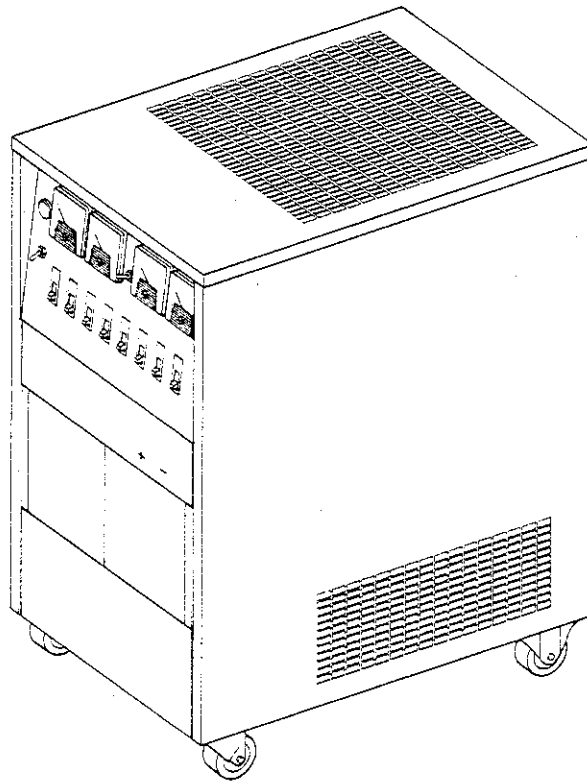


MODEL
Load Bank



OWNER'S MANUAL



MILLER ELECTRIC MFG. CO.

718 S. BOUNDS ST. P.O. Box 1079
APPLETON, WI 54912 USA

ADDITIONAL COPY PRICE 40 CENTS

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EFFECTIVE: JUNE 1, 1979

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(labor - 1 year only)
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5. Replacement or repair parts, exclusive of labor . 60 days
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SECTION 1 - SAFETY RULES FOR OPERATION OF ARC WELDING POWER SOURCE

1-1. INTRODUCTION - We learn by experience. Learning safety through personal experience, like a child touching a hot stove is harmful, wasteful, and unwise. Let the experience of others teach you.

Safe practices developed from experience in the use of welding and cutting are described in this manual. Research, development, and field experience have evolved reliable equipment and safe installation, operation, and servicing practices. Accidents occur when equipment is improperly used or maintained. The reason for the safe practices may not always be given. Some are based on common sense, others may require technical volumes to explain. It is wiser to follow the rules.

Read and understand these safe practices before attempting to install, operate, or service the equipment. Comply with these procedures as applicable to the particular equipment used and their instruction manuals, for personal safety and for the safety of others.

Failure to observe these safe practices may cause serious injury or death. When safety becomes a habit, the equipment can be used with confidence.

These safe practices are divided into two Sections: 1 - General Precautions, common to arc welding and cutting; and 2 - Arc Welding (and Cutting) (only).

Reference standards: Published Standards on safety are also available for additional and more complete procedures than those given in this manual. They are listed in the Standards Index in this manual. ANSI Z49.1 is the most complete.

The National Electrical Code, Occupational Safety and Health Administration, local industrial codes, and local inspection requirements also provide a basis for equipment installation, use, and service.

1-2. GENERAL PRECAUTIONS

Different arc welding processes, electrode alloys, and fluxes can produce different fumes, gases, and radiation levels. In addition to the information in this manual, be sure to consult flux and electrode manufacturers for specific technical data and precautionary measures concerning their material.

A. Burn Prevention

Wear protective clothing - gauntlet gloves designed for use in welding, hat, and high safety-toe shoes. Button shirt collar and pocket flaps, and wear cuffless trousers to avoid entry of sparks and slag.

Wear helmet with safety goggles or glasses with side shields underneath, appropriate filter lenses or plates (protected by clear cover glass). This is a MUST for

welding or cutting, (and chipping) to protect the eyes from radiant energy and flying metal. Replace cover glass when broken, pitted, or spattered. See 1-3A.2.

Avoid oily or greasy clothing. A spark may ignite them.

Hot metal such as electrode stubs and workpieces should never be handled without gloves.

Medical first aid and eye treatment. First aid facilities and a qualified first aid person should be available for each shift unless medical facilities are close by for immediate treatment of flash burns of the eyes and skin burns.

Ear plugs should be worn when working on overhead or in a confined space. A hard hat should be worn when others work overhead.

Flammable hair preparations should not be used by persons intending to weld or cut.

B. Toxic Fume Prevention

Severe discomfort, illness or death can result from fumes, vapors, heat, or oxygen enrichment or depletion that welding (or cutting) may produce. Prevent them with adequate ventilation as described in ANSI Standard Z49.1 listed 1 in Standards index. NEVER ventilate with oxygen.

Lead -, cadmium -, zinc -, mercury -, and beryllium - bearing and similar materials, when welded (or cut) may produce harmful concentrations of toxic fumes. Adequate local exhaust ventilation must be used, or each person in the area as well as the operator must wear an air-supplied respirator. For beryllium, both must be used.

Metals coated with or containing materials that emit toxic fumes should not be heated unless coating is removed from the work surface, the area is well ventilated, or the operator wears an air-supplied respirator.

Work in a confined space only while it is being ventilated and, if necessary, while wearing an air-supplied respirator.

Gas leaks in a confined space should be avoided. Leaked gas in large quantities can change oxygen concentration dangerously. Do not bring gas cylinders into a confined space.

Leaving confined space, shut OFF gas supply at source to prevent possible accumulation of gases in the space if downstream valves have been accidentally opened or left open. Check to be sure that the space is safe before re-entering it.

Vapors from chlorinated solvents can be decomposed by the heat of the arc (or flame) to form PHOSGENE, a

highly toxic gas, and other lung and eye irritating products. The ultraviolet (radiant) energy of the arc can also decompose trichloroethylene and perchloroethylene vapors to form phosgene. DO NOT WELD or cut where solvent vapors can be drawn into the welding or cutting atmosphere or where the radiant energy can penetrate to atmospheres containing even minute amounts of trichloroethylene or perchloroethylene.

C. Fire and Explosion Prevention

Causes of fire and explosion are: combustibles reached by the arc, flame, flying sparks, hot slag or heated material; misuse of compressed gases and cylinders; and short circuits.

BE AWARE THAT flying sparks or falling slag can pass through cracks, along pipes, through windows or doors, and through wall or floor openings, out of sight of the goggled operator. Sparks and slag can fly 35 feet.

To prevent fires and explosion:

Keep equipment clean and operable, free of oil, grease, and (in electrical parts) of metallic particles that can cause short circuits.

If combustibles are in area, do NOT weld or cut. Move the work if practicable, to an area free of combustibles. Avoid paint spray rooms, dip tanks, storage areas, ventilators. If the work cannot be moved, move combustibles at least 35 feet away out of reach of sparks and heat; or protect against ignition with suitable and snug-fitting, fire-resistant covers or shields.

Walls touching combustibles on opposite sides should not be welded on (or cut). Walls, ceilings, and floor near work should be protected by heat-resistant covers or shields.

Fire watcher must be standing by with suitable fire extinguishing equipment during and for some time after welding or cutting if:

- a. appreciable combustibles (including building construction) are within 35 feet
- b. appreciable combustibles are further than 35 feet but can be ignited by sparks
- c. openings (concealed or visible) in floors or walls within 35 feet may expose combustibles to sparks
- d. combustibles adjacent to walls, ceilings, roofs, or metal partitions can be ignited by radiant or conducted heat.

Hot work permit should be obtained before operation to ensure supervisor's approval that adequate precautions have been taken.

After work is done, check that area is free of sparks, glowing embers, and flames.

An empty container that held combustibles, or that can produce flammable or toxic vapors when heated, must

never be welded on or cut, unless container has first been cleaned as described in AWS Standard A6.0, listed 3 in Standards index.

This includes: a thorough steam or caustic cleaning (or a solvent or water washing, depending on the combustible's solubility) followed by purging and inerting with nitrogen or carbon dioxide, and using protective equipment as recommended in A6.0. Waterfilling just below working level may substitute for inerting.

A container with unknown contents should be cleaned (see paragraph above). Do NOT depend on sense of smell or sight to determine if it is safe to weld or cut.

Hollow castings or containers must be vented before welding or cutting. They can explode.

Explosive atmospheres. Never weld or cut where the air may contain flammable dust, gas, or liquid vapors (such as gasoline).

D. Compressed Gas Equipment

Standard precautions. Comply with precautions in this manual, and those detailed in CGA Standard P-1, PRECAUTIONS FOR SAFE HANDLING OF COMPRESSED GASES IN CYLINDERS, listed 6 in Standards index.

1. Pressure Regulators

Regulator relief valve is designed to protect only the regulator from overpressure; it is not intended to protect any downstream equipment. Provide such protection with one or more relief devices.

Never connect a regulator to a cylinder containing gas other than that for which the regulator was designed.

Remove faulty regulator from service immediately for repair (first close cylinder valve). The following symptoms indicate a faulty regulator:

Leaks - if gas leaks externally.

Excessive Creep - if delivery pressure continues to rise with downstream valve closed.

Faulty Gauge - if gauge pointer does not move off stop pin when pressurized, nor returns to stop pin after pressure release.

Repair. Do NOT attempt repair. Send faulty regulators for repair to manufacturer's designated repair center, where special techniques and tools are used by trained personnel.

2. Cylinders

Cylinders must be handled carefully to prevent leaks and damage to their walls, valves, or safety devices:

Avoid electrical circuit contact with cylinders including third rails, electrical wires, or welding circuits. They can produce short circuit arcs that may lead to a serious accident. (See 1-3C.)

ICC or DOT marking must be on each cylinder. It is an assurance of safety when the cylinder is properly handled.

Identifying gas content. Use only cylinders with name of gas marked on them; do not rely on color to identify gas content. Notify supplier if unmarked. NEVER DEFACE or alter name, number, or other markings on a cylinder. It is illegal and hazardous.

Empties: Keep valves closed, replace caps securely; mark MT; keep them separate from FULLS and return promptly.

Prohibited use. Never use a cylinder or its contents for other than its intended use, NEVER as a support or roller.

Locate or secure cylinders so they cannot be knocked over.

Passageways and work areas. Keep cylinders clear of areas where they may be struck.

Transporting cylinders. With a crane, use a secure support such as a platform or cradle. Do NOT lift cylinders off the ground by their valves or caps, or by chains, slings, or magnets.

Do NOT expose cylinders to excessive heat, sparks, slag, and flame, etc. that may cause rupture. Do not allow contents to exceed 130°F. Cool with water spray where such exposure exists.

Protect cylinders particularly valves from bumps, falls, falling objects, and weather. Replace caps securely when moving cylinders.

Stuck valve. Do NOT use a hammer or wrench to open a cylinder valve that can not be opened by hand. Notify your supplier.

Mixing gases. Never try to mix any gases in a cylinder.

Never refill any cylinder.

Cylinder fittings should never be modified or exchanged.

3. Hose

Prohibited use. Never use hose other than that designed for the specified gas. A general hose identification rule is: red for fuel gas, green for oxygen, and black for inert gases.

Use ferrules or clamps designed for the hose (not ordinary wire or other substitute) as a binding to connect hoses to fittings.

No copper tubing splices. Use only standard brass fittings to splice hose.

Avoid long runs to prevent kinks and abuse. Suspend hose off ground to keep it from being run over, stepped on, or otherwise damaged.

Coil excess hose to prevent kinks and tangles.

Protect hose from damage by sharp edges, and by sparks, slag, and open flame.

Examine hose regularly for leaks, wear, and loose connections. Immerse pressured hose in water; bubbles indicate leaks.

Repair leaky or worn hose by cutting area out and splicing (1-2D3). Do NOT use tape.

4. Proper Connections

Clean cylinder valve outlet of impurities that may clog orifices and damage seats before connecting regulator. Except for hydrogen, crack valve momentarily, pointing outlet away from people and sources of ignition. Wipe with a clean lintless cloth.

Match regulator to cylinder. Before connecting, check that the regulator label and cylinder marking agree, and that the regulator inlet and cylinder outlet match. NEVER CONNECT a regulator designed for a particular gas or gases to a cylinder containing any other gas.

Tighten connections. When assembling threaded connections, clean and smooth seats where necessary. Tighten. If connection leaks, disassemble, clean, and retighten using properly fitting wrench.

Adapters. Use a CGA adapter (available from your supplier) between cylinder and regulator, if one is required. Use two wrenches to tighten adapter marked RIGHT and LEFT HAND threads.

Regulator outlet (or hose) connections may be identified by right hand threads for oxygen and left hand threads (with grooved hex on nut or shank) for fuel gas.

5. Pressurizing Steps:

Drain regulator of residual gas through suitable vent before opening cylinder (or manifold valve) by turning adjusting screw in (clockwise). Draining prevents excessive compression heat at high pressure seat by allowing seat to open on pressurization. Leave adjusting screw engaged slightly on single-stage regulators.

Stand to side of regulator while opening cylinder valve.

Open cylinder valve slowly so that regulator pressure increases slowly. When gauge is pressurized (gauge reaches regulator maximum) leave cylinder valve in following position: For oxygen, and inert gases, open fully to seal stem against possible leak. For fuel gas, open to less than one turn to permit quick emergency shutoff.

Use pressure charts (available from your supplier) for safe and efficient, recommended pressure settings on regulators.

Check for leaks on first pressurization and regularly there-after. Brush with soap solution (capful of Ivory

Liquid* or equivalent per gallon of water). Bubbles indicate leak. Clean off soapy water after test; dried soap is combustible.

E. - User Responsibilities

Remove leaky or defective equipment from service immediately for repair. See User Responsibility statement in equipment manual.

F. Leaving Equipment Unattended

Close gas supply at source and drain gas.

G. Rope Staging-Support

Rope staging-support should not be used for welding or cutting operation; rope may burn.

1-3. ARC WELDING - Comply with precautions in 1-1, 1-2, and this section. Arc Welding, properly done, is a safe process, but a careless operator invites trouble. The equipment carries high currents at significant voltages. The arc is very bright and hot. Sparks fly, fumes rise, ultraviolet and infrared energy radiates, weldments are hot, and compressed gases may be used. The wise operator avoids unnecessary risks and protects himself and others from accidents. Precautions are described here and in standards referenced in index.

A. Burn Protection

Comply with precautions in 1-2.

The welding arc is intense and visibly bright. Its radiation can damage eyes, penetrate lightweight clothing, reflect from light-colored surfaces, and burn the skin and eyes. Skin burns resemble acute sunburn, those from gas-shielded arcs are more severe and painful. **DON'T GET BURNED; COMPLY WITH PRECAUTIONS.**

1. Protective Clothing

Wear long-sleeve clothing (particularly for gas-shielded arc) in addition to gloves, hat, and shoes (1-2A). As necessary, use additional protective clothing such as leather jacket or sleeves, flame-proof apron, and fire-resistant leggings. Avoid outergarments of untreated cotton.

Bare skin protection. Wear dark, substantial clothing. Button collar to protect chest and neck and button pockets to prevent entry of sparks.

2. Eye and Head Protection

Protect eyes from exposure to arc. NEVER look at an electric arc without protection.

Welding helmet or shield containing a filter plate shade no. 12 or denser must be used when welding. Place over face before striking arc.

*Trademark of Proctor & Gamble.

Protect filter plate with a clear cover plate.

Cracked or broken helmet or shield should NOT be worn; radiation can pass through to cause burns.

Cracked, broken, or loose filter plates must be replaced IMMEDIATELY. Replace clear cover plate when broken, pitted, or spattered.

Flash goggles with side shields MUST be worn under the helmet to give some protection to the eyes should the helmet not be lowered over the face before an arc is struck. Looking at an arc momentarily with unprotected eyes (particularly a high intensity gas-shielded arc) can cause a retinal burn that may leave a permanent dark area in the field of vision.

3. Protection of Nearby Personnel

Enclosed welding area. For production welding, a separate room or enclosed bay is best. In open areas, surround the operation with low-reflective, non-combustible screens or panels. Allow for free air circulation, particularly at floor level.

Viewing the weld. Provide face shields for all persons who will be looking directly at the weld.

Others working in area. See that all persons are wearing flash goggles.

Before starting to weld, make sure that screen flaps or bay doors are closed.

B. Toxic Fume Prevention

Comply with precautions in 1-2B.

Generator engine exhaust must be vented to the outside air. Carbon monoxide can kill.

C. Fire and Explosion Prevention

Comply with precautions in 1-2C.

Equipment's rated capacity. Do not overload arc welding equipment. It may overheat cables and cause a fire.

Loose cable connections may overheat or flash and cause a fire.

Never strike an arc on a cylinder or other pressure vessel. It creates a brittle area that can cause a violent rupture or lead to such a rupture later under rough handling.

D. Compressed Gas Equipment

Comply with precautions in 1-2D.

E. Shock Prevention

Exposed hot conductors or other bare metal in the welding circuit, or in ungrounded, electrically-HOT equipment can fatally shock a person whose body becomes a conductor. **DO NOT STAND, SIT, LIE, LEAN ON, OR TOUCH** a wet surface when welding, without suitable protection.

To protect against shock:

Keep body and clothing dry. Never work in damp area without adequate insulation against electrical shock. Stay on a dry duckboard, or rubber mat when dampness or sweat can not be avoided. Sweat, sea water, or moisture between body and an electrically HOT part - or grounded metal - reduces the body surface electrical resistance, enabling dangerous and possibly lethal currents to flow through the body.

1. Grounding the Equipment

When arc welding equipment is grounded according to the National Electrical Code, and the work is grounded according to ANSI Z49.1 "Safety In Welding And Cutting," a voltage may exist between the electrode and any conducting object. Examples of conducting objects include, but are not limited to, buildings, electrical tools, work benches, welding power source cases, workpieces, etc. **Never touch the electrode and any metal object unless the welding power source is off.**

When installing, connect the frames of each unit such as welding power source, control, work table, and water circulator to the building ground. Conductors must be adequate to carry ground currents safely. Equipment made electrically HOT by stray current may shock, possibly fatally. **DO NOT GROUND** to electrical conduit, or to a pipe carrying ANY gas or a flammable liquid such as oil or fuel.

Three-phase connection. Check phase requirements of equipment before installing. If only 3-phase power is available, connect single-phase equipment to only two wires of the 3-phase line. **DO NOT** connect the equipment ground lead to the third (live) wire, or the equipment will become electrically HOT - a dangerous condition that can shock, possibly fatally.

Before welding, check ground for continuity. Be sure conductors are touching bare metal of equipment frames at connections.

If a line cord with a ground lead is provided with the equipment for connection to a switchbox, connect the ground lead to the grounded switchbox. If a three-prong plug is added for connection to a grounded mating receptacle, the ground lead must be connected to the ground prong only. If the line cord comes with a three-prong plug, connect to a grounded mating receptacle. **Never** remove the ground prong from a plug, or use a plug with a broken off ground prong.

2. Electrode Holders

Fully insulated electrode holders should be used. **DO NOT** use holders with protruding screws.

3. Connectors

Fully insulated lock-type connectors should be used to join welding cable lengths.

4. Cables

Frequently inspect cables for wear, cracks and damage. **IMMEDIATELY REPLACE** those with excessively worn or damaged insulation to avoid possibly - lethal shock from bared cable. Cables with damaged areas may be taped to give resistance equivalent to original cable.

Keep cable dry, free of oil and grease, and protected from hot metal and sparks.

5. Terminals And Other Exposed Parts

Terminals and other exposed parts of electrical units should have insulating covers secured before operation.

6. Electrode Wire

Electrode wire becomes electrically HOT when the power switch of gas metal-arc welding equipment is ON and welding gun trigger is pressed. Keep hands and body clear of wire and other HOT parts.

7. Safety Devices

Safety devices such as interlocks and circuit breakers should not be disconnected or shunted out.

Before installation, inspection, or service, of equipment, shut OFF all power and remove line fuses (or lock or red-tag switches) to prevent accidental turning ON of power. Disconnect all cables from welding power source, and pull all 115 volts line-cord plugs.

Do not open power circuit or change polarity while welding. If, in an emergency, it must be disconnected, guard against shock burns, or flash from switch arcing.

Leaving equipment unattended. Always shut OFF and disconnect all power to equipment.

Power disconnect switch must be available near the welding power source.

1-4. STANDARDS BOOKLET INDEX

For more information, refer to the following standards or their latest revisions and comply as applicable:

1. ANSI Standard Z49.1, SAFETY IN WELDING AND CUTTING obtainable from the American Welding Society, 550 Le Jeune Rd, P.O. Box 351040, Miami, FL 33135.

2. NIOSH, SAFETY AND HEALTH IN ARC WELDING AND GAS WELDING AND CUTTING obtainable from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.
3. OSHA, SAFETY AND HEALTH STANDARDS, 29CFR 1910, obtainable from the U.S. Government Printing Office, Washington, D.C. 20402.
4. ANSI Standard Z87.1, SAFE PRACTICES FOR OCCUPATION AND EDUCATIONAL EYE AND FACE PROTECTION obtainable from the American National Standards Institute, 1430 Broadway, New York, NY 10018.
5. ANSI Standard Z41.1, STANDARD FOR MEN'S SAFETY-TOE FOOTWEAR obtainable from the American National Standards Institute, 1430 Broadway, New York, NY 10018.
6. ANSI Standard Z49.2, FIRE PREVENTION IN THE USE OF CUTTING AND WELDING PROCESSES obtainable from the American National Standards Institute, 1430 Broadway, New York, NY 10018.
7. AWS Standard A6.0, WELDING AND CUTTING CONTAINERS WHICH HAVE HELD COMBUSTIBLES obtainable from the American Welding Society, 550 Le Jeune Rd., P.O. Box 351040, Miami, FL 33135.
8. NFPA Standard 51, OXYGEN - FUEL GAS SYSTEMS FOR WELDING AND CUTTING obtainable from the National Fire Protection Association, 470 Atlantic Avenue, Boston, MA 02210.
9. NFPA Standard 70-1978, NATIONAL ELECTRICAL CODE obtainable from the National Fire Protection Association, 470 Atlantic Avenue, Boston, MA 02210.
10. NFPA Standard 51B, CUTTING AND WELDING PROCESSES obtainable from the National Fire Protection Association, 470 Atlantic Avenue, Boston, MA 02210.
11. CGA Pamphlet P-1, SAFE HANDLING OF COMPRESSED GASES IN CYLINDERS obtainable from the Compressed Gas Association, 500 Fifth Avenue, New York, NY 10036.
12. CSA Standard W117.2, CODE FOR SAFETY IN WELDING AND CUTTING obtainable from the Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.
13. NWSA booklet, WELDING SAFETY BIBLIOGRAPHY obtainable from the National Welding Supply Association, 1900 Arch Street, Philadelphia, PA 19103.
14. American Welding Society Standard AWSF4.1 "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", obtainable from the American Welding Society, 550 Le Jeune Rd., P.O. Box 351040, Miami, FL 33135.
15. ANSI Standard Z88.2 "Practice for Respiratory Protection" obtainable from the American National Standards Institute, 1430 Broadway, New York, NY 10018.

SECTION 2 - INTRODUCTION

| Maximum Load | Power Requirements | Dimensions | Weight | |
|---|--------------------------|---|-------------------|------|
| | | | Net | Ship |
| 750 Amperes, 37.5 KW @ 50 Volts AC/DC | 115 Volts AC 60 Hertz | Height - 37-3/4 in. (959 mm) Width - 22 in. (559 mm) Length - 30 in. (762 mm) | 182 lb. 83 kg. | |

Figure 2-1. Specifications

2-1. GENERAL INFORMATION AND SAFETY

A. General

Information presented in this manual and on various labels, tags, and plates provided on this unit pertains to equipment design, installation, operation, maintenance, and troubleshooting which should be read, understood, and followed for the safe and effective use of this equipment.

B. Safety

The installation, operation, maintenance, and troubleshooting of arc welding equipment requires practices and procedures which ensure personal safety and the safety of others. Therefore, this equipment is to be installed, operated and maintained only by qualified persons in accordance with this manual and all other applicable codes such as, but not limited to, those listed at the end of Section 1 - Safety Rules For Operation Of Arc Welding Power Source.

Safety instructions specifically pertaining to this unit appear throughout this manual, highlighted by the signal word **CAUTION**.

CAUTION statements include installation, operating, and maintenance procedures or practices which if not carefully followed could result in minor personal injury or damage to equipment.

Another signal word, **IMPORTANT**, highlights instructions which need special emphasis to obtain the most efficient operation of this equipment.

2-2. RECEIVING-HANDLING - Prior to installing this equipment, clean all packing material from around the unit and carefully inspect for any damage that may have occurred during shipment. Any claims for loss or damage that may have occurred in transit must be filed by the purchaser with the carrier. A copy of the bill of lading and freight bill will be furnished by the carrier on request if occasion to file claim arises.

When requesting information concerning this equipment, it is essential that Model Description and Serial Number of the equipment be supplied.

2-3. DESCRIPTION - The load bank is used to provide rated load during testing procedures for welding power sources and welding generators. The load bank requires 115 volts ac, 60 hertz power for operation.

SECTION 3 - OPERATION

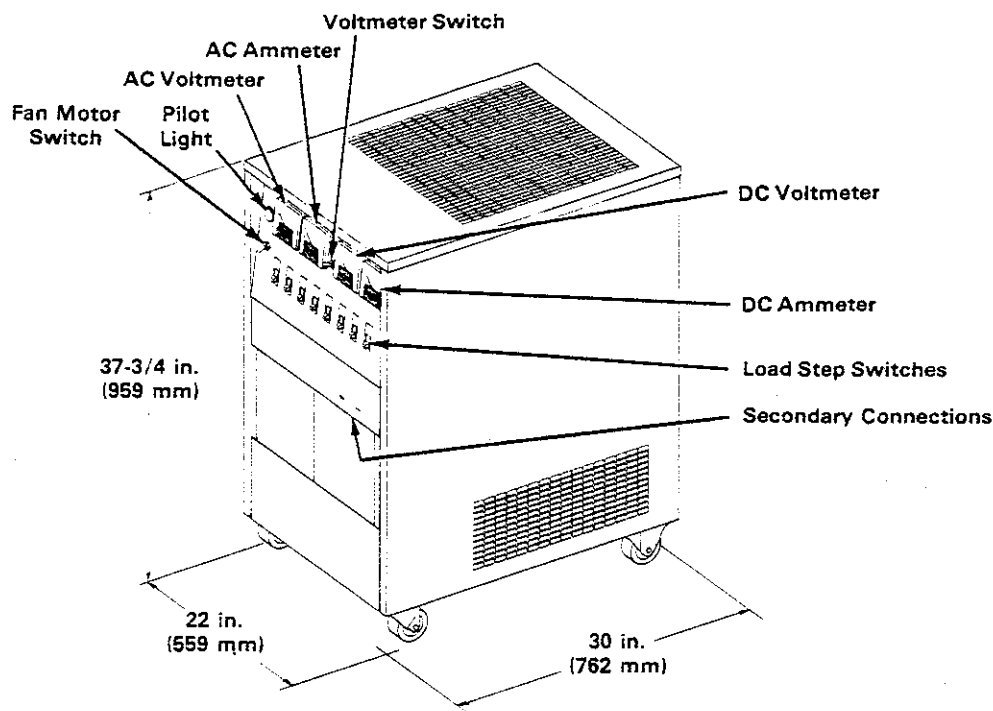


Figure 3-1. Dimensional And Component Location View

TC-082 917

3-1. SECONDARY CONNECTIONS (Figure 3-1) - Two cables are supplied for connection to the positive and negative terminals on the load bank. These cables have jack plugs for making connections between the load bank and welding power source or welding generator output receptacles.

Two adapter cables are supplied for use with units having output terminals.

CAUTION: INCORRECT CONNECTIONS can damage load bank meters.

- Ensure that correct polarity (+ to + and - to -) is maintained when making connections between the load bank and welding power source or welding generator.

3-2. METERS (Figure 3-1) - An ac voltmeter and ammeter and a dc voltmeter and ammeter, all with RF protection, are provided for reading load voltage and amperage of the welding power source or welding generator.

3-3. VOLTMETER SWITCH (Figure 3-1) - The VOLTMETER AC/DC toggle switch position determines whether the AC or DC voltmeter will read load voltage of the unit connected to the load bank.

3-4. FAN MOTOR SWITCH & PILOT LIGHT (Figure 3-1) - The FAN MOTOR SWITCH provides on/off control of the load bank fan motor. The FAN MOTOR SWITCH must be in the ON position before a load is applied. When the switch is ON, the pilot light should be on. If the pilot light does not come on, do not apply a load until the fan and pilot light are both working.

3-5. LOAD STEP SWITCHES (Figure 3-1) - The LOAD STEP SWITCHES provide the proper resistance to obtain the rated load output of the welding power source or welding generator. Switches 1 through 7 (left to right) add the same amount of resistance while switch 8 adds a lower resistance. For example: When switches 1 through 4 are ON, the meter readings are below rated load; however, when switch 5 is turned on, meter readings are well above rated load. In this situation using switches 1 through 4 and switch 8 may provide close to rated load for the unit.

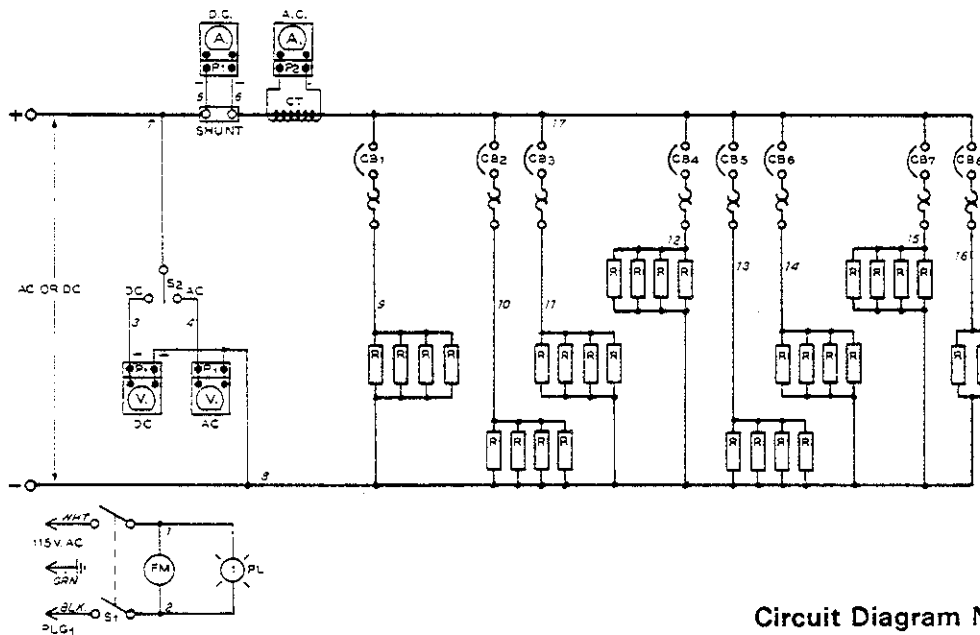
SECTION 4 - SEQUENCE OF OPERATION

4-1. LOADING PROCEDURES

1. Connect power cord from load bank to 115 vac, 60 Hz. power supply.
2. Connect welding power source or welding generator to load bank. Ensure that unit is completely shut down before making any connections.
3. Ensure that high frequency on welding power source or welding generator is off if applicable.
4. Place VOLTMETER AC/DC switch in the proper position for the application.

5. Place the FAN MOTOR SWITCH in the ON position.
6. Turn on welding power source or start welding generator.
7. Turn on LOAD STEP SWITCHES one at a time starting from the left to obtain rated load readings on the meters.

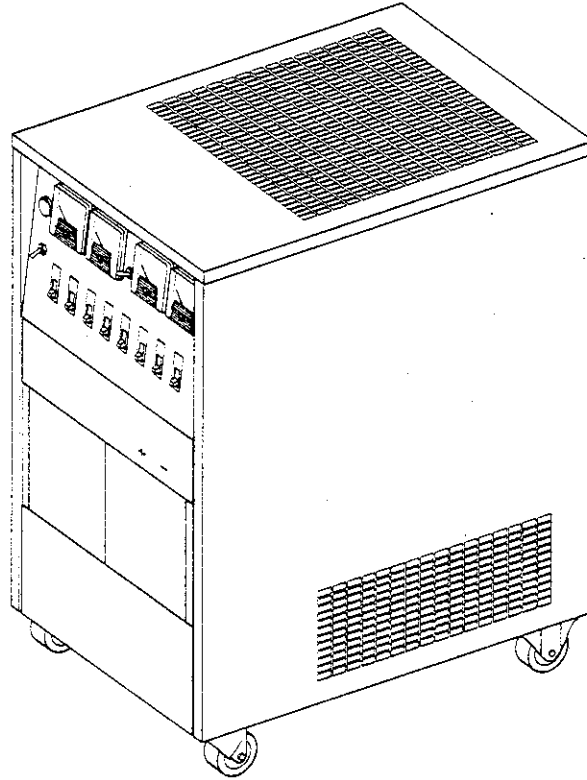
IMPORTANT: Use of the volt-ampere curves for the unit may be helpful in diagnostic loading to see if the unit provides proper output at certain loading conditions.



Circuit Diagram No. A-082 114-B

Figure 4-1. Circuit Diagram

MODEL
Load Bank



PARTS LIST

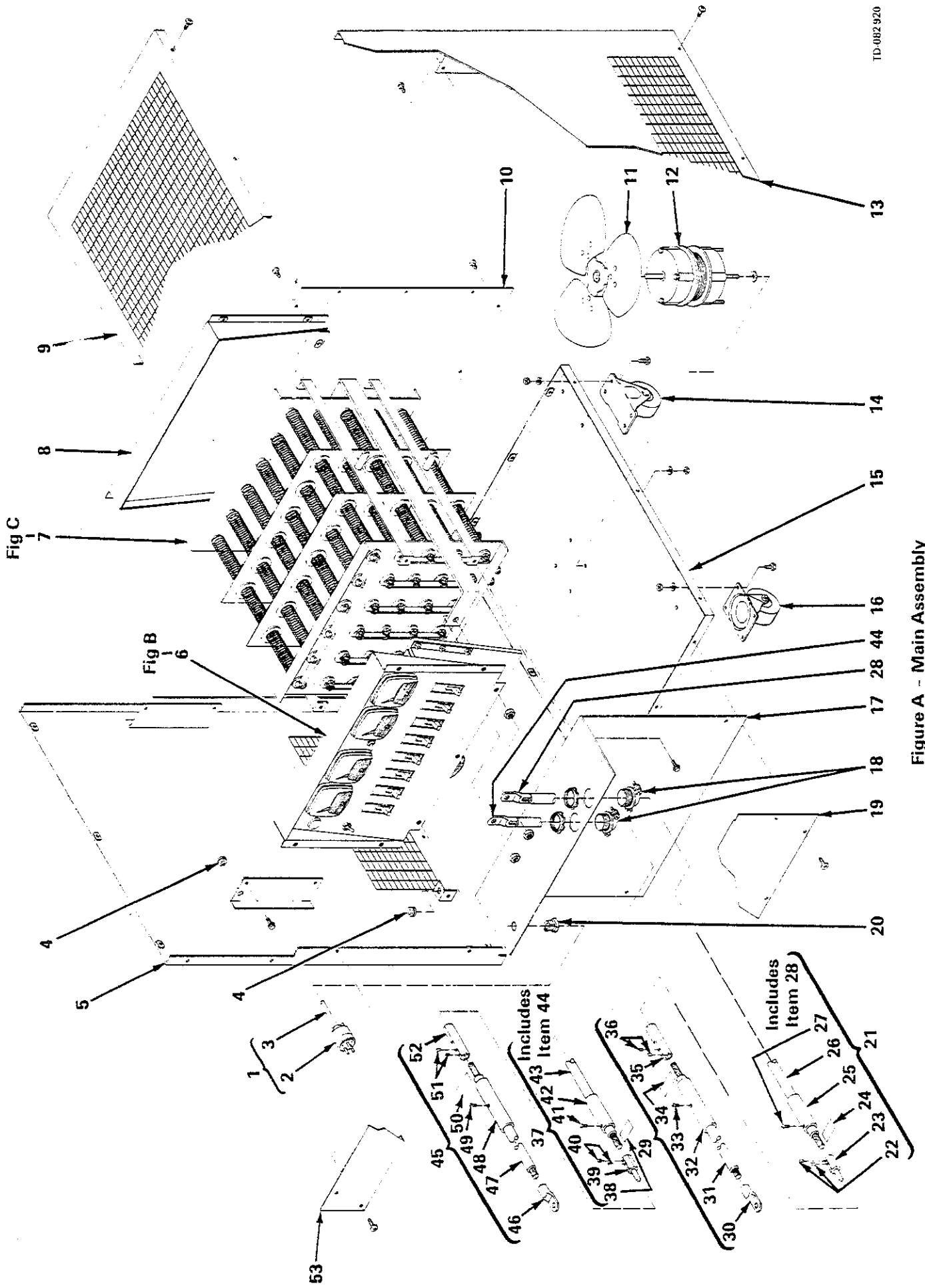


Figure A - Main Assembly

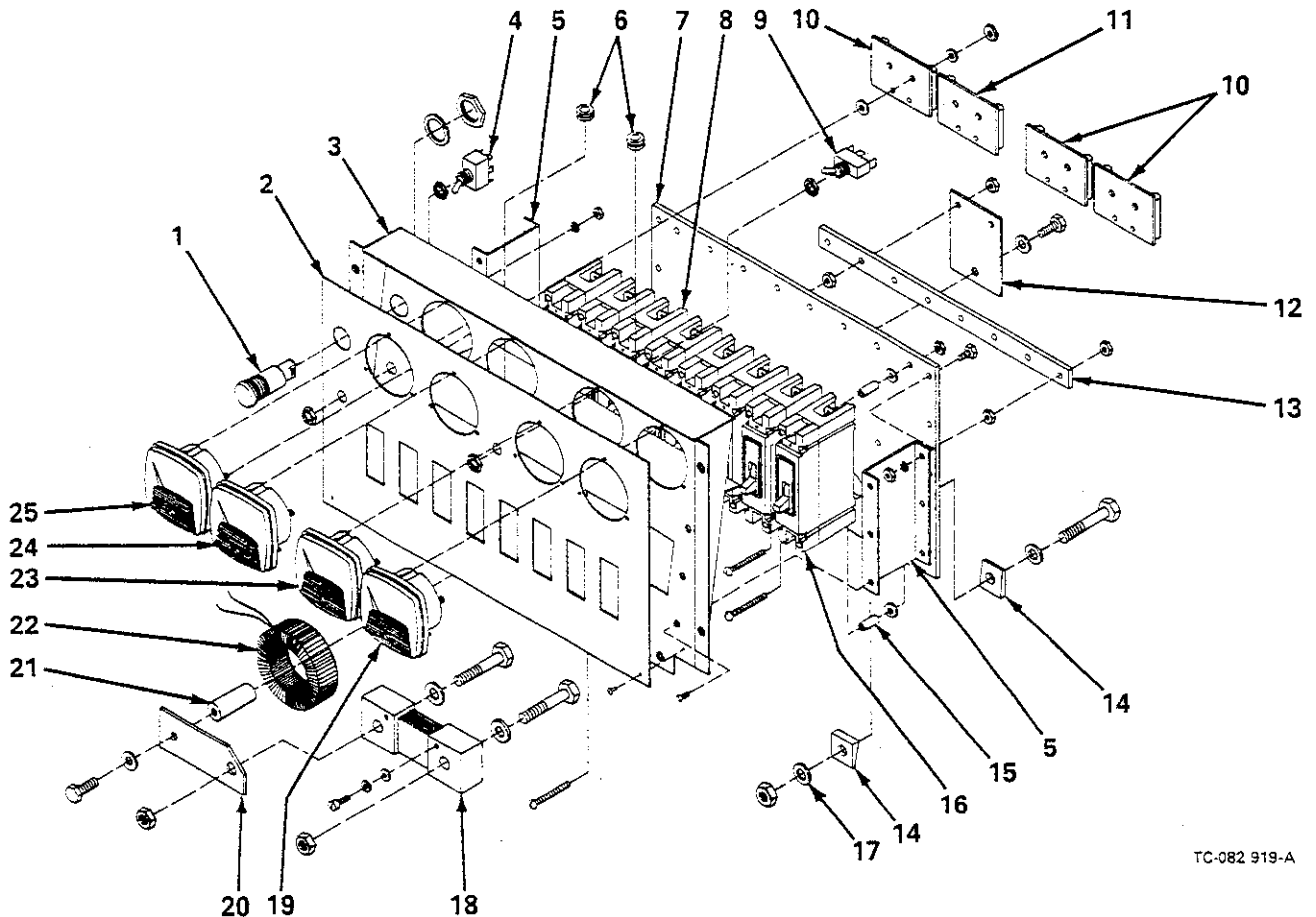
| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|-------------------------------|------------|----------|---|----------|
| Figure A Main Assembly | | | | |
| 1 | PLG1 | 082 162 | CORD, power (consisting of) | 1 |
| 2 | | 073 690 | . CAP, straight-grounded 2P3W 15 amp 125 volts | 1 |
| 3 | | 600 737 | . CORD, No. 16 3/c (order by ft) | 13 ft |
| 4 | | 010 116 | GROMMET, 3/8 ID x 1/2 mtg hole | 2 |
| 5 | | 082 125 | PANEL, side-LH | 1 |
| 6 | Figure B | | PANEL, front-w/components (Pg 3) | 1 |
| 7 | Figure C | | RESISTOR ASSEMBLY (Pg 4) | 1 |
| 8 | | 082 136 | PANEL, rear-top | 1 |
| 9 | + 082 129 | | COVER, top | 1 |
| | | 047 497 | LABEL, general precautionary | 1 |
| 10 | | 082 139 | PANEL, rear-lower | 1 |
| 11 | | 032 604 | BLADE, fan 60 Hz 14 inch 3 wing 19 deg | 1 |
| 12 | FM | 082 127 | MOTOR, fan 115 volts | 1 |
| 13 | | 082 126 | PANEL, side-RH | 1 |
| 14 | | 073 311 | CASTER, rubber-stationary 3 inch | 2 |
| 15 | | 082 121 | PAN, base | 1 |
| 16 | | 073 310 | CASTER, rubber-swivel 3 inch | 2 |
| 17 | | 082 137 | PANEL, retaining-cables | 1 |
| 18 | | 604 102 | CONNECTOR, clamp-cable 1 inch | 2 |
| 19 | | 082 138 | PANEL, front-lower | 1 |
| 20 | | 010 476 | BUSHING, strain relief-5/8 x .570 hole | 1 |
| 21 | | 082 158 | CABLE, interconnecting plug-black (consisting of) | 1 |
| 22 | | 602 178 | . SCREW, set-socket hd 1/4-20 x 3/8 | 2 |
| 23 | | 101 219 | . PLUG, jack | 1 |
| 24 | | 019 833 | . STRIP, copper 0.10 x 2-1/2 x 3/4 | 1 |
| 25 | | 026 978 | . INSULATOR | 1 |
| 26 | | 600 321 | . CABLE, copper-stranded No. 1/0 (order by ft) | 13 ft |
| 27 | | 602 160 | . SCREW, self-tapping fillister hd 8-32 x 1/4 | 1 |
| 28 | | 010 946 | . TERMINAL, ring 5/8 barrel 1/2 stud | 1 |
| 29 | | 082 160 | CABLE, interconnecting receptacle-black (consisting of) | 1 |
| 30 | | 010 946 | . TERMINAL, ring 5/8 barrel 1/2 stud | 1 |
| 31 | | 600 321 | . CABLE, copper-stranded No. 1/0 (order by ft) | 1 ft |
| 32 | | 026 053 | . INSULATOR | 1 |
| 33 | | 602 160 | . SCREW, self-tapping fillister hd 8-32 x 1/4 | 1 |
| 34 | | 019 833 | . STRIP, copper 0.10 x 2-1/2 x 3/4 | 1 |
| 35 | | 026 054 | . CONNECTOR, female-disconnect | 1 |
| 36 | | 602 178 | . SCREW, set-socket hd fillister hd 1/4-20 x 3/8 | 2 |
| 37 | | 082 159 | CABLE, interconnecting plug-red (consisting of) | 1 |
| 38 | | 019 833 | . STRIP, copper 0.10 x 2-1/2 x 3/4 | 1 |
| 39 | | 101 219 | . PLUG, jack | 1 |
| 40 | | 602 178 | . SCREW, set-socket hd fillister hd 1/4-20 x 3/8 | 2 |
| 41 | | 602 160 | . SCREW, self-tapping fillister hd 8-32 x 1/4 | 1 |
| 42 | | 602 814 | . INSULATOR | 1 |
| 43 | | 600 321 | . CABLE, copper-stranded No. 1/0 (order by ft) | 13 ft |
| 44 | | 010 946 | . TERMINAL, ring 5/8 barrel 1/2 stud | 1 |
| 45 | | 082 161 | CABLE, interconnecting receptacle-red (consisting of) | 1 |
| 46 | | 010 946 | . TERMINAL, ring 5/8 barrel 1/2 stud | 1 |
| 47 | | 600 321 | . CABLE, copper-stranded No. 1/0 (order by ft) | 1 ft |
| 48 | | 026 053 | . INSULATOR | 1 |
| 49 | | 602 160 | . SCREW, self-tapping fillister hd 8-32 x 1/4 | 1 |
| 50 | | 019 833 | . STRIP, copper 0.10 x 2-1/2 x 3/4 | 1 |
| 51 | | 602 178 | . SCREW, set-socket hd fillister hd 1/4-20 x 3/8 | 2 |
| 52 | | 026 054 | . CONNECTOR, female-disconnect | 1 |
| 53 | | 082 140 | PANEL, front-center | 1 |

+ When ordering a component originally displaying a precautionary label, the label should also be ordered.
BE SURE TO PROVIDE MODEL AND SERIAL NUMBERS WHEN ORDERING REPLACEMENT PARTS.

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

Figure B Panel, Front - W/Components (Fig A Pg 2 Item 6)

| | | | | |
|----|-------|---------|---|----|
| 1 | PL1 | 027 601 | LIGHT, indicator - green lens 6-125 volts ac | 1 |
| | | 027 602 | BULB, incandescent - base 120 volts | 1 |
| 2 | | | NAMEPLATE (order by model and serial number) | 1 |
| 3 | | 082 131 | PANEL, front | 1 |
| 4 | S2 | 011 611 | SWITCH, toggle DPDT 15 amp 125 volts | 1 |
| 5 | | 082 144 | BRACKET, mtg - circuit breaker board | 2 |
| 6 | | 010 116 | GROMMET, rubber 3/8 ID x 1/2 mtg hole | 2 |
| 7 | | 082 134 | MOUNTING BOARD, circuit breaker | 1 |
| 8 | CB1-7 | 083 608 | CIRCUIT BREAKER, single pole 100 amp | 7 |
| 9 | S1 | 011 610 | SWITCH, toggle SPDT 10 amp 125 volts center off | 1 |
| 10 | P1 | 025 701 | FILTER, HF dc volt & amp meter 3-1/2 | 3 |
| 11 | P2 | 025 700 | FILTER, HF ac amp meter 3-1/2 | 1 |
| 12 | | 082 150 | BUS BAR, connecting - circuit breaker | 1 |
| 13 | | 082 149 | BUS BAR, connecting - circuit breaker | 1 |
| 14 | | 602 227 | WASHER, beveled 1/2 inch hole | 2 |
| 15 | | 059 876 | TUBING, 3/8 OD x .256 ID x 11/16 | 16 |
| 16 | CB8 | 083 609 | CIRCUIT BREAKER, manual reset 1 pole 50 amp 125 volts | 1 |
| 17 | | 080 419 | SPACER, 1 OD x 17/32 x 1/4 | 2 |
| 18 | Shunt | 030 637 | SHUNT, meter 50 MV 800 amp | 1 |
| 19 | A | 025 610 | METER, amp dc 50 MV 0-800 scale | 1 |
| 20 | | 082 148 | BUS BAR, connecting - shunt | 1 |
| 21 | | 082 143 | STAND-OFF, 3/8-16 x 2-.035 | 1 |
| 22 | CT | 036 612 | TRANSFORMER, current 800/5 | 1 |
| 23 | V | 025 639 | METER, volt dc 0-150 scale | 1 |
| 24 | A | 025 618 | METER, amp ac 0-800 scale | 1 |
| 25 | V | 025 723 | METER, volt ac 0-150 scale | 1 |



TC-082 919-A

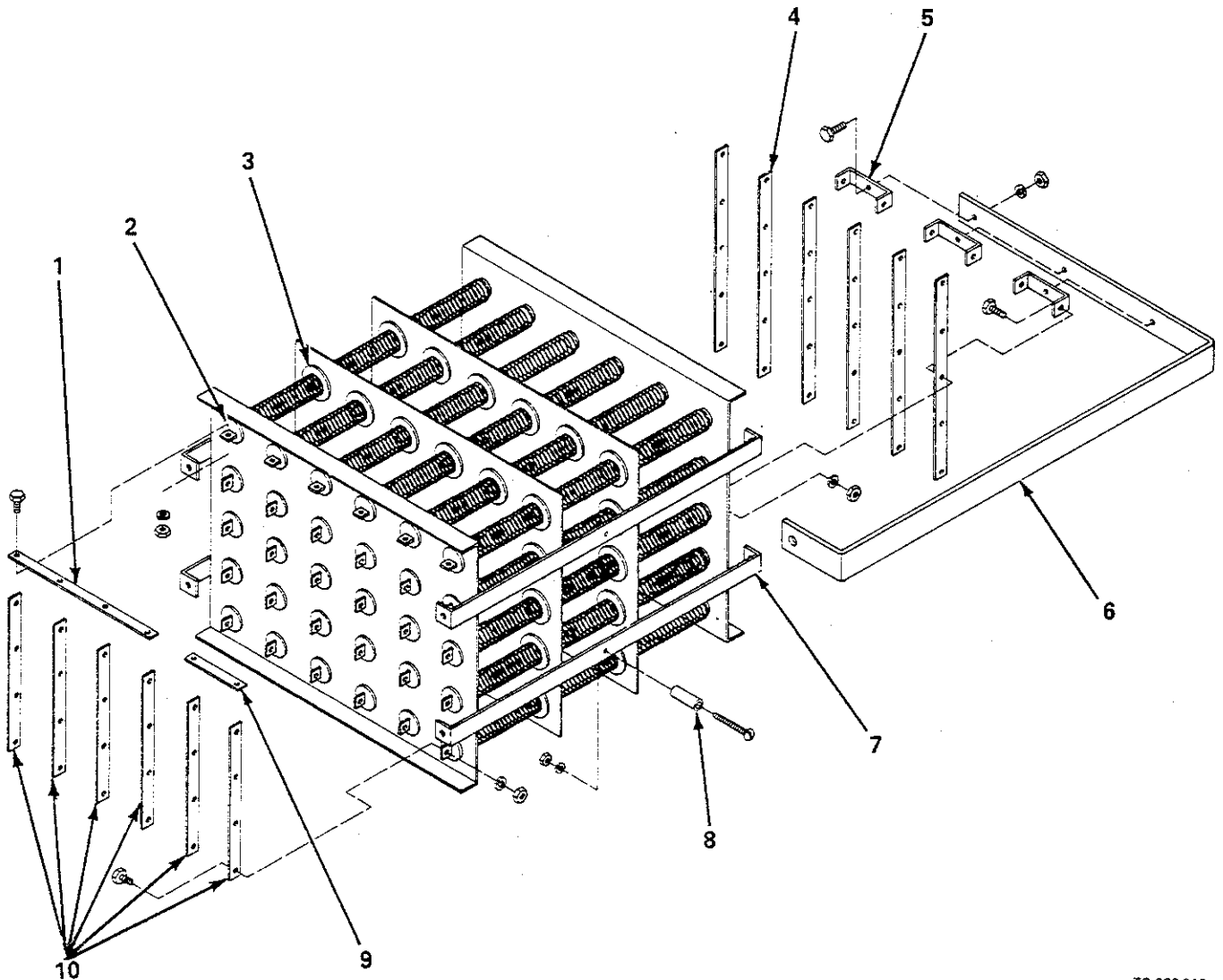
Figure B - Panel, Front W/Components

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

| Item No. | Part No. | Description | Quantity |
|----------|----------|-------------|----------|
|----------|----------|-------------|----------|

Figure C 082 122 Resistor Assembly (Fig A Pg 2 Item 7)

| | | | |
|----|---------|-------------------------------------|----|
| 1 | 070 272 | BUS BAR, connecting-resistors | 1 |
| 2 | 059 800 | RESISTOR, 25 amp | 30 |
| 3 | 059 726 | INSULATOR, end | 60 |
| 4 | 082 146 | BUS BAR, connecting-resistors | 6 |
| 5 | 049 478 | BUS BAR, connecting-resistors | 3 |
| 6 | 082 132 | BUS BAR, input | 1 |
| 7 | 082 130 | FRAME, resistor-grid | 1 |
| 8 | 020 961 | TUBING, 3/8 OD x 18 ga wall x 1-1/2 | 2 |
| 9 | 070 270 | BUS BAR, connecting-resistors | 1 |
| 10 | 049 481 | BUS BAR, connecting-resistors | 1 |



TC-082 918

Figure C - Resistor Assembly

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

