATION IN INSTRUCTION MANUAL).

1. CHECK NAMEPLATE OF THE WELDER TO BE CERTAIN IT IS DESIGNED FOR THE LINE VOLTAGE TO WHICH YOU WISH TO CONNECT IT.
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COLOR CODE

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BR - BROWN	TN - TAN
BL - BLUE	VT - VIOLET(PURPLE)
GN - GREEN	WT - WHITE
GY - GRAY(SLATE)	YL - YELLOW
OR - ORANGE	D - DARK(PREFIX)
PK - PINK	L - LIGHT(PREFIX)

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Service	[illegible]
02-527	9-7-31
OUTSIDE DISTR.	

PROTECTIVE FINISH NONE

CHANGE RECORD							USED		
No.	INDEX	DATE	No.	INDEX	DATE		REQ.	USED ON	
1	X0636	6-22-81	13			SPECS	/	S-6314	

ACTIVITY	REPLACED BY	REPLACES	QUANTITY/U.M.
SD/R		ACCESS NO. 1180-06	

MATERIAL NO. | MATERIAL SPEC.

TITLE DIAGRAM, VOLTAGE CHANGEOVER
INDEX DATA RC-300-RVS

DESIGNED	DRAWN	DATE	SCALE
RAS	MIH	2-5-81	—
CHECKED	DATE	APPROVED	REPRO FROM
CFC	2-24-81	RAS	368318
RECORDS	DATE	INDEXED / M.F.	PI.
USC	2-25-81		~

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FRACTIONS	DECIMALS	ANGLES
± —	.00 ± .01 .000 ± .003	± 30'

SIZE C DWG. NO. 200033

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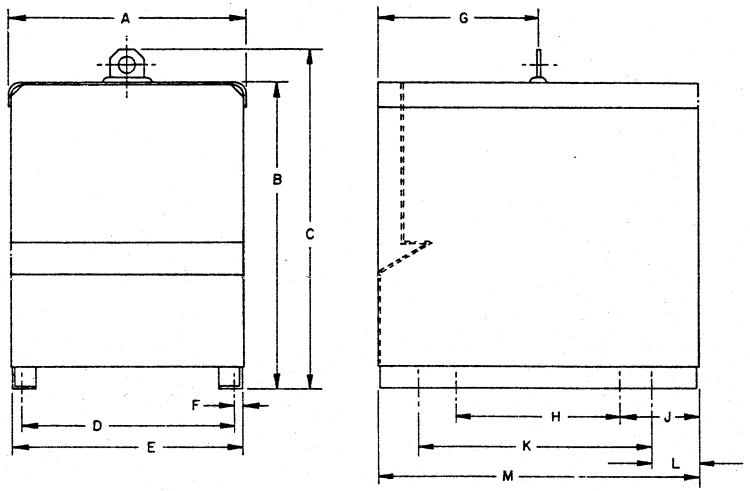

	DRAWING NUMBER	WHERE USED	DIMENSIONS IN	DIMENSION											
				A	B	C	D	E	F	G	H	J	K	L	M
	369707-1	RC-300-RVS, RC-450-RVS RCC-450-RVS, R-200-S, R-300-S, R-400-S RC-650-SSP	ENGLISH INCHES	21-1/2	26-1/2	29-1/2	19-3/4	21-3/8	13/16	14-9/16	14-3/4	7-3/16	20-3/4	4-3/16	29-1/8
③			METRIC MILLIMETERS	546	673.1	749.3	501.6	542.9	20.6	369.9	374.6	182.6	527	106.4	737.8
①	369707-2	RC-650-RVS, RCC-650-RVS, R-600-S	ENGLISH INCHES	24-1/4	26-1/2	29-1/2	22-1/2	24	3/4	16-3/16	19-3/4	7-3/16	25-3/4	4-3/16	34-1/8
			METRIC MILLIMETERS	616.0	673.1	749.3	571.5	609.6	19.1	411.2	501.7	182.6	654.1	106.4	866.8
②	369707-3	TR-300-HF	ENGLISH INCHES	24-1/4	26-1/2	29-1/2	22-1/2	24	3/4	18-11/16	19-3/4	7-3/16	25-3/4	4-3/16	39-1/8
			METRIC MILLIMETERS	616.0	673.1	749.3	571.5	609.6	19.1	474.7	501.7	182.6	654.1	106.4	993.8

OUTSIDE DISTR.

DISTRIBUTION TABLE

PROTECTIVE FINISH NONE

ACCESS NO. 2

CHANGE RECORD

No.	INDEX	DATE	No.	INDEX	DATE
1	RAS	5-27-82	13		
2	RAS	6-1-82	14		
3	RAS	3-8-83	15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

WHERE USED

NEXT ASSY.	NO. REQ.	USED ON
		SEE CHART

UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES. DO NOT SCALE DRAWING. TOLERANCES BELOW APPLY EXCEPT FOR VENDOR DESIGNED PARTS AND ITEMS PRODUCED TO RECOGNIZED STANDARDS.

SURFACE TEXTURE

FRACTIONS	DECIMALS	ANGLES
± - - - -	.00 ± .01 .000 ± .003	± 30'

ACTIVITY	REPLACED BY	REPLACES	QUANTITY/U.M
MATERIAL NO.	MATERIAL SPEC.		

TITLE OUTLINE, DIMENSIONAL

INDEX DATA

DESIGNED	DRAWN	DATE	SCALE
WDB	KEIM	7-14-81	NONE
CHECKED	DATE	APPROVED	REPRO FROM
DFC	7-15-81		369182
RECORDS	DATE	INDEXED / M.F. / PI	REVISION
PSD	7-17-81	~	2

THERMAL ARC

SIZE C

DWG. NO. 369707

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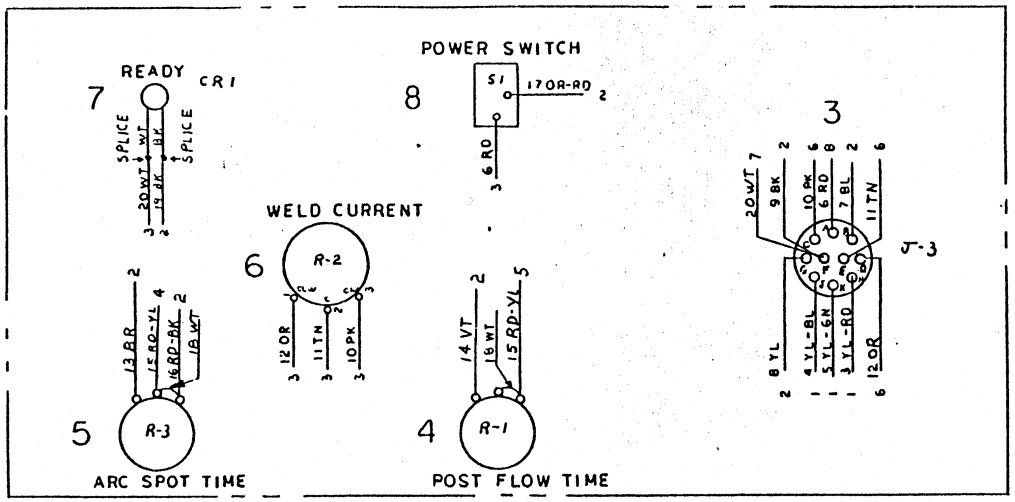
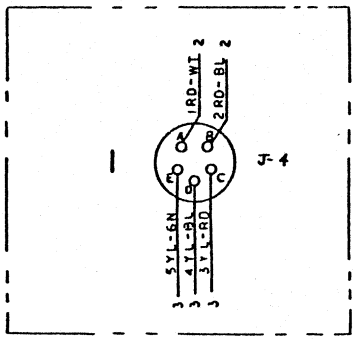
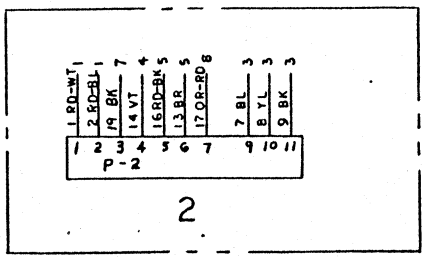
DWG NO 201181

LEGEND

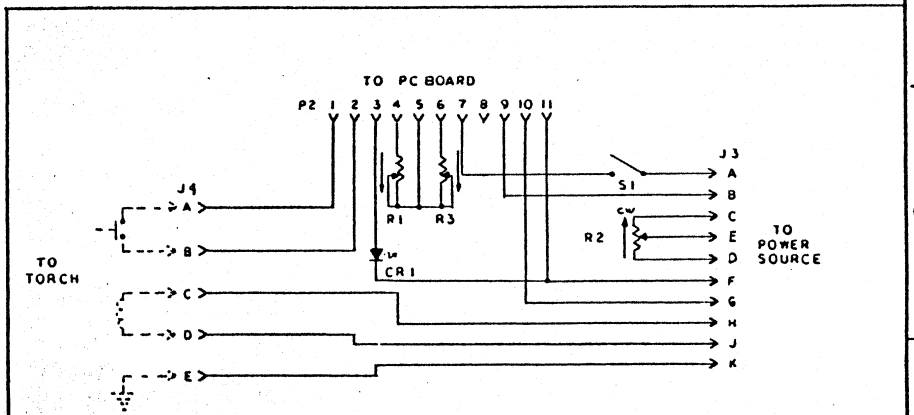
CR1	DIODE, LIGHT EMITTING
J-3 J-4	CONNECTOR, AMPHENOL, 10 PIN CONNECTOR, AMPHENOL, 5 PIN
P-2	CONNECTOR, 11 PIN
R2 R1,R3	POTENTIOMETER, 5K OHM, 3 TURN, 3W POTENTIOMETER, 500K OHM, 2W
S1	SWITCH, TOGGLE, SPST







CONNECTION DIA.



SCHEMATIC

COLOR CODE			
BK	BLACK	RD	RED
BL	BLUE	TN	TAN
BR	BROWN	VT	VIOLET (PURPLE)
GN	GREEN	WT	WHITE
GY	GRAY (SLATE)	YL	YELLOW
OR	ORANGE	D	DARK (PREFIX)
PK	PINK	L	LIGHT (PREFIX)

PROTECTIVE FINISH NONE

CHANGE RECORD

No.	E.C. No.	DATE	No.	E.C. No.	DATE
1			13		
2			14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

WHERE USED

NEXT ASSY.	NO. REQ.	USED ON
201106	-	-

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES/MILLIMETERS. TOLERANCES BELOW APPLY EXCEPT FOR VENDOR DESIGNED PARTS AND ITEMS PRODUCED TO RECOGNIZED STANDARDS. DO NOT SCALE DRAWING.
FRACTIONAL - INCH ± —
DECIMAL - INCH .00 ± .01 .000 ± .005
METRIC 0. ± 1.0 mm 0.0 ± 0.4 mm 0.00 ± 0.1 mm
ANGLES ± 30'
SURFACE TEXTURE

ACTIVITY	REPLACED BY	REPLACES	QUANTITY/U M
MATERIAL NO.	MATERIAL SPEC		
TITLE DIAGRAM, CONNECTION			
INDEX DATA ELECTRIC BOAT PENDENT			
DESIGNED REB	DRAWN RAM	DATE 20OCT82	SCALE NONE
CHECKED DFC	DATE 11-15-82	APPROVED	BASED ON
RECORDS 11-18-82	MFG. ENGRG.	M. F.	LT. ~ REVISION D
		SIZE C	DWG NO 201181

G1A 10-7-82
G1B TEST 10-7-82
OUTSIDE DISTR.
PRODUCT CODE
DISTRIBUTION TABLE
COMM CLS. 149H

CONFIDENTIAL: This drawing, including all information contained thereon, is the exclusive and confidential property of [redacted] of Troy, Ohio, and is not to be copied, reproduced or delivered or disclosed to others, in whole or in part, except with express written permission.

FORM NO. 424070

STATEMENT OF WARRANTY

LIMITED WARRANTY: Thermal Arc®, Inc., A Thermadyne Company, warrants that its products will be free of defects in workmanship or material. Should any failure to conform to this warranty appear within the time period applicable to the Thermal Arc products as stated below, Thermal Arc shall, upon notification thereof and substantiation that the product has been stored, installed, operated, and maintained in accordance with Thermal Arc's specifications, instructions, recommendations and recognized standard industry practice, and not subject to misuse, repair, neglect, alteration, or accident, correct such defects by suitable repair or replacement, at Thermal Arc's sole option, of any components or parts of the product determined by Thermal Arc to be defective.

THERMAL ARC MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHERS, INCLUDING, BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

LIMITATION OF LIABILITY: Thermal Arc shall not under any circumstances be liable for special or consequential damages, such as, but not limited to, damage or loss of purchased or replacement goods, or claims of customers of distributor (hereinafter "Purchaser") for service interruption. The remedies of the Purchaser set forth herein are exclusive and the liability of Thermal Arc with respect to any contract, or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale, delivery, resale, or use of any goods covered by or furnished by Thermal Arc whether arising out of contract, negligence, strike tort, or under any warranty, or otherwise, shall not, except as expressly provided herein, exceed the price of the goods upon which such liability is based. No employee, agent, or representative of Thermal Arc is authorized to change this warranty in any way or grant any other warranty.

PURCHASER'S RIGHTS UNDER THIS WARRANTY ARE VOID IF REPLACEMENT PARTS OR ACCESSORIES ARE USED WHICH IN THERMAL ARC'S SOLE JUDGMENT MAY IMPAIR THE SAFETY OR PERFORMANCE OF ANY THERMAL ARC PRODUCT.

PURCHASER'S RIGHTS UNDER THIS WARRANTY ARE VOID IF THE PRODUCT IS SOLD TO PURCHASER BY NON-AUTHORIZED PERSONS.

Except with regards to the products listed below, this warranty shall remain effective three (3) years from the date Thermal Arc's authorized distributor delivers the product to Purchaser, but in no event more than (4) years from the date Thermal Arc delivers the product to the authorized distributor.

Shorter warranty periods apply to the products listed below. On these products, the warranty is effective for the time stated below beginning on the date that the authorized distributor delivers the products to the Purchaser. Notwithstanding the foregoing, in no event shall the warranty period extend more than the time stated plus one year from the date Thermal Arc delivered the product to the authorized distributor.

	ALL OTHER	**P-WEE, PRO-LITE**	
POWER SUPPLIES	POWER SUPPLIES	PRO-PLUS, PRO-WAVE	LABOR
MAIN POWER MAGNETICS (STATIC & ROTATING)	3 YEARS	2 YEARS	1 YEAR
ORIGINAL MAIN POWER RECTIFIER	3 YEARS	2 YEARS	1 YEAR
CONTROL PC BOARD	3 YEARS	2 YEARS	1 YEAR
ALL OTHER CIRCUITS AND COMPONENTS INCLUDING BUT NOT LIMITED TO, CONTACTORS, RELAYS, SOLENOID, PUMPS, POWER SWITCHING SEMI-CONDUCTORS	1 YEAR	1 YEAR	1 YEAR
ENGINES: ENGINES ARE NOT WARRANTED BY THERMAL ARC, ALTHOUGH MOST ARE WARRANTED BY THE ENGINE MANUFACTURER. SEE THE ENGINE MANUFACTURES WARRANTY FOR DETAILS.			
CONSOLES, CONTROL EQUIPMENT, HEAT EXCHANGES, AND ACCESSORY EQUIPMENT	1 YEAR	1 YEAR	1 YEAR
TORCH AND LEADS	180 DAYS	180 DAYS	180 DAYS
REPAIR/REPLACEMENT PARTS	90 DAYS	90 DAYS	90 DAYS

Warranty repairs or replacement claims under this limited warranty must be submitted to Thermal Arc by an authorized Thermal Arc® repair facility within thirty (30) days of the repair. No transportation costs of any kind will be paid under this warranty. Transportation charges to send products to an authorized warranty repair facility shall be the responsibility of the customer. All returned goods shall be at the customer's risk and expense. This warranty supersedes all previous Thermal Arc warranties.

Thermal Arc® is a Registered Trademark of Thermadyne Industries Inc.