

MARINE CORPS TECHNICAL MANUAL TM 05926B/06509B-12/1
ARMY TECHNICAL MANUAL TM 5-6115-615-12
NAVY PUBLICATION NAVFAC P-8-646-12
AIR FORCE TECHNICAL ORDER TO 35C2-3-386-31

TECHNICAL MANUAL

OPERATOR AND ORGANIZATIONAL
MAINTENANCE MANUAL

**GENERATOR SET, DIESEL ENGINE DRIVEN, TACTICAL,
SKID MOUNTED, 3 KW, 3 PHASE 120/208 AND
SINGLE PHASE 120/240 VOLTS AC AND 28 VOLTS DC**

<u>DOD MODEL</u>	<u>CLASS</u>	<u>MODE</u>	<u>NSN</u>
MEP-016B	UTILITY	60 HZ	6115-01-150-4140
MEP-021B	UTILITY	400 HZ	6115-01-151-8126
MEP-026B	UTILITY	28 VDC	6115-01-150-0367

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THE DEPARTMENTS OF THE ARMY, AIR FORCE, AND NAVY

JULY 1987

PCN 184 059267 00

C1

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No. 1 }

Headquarters, U.S. Marine Corps
Department of the Army, Navy & Air Force
WASHINGTON, D.C., 31 May 1989

Operator and Organizational Maintenance Manual
GENERATOR SET, DIESEL ENGINE DRIVEN, TACTICAL, SKID MOUNTED
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AIR FORCE TO 35C2-3-386-31

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TO 35C2-3-386-31

HEADQUARTERS U.S. MARINE CORPS,
DEPARTMENTS OF THE ARMY, NAVY, AND AIR FORCE
WASHINGTON, D.C. (July 1987)

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Marine Corps TM 05926B/06509B-12/1

Army TM 5-6115-615-12

Navy NAVFAC P-8-646-12

Air Force TO 35C2-3-386-31

DEPARTMENT OF THE NAVY
Headquarters, U.S. Marine Corps
Washington, D.C. 20380-0001

31 July 1987

1. This Manual is effective upon receipt and contains operator and organizational maintenance instructions, and a Maintenance Allocation Chart (MAC) for Generator Set, Engine Driven, Tactical, Skid Mounted, 3 KW, DOD Models MEP 016B, 60 HZ, NSN 6115-01-150-4140, MEP 021B, 400 HZ, NSN 6115-01-151-8126, and MEP 026B, 28 VDC, NSN 6115-01-150-0367.

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SAFETY SUMMARY

The following are general safety precautions that are not related to any specific procedures and therefore do not appear elsewhere in this publication. These are recommended precautions that personnel must understand and apply during many phases of operation and maintenance.

KEEP AWAY FROM LIVE CIRCUITS

Operating personnel must at all times observe all safety regulations. Do not replace components or make adjustments to this equipment with the high voltage supply turned on. Under certain conditions, dangerous potentials may exist when the power control is in the off position, due to charges retained by capacitors. To avoid casualties, always remove power and discharge and ground a circuit before touching it. Always remove rings, watches and other jewelry before servicing this equipment.

DO NOT SERVICE OR ADJUST ALONE

Under no circumstances should any person reach into this equipment for the purpose of servicing or adjusting this equipment except in the presence of someone who is capable of rendering aid.

RESUSCITATION

Personnel working with or near high voltages should be familiar with modern methods of resuscitation. Such information may be obtained from the Bureau of Medicine and Surgery.

SECURE LOOSE CLOTHING

Personnel working on this equipment should secure all loose fitting clothing to prevent clothing from catching in moving parts.

KEEP COMPRESSED AIR AWAY FROM SKIN

Personnel using compressed air should not exceed 15 psi nozzle pressure when drying parts, and should not direct compressed air toward skin. Personal injury could result.

OPERATE EQUIPMENT IN A WELL VENTILATED AREA

Exhaust discharge contains noxious and deadly fumes. Do not operate this equipment in an enclosed area unless exhaust discharge is properly vented to the outside. When using cleaning solvents, clean parts in a well ventilated area and avoid inhalation of solvent fumes .

WEAR EAR PROTECTION

The noise level of this generator set can cause hearing damage. To avoid hearing damage, always wear ear protectors, as recommended by the medical or safety officer, when operating near this equipment.

USE CAUTION WHEN WORKING AROUND FLAMMABLES

Do not smoke, use open flame or use excessive heat in the vicinity of the generator set when refueling, working around the battery, or working with flammable cleaning solvents. Doing so could cause an explosion which could result in severe personal injury or death.

The following warnings appear in the text in this volume and are repeated here for emphasis.

WARNING

All personnel who operate or maintain the generator sets should become thoroughly familiar with the safety precautions prior to performing operation or maintenance procedures. Paragraph 2-1.

WARNING

Personnel should not attempt any of the following operating procedures without first grounding the unit as outlined in paragraph 2-5.1. Failure to do so could result in serious electrical shock or death from electrocution. Paragraph 2-1.

WARNING

Operation of this equipment presents a noise hazard to personnel in the area. The noise level exceeds the allowable limits for unprotected personnel. Wear ear muffs or ear plugs. Paragraph 2-1.

WARNING

Battery electrolyte is an acid solution that gives off flammable fumes. Do not smoke or use open flame when working around battery. Doing so can cause an explosion that could result in serious personal injury. If skin is exposed to electrolyte, flush exposed area with water immediately. If eyes are exposed to electrolyte, flush them with water and seek immediate medical attention. Paragraphs 2-10, 3-15, 3-16, 4-19, 4-22, Tables 3-2, 3-3.

WARNING

Prior to connecting load cables, be certain that all switches and circuit breakers are in the OFF or OPEN position, and that the generator set is not running. Failure to do so can result in death from electrocution. Paragraphs 2-2, 4-2.

WARNING

Do not hold main circuit breaker in ON position. Shock or death from electrocution can result. Table 3-3.

WARNING

Disconnect load before switching load terminal connections. Shock or death from electrocution can result. Table 3-3.

WARNING

Shut down generator set before switching load terminal connections. Shock or death from electrocution can result. Table 3-3.

WARNING

Unless manual directs otherwise, do not attempt any of the following maintenance procedures when generator set is operating. Do not touch exposed electrical connection when a source of power such as utility power or another generator set is connected to the load terminals. Severe electrical shock or death by electrocution can result. Section V, Section VIII, Section IX, Section X, Section XI, Section XII, Section XIII, Section XIV.

WARNING

Do not use a lifting device with a capacity of less than 600 lbs (272 kg). Do not allow the crated generator to swing while it is suspended. Failure to observe this warning can result in serious injury or death to personnel. Paragraph 4-1.

WARNING

Do not operate the generator set in an enclosed area unless the exhaust gases are piped to the outside. Inhalation of exhaust fumes will result in serious illness or death. Paragraph 4-2.

WARNING

Do not remove oil filler cap when engine is running. Hot oil can splash up and cause burns. Paragraph 4-7.

WARNING

Keep feet clear when tilting and working around tilted generator set. Failure to do so can result in personal injury. Paragraph 4-7.

WARNING

Avoid prolonged contact and inhalation of fumes of dry cleaning solvent. Use dry cleaning solvent only in a well ventilated area. Table 4-1, Paragraph 4-52.

WARNING

Do not direct pressurized air toward skin. Personal injury could result. Paragraph 4-52.

WARNING

Disconnect battery cables before servicing generator components. The high current output of the DC electrical system can cause arcing and/or burns if a short circuit occurs. Paragraph 4-22.

WARNING

Make sure muffler is completely cooled before performing any maintenance procedures. Paragraph 4-54.

WARNING

When changing the position of the output reconnection switch, make sure that the grounding jumper is connected to the correct output terminal as indicated in paragraph 2-5.1.b. Serious damage may result if the ground jumper is incorrectly connected. Paragraph 2-5.1.

WARNING

In the 240 volt single phase mode, the output receptacle "NEUTRAL" lead is NOT GROUNDED. When L-2 is grounded in the 240 volt mode, both leads to the receptacle will measure a potential with respect to ground. Serious damage may result if the output receptacle is grounded. Paragraph 2-5.1.

WARNING

The output receptacle is connected to a floating ground system. The set MUST be grounded as specified in paragraph 2-5.1 to effectively ground the receptacle. Failure to do so may cause severe injury or death. Paragraph 3-35.

CHAPTER 1

INTRODUCTION

Section I. GENERAL.

1-1. **SCOPE** . This manual is for your use in operating and maintaining the 3KW DED Generator Set, Type I (Tactical), Class 2 (utility) skid mounted Models MEP-016B, MEP-021B, and MEP-026B. It contains information on operation, lubrication, preventive maintenance checks and services, troubleshooting, operator/crew maintenance and organizational maintenance. Thoroughly familiarize yourself with the unit before operating or servicing.

1-1.1. Appendices. Appendix A contains a list of reference publications applicable to this manual. Appendix B contains a Components List. Appendix C contains the Maintenance Allocation Chart (MAC) which determines the level of maintenance responsibility for Army users.

1-2. **LIMITED APPLICABILITY**. Some portions of this publication are not applicable to all services. These portions are prefixed to indicate the services to which they pertain: (A) for Army, (AF) for Air Force, (N) for Navy, and (MC) for Marine Corps. Portions not prefixed are applicable to all services.

1-3. MAINTENANCE FORMS AND RECORDS.

1-3.1. (MC) Maintenance forms and records used by Marine Corps personnel are prescribed by TM 4700-15/1.

1-3.2. (A) Maintenance forms and records used by Army personnel are prescribed by DA PAM 738-750.

1-3.3. (AF) Maintenance forms and records used by Air Force personnel are prescribed in AFM 66-1 and the applicable 00-20 Series Technical Orders.

1-3.4. (N) Navy users should refer to their service peculiar directives to determine applicable maintenance forms and records to be used.

1-4. **REPORTING OF ERRORS**. Reporting of errors, omissions, and recommendations for improvement of this publication by the individual user is encouraged. Reports should be submitted as follows:

1-4.1. (MC) By NAVMC form 10772 directly to: Commanding General, Marine Corps Logistics Base (Code 850), Albany, Georgia 31704-5000.

1-4.2. (A) DA Form 2028 directly to: Commander, US Army Troop Support Command, ATTN: AMSTR-MCTS, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798.

1-4.3. (AF) AFTO Form 22 directly to: Commander, Sacramento Air Logistics Center, ATTN: MMEDT, McClellan Air Force Base, CA. 95652 in accordance with TO-00-5-1.

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1-4.4. (N) By letter directly to: Commanding Officer, U.S. Navy, Ships Parts Control Center, ATTN : Code 783, Mechanicsburg, PA 17055.

1-5. LEVELS OF MAINTENANCE ACCOMPLISHMENT.

1-5.1. (MC) Marine Corps users shall refer to the Repair Parts List.

1-5.2. (A) Army users shall refer to the Maintenance Allocation Chart (MAC) for tasks and levels of maintenance to be performed.

1-5.3. (AF) Air Force users shall accomplish maintenance at the user level consistent their capability in accordance with AFM 66-1.

1-5.4. (N) Navy users shall determine their maintenance levels in accordance with their service directives.

1-6. (MC, A) DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE. Demolition of materiel to prevent enemy use shall be in accordance with the requirement of TM-750-244-3 (Procedures for Destruction of Equipment to Prevent Enemy Use for U.S. Army).

1-7. ADMINISTRATIVE STORAGE.

1-7.1. (MC, N) Refer to individual service directives for requirements.

1-7.2. (A) Refer to TM 740-90-1 (Administrative Storage).

1-7.3. (AF) Refer to TO 35-1-4 (Processing and Inspection of Aerospace Ground Equipment

1-8. PREPARATION FOR SHIPMENT AND STORAGE.

1-8.1. (MC) Refer to MCO P4450.7.

1-8.2. (A) Refer to TB 740-97-2 and TM 740-90-1.

1-8.3. (AF) Refer to TO 35-1-4 for end item generator sets and TO 38-1-5 for installed engine.

1-8.4. (N) Refer to individual service directives for requirements.

1-8.5. (A) REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR). EIR will be prepared using DA form 2407, Maintenance Request. Instructions for preparing EIR's are provided in DA PAM 738-750, The Army Maintenance Management System. EIR'S should be mailed directly to: U.S. Army Troop Support Command, ATTN: AMSTR-QX, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. A reply will be furnished directly to you.

1-8.6. (MC) REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR). Submit Quality Assurance Report on standard form 368 in accordance with MCO 4855.10.

Section II. DESCRIPTION AND DATA.

1-9. DESCRIPTION. The generator sets are self contained, frame mounted portable units. They are powered by a single cylinder diesel engine that is directly coupled to the generator. See Figures 1-1 and 1-2 for locations of major components.

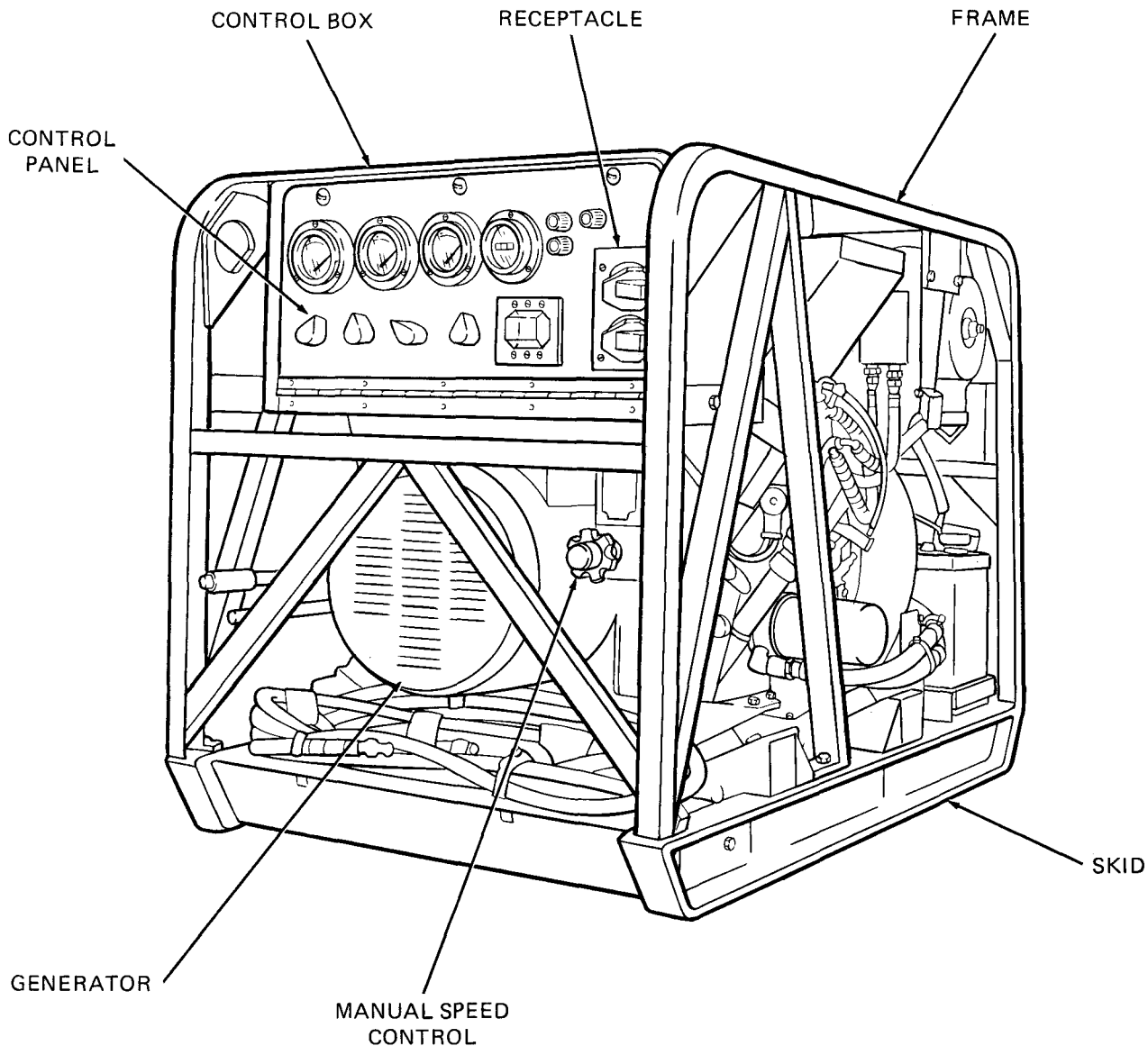


Figure 1-1. Generator Set, Right Front, Three Quarter View.

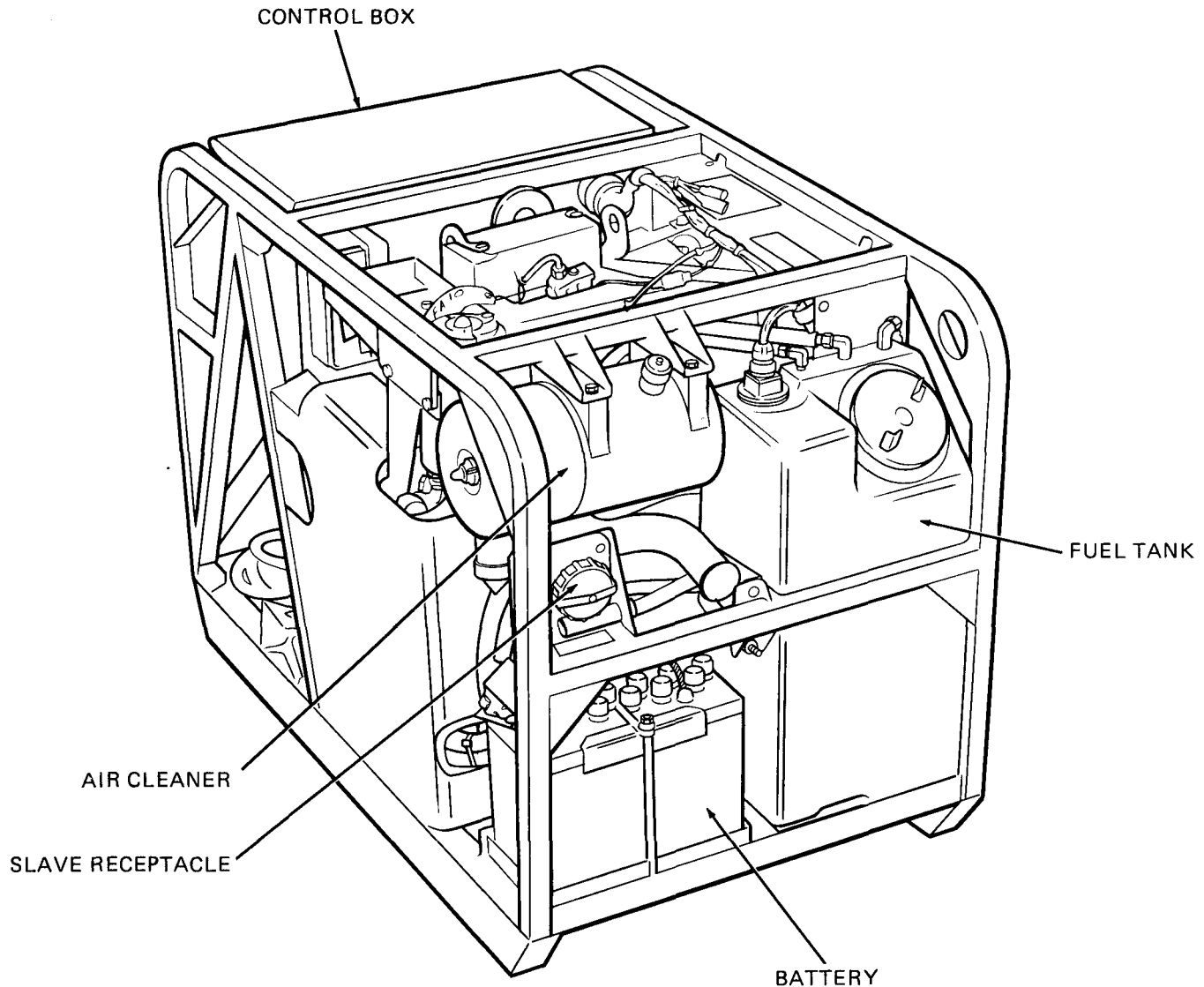


Figure 1-2. Generator Set, Left Rear, Three Quarter View.

1-9.1. Engine. The engine is a single cylinder, air cooled, direct injection diesel with a displacement of 36.80 cubic inches (603cc). A mechanical governor is used to maintain engine speed under rated load conditions.

1-9.1.1. Fuel System. Fuel is supplied from the unit's self-contained fuel tank. The fuel is filtered by an integral strainer/filter and water separator. A mechanical fuel transfer pump delivers fuel to the fuel injection pump which pumps fuel at high pressure to the fuel injection nozzle in the cylinder head. The fuel transfer pump has a manual priming lever that is used to prime the fuel system when necessary. The unit can also be run from an auxiliary fuel source. An adapter connects the auxiliary fuel source to the electric auxiliary fuel pump mounted to the skid base. The auxiliary fuel pump transfers the fuel into the unit's main fuel tank allowing fuel to be delivered to the engine in the normal manner.

1-9.1.2. Electrical. One 24-volt "wet cell" battery supplies power for the 24 volt electric starter, the glow plug located in the cylinder head, and for the electric auxiliary fuel pump. An alternator automatically recharges the battery when the engine is running.

1-9.2. Generators.

1-9.2.1. MEP-061-B. The generator provided with the Model MEP-016B generator set is a self-excited, 60 hertz alternating current generator. The generator output is 120/240 volts, single phase; 120 volt, 3 phase; or 120/208 volt, 3 phase, 4 wire. It is rated at 3 kilowatts at 8000 feet altitude when operating on diesel fuel. When operating with JP4 fuel, the altitude operation is limited by temperature (see Figure 1-3).

1-9.2.2. MEP-021B. The generator provided with the Model MEP-021B generator set is a self-excited, 400 hertz alternating current generator. The generator output is 120/240 volt, single phase; 120 volt, 3 phase; or 120/208 volt, 3 phase, 4 wire. It is rated at 3 kilowatts at 8000 feet altitude when operating on diesel fuel. When operating with JP4 fuel, the altitude operation is limited by temperature (see Figure 1-3).

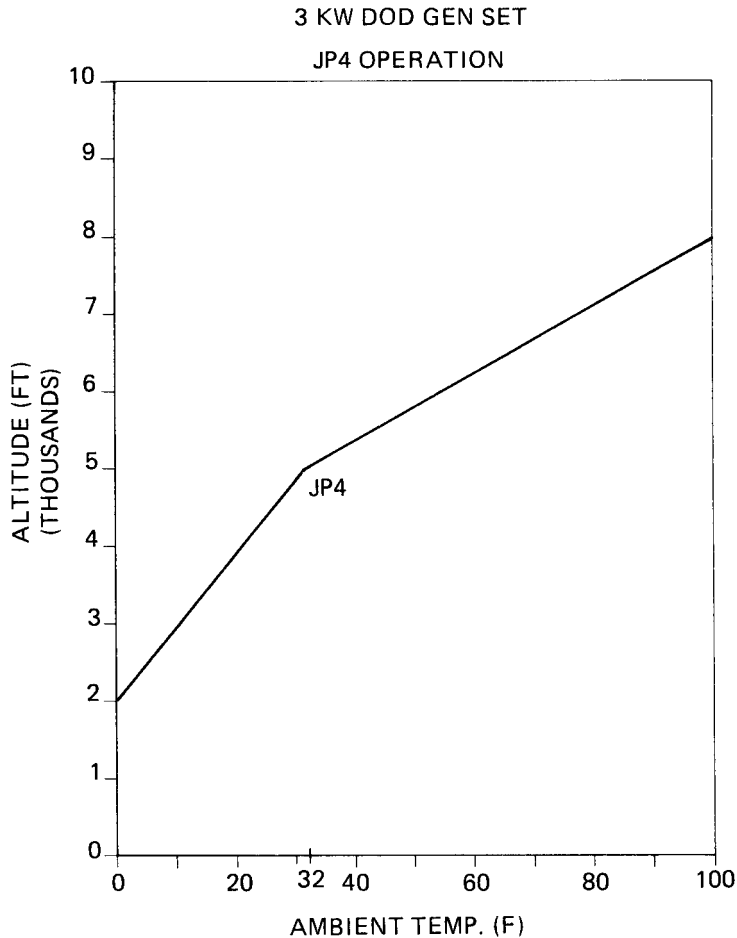


Figure 1-3. JP4 Operation.

1-9.2.3. MEP-026B. The generator provided with the Model MEP-026B generator set is a self-excited, 28 volt direct current generator. It is rated at 3 kilowatts at 8000 feet altitude when operating on diesel fuel. When operating with JP4 fuel, the altitude operation is limited by temperature (see Figure 1-3).

1-9.3. Controls. (See Figures 1-2, 1-4 and 1-5). All of the controls necessary for operation of the generator set are located on the main control panel, with the exception of the output selection switch and the engine speed control. The output selection switch is located inside the control box (easily accessible by opening the front panel of the control box). The engine manual speed control is located directly below the control box.

1-10. TABULATED DATA.

1-10.1. Identification and Instruction Plates. All identification and instruction plates are explained in Table 1-1.

1-10.2. Tabulated Data. The tabulated data for the generator sets are contained in Table 1-2.

1-10.3. Torque Data. Torque data applicable to operator/crew and organizational maintenance is found in Table 1-3.

1-10.4. Installation Plans and Schematics. Installation plans and schematics are shown in Figures 1-4, 1-5, 1-6, FO-1 and FO-2.

Table 1-1. Identification and Instruction Plates.

Location	Type	Description
Inside of hinged control box cover (60,400 Hz)	Schematic	Electrical schematic
Top of control box (28VDC)	Schematic/instruction	Electrical schematic/operating instructions
Top of control box (60,400 Hz)	Instruction	Operating instructions
Back of control box	Identification	Load terminals
Load terminal cover	Identification/caution	Identifies load terminals and has voltage caution
Front of control box (28VDC)	Identification	Circuit breaker

Table 1-1. Identification and Instruction Plates, Continued.

Location	Type	Description
Muffler heat shield plate	Instruction	Instructions for disconnecting and connecting the battery
Muffler heat shield plate	Identification	U.S. Department of Defense Data Plate Contains model, serial number and rating information for the set
Muffler heat shield plate	Caution	Hearing protection required
Muffler heat shield plate	Diagram	Block diagram of the fuel system
Muffler heat shield plate	Identification	Identifies lifting and tie down points
Engine guard panel (60,400 Hz)	Instruction	Instructions for connecting load cables
On frame	Identification - slave receptacle	Identifies the slave receptacle
Bracket under control box	Identification - speed adjustment control	Identification and instructions for the engine manual speed control
on skid base	Identification - auxiliary fuel connection	Identifies the auxiliary fuel connection point
On skid base	Identification - ground	Identifies the ground stud
Engine cooling air outlet	Data plate	Manufacturer's identification
Top of generator housing	Data plate	Contains the manufacturer's identification and rating
Both sides of generator housing	Warning	Danger - rotating fan can cause severe injury

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Table 1-2. Tabulated Data.

Generator Set Manufacturer. ONAN Corporation, Minneapolis, MN.

MODEL	HERTZ/MODE	CLASS
MEP-016B	60 Hz	UTILITY
MEP-021B	400 Hz	UTILITY
MEP-026B	28 VDC	UTILITY

Operating Temperature Range

without external heat

MEP-016B	-25°F to +125°F (-32°C to +52°C)
MEP-021B	-25°F to +125°F (-32°C to +52°C)
MEP-026B	-25°F to +125°F (-32°C to +52°C)

Voltage Output

MEP-016B (60Hz)	120/240 VAC, single phase 120 VAC, 3 phase 120/208 VAC, 3 phase, 4 wire
MEP-021B (400Hz)	120/240 VAC, single phase 120 VAC, 3 phase 120/208 VAC, 3 phase, 4 wire
MEP-026B	28VDC

Power Factor

MEP-016B	0.8
MEP-021B	0.8
MEP-026B	N/A

Capacities

Fuel System	4.5 gal. (17.4 Liters)
Lubricating Oil	3.0 qts. (2.8 Liters)

Dimensions and Weights

Overall Length	39" (99 cm)
Overall Width	23.75" (60.3 cm)
Overall Height	28" (71.1 cm)
Net Weight Empty	440 lbs. (199 kg)
Net Weight Filled	498 lbs. (226.3 kg)
Shipping Weight	500 Ms. (227.6 kg)
Cubage	19.5 ft ³ (552.3 dm ³)

Table 1-2. Tabulated Data, Continued.

Engine

Manufacturer	Onan Corporation, Minneapolis, MN
Model	Q106D
Type	Diesel, direct injection, 4 stroke/cycle
Number of Cylinders	1
Displacement	36.80 Cubic inches (603 cc)
Horsepower	8 BHP at 3600 rpm (as installed)
Rotation	ccw (viewed from generator end)

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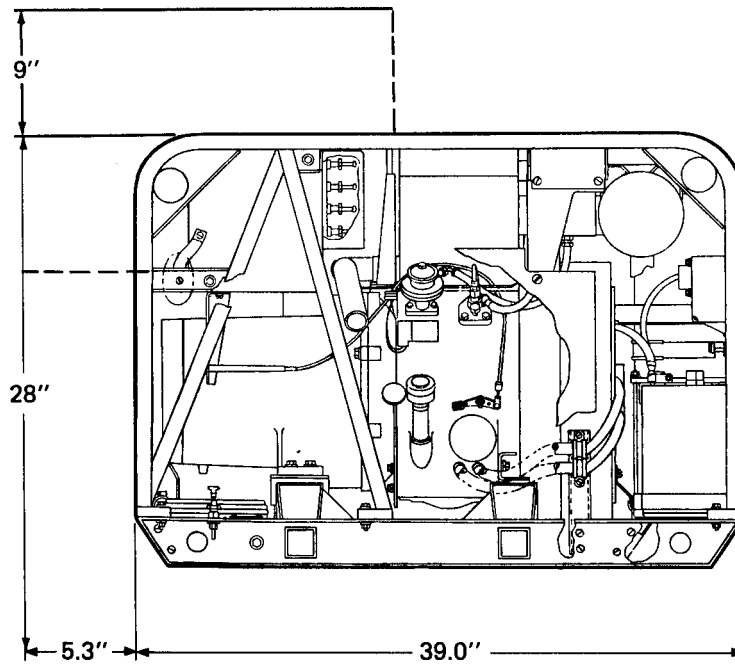
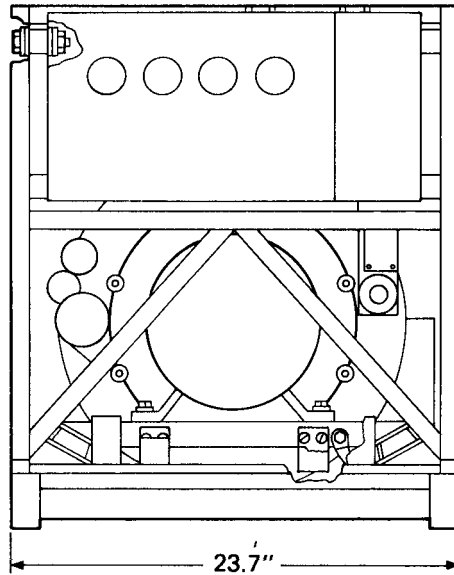


Figure 1-4. Installation Plans.

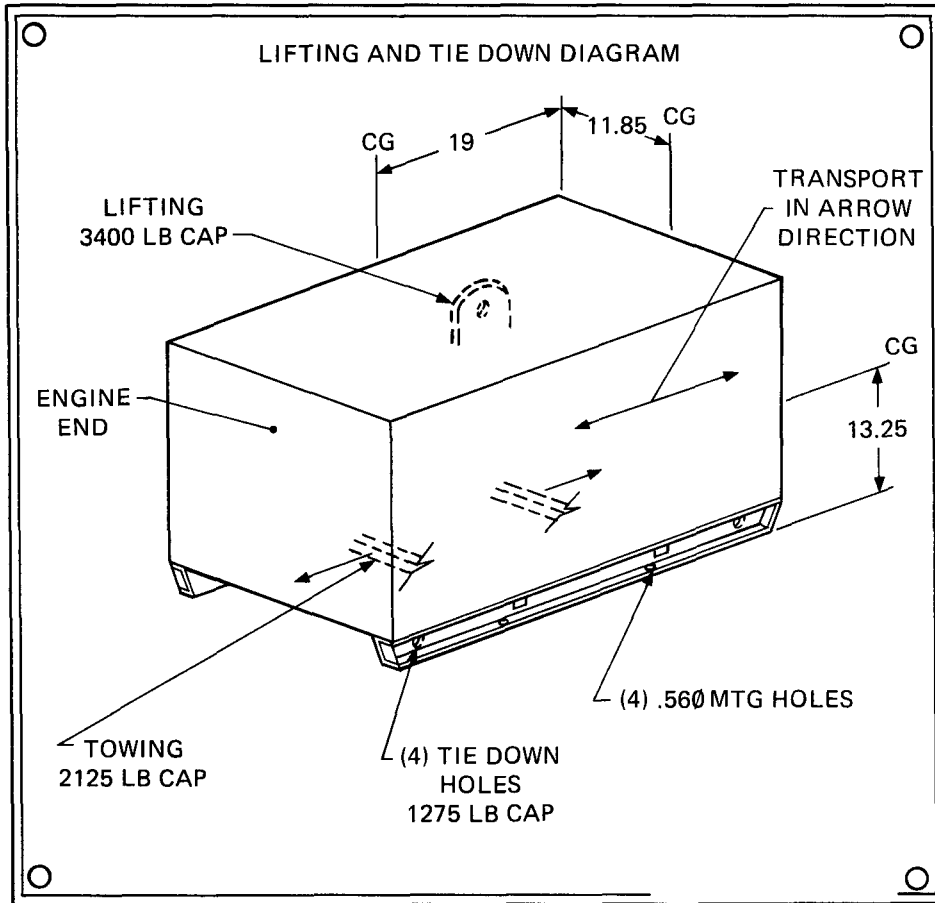


Figure 1-5. Tie Down, Lifting and Towing provisions.

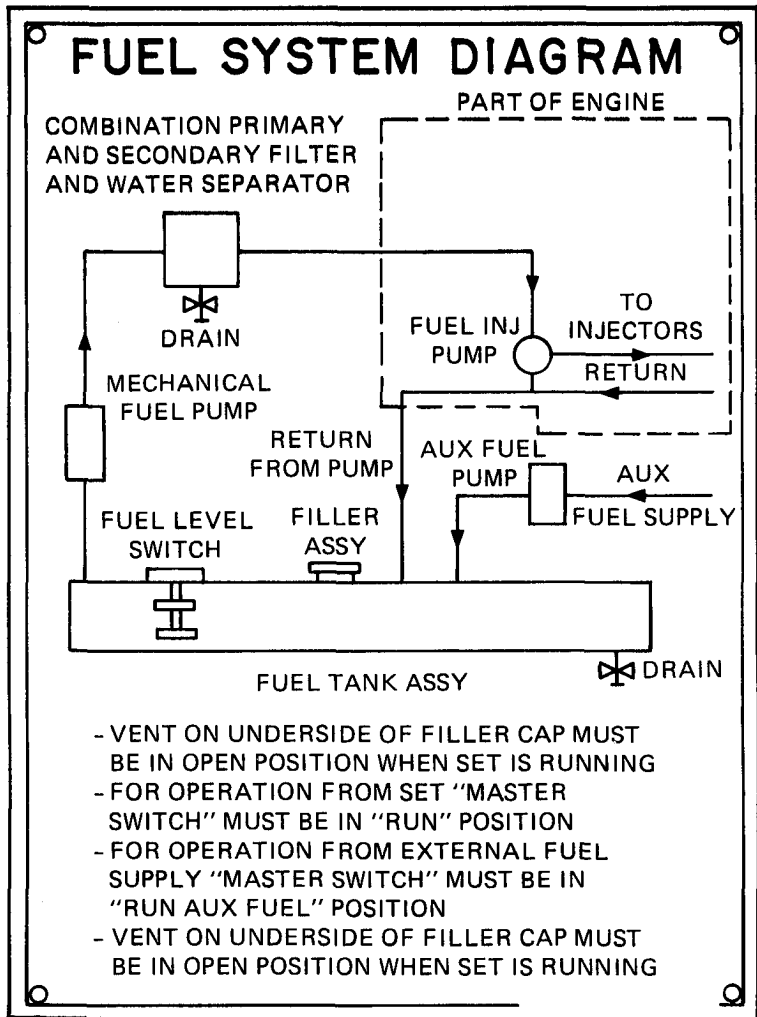


Figure 1-6. Fuel System Schematic.

1-11. **DIFFERENCES BETWEEN MODELS.** This manual covers DOD Models MEP-016B, MBP-021B and MEP-026B. The main differences between these models is the frequency, output voltage, and current that each delivers. The output characteristics are listed in Table 1-3. The other noticeable differences are in the control panels for each of the sets. These differences are thoroughly discussed in Chapter 2 of this manual.

Table 1-3. Output Characteristics.

Model MEP-016B	Model MEP-021B	Model MEP-126B
120 or 240 VAC single phase 60 Hz	120 or 240 VAC single phase 400 Hz	28 VDC
120 VAC three phase 60 Hz	120 VAC three phase 400 Hz	
120/208 VAC three phase, 4 wire 60 Hz	120/208 VAC three phase, 4 wire 400 Hz	

CHAPTER 2

OPERATING INSTRUCTIONS

Section I. OPERATING PROCEDURES.

2-1. GENERAL. This chapter contains instructions for starting, operating, and stopping the generator sets. Location and functions of all controls and indicators are provided, as well as safety precautions for operating and maintaining the generator sets.

WARNING

All personnel who operate or maintain the generator sets should become thoroughly familiar with the safety precautions prior to performing operation or maintenance procedures.

Personnel should not attempt any of the following operating procedures without first grounding the unit as outlined in paragraph 2-5.1. Failure to do so could result in serious electrical shock or death from electrocution.

Operation of this equipment presents a noise hazard to personnel in the area. The noise level exceeds the allowable limits for unprotected personnel. Wear ear muffs or ear plugs.

2-2. POWER CONNECTIONS.

WARNING

Prior to connecting load cables, be certain all switches and circuit breakers are in the OFF or OPEN position, and that the generator set is not running. Failure to do so can result in death from electrocution.

Models MEP-016B and MEP-021B can be switched to provide voltage outputs of either 120/240 volts, single phase; 120 volts, 3 phase or 120/208 volts, 3 phase, 4 wire. The output selection switch is located inside the control box (see Figures 2-1 and 2-2) and is accessible by turning the three "quarter turn" screws on the front of the control panel. It is important that the load is connected before starting the unit, and that the load connections and the setting of the output selection switch match the load requirements.

2-3. **EQUIPMENT RECONNECTION.** Before operating the unit, be certain that the voltage and frequency rating of the load matches that of the generator set. If the output voltage of the generator set must be changed to match a particular load, rotate the output selection switch (see Figures 2-1 and 2-2) to the desired output setting before starting the generator set.

2-4. **CONTROLS AND INSTRUMENTS.**

2-4.1. Model MEP-016B. Controls and instruments for Model MEP-016B are illustrated in Figure 2-1 and described in Table 2-1.

2-4.2. Model MEP-021B. Controls and instruments for Model MBP-021B are illustrated in Figure 2-2 and described in Table 2-2.

2-4.3. Model MEP-026B. Controls and instruments for Model MEP-026B are illustrated in Figure 2-3 and described in Table 2-3.

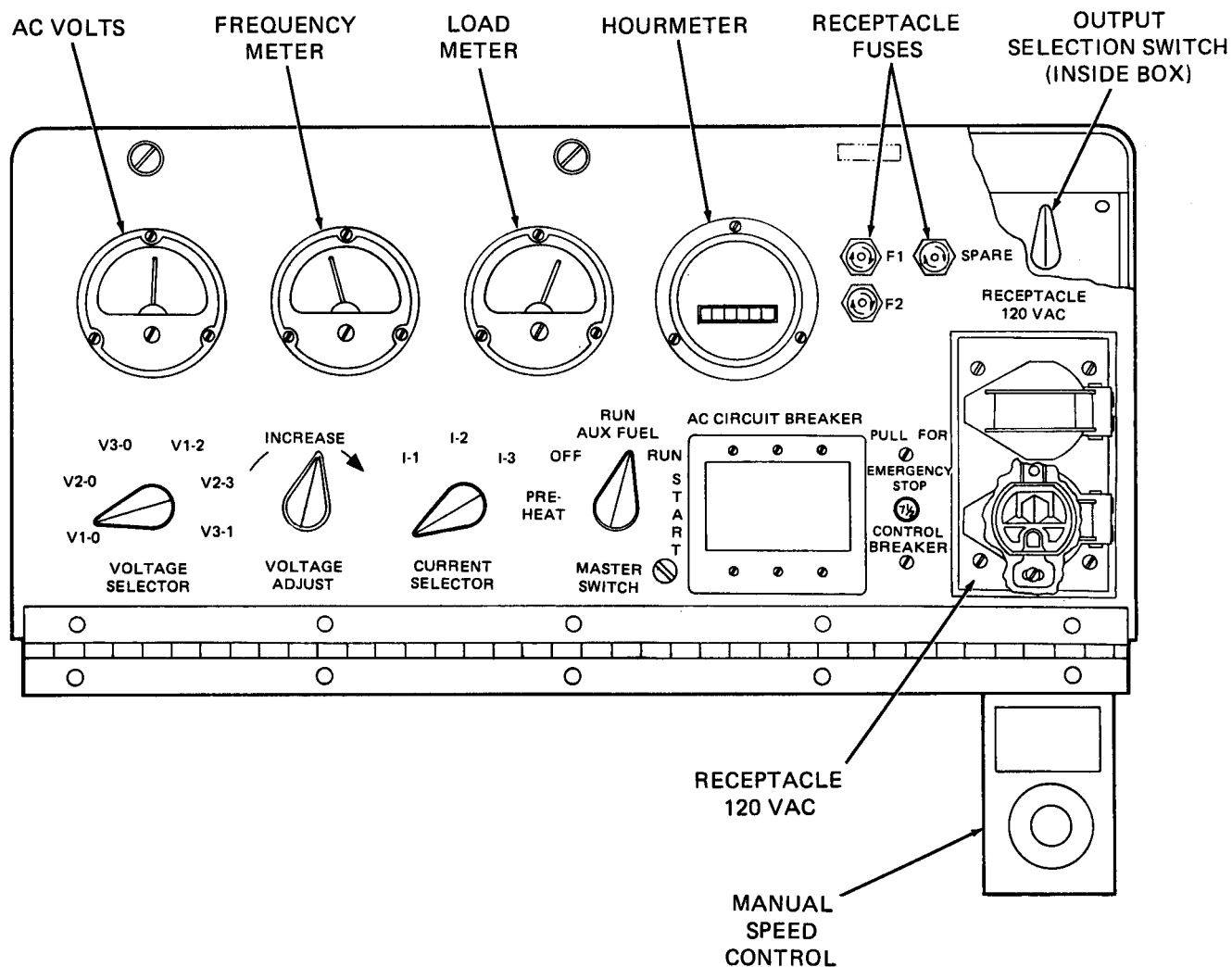


Figure 2-1. Controls and Instruments, Model MEP-061B (60 Hz).

Table 2-1. Controls and Instruments, Model MEP-016B (60 Hz).

Control	Description	Function
AC Volts	50 to 250 volt scale in 10 volt increments. Red marks at 120, 208 and 240 volts .	Indicates output voltage. Normal reading is 120, 208 or 240 volts.
Frequency Meter	Range 55 to 65 Hz. in 0.5 Hz scale divisions. Red mark at 60 Hz.	Indicates output frequency. Normal reading is 60 Hz (red line).
Load Meter	0 to 125 percent range. Red band from 100 to 125 percent.	Indicates output current as percentage of load. Load is not to exceed 100%.
Hourmeter	0 to 9999.9 hours	Records total engine operating time in hours.
Voltage Selector	Rotary switch	When this switch corresponds to the load terminal connections, the voltmeter will indicate output voltage for the selected load.
Voltage Adjust	Rheostat	Adjusts generator set output voltage. Clockwise to increase; counterclockwise to decrease.
Current Selector	Rotary Switch	When this switch corresponds to the load, the load meter will indicate output current for the selected load terminal connections.
Master Switch	Rotary Switch	Controls the Preheat, Start, and Stop functions of the engine. Also used for switching between main and auxiliary fuel sources.
Main Circuit Breaker		Used to connect the load and protect the generator against shorts in the load.
DC Control	7.5 amp breaker	Protects DC circuitry in case of short. Also used for emergency stopping (pull out to stop engine).

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Table 2-1. Controls and Instruments, Model MEP-016B (60 Hz), Continued.

Control	Description	Function
Receptacle, 120 VAC	Standard 120 VAC receptacle	Convenience outlet (120 volts AC, 60 Hz). Provides power for lighting, tools or appliances.
Fuse, F1	12 amp fuse	Protects convenience outlet against short circuits.
Fuse, F2	12 amp fuse	Protects convenience outlet against short circuits.
Fuse, Spare	12 amp fuse	Spare fuse for replacement of F1 or F2.
Output Selection Switch	Rotary switch located inside control box.	Selects output voltage from generator: 120 or 240 volts single phase; 120 volts, 3 phase; or 120/208 volts, 3 phase, 4 wire.
Manual Speed Control		Controls engine speed.

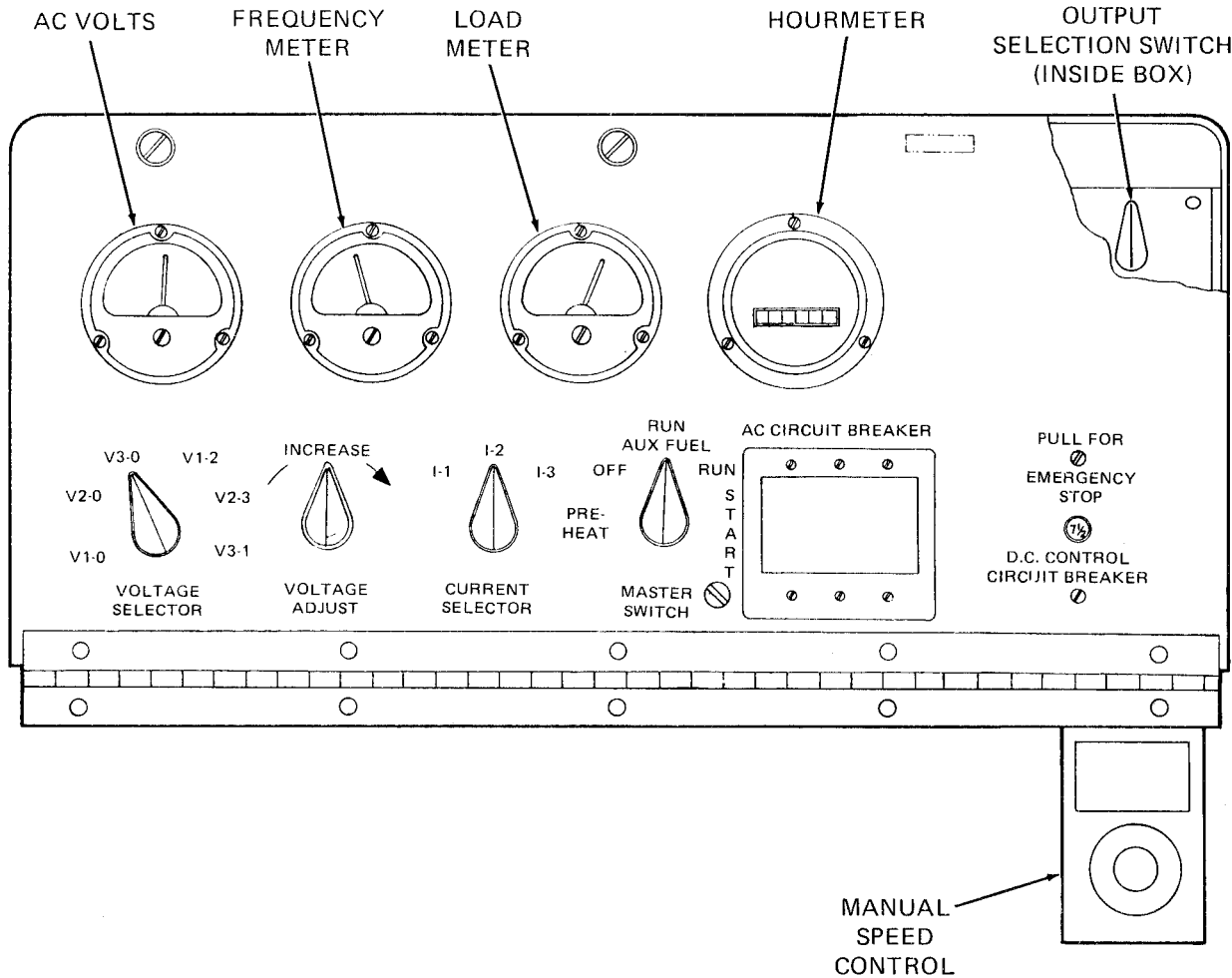


Figure 2-2. Controls and Instruments, Model MEP-021B (400 Hz).

Table 2-2. Controls and Instruments, Model MEP-021B (400 Hz).

Control	Description	Function
AC Volts	50 to 250 volt scale in 10 volt increments. Red marks at 120, 208 and 240 volts .	Indicates output voltage. Normal reading is 120, 208 or 240 volts.
Frequency Meter	Range 380 to 420 Hz. in 0.5 Hz scale divisions. Red mark at 400 Hz.	Indicates output frequency. Normal reading is 400 Hz (red line).

Table 2-2. Controls and Instruments, Model MEP-021B (400 Hz), Continued.

Control	Description	Function
Load Meter	0 to 125 percent range. Red band from 100 to 125 percent.	Indicates output current as percentage of load. Load is not to exceed 100%.
Hourmeter	0 to 9999.9 hours	Records total engine operating time in hours.
Voltage Selector	Rotary switch	When this switch corresponds to the load terminal connections, the voltmeter will indicate output voltage for the selected load terminal.
Voltage Adjust	Rheostat	Adjusts generator set output. Clockwise to increase, counterclockwise to decrease.
Current Selector	Rotary switch	When this switch corresponds to the load, the load meter will indicate output current for the selected load.
Master Switch	Rotary switch	Controls the Preheat, Start, Run and Stop functions of the engine. Also used for switching between main and auxiliary fuel sources.
Main Circuit Breaker		Used to connect the load and to protect the generator against shorts in the load.
DC Control Circuit Breaker	7.5 amp breaker	Protects DC circuitry in case of short. Also used for emergency stopping (pull out to stop engine).
Output Selection Switch	Rotary switch located inside control box.	Selects output voltage from generator: 120 or 240 volts, single phase; 120 volts, 3 phase; or 120 or 208 volts, 3 phase, 4 wire.
Manual Speed Control		Controls engine speed.

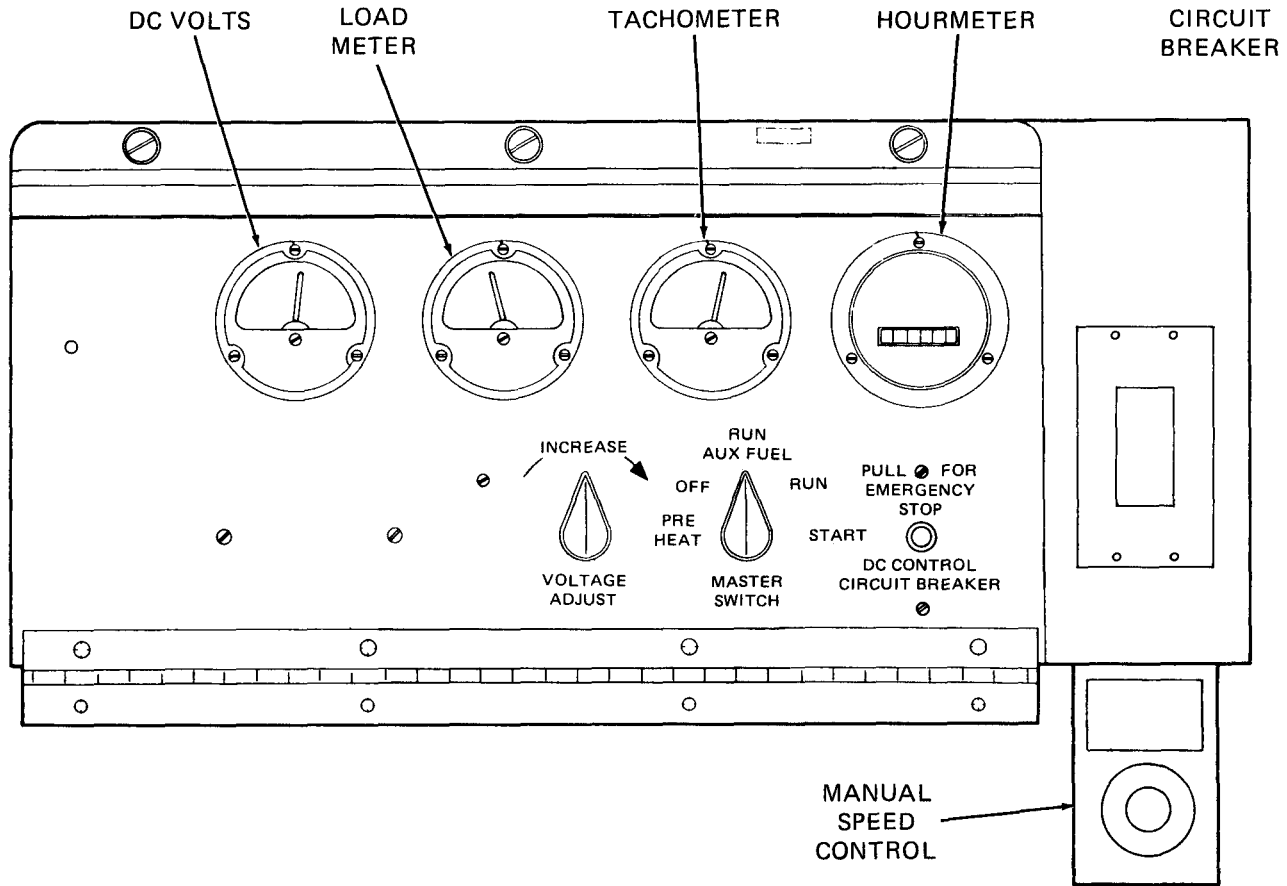


Figure 2-3. Controls and Instruments, Model MEP-026B (28 VDC).

Table 2-3. Controls and Instruments, Model MEP-02613 (28 VDC).

Control	Description	Function
DC Volts	0 to 50 volt range in 1 volt increments. Red mark at 28 volts .	Indicates output voltage. Normal reading indicates 28 volts DC.
Load Meter	0 to 125 percent range. Red band from 100 to 125 percent.	Indicates output current as percentage of load. Load is not to exceed 100 percent.
Tachometer	Range from 3300 to 3900 rpm in increments of 20 rpm. Red mark at 3600 rpm.	Indicates engine speed in revolutions per minute (RPM). Normal reading is 3600 RPM. Do not exceed 3600 RPM.
Hourmeter	0 to 9999.9 hours	Records total engine operating time in hours.

Table 2-3. Controls and Instruments, Model MEP-026B (28 VDC), Continued.

Control	Description	Function
Voltage Adjust	Rheostat	Adjusts generator set output voltage. Clockwise to increase; counterclockwise to decrease.
Master Switch	Rotary switch	Controls the Preheat, Start, Run and Stop functions of the engine. Also used for switching between main and auxiliary fuel sources.
DC Control Circuit Breaker	7.5 amp breaker	Protects DC circuitry in case of short. Also used for emergency stopping (pull out to stop engine).
Main Circuit Breaker		Used to connect the load and to protect the generator against a short in the load.
Manual Speed Control		Controls engine speed.

2-5. OPERATING PROCEDURES. The instructions in this section are provided for the information and guidance of the personnel responsible for the operation of the generator sets. The operator must know how to perform every operation of which the generator sets are capable. This section gives instructions on starting and stopping the generator sets and regulating them to perform the specific tasks for which the equipment is designed.

2-5.1. Grounding. The generator set must be properly grounded before operation.

a. System Description. The AC alternator stator consists of three individual windings which are brought out of the generator housing by six wires, T-1 and T-4, T-2 and T-5, T-3 and T-6, which are connected to the output reconnect switch. By positioning the output switch to the desired position, the alternator output leads, T-1 through T-6 are connected to give the desired output voltage configuration. As wired, the generator output is always floating (not connected to ground); safety requirements dictate that the system must be grounded. This is accomplished by placing a #6 American Wire Gauge (AWG) stranded conductor between the proper output terminal (paragraph 2-5.1.b) and the generator set ground terminal located on the generator frame. To complete the grounding requirement, the ground terminal must also be connected to a proper grounding electrode system (ground rod, ground plate, etc.).

b. Set Grounding Instructions. When grounding the 60 Hz and 400 Hz sets, grounding connections MUST be made to both the output terminal and frame terminal (see Figure 2-4.1). When grounding the 28 VDC set, only the frame (ground terminal stud) need be grounded (see Figure 2-4.2).

- (1) For 120 volt single phase, 120 volt three phase, or 240 volt single phase modes, connect a #6 AWG stranded conductor between the output terminal stud L-2 and frame (ground terminal stud) (see Figures 2-4.1 and 2-4.3).
- (2) For a 120/208 volt three phase mode, connect a #6 AWG stranded conductor between output terminal stud LO and frame (ground terminal stud) (see Figures 2-4.1 and 2-4.3).

WARNING

When changing the position of the output reconnection switch, make sure that the grounding jumper is connected to the correct output terminal as indicated in paragraph 2-5.1.b. Serious damage may result if the ground jumper is incorrectly connected.

- (3) For ALL modes, ground the frame (ground terminal stud) to an appropriate ground electrode system as described in paragraph 2-5.1.d.

c. Output Receptacle Grounding. The leads to the output receptacle are connected to alternator leads T-1 and T-4. The receptacle is floating (not grounded). When a grounding jumper is installed between the specified output terminal (paragraphs 2-5.1.b (1) and 2-5.1.b (2)), the receptacle will automatically be grounded with proper polarity EXCEPT when the output switch is in the 240 volt single phase mode. In the 240 volt single phase mode, the output receptacle is always floating (not grounded).

WARNING

In the 240 volt single phase mode, the output receptacle "NEUTRAL" lead is NOT GROUNDED. When L-2 is grounded in the 240 volt mode, both leads to the receptacle will measure a potential with respect to ground. Serious damage may result if the output receptacle is grounded.

d. Grounding Electrode (Rod) System.

- (1) The generator set must be grounded before operation. The ground can be, in order of preference: (1) a underground metallic water piping; (2) a driven metal rod; (3) a buried metal plate (see Figure 2-4.2).

NOTE

A ground rod is furnished with the unit.

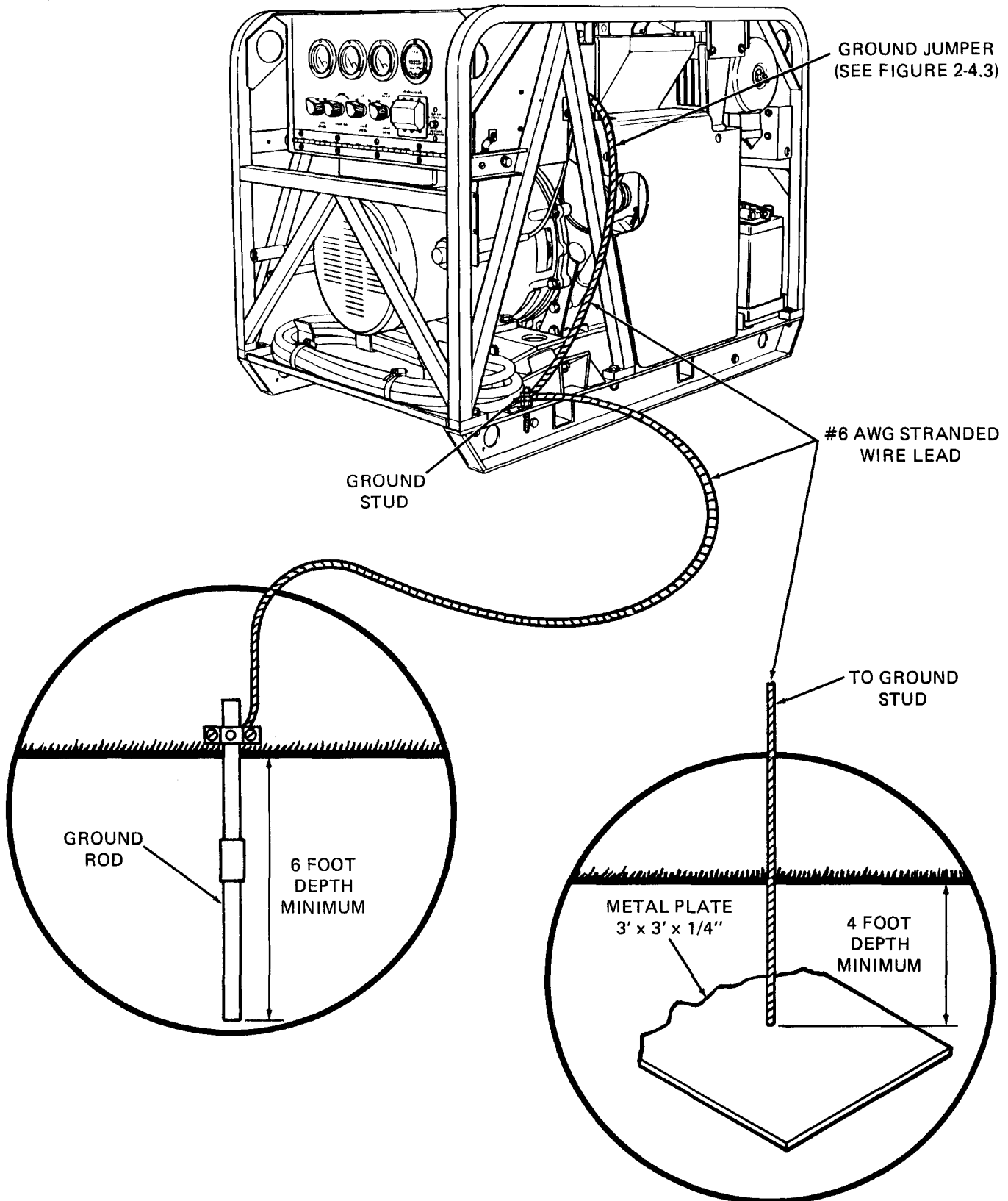


Figure 2-4.1. Grounding the Generator Set (60 Hz and 400 Hz).

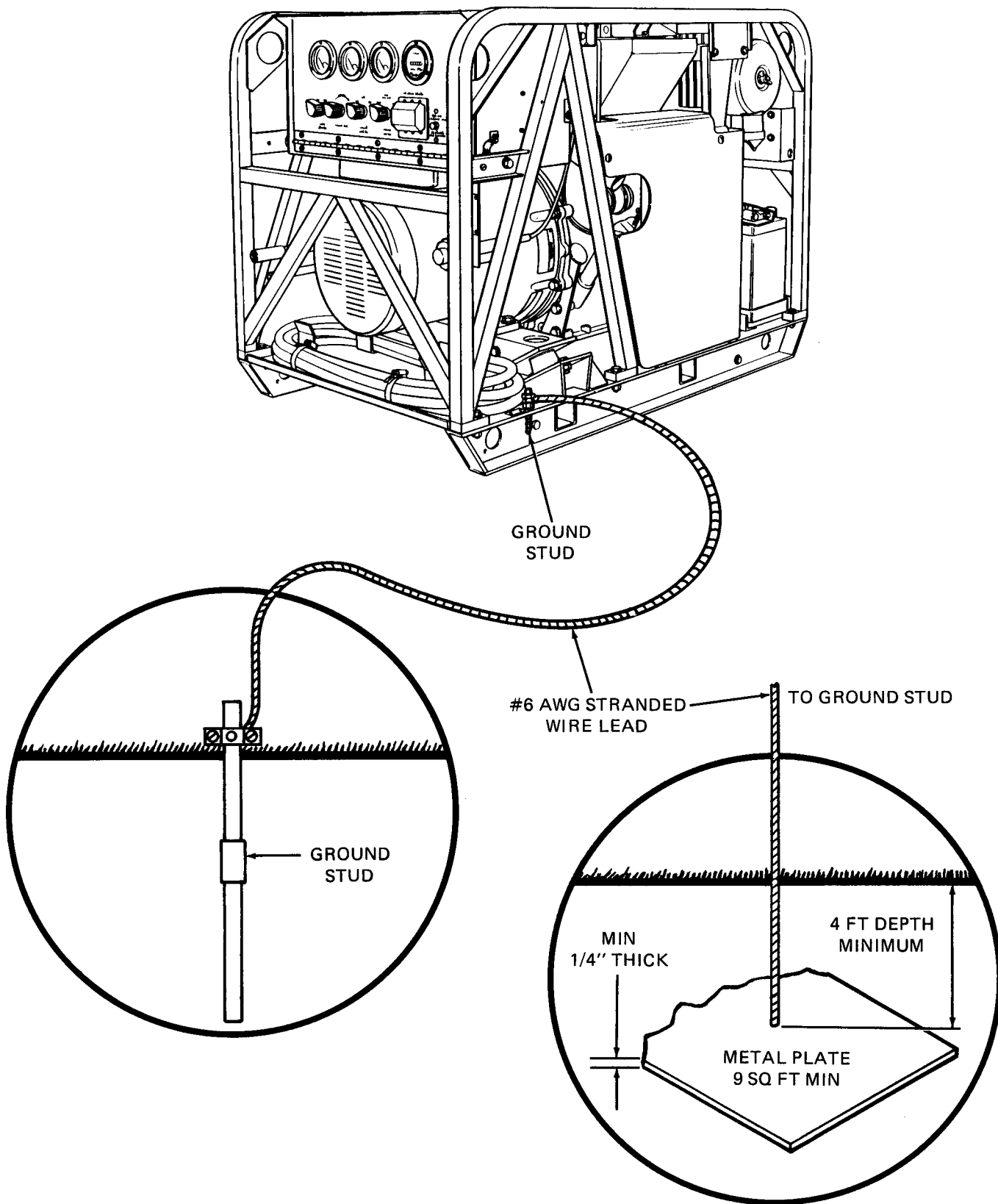
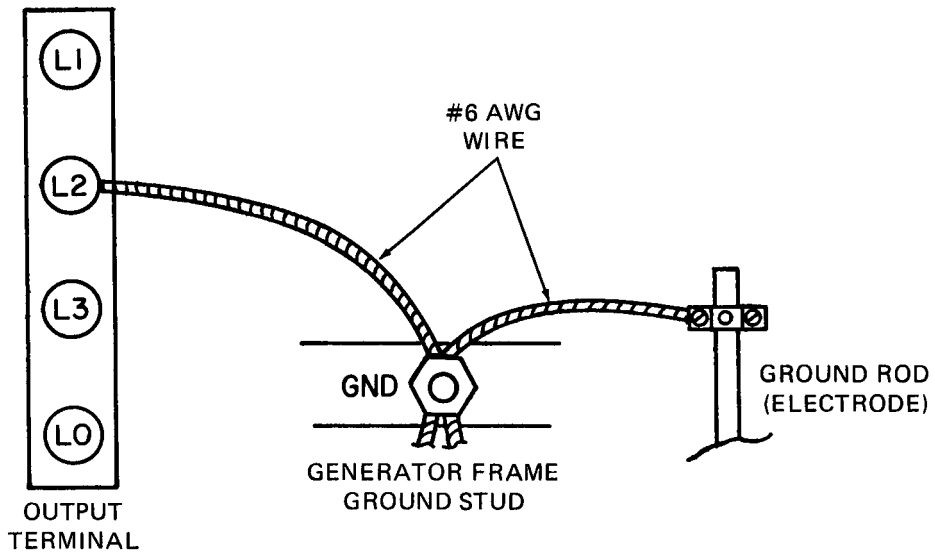
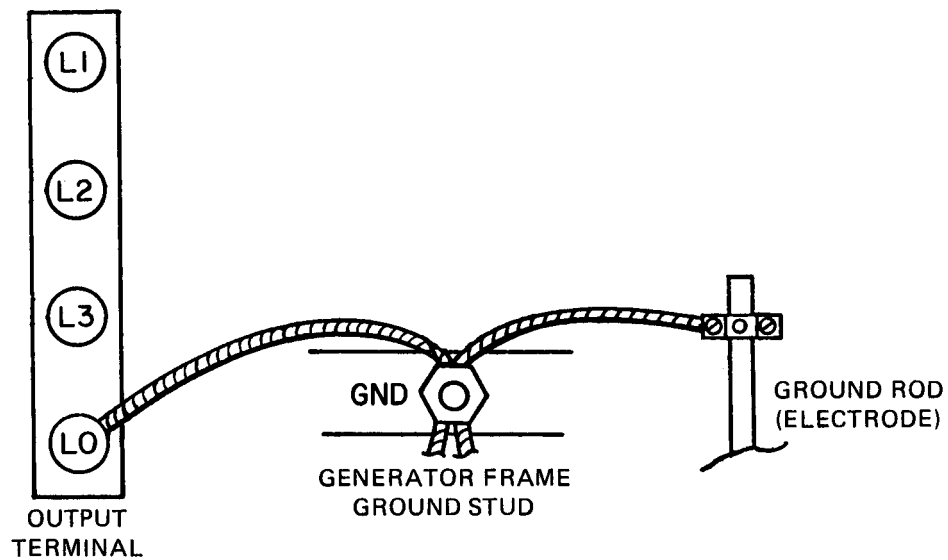


Figure 2-4.2. Grounding the Generator Set (28 VDC).

- (2) If the effectively grounded portion of the buried metallic water pipe is less than 10 feet (3.0 meters) because of insulated sections or joints, this preferred grounding method must be supplemented by an additional driven metal ground rod or a buried metal plate. A driven metal ground rod must have a minimum diameter of 5/8 inch (16 mm) if solid, or 3/4 inch (20 mm) if pipe. The rod must be driven to a minimum depth of 6 feet (2 meter). A buried metal plate must have a minimum area of nine square feet (1 square meter), a minimum thickness of 1/4 inch (7 mm), and be buried to a minimum depth of four feet (1.5 meters). The ground lead must be at least a #6 AWG or thicker stranded copper wire.



GROUNDING CONNECTION FOR 120V 1 PHASE,
 120V 3 PHASE AND 240V 1 PHASE



GROUNDING CONNECTION FOR 120/208V 3 PHASE

Figure 2-4.3. Grounding Connections (60 Hz and 400 Hz).

2-6. **STARTING.**

2-6.1. Preparation For Starting.

- a. Be sure set is adequately grounded (refer to paragraph 2-5.1).
- b. Perform the daily preventive maintenance services (see Table 3-2).
- c. Be certain load is connected, and that setting of output selection switch corresponds to load requirements.
- d. Switch Main circuit breaker to the OFF position.
- e. If fuel filter has been removed for any reason, or if bleed screw on top of filter was opened to drain the filter, be sure bleed screw is tight and use manual priming lever on fuel transfer pump to prime fuel system (see Figure 2-5) .

CAUTION

Do not attempt to prime fuel system by adding fuel to fuel filter assembly. Doing so can permanently damage fuel injection pump.

NOTE

Manual priming lever must be depressed several times before fuel system is primed. Priming is complete when fuel drains back into fuel tank through return line (observable by removing fuel filler cap).

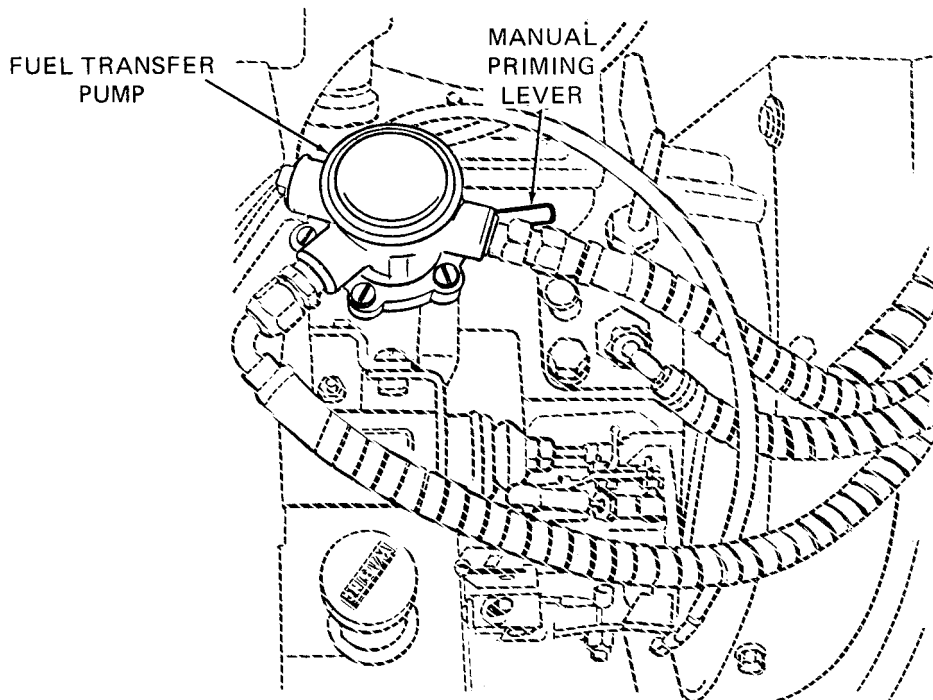


Figure 2-5. Manual Priming Lever and Fuel Transfer Pump Connection.

- g. If an auxiliary fuel source is to be used, connect fuel line to auxiliary fuel pump (see Figure 2-6).

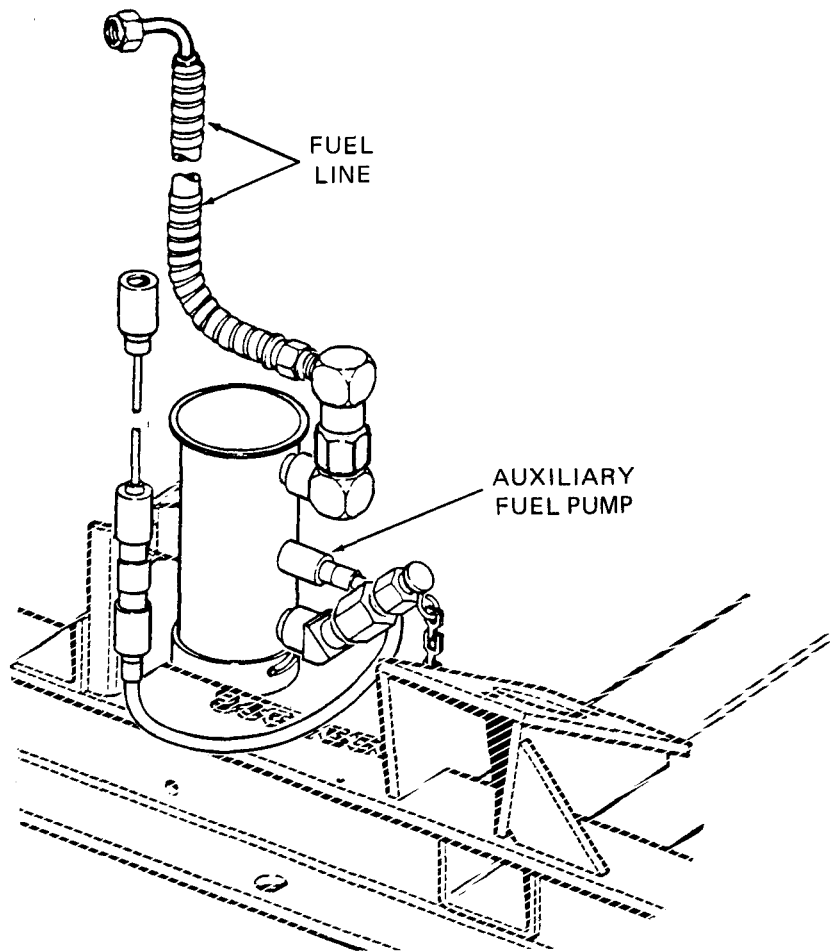


Figure 2-6. Auxiliary Fuel Pump.

- h. Vent on underside of fuel filler cap must be in the open position whenever the set is running (see Figure 2-7).

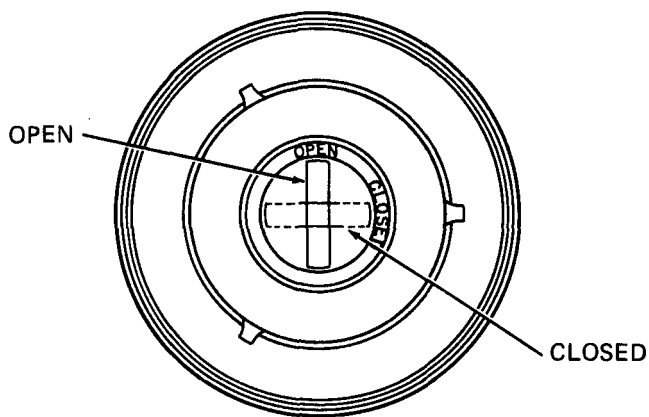


Figure 2-7. Fuel Filler Cap.

2-6.2. Starting and Operation (all models).

- a. Make sure that the DC control circuit breaker is in the ON position.
- b. Rotate master switch to PREHEAT position and hold for 30 seconds.
- c. Rotate master switch to START position and hold until voltmeter reads normal operation. Release master switch. It will automatically go to the RUN position.

NOTE

If engine does not start within 30 seconds, repeat start sequence above. If engine will not start after a total of five attempts, turn master switch to OFF position and allow the starter to cool for 60 seconds before attempting to start engine again. Repeat steps (b) and (c). If engine fails to start, refer to troubleshooting (Table 3-3).

- d. If running from an auxiliary fuel source, rotate the master switch to the RUN AUX FUEL position.
- e. Models MEP-016B and MEP-021B. Rotate the current selector to the desired position corresponding to the load requirements. Place the AC circuit breaker in the ON position. Use the engine manual speed control (located directly below the control panel) to adjust frequency. Turn the knob clockwise to increase, counterclockwise to decrease.

Model MEP-026B. Use the engine manual speed control (located directly below the control panel) to adjust the engine speed to 3600 rpm. Turn the knob clockwise to increase engine speed, counterclockwise to decrease.
- f. Models MEP-016B and MEP-021B. Place the AC circuit breaker in the ON position.

Models MEP-026B. Place the DC control circuit breaker in the ON position.
- g. Rotate the voltage selector to the desired position corresponding to the load requirements. Use the voltage adjust knob to obtain the desired output voltage: 120, 208 or 240 for Models MEP-016B and MEP-021B or 28 volts DC for Model MEP-026B.
- h. After unit has reached normal operating temperature recheck output voltage, output current and frequency, and engine RPM, and adjust as necessary.

2-7. STOPPING THE UNIT.

- a. Models MEP-016B and MEP-021B. Switch the main (AC) circuit breaker to the OFF position.

Model MEP-026B. Switch the main (DC) circuit breaker to the OFF position.

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- b. Rotate voltage adjust knob counterclockwise until it stops.
- c. Rotate engine manual speed control knob counterclockwise to the in position to bring engine to idle.
- d. Rotate the master switch to the OFF position.
- e. After operation of the generator set, perform the "after operation" inspection and service procedures as outlined in Table 3-2, Operator Preventive Maintenance Checks and Services.

2-8. EMERGENCY STOPPING. To stop the generator set in an emergency, pull out the DC control circuit breaker (see Figures 2-1, 2-2 and 2-3).

Section II. OPERATION UNDER UNUSUAL CONDITIONS.

2-9. OPERATION IN EXTREME COLD (BELOW -25 degrees Fahrenheit, -32 degrees Celsius).

To ensure satisfactory operation under conditions of extreme cold, do the following:

- a. Use OEA grade of lubricating oil in the engine crankcase for arctic conditions (see Table 3-1 and Table 3-1, item 7). Change oil only when the engine is warm.
- b. Use arctic grade diesel fuel (see Table 3-1).
- c. Keep batteries in a well charged condition (between 1.280 and 1.300 on hydrometer reading). If possible, remove battery from unit and store in a heated area when not in use.
- d. Keep fuel tank as full as possible to prevent accumulation of moisture or condensation.
- e. Remove any ice or snow which may have accumulated on the engine, generator, or wiring.

2-10. OPERATION IN EXTREME HEAT.

To ensure satisfactory operation under conditions of extreme heat, do the following:

- a. Be sure that nothing obstructs air flow to or from the unit.
- b. Keep cooling fins clean.

WARNING

Battery electrolyte is an acid solution that gives off flammable fumes. Do not smoke or use open flame when working around battery. Doing so can cause an explosion that could result in serious personal injury. If skin is exposed to electrolyte, flush exposed area with water immediately. If eyes are exposed to electrolyte, flush them with water and seek immediate medical attention.

- c. Inspect the battery electrolyte level daily. Add distilled water if necessary to keep the electrolyte level over the plates.
- d. Keep the generator free of dirt and grime. Be sure ventilating screens are free of obstructions.
- e. Inspect load meter frequently to make sure that generator is not overloaded.

2-11. OPERATION IN DUSTY OR SANDY AREAS.

To ensure that the generator set will operate satisfactorily in dusty or sandy areas, do the following:

- a. Shield generator from dust. Take advantage of natural barriers that offer protection from wind and dust.
- b. Clean the generator set as required.
- c. Service air cleaner as required. Check air restriction indicator daily. If red signal is visible, service the air cleaner. Be certain that all air cleaner and intake manifold connections do not leak. Be certain oil filler cap fits tightly.
- d. Change crankcase oil and oil filter every 60 hours or as needed. Clean area around oil filler cap and filter connection before inspecting or servicing engine.
- e. Store oil and fuel in dust free containers. Be certain that foreign matter does not enter fuel tank when refueling.
- f. Make sure that the generator set ground connections are free of dust and sand, and that connections are tight before starting unit.

2-12. OPERATION UNDER HIGH HUMIDITY.

To ensure that the generator set will operate satisfactorily in wet or humid areas, do the following:

- a. Keep the unit covered when not operating. Remove the cover during dry periods.
- b. Keep the main and auxiliary fuel tanks as full as possible to protect against moisture and condensation accumulation.
- c. Keep electrical components and wiring clean and dry. Humid conditions can cause corrosion and deterioration of electrical components.

2-13. OPERATION IN SALT WATER AREAS.

- a. Wipe the generator set with a clean cloth dampened with clean, fresh water at frequent intervals. Use care not to contaminate the fuel supply or damage the electrical system with water.
- b. Use care to prevent salt water from entering the engine when adding or changing oil.
- c. Paint all exposed nonpolished surfaces. Coat exposed parts of polished steel or other ferrous metal with standard issue rustproofing material if available, or cover exposed parts with a light coating of grease (Table 3-1, no. 17).

2-14. OPERATION AT HIGH ALTITUDE.

- a. Be sure that the air flow is not obstructed to and from the generator during operation.
- b. Keep the cooling fins clean.
- c. Keep generator free of dirt and grime. Be sure ventilating screens are clean and free of obstructions.
- d. The generator sets are rated at 3 kilowatts up to 8,000 feet altitude. To calculate specific generator set output above 8,000 feet, use the following formula:

$$\frac{7\% \times (\text{actual altitude} - 8000) \times 3\text{kw}}{1000} = \text{kw derating}$$

Example: $\frac{0.07 \times (13000 - 8000) \times 3\text{kw}}{1,000} = 1.05 \text{ kw derating}$

$3 \text{ kw} - 1.05 \text{ kw} = 1.95 \text{ kw derated power at 13,000 feet.}$

CHAPTER 3

OPERATOR/CREW MAINTENANCE INSTRUCTIONS

Section I. CONSUMABLE OPERATING AND MAINTENANCE SUPPLIES.

3-1. CONSUMABLE SUPPLIES. Table 3-1 contains all consumable supplies and the quantities necessary for operating and maintaining this generator set.

Table 3-1. Consumable Operating and Maintenance Supplies.

Item No.	component Application	National Stock Number	Description	Qty Required For Initial Operation	Qty Required 8 Hours Operation
1	Tank, fuel	9130-00-256-8613	JP-4, MIL-J-5624 Bulk *	1.0 Gal.	4.8 Gal.
			FUEL OIL, DIESEL as follows:		
2		9140-00-286-5294	Regular Grade, DF2	1.0 Gal.	4.0 Gal.
3		9140-00-286-5286	Winter Grade, DF1	1.0 Gal.	4.0 Gal.
4		9140-00-286-5283	Arctic Grade, DFA	1.0 Gal.	4.0 Gal.
* For Emergency use only					
	Crankcase		OIL, LUBRICATING # five gallon can as follows:		
5		9150-00-188-9858	Grade OE/HDO 30	3.0 Qt.	
6		9150-00-186-6668	Grade OE/HDO 10	3.0 Qt.	
7		9150-00-402-2372	Grade OEA/APG-PD-1	3.0 Qt.	
# Refer to Figure 3-1.					

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Table 3-1. Consumable Operating and Maintenance Supplies, Continued.

Item No.	Component Application	National Stock Number	Description	Qty Required For Initial Operation	Qty Required 8 Hours Operation
8	Battery	6810-00-249-9354	Electrolyte	0.7 Gal.	
9	Misc.	6850-00-264-9037	Dry cleaning solvent, P-D-680	As req'd	
10	Misc.	8030-01-025-1692	Sealing compound, MIL-S-46163-A Type II, Grade N, Removable	As req'd	
11	Misc.	8030-00-148-9833	Sealing compound, MIL-S-46163-A Type III, Grade R Removable	As req'd	
12	Misc.	8030-00-148-9833	Sealing compound, MIL-S-46163-A Type I, Grade K	As req'd	
13	Misc.	8030-00-133-3164	Sealing compound, MIL-S-22473-E Grade HVV	As req'd	
14	Misc.	8030-00-148-9833	Sealing compound, MIL-R-40082 Type I	As req'd	
15	Misc.	8030-00-058-5398	Loctite Superflex Ultra Blue Silicone sealant	As req'd	
16	Misc.	8030-00-059-2761	Anti-seize lubricant MIL-A-907	As req'd	
17	Misc.	xxxx-xx-xxx-xxxx	Grease	As req'd	
18	Misc.	5975-00-074-2072	Plastic tie wraps	As req'd	

Section II. LUBRICATION INSTRUCTIONS.

3-2. **GENERAL.** The generator utilizes sealed bearings; lubrication of the generator is not required. For general lubrication information on the engine; Army, Marine Corps and Navy users should refer to LI 05926B/06509B-12/5 reproduced in this section. Air Force users will use the lubrication section of applicable T.O. series workcards.

3-3. LUBRICATION ORDER.

Refer to Figure 3-1 for a reproduction of the Lubrication Order.

LUBRICATION INSTRUCTION					
MARINE CORPS LI 05926B/06509B-12/5					
ARMY LO 5-6115-615-12					
NAVY P-8-646-LO					
<i>GENERATOR SET, DIESEL ENGINE DRIVEN, TACTICAL SKID MOUNTED, 3 KW</i>					
<u>DOD</u>	<u>MODEL</u>	<u>CLASS</u>	<u>M O D E</u>		<u>N S N</u>
MEP-016B	UTILITY	50/60	HZ		6115-01-150-4140
MEP-021B	UTILITY	400	HZ		6115-01-151-8126
MEP-026B	UTILITY	28	VDC		6115-01-150-0367
<p>Intervals (on condition or hard time) and the related man-hour times are based on normal operation. The man-hour time specified is the time you need to do all the services prescribed for a particular interval.</p> <p>On-condition (OC) oil sample intervals shall be applied unless changed by the Army Oil Analysis Program (AOAP) laboratory. Change the hard time interval if your lubricants are contaminated or if you are operating the equipment under adverse operating conditions, including longer-than-usual operating hours. The hard time interval may be extended during periods of low activity. If extended, adequate preservation precautions must be taken. Hard time intervals will be applied in the event AOAP laboratory support is not available.</p>			<p>Clean areas to be lubricated. Clean parts with dry cleaning solvent (SD), type II or equivalent. Dry before lubricating. Dotted arrow points indicate lubrication on both sides of the equipment.</p> <p>Level of maintenance. The lowest level of maintenance authorized to lubricate a point is indicated by one of the following symbols as appropriate: Operator/Crew (C); and Organizational Maintenance(O).</p>		
TOTAL MAN-HOURS			TOTAL MAN-HOURS		
INTERVAL	MAN-HOURS		INTERVAL	MAN-HOURS	
D	0.2		125	0.5	
Q	0.1				

Figure 3-1. Lubrication Instruction/Lubrication Order (Sheet 1 of 3).

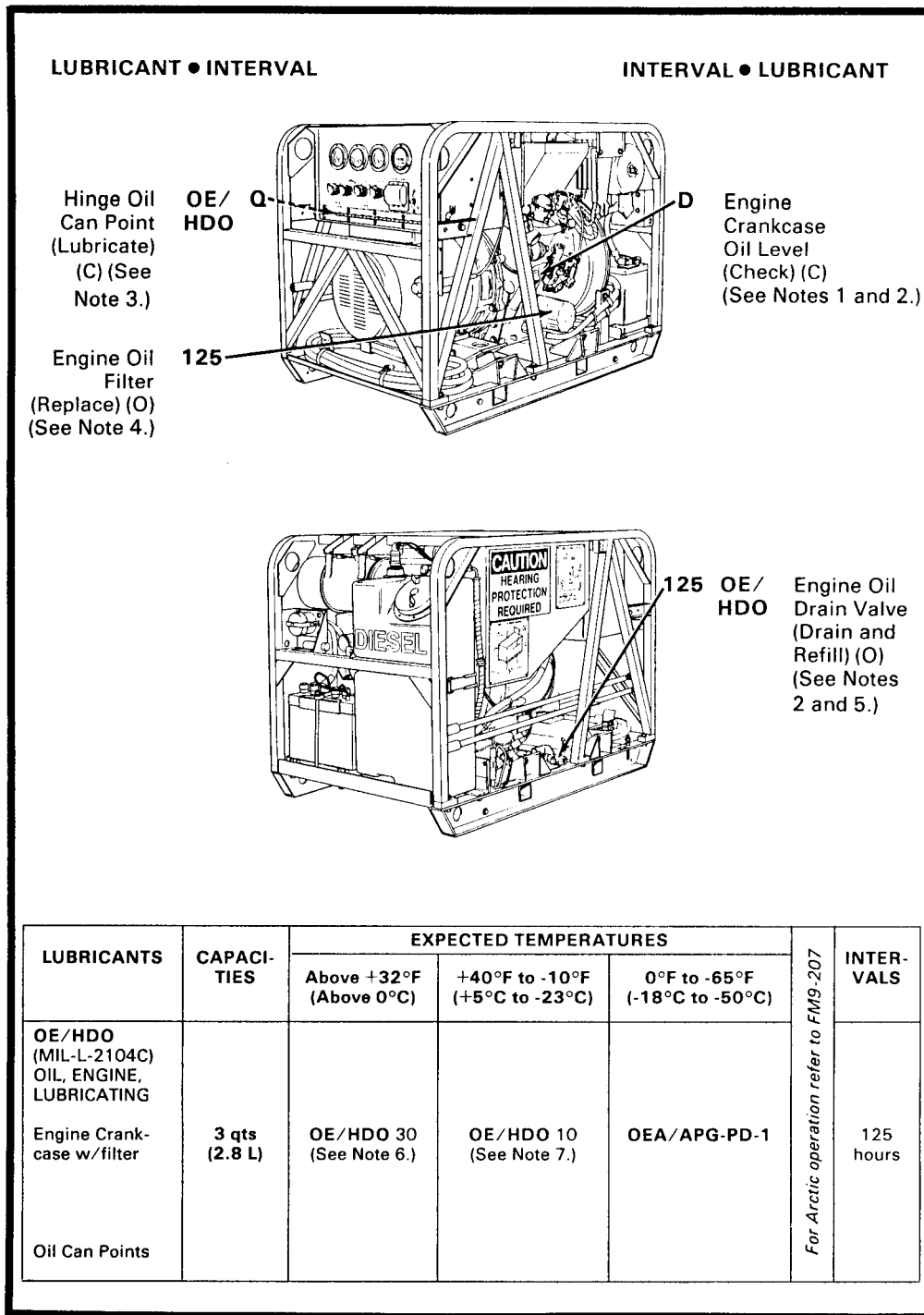


Figure 3-1. Lubrication Instruction/Lubrication Order (Sheet 2 of 3).

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NOTES:

WARNING

Do not remove oil filler cap when engine is running. Hot oil can splash up and cause burns.

1. ENGINE CRANKCASE OIL LEVEL. Start engine and allow to run until normal operating temperature is achieved (about 5 minutes). Check for leaks. Stop the unit and allow to sit for one minute. Remove the access panel on the left side of the unit. Remove filler cover/dipstick and wipe with a clean, dry cloth. Insert dipstick and immediately remove. Oil level should be between marks on dipstick. Add or drain oil as needed and recheck oil level.

2. ENGINE CRANKCASE OIL. If a sample of engine crankcase oil is to be sent to an AOAP laboratory for analysis, refer to TB43-0210 for complete sampling requirements.

3. OIL CAN POINTS. Clean and lightly coat hinge, fasteners, control cable and all exposed adjusting threads. DO NOT lubricate governor linkages.

4. ENGINE OIL FILTER. Drain engine oil (Note 5). Remove filter by turning counter-clockwise and clean base with a clean, dry cloth. Apply a thick film of clean engine oil to new filter gasket. Install new filter until gasket contacts base, then turn an additional 3/4 turn clockwise. Add engine oil and check level (Note 1).

5. ENGINE OIL DRAIN VALVE. Start engine and allow to run until normal operating temperature is achieved (about 5 minutes).

Stop the unit and open drain valve. Allow all oil to drain into suitable container. Change oil filter (Note 4). Refill crankcase and check oil level (Note 1).

6. Grade 15W/40 (OE/HDO 15/40) may be used when expected temperatures are above +5°F (-15°C).

7. If OEA lubricant is required to meet the low "expected temperature" range, OEA lubricant is to be used in place of OE/HDO-10 lubricant for all expected temperature ranges where OE/HDO-10 is specified in the key.

Copy of this Lubrication Order will remain with the equipment at all times; instructions contained herein are mandatory.

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Figure 3-1. Lubrication Instruction/Lubrication Order (Sheet 3 of 3).

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Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS).

3-4. GENERAL. To ensure that the generator set is ready for operation at all times, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance checks and services to be performed by the operator personnel are listed and described in paragraph 3-8.

3-5. CORRECTING AND REPORTING DEFICIENCIES. Defects discovered during operation will be noted for future correction. Stop operation immediately if a deficiency is noted which could damage the equipment or present a safety hazard. All deficiencies will be recorded together with the corrective actions taken on the applicable form.

(MC) Marine Corps users should refer to current issue of TM 4700-15/1.

(A) Army users should refer to current issue of DA PAM 738-750.

(AF) Air Force users should refer to current issue of AFM 66-1 and the applicable 00-20 Series Technical Orders.

(N) Navy users should refer to their service peculiar directives to determine applicable maintenance forms and records to be used.

3-6. DETERMINING PMCS INTERVALS. Certain Operator PMCS on this unit should be performed on a "per hours of operation" basis. The hourmeter on the control panel should be used to determine the generator set operating time.

3-7. PMCS FOR UNITS IN CONTINUOUS OPERATION. For PMCS performed on an operating time basis, the PMCS should be performed as close as possible to the time intervals indicated. For units in continuous operation, perform PMCS before starting operation if continuous operation will extend beyond the service interval indicated.

3-8. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES. Table 3-2 contains a tabulated listing of PMCS to be performed by the Operator personnel. The item numbers are listed consecutively and indicate the sequence of minimum requirements.

Table 3-2. Operator Preventive Maintenance Checks and Services.

Interval B - Before Operation		A - After Operation		Total M/H 1.3
B	D	D	Daily - 8 Hours	
Operator Daily		Items To Be Inspected		Equipment Is Not
B	D	A	Inspection Procedures	Ready Or Available If:
GENERAL				
1	9	15	Make a visual inspection of the entire generator set for cleanliness, any obvious deficiencies such as loose or missing hardware, and for any bent, cracked or broken parts. Inspect all wires and terminals for damage and loose connections.	Damaged components, loose or missing hardware, or leaking fluids are found.
2	10	16	Check fuel supply. Make sure that quantity of fuel in tank or in auxiliary fuel supply is enough for operation.	Fuel tank is empty.
3	11		Open drain valves on fuel tank and filter. Remove any water or sediment. Make sure vent on underside of fuel filler cap is open whenever set is running.	Water is present in fuel, or filler cap vent is closed.
<u>WARNING</u>				
<p>Battery electrolyte is an acid solution that gives off flammable fumes. Do not smoke or use open flame when working around battery. Doing so can cause an explosion that could result in serious personal injury. If skin is exposed to electrolyte, flush exposed area with water immediately. If eyes are exposed to electrolyte flush them with water and seek immediate medical attention.</p>				
4			Inspect battery electrolyte level.	Electrolyte level is below plates.
ENGINE				
5	17		Inspect oil in crankcase for proper level. Add oil as necessary.	Oil level in crankcase is low.

Table 3-2. Operator Preventive Maintenance Checks and Services, Continued.

Interval B - Before Operation A - After Operation D - During Operation Daily - 8 Hours		Total M/B 1.3
Operator Daily B D A	Items To Be Inspected Inspection Procedures	Equipment Is Not Ready Or Available If:
6	Inspect air filter element. Clean if necessary. Refer to paragraph 3-29.	Air filter is damaged or clogged.
7 12 18	Inspect air flow indicator. If indicator shows red, clean or replace air cleaner element. Reset indicator. Clean dust valve. Refer to paragraph 3-29.	Air flow indicator shows red.
13	Inspect for unusual noises or operation, too much vibration, lack of power, excessive smoke or engine failing to respond to the controls. Shut down generator set under such conditions. Refer to troubleshooting, Table 3-3.	Any of the listed conditions exist.
GENERATOR		
14	Inspect controls and instruments for proper operation. Refer to Tables 2-1, 2-2, and 2-3 for descriptions and ranges. Replace any damaged components. Refer to paragraph 3-35.	Controls and/or instruments do not operate properly.
GROUND		
8	Inspect the ground connections to make certain that all are clean and tight.	Ground stud connections are loose or damaged.

Section IV. TROUBLESHOOTING.

3-9. GENERAL. This section contains troubleshooting information for locating and correcting operating troubles which may develop in the generator set. Each malfunction for an individual component, unit or system is followed by a list of tests or inspections which will help you determine the probable causes and corrective actions to take. You should perform the tests/inspections and corrective actions in the order listed.

3-10. MALFUNCTIONS NOT CORRECTED BY THE USE OF THE TROUBLESHOOTING TABLE. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed, or cannot be corrected by listed corrective actions, notify your supervisor.

NOTE

Before you use the troubleshooting table, be sure you have performed all the applicable Operator Preventive Maintenance Checks and Services (refer to Table 3-2).

Table 3-3. Troubleshooting.

Malfunction	Test Or Inspection	Corrective Action
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1. ENGINE FAILS TO CRANK WHEN MASTER SWITCH IS HELD IN THE START POSITION.

Step 1. Inspect to see that the DC control circuit breaker on the control panel is depressed.

Depress button to set DC control circuit breaker. If breaker will not stay depressed, notify higher echelon of maintenance.

Step 2. Inspect for empty fuel tank.

If fuel tank is empty or low, refill tank or switch to auxiliary fuel source.

Table 3-3. Troubleshooting, Continued.

Malfunction

Test or Inspection

Corrective Action

1. ENGINE FAILS TO CRANK WHEN MASTER SWITCH IS HELD IN THE START POSITION (CONT ' D).

Step 3. Inspect for loose, corroded or broken battery cables or starter ground cable.

If loose, corroded or broken battery cables and/or starter ground cable are found, notify higher echelon of maintenance.

WARNING

Battery electrolyte is a acid solution that gives off flammable fumes. Do not smoke or use open flame when working around battery. Doing so can cause an explosion that could result in serious personal injury. If skin is exposed to electrolyte, flush exposed area with water. If eyes are exposed to electrolyte, flush them with water and seek immediate medical attention.

Step 4. Inspect to see that electrolyte (liquid) level in each battery cell is above the top of the plates.

If electrolyte level is below top of plates, add distilled water.

2. ENGINE CRANKS NORMALLY BUT FAILS TO START.

Step 1. Inspect for empty fuel tank.

If fuel tank is empty or low, refill tank or switch to auxiliary fuel source.

Table 3-3. Troubleshooting, Continued.

Malfunction

Test Or Inspection

Corrective Action

2. ENGINE CRANKS NORMALLY BUT FAILS TO START (CON'T).

Step 2. Inspect for sediment or water in fuel filter.

Open drain on bottom of fuel filter and drain sediment and water. If necessary, drain fuel system and use fresh, clean fuel supply.

Step 3. Inspect for loose fuel fittings or bad fuel lines.

If fuel lines are loose, cracked or show signs of leaking, notify higher echelon of maintenance.

Step 4. Inspect governor linkage for obstructions or binding (see Figure 3-2) .

Remove any obstructions or notify higher echelon of maintenance.

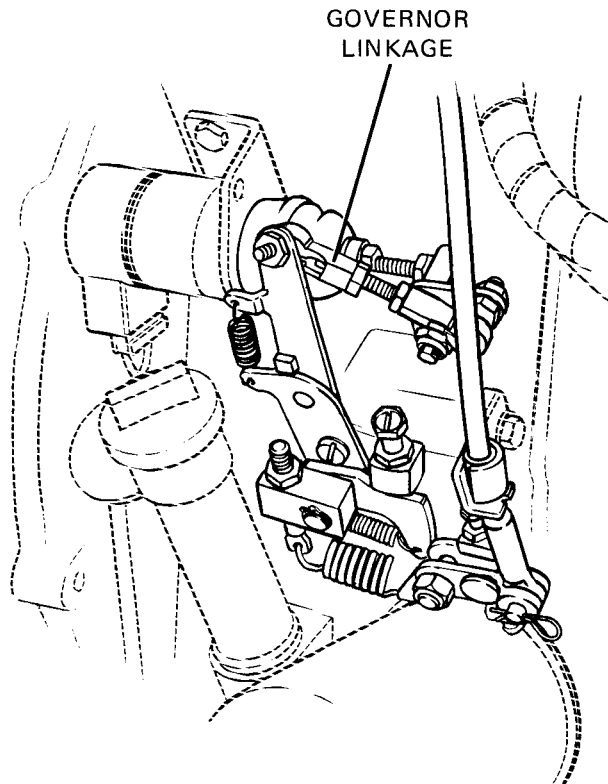


Figure 3-2 Governor Linkage.

Table 3-3. Troubleshooting, Continued.

Malfunction

Test Or Inspection

Corrective Action

Step 5. Inspect Stop/Run solenoid to be sure it is fully engaged.
Inspect for loose or broken wiring or connections.

If Stop/Run solenoid is not fully engaged, or wiring is damaged, notify higher echelon of maintenance.

Step 6. Inspect to see if glow plug lead connection is clean and tight.

Clean and tighten connection as needed, or notify higher echelon of maintenance to repair or replace wiring.

3. ENGINE STARTS BUT DOES NOT RUN SMOOTHLY (MISFIRES, KNOCKS OR MAKES UNUSUAL NOISES).

Step 1. Refer to Steps 2 and 3 under ENGINE CRANKS NORMALLY BUT FAILS TO START above.

Perform corrective action as necessary.

Step 2. Inspect exhaust muffler assembly for obstructions.

Remove obstructions if possible or notify higher echelon of maintenance.

4. ENGINE STARTS AND RUNS NORMALLY BUT SUDDENLY STOPS.

Step 1. Inspect for empty fuel tank.

If fuel tank is empty, refill tank or switch to auxiliary fuel source.

Step 2. Inspect to see that vent on underside of fuel filler cap is open.

Clear vent hole.

5. ENGINE RUNS BUT EMITS BLACK SMOKE IN EXHAUST.

Step 1. Inspect for restricted air intake. Red signal on air flow indicator should not be visible under normal conditions.

Remove any restrictions from intake port. Inspect air cleaner element and notify higher echelon of maintenance if replacement is necessary. Reset air flow indicator by pushing reset button.

Table 3-3. Troubleshooting, Continued.

Malfunction

Test Or Inspection

Corrective Action

Step 2. Inspect load on generator by checking percent rated current meter on control panel.

If meter indicates more than 100 percent load, notify immediate supervisor.

6. ENGINE RUNS WITH EXCESSIVE OIL CONSUMPTION.

Step 1. Inspect for oil leaks, especially at front and rear oil seals, at oil pan gasket and at dipstick cap.

If oil is leaking, notify higher echelon of maintenance.

Step 2. Inspect for white smoke or oil coming from exhaust pipe.

If exhaust pipe emits white smoke or oil, notify higher echelon of maintenance.

7. GENERATOR SUPPLIES NO VOLTAGE TO LOAD.

Step 1. Inspect to be sure that the main circuit breaker on the control panel is in the ON position (Models MEP-016B and MEP-021B only).

WARNING

Do not hold main circuit breaker in ON position. Shock or death from electrocution can result.

CAUTION

Do not hold AC circuit breaker in ON position. Damage to equipment can result.

Place main circuit breaker in the ON position. If breaker will not stay in the ON position, notify higher echelon of maintenance.

Table 3-3. Troubleshooting, Continued.

Malfunction

Test Or Inspection

Corrective Action

WARNING

Disconnect load before switching load terminal connections. Shock or death from electrocution can result.

Step 2. Inspect load terminal board.

Make certain that load leads are attached to the correct load terminals. Make certain that connections are clean and tight.

8. GENERATOR SUPPLIES IMPROPER (UNDER OR OVER) VOLTAGE/FREQUENCY TO LOAD.

Step 1. Inspect voltage selector switch located inside control box. (Models MEP-016B and MEP-021B only).

Make certain switch is in the proper position.

WARNING

Shut down generator set before switching load terminal connections. Shock or death from electrocution can result.

Step 2. Inspect for restricted air intake. Red signal on air flow indicator should not be visible under normal conditions.

Remove any restrictions from intake port. Check air cleaner element and notify higher echelon of maintenance if replacement is necessary. Reset air flow indicator by pushing reset button.

Step 3. Inspect load terminal board.

Make certain that load leads are attached to the correct load terminals. Make certain that connections are clean and tight.

Table 3-3. Troubleshooting, Continued.

Malfunction

Test or Inspection

Corrective Action

Step 4. Inspect engine speed.

- Adjust engine speed by turning manual speed control assembly until frequency meter on control panel indicates 60 Hz or 400 Hz for AC units, or until rpm indicator indicates 3600 rpm for 28 volt DC units.
 - If engine speed cannot be brought up so that generator operates at rated frequency, inspect external governor linkage for binding and check steps under ENGINE STARTS BUT DOES NOT RUN SMOOTHLY.
 - If engine speed cannot be brought down so that generator operates at rated frequency, inspect external governor linkage for binding or notify higher echelon of maintenance.
-

Section V. OPERATOR MAINTENANCE PROCEDURES.

WARNING

Unless manual directs otherwise, do not attempt any of the following maintenance procedures when generator set is operating. Do not touch exposed electrical connection when a source of power such as utility power or another generator set is connected to the load terminals. Severe electrical shock or death by electrocution can result.

3-11. GENERAL. This section contains information on the maintenance of the equipment that is the responsibility of the operator.

3-12. FRAME. (See Figure 3-3)

- a. Inspect frame (7) for damage such as cracks, dents, rust or misalignment. Notify higher echelon of maintenance for repair or replacement of frame.
- b. Inspect for loose or missing hardware (items 1, 2, 3, 5, 6, 9, 10, 12, 13, 14, 15, 16, 17, and 18). Notify higher echelon of maintenance to tighten or replace hardware as necessary.

3-13. LIFTING EYE. (See Figure 3-3)

Inspect lifting eye (8) for cracks, damage and secure mounting. Notify higher echelon of maintenance to tighten or replace mounting bolts (9), or for replacement of spacer (11) or lifting eye (8).

3-14. SKID BASE AND GROUND STUD. (See Figure 3-3)

- a. Inspect skid base (4) for damage such as cracks, dents, rust or misalignment. Notify higher echelon of maintenance for repair or replacement.
- b. Inspect for loose or missing hardware (items 19, 20, 21, 22, 23, 25, 26, 29, 30, 31, 32, 33, 34, 35 and 36). Notify higher echelon of maintenance to tighten or replace hardware as necessary.
- c. Inspect rubber engine mounts (20) for damage, deterioration and secure mounting. Notify higher echelon of maintenance for replacement.

1. NUT
2. WASHER
3. WASHER
4. SKID BASE
5. WASHER
6. BOLT
7. FRAME
8. LIFTING EYE
9. BOLT
10. WASHER
11. SPACER
12. BOLT
13. WASHER
14. NUT
15. CLAMP
16. WASHER
17. WASHER
18. BOLT
19. BOLT
20. FOOT
21. WASHER
22. WASHER
23. NUT
24. STUD, GROUND
25. WASHER
26. NUT
27. BRACKET, REAR
28. BRACKET, FRONT
29. SCREW
30. WASHER
31. SCREW
32. WASHER
33. SCREW
34. LOCKNUT
35. SCREW
36. LOCKNUT
37. BRACKET
38. CLAMP
39. CLAMP

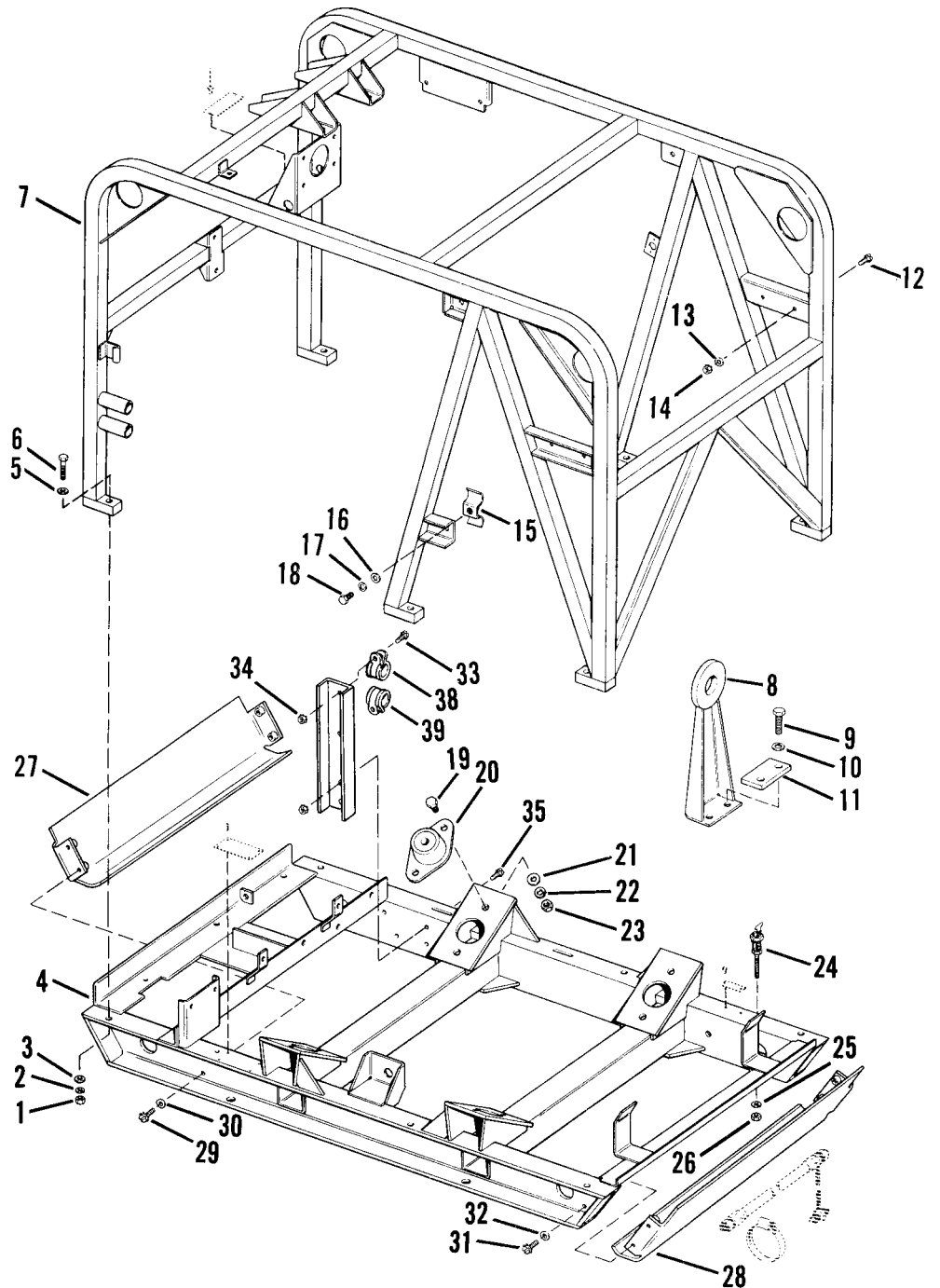


Figure 3-3. Frame and Skid Base.

- d. Inspect ground stud (24) for damaged threads, corrosion or other damage. Check that ground stud is securely attached to the skid base. Check that connections to ground stud are clean and tight.
- e. Inspect brackets (27, 28 and 37) for damage such as cracks, dents or misalignment. Notify higher echelon of maintenance for repair or replacement of brackets.
- f. Inspect clamps (38 and 39) for wear or damage. Notify higher echelon of maintenance for replacement of clamps.

3-15. BATTERY FRAME, TRAY AND BATTERY HOLDDOWN. (See Figure 3-4)

WARNING

Battery electrolyte is an acid solution that gives off flammable fumes. Do not smoke or use open flame when working around battery. Doing so can cause an explosion that could result in serious personal injury. If skin is exposed to electrolyte, flush exposed area with water immediately. If eyes are exposed to electrolyte, flush them with water and seek immediate medical attention.

- a. Inspect battery top frame (9), bottom frame (6) and battery tray (5) for dents, cracks, corrosion or other damage. Clean all traces of battery electrolyte from components with fresh water or baking soda solution. Notify higher echelon of maintenance for replacement of components.
- b. Inspect battery holddown bolts (23) for secure mounting, damage, corrosion or stripped threads. Tighten or replace damaged holddown bolts as necessary.

3-16. BATTERY. (See Figure 3-4)

- a. Inspect. Inspect battery (8) for leaks or cracks. Make sure terminals are not damaged or loose. Make sure all vent covers are securely in place. Notify higher echelon of maintenance to replace battery.

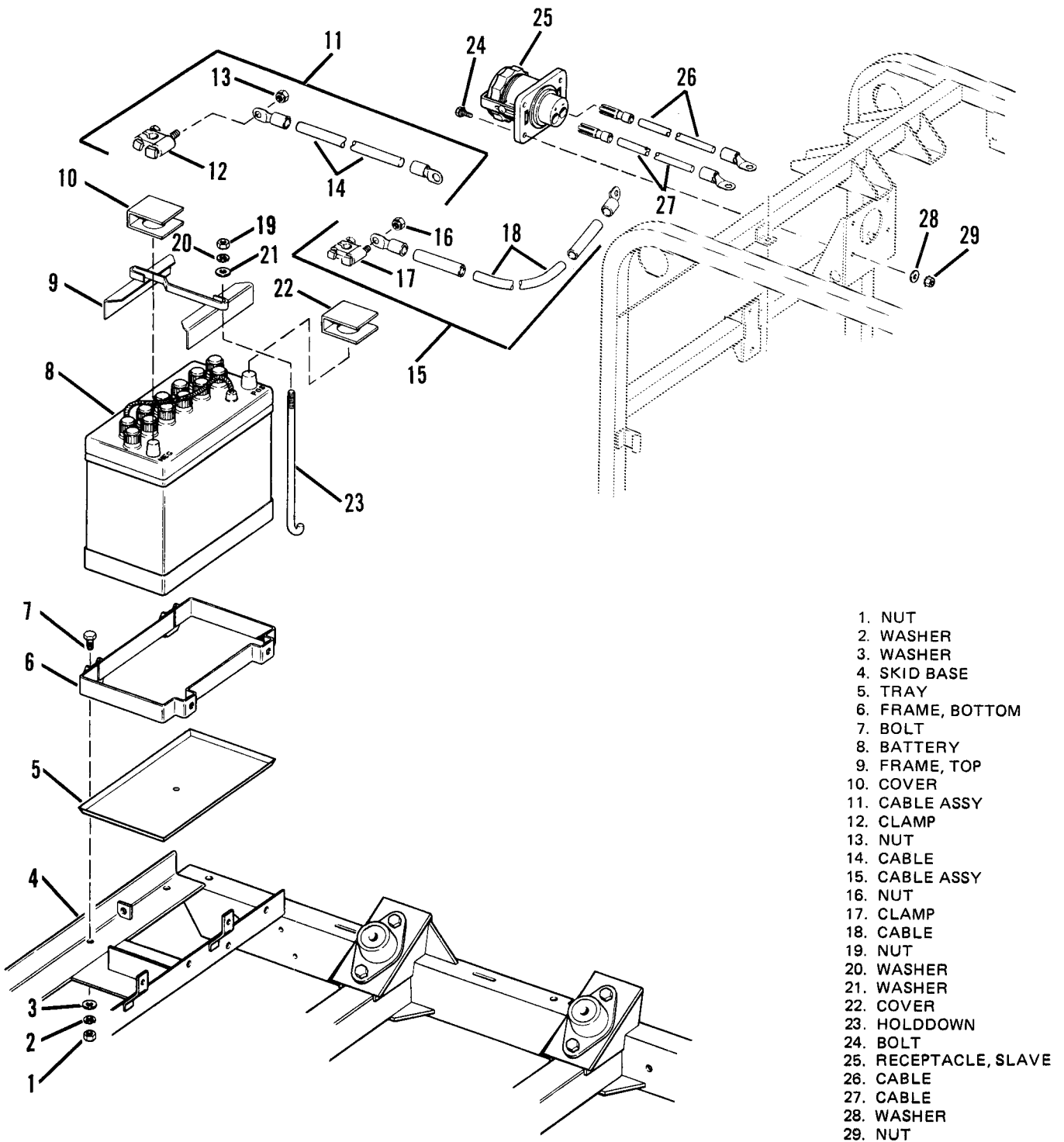


Figure 3-4. Battery, Battery Cables, Battery Tray, Frame and Holddown.

b. Service.

WARNING

Battery electrolyte is an acid solution that gives off flammable fumes. Do not smoke or use open flame when working around battery. Doing so can cause an explosion that could result in serious personal injury. If skin is exposed to electrolyte, flush exposed area with water immediately. If eyes are exposed to electrolyte, flush them with water and seek immediate medical attention.

Remove filler caps and check electrolyte (fluid) level in the battery. Electrolyte should cover the plates. If electrolyte level is low, add clean, distilled water as necessary. Tighten filler caps securely. Rinse top of battery with fresh water or baking soda solution.

3-17. BATTERY CABLES AND SLAVE RECEPTACLE. (See Figure 3-4)

a. Inspect.

- (1) Inspect battery cable assemblies (11 and 15) and slave receptacle cables (26 and 27) for damage, deterioration and secure connections. Notify higher echelon of maintenance to replace battery cables.
- (2) Inspect slave receptacle (25) for loose or missing hardware, or for damage. Notify higher echelon of maintenance to replace hardware or to replace a damaged slave receptacle.

- b. Service. Disconnect battery cable assemblies (11 and 15) from battery (disconnect negative cable first). Use a wire brush to clean battery cable terminals (12 and 17) and battery posts. Connect positive cable to battery first when reconnecting.

3-18. VOLTAGE REGULATOR, BATTERY CHANGING. (See Figure 3-5)

Inspect the voltage regulator for damage, secure mounting or damaged or frayed wires. Notify higher echelon of maintenance for replacement.

3-19. STARTER RELAY. (See Figures 3-6 or 3-7)

Inspect the starter relay for damage, secure mounting, or damaged or frayed wires. Notify higher echelon of maintenance for replacement.

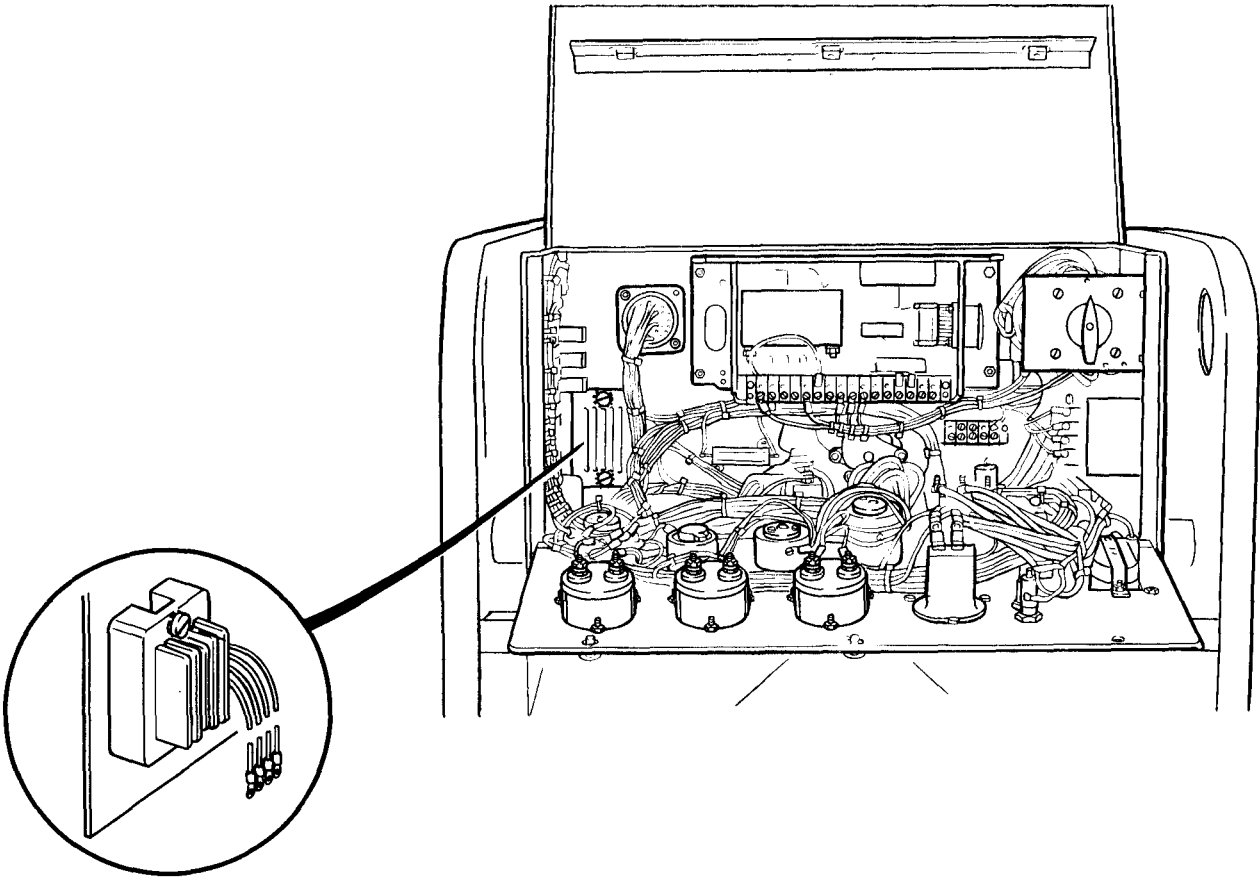


Figure 3-5. Voltage Regulator, Battery Charging.

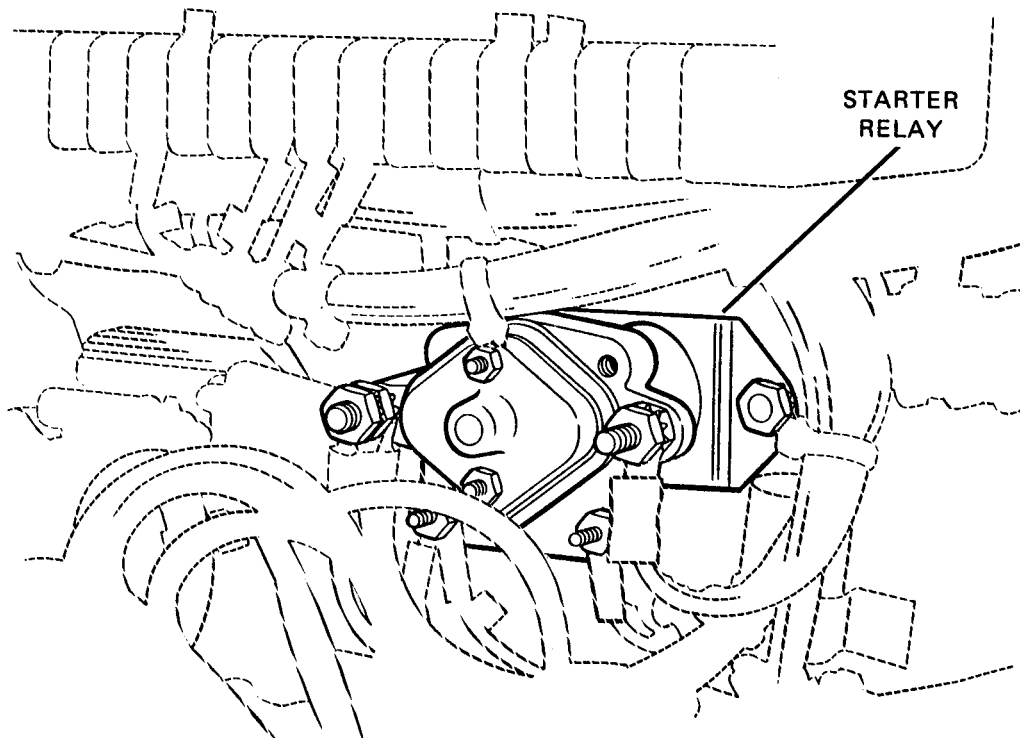


Figure 3-6. Control Box, Back Panel.
Models HEP-016B and MEP-021B.

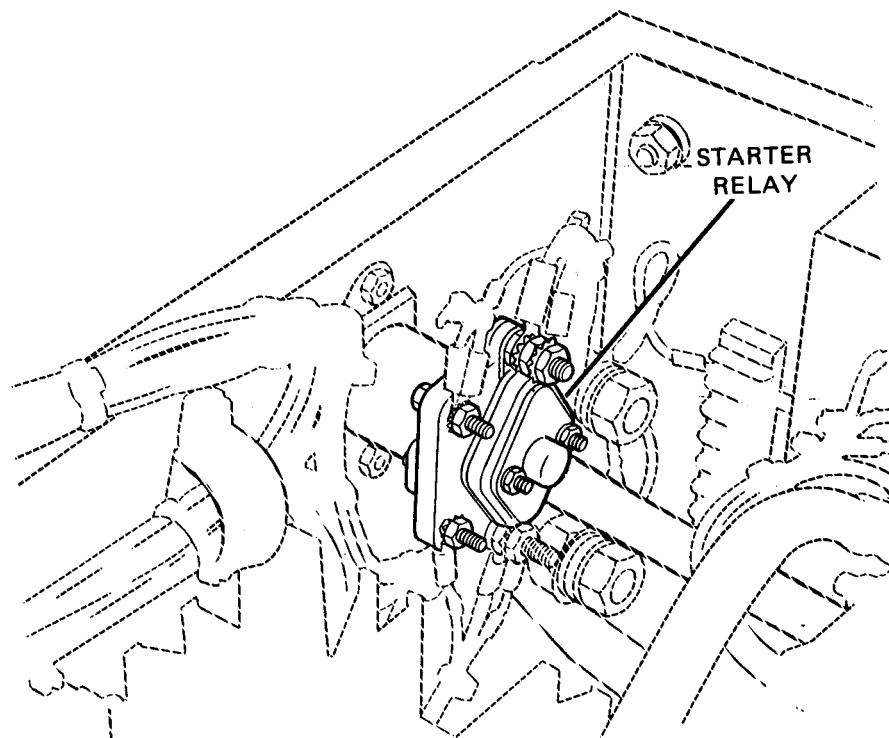


Figure 3-7. Control Box, Back Panel,
Model MEP-026B

3-20. CIRCUIT BREAKER, DC CONTROL. (See Figure 3-8)

Inspect the DC control circuit breaker for secure mounting or damage. Check to see that all wiring is securely connected to the circuit breaker. Notify higher echelon of maintenance to replace hardware, repair or replace wiring, or to replace a damaged circuit breaker.

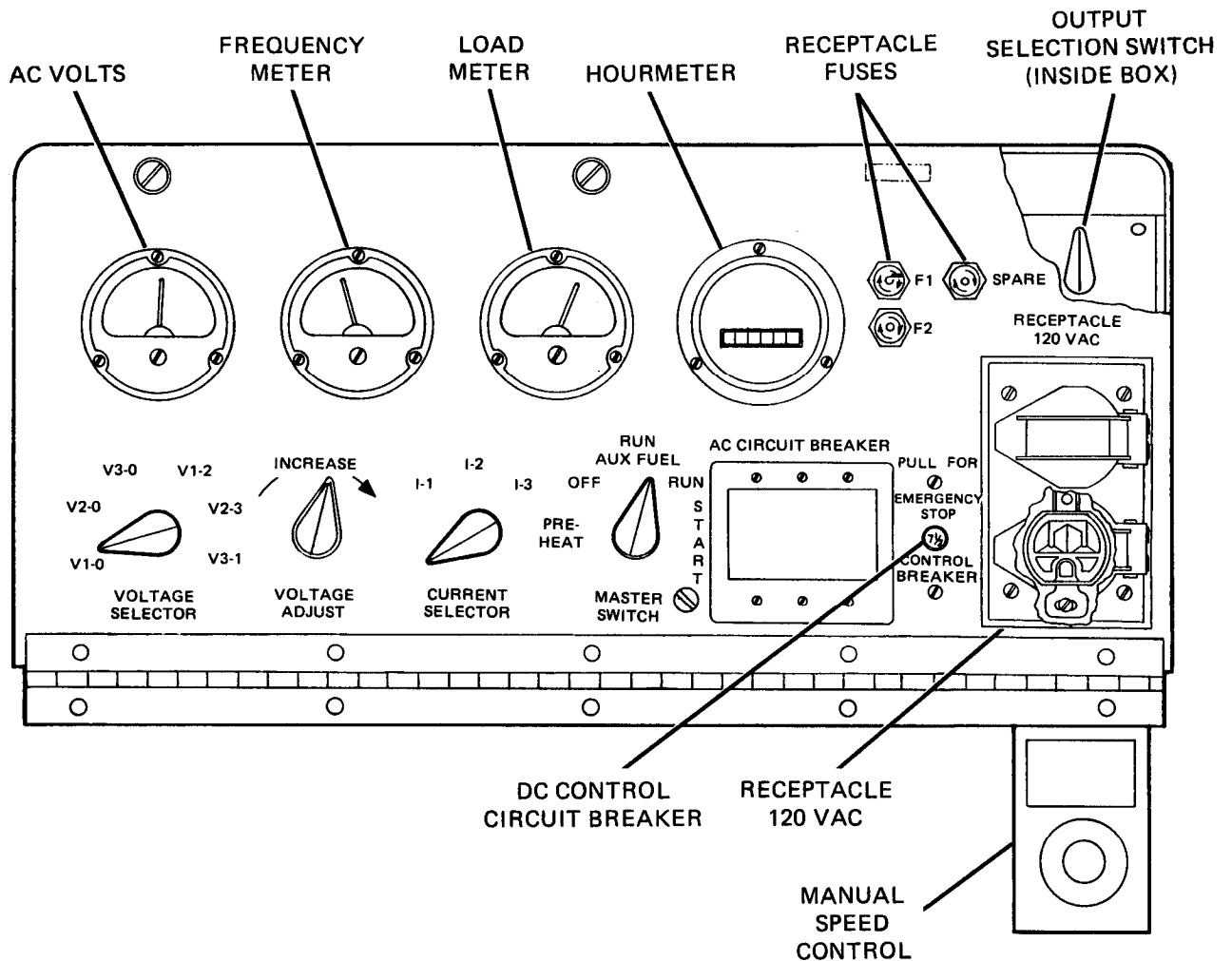
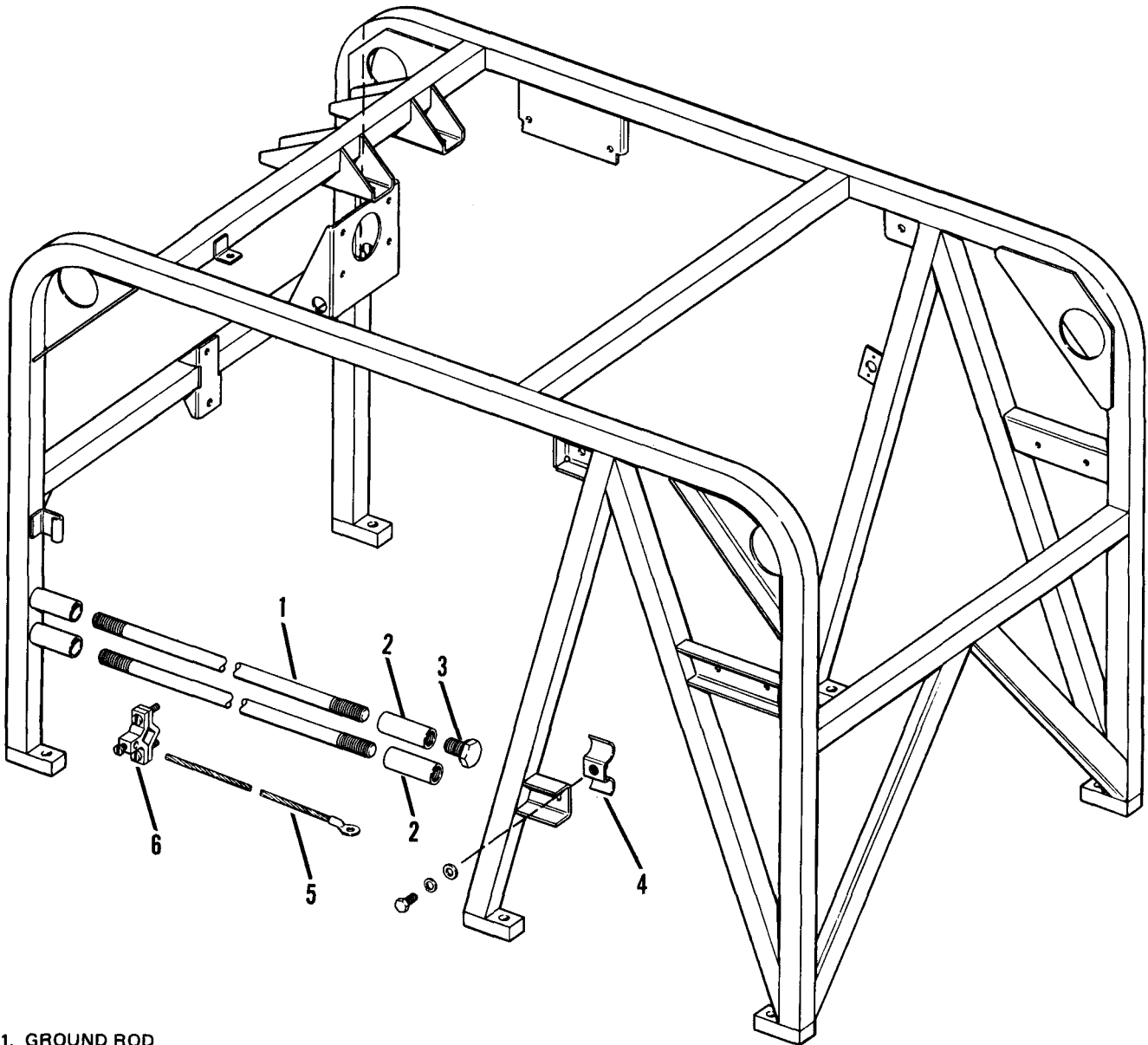


Figure 3-8. DC Control Circuit Breaker (Model MEP-016B Shown).

3-21. GROUNDING ASSEMBLY. (See Figure 3-9)

- a. Inspect ground rods (1), couplings (2), and driving bolt (3) for damage or stripped threads. If components or threads are damaged, they must be replaced.



- 1. GROUND ROD
- 2. COUPLING
- 3. BOLT
- 4. CLAMP
- 5. CABLE
- 6. TERMINAL

Figure 3-9. Grounding Assembly.

- b. Inspect ground stud clamp (4) for damage or missing mounting hardware. Replace parts as necessary.

NOTE

The ground cable and terminal are stored with the auxiliary fuel hose on the skid base beneath the generator. The driving bolt and coupling are stored at the slave receptacle.

- c. Inspect ground cable (8) for damage or frayed condition. Replace a damaged cable.
- d. Inspect ground cable terminal (9) for damage, or for missing hardware. Replace a damaged terminal.
- e. Service ground rods and cables by cleaning dirty or corroded connections.

3-22. LOAD TERMINAL BOARD. (See Figure 3-10)

- a. Inspect load terminal insulator plate (6) for damage and secure mounting. Inspect for loose or missing hardware. Notify higher echelon of maintenance to replace hardware, or to replace a damaged load terminal board.
- b. Inspect load terminals (7) for damage and secure mounting. Open control box and inspect to see that all internal wiring is securely connected to the load terminals. Notify higher echelon of maintenance to replace hardware, repair wiring, or to replace load terminals.
- c. Inspect cover (15), bracket (10) and hinge (11) for damage and secure mounting. Notify higher echelon of maintenance to replace hardware, or to replace a damaged cover or hinge.

3-23. FUEL TRANSFER PUMP. (See Figure 3-11)

- a. Inspect fuel transfer pump for physical damage and secure mounting.
- b. Inspect for leaks around fittings and around base.
- c. Inspect to see that manual priming lever operates freely.
- d. Notify higher echelon of maintenance to tighten hardware or replace components.

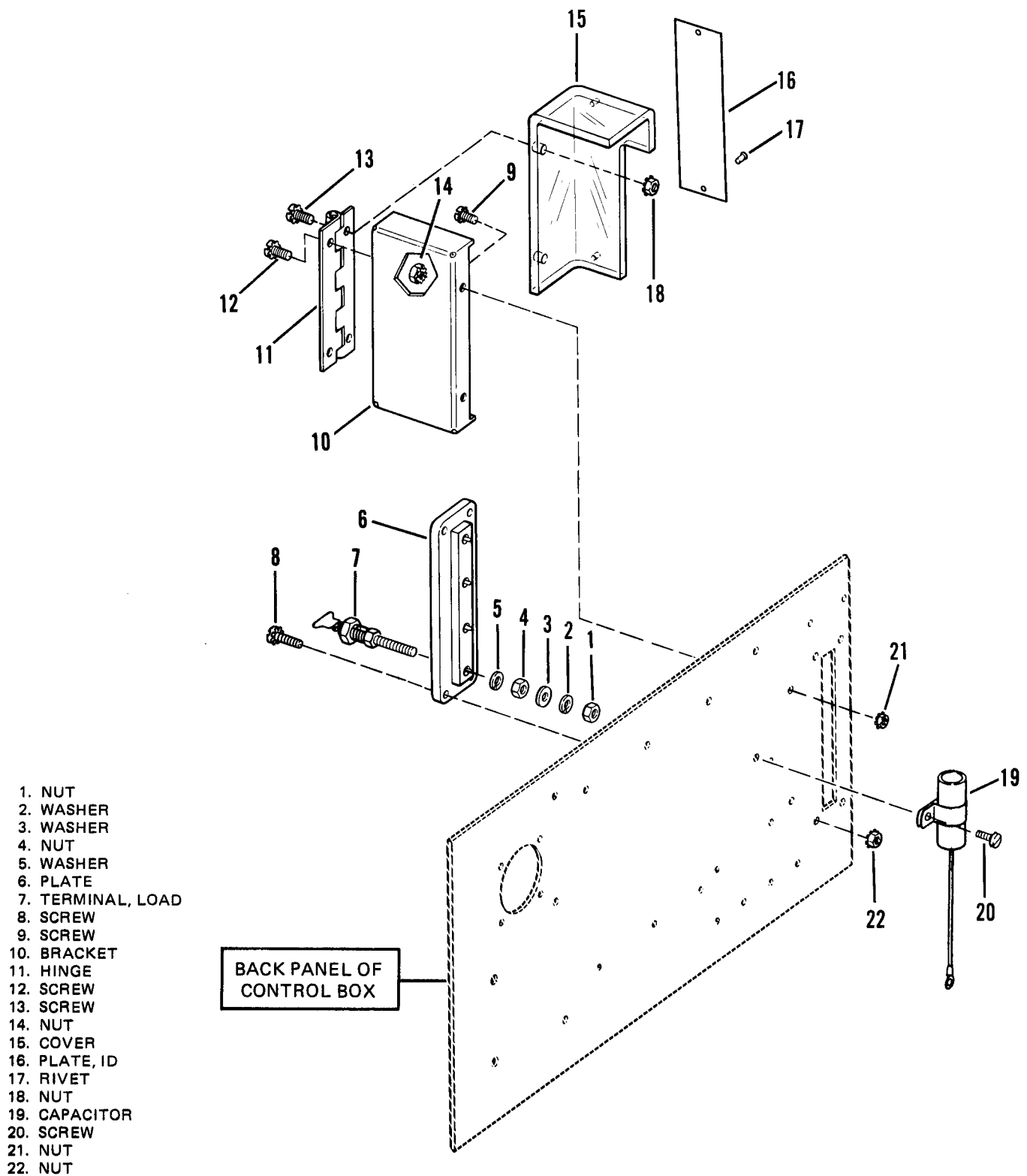


Figure 3-10. Load Terminal Board (Model MEP-016B Shown).

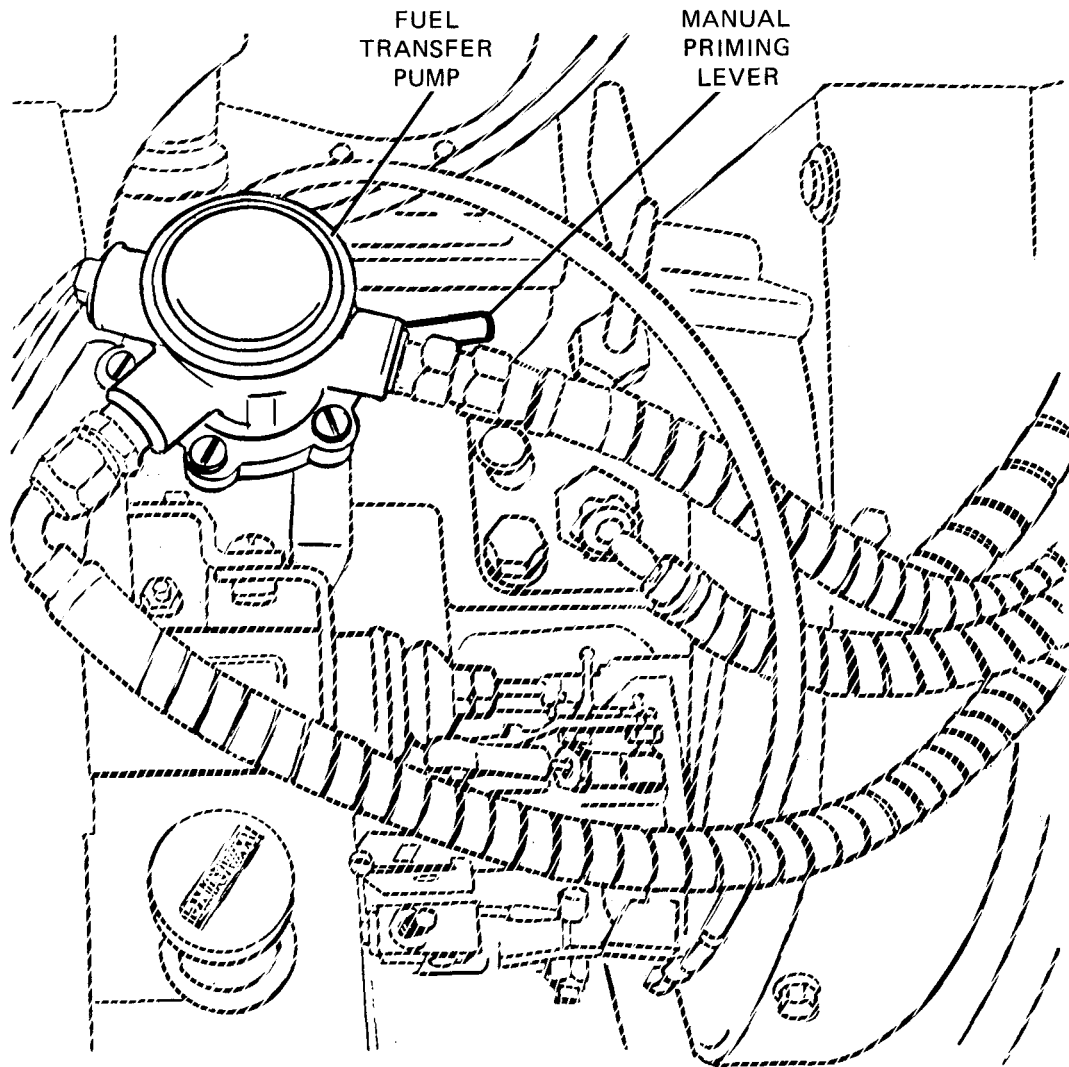


Figure 3-11. Fuel Transfer Pump.

3-24. AUXILIARY FUEL PUMP. (See Figure 3-12)

- a. Inspect auxiliary fuel pump (2) for dents or other physical damage. Check to see that fuel pump is securely attached to the mounting bracket and that the bracket is securely attached to the skid base.
- b. Inspect for leaks around fuel line elbows (4, 5 and 7), and around fitting (6).

- c. Inspect electrical leads to the fuel pump to see that wires are not broken, frayed or damaged. Check to see that connectors are securely connected.
- d. Inspect to see that cap (9) on auxiliary fuel inlet is secured to fitting (8) when unit is not being run from an auxiliary fuel supply. Be sure chain for cap (9) is secured to skid base with screw (10) and nut (11).
- e. Notify higher echelon of maintenance to tighten fittings and hardware, repair or replace electrical connections, or replace components.

- 1. SCREW
- 2. PUMP
- 3. HOSE
- 4. ELBOW
- 5. ELBOW
- 6. FITTING
- 7. ELBOW
- 8. FITTING
- 9. CAP
- 10. SCREW
- 11. NUT

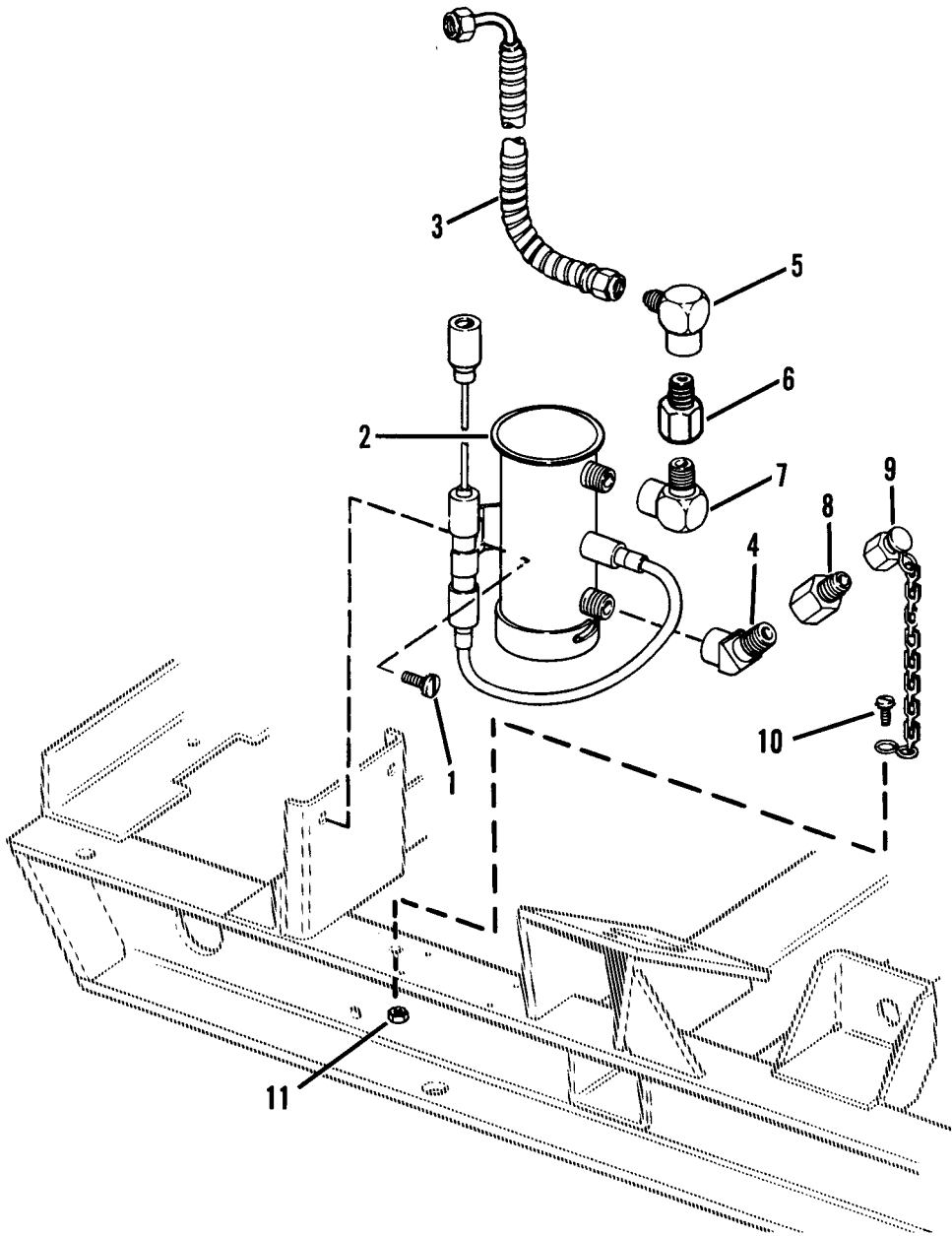


Figure 3-12. Auxiliary Fuel Pump.

3-25. **FUEL FILTER ASSEMBLY.** (See Figure 3-13)

- a. Inspect filter assembly for dents or other physical damage. Check for leaks around drain valve (9), vent screw (2), and where cannister (8) joins cover (5).
- b. Check that fuel filter assembly is securely attached to the mounting bracket (12), and that bracket is securely attached to the frame.
- c. Notify higher echelon of maintenance to tighten fittings or hardware, or to replace components.

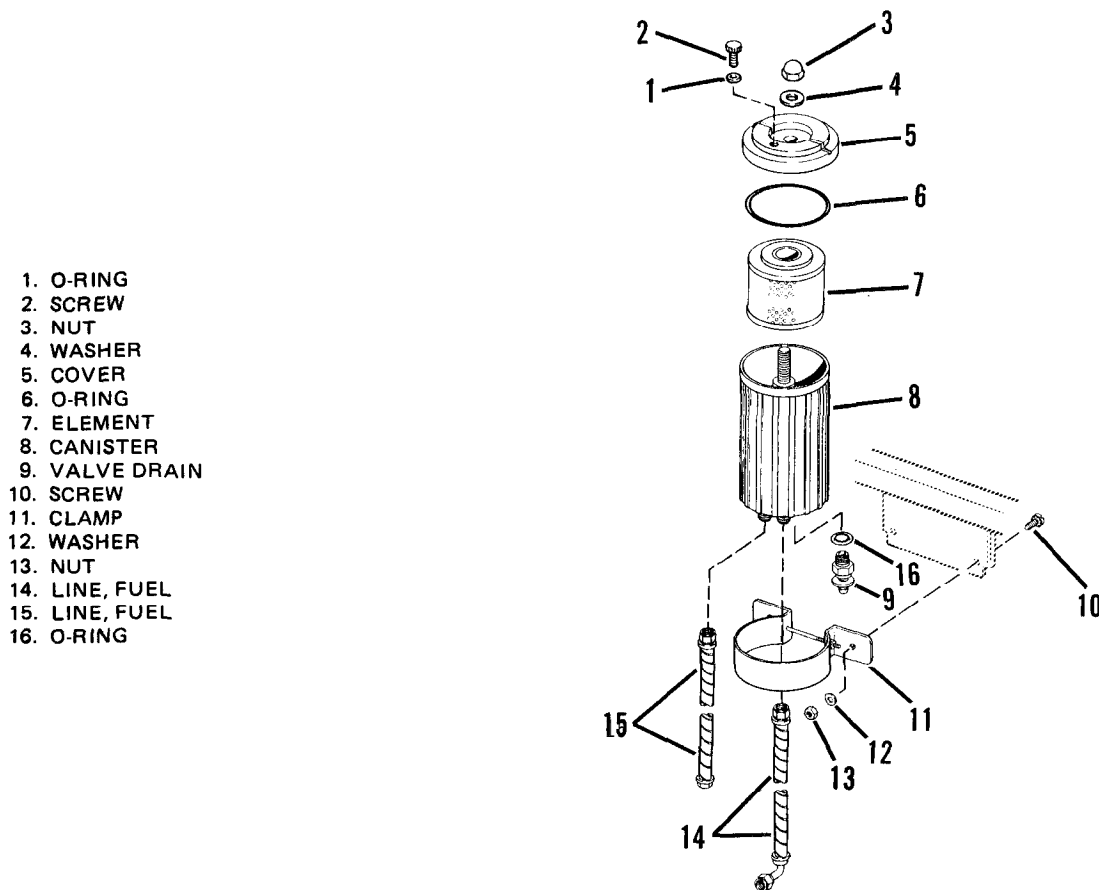
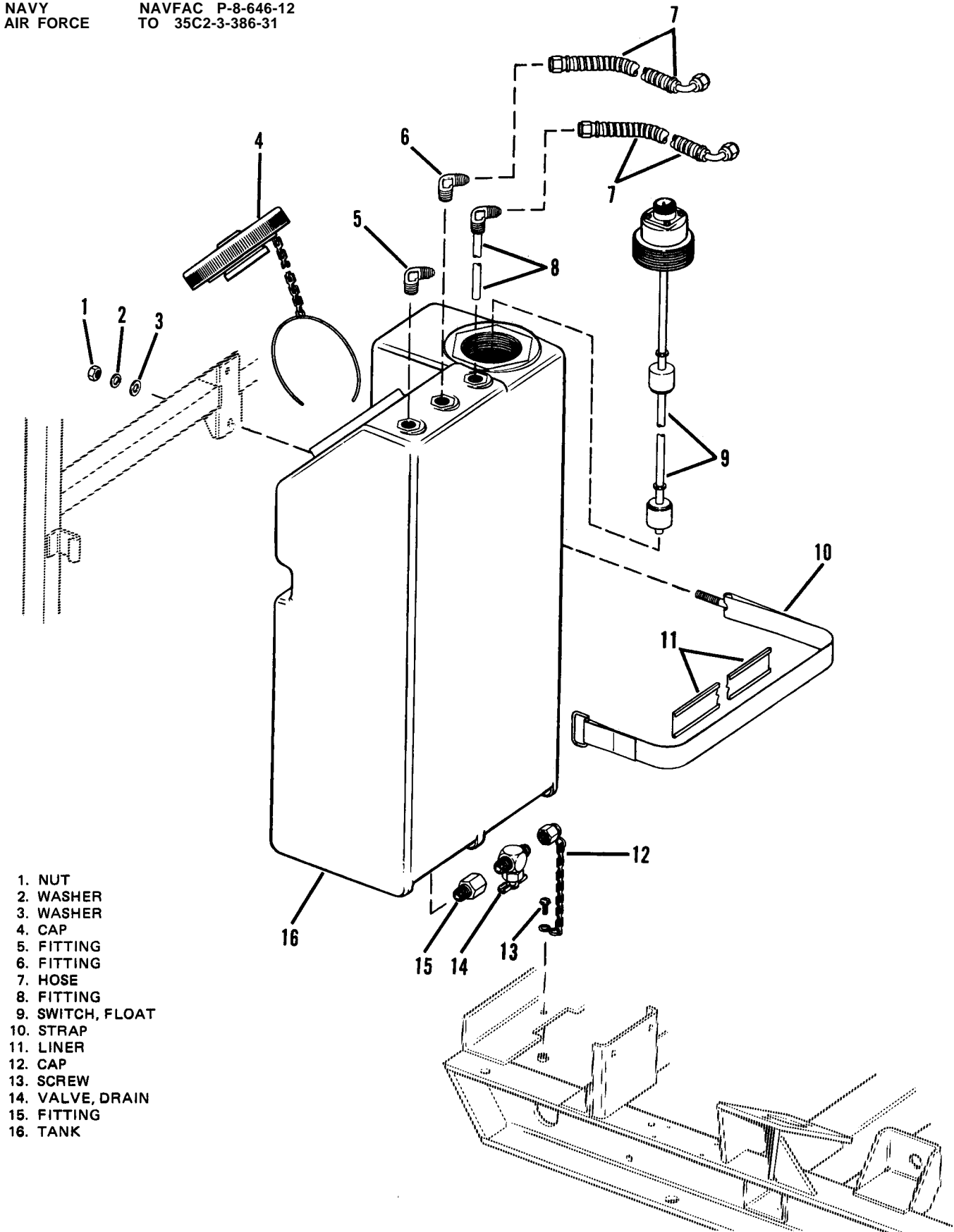


Figure 3-13. Fuel Filter Assembly, Exploded View.

3-26. **FUEL TANK.** (See Figure 3-14)

- a. Inspect fuel tank (16) for damage or leaks.



- 1. NUT
- 2. WASHER
- 3. WASHER
- 4. CAP
- 5. FITTING
- 6. FITTING
- 7. HOSE
- 8. FITTING
- 9. SWITCH, FLOAT
- 10. STRAP
- 11. LINER
- 12. CAP
- 13. SCREW
- 14. VALVE, DRAIN
- 15. FITTING
- 16. TANK

Figure 3-14. Fuel Tank and Fittings, Exploded View.

- b. Inspect fittings (5, 6 and 8), float switch (9) and hoses (7) for stripped threads or other damage. Inspect wires to float switch for cracked or broken condition.
- c. Inspect underside of cap (4) to see that vent is operational and rubber gasket is free of damage.
- d. Inspect to see that fuel drain fittings (14 and 15) do not leak, and that cap is secured to frame with chain.
- e. Make sure cap (4) fits securely on tank (16).
- f. Be sure that strap (10) and liner (11) are not damaged, and that tank is held securely to frame.
- g. Notify higher echelon of maintenance to tighten fittings and hardware, repair or replace damaged electrical connections, or replace damaged components.

3-27. FUEL LINES, VALVES AND FITTINGS. Inspect all fuel lines, valves and fittings for leaks or physical damage. Inspect to see that all fittings are tightened securely. Notify higher echelon of maintenance to tighten fittings or replace components.

3-28. ENGINE ASSEMBLY. Inspect engine assembly for leakage of fuel or lubricants, obvious damage, loose or missing hardware. Notify higher echelon of maintenance for repair or replacement of engine components.

3-29. AIR FILTER. (See Figure 3-15)

a. Inspect.

- (1) Inspect housing (8) and cover (4) for physical damage. Inspect to see that housing is securely attached to frame.
- (2) Inspect air filter indicator (9) for damage.
- (3) Check hose (7) from air filter assembly to intake manifold for leaks and secure mounting.
- (4) Notify higher echelon of maintenance to tighten hardware or replace components.

b. Service.

CAUTION

Before servicing air filter assembly, make sure all external surfaces of air filter assembly and surrounding areas are clean. Entry of dirt into engine can cause premature engine wear.

- (1) Service air filter assembly per schedule in Table 3-2.

- (2) Loosen wingnut on cover (12), and remove cover from housing (8).
- (3) Remove and discard element (5).

NOTE

Under extreme conditions element can be cleaned with low pressure air. Use no more than four psi air pressure.

- (4) Be sure that all interior surfaces of air filter assembly are clean. Inspect gasket (10) for damage and replace if necessary. Remove and clean dust valve (13).
- (5) Install new element or cleaned element (5) and install cover (4).
- (6) Reset filter indicator (9) by pressing button.

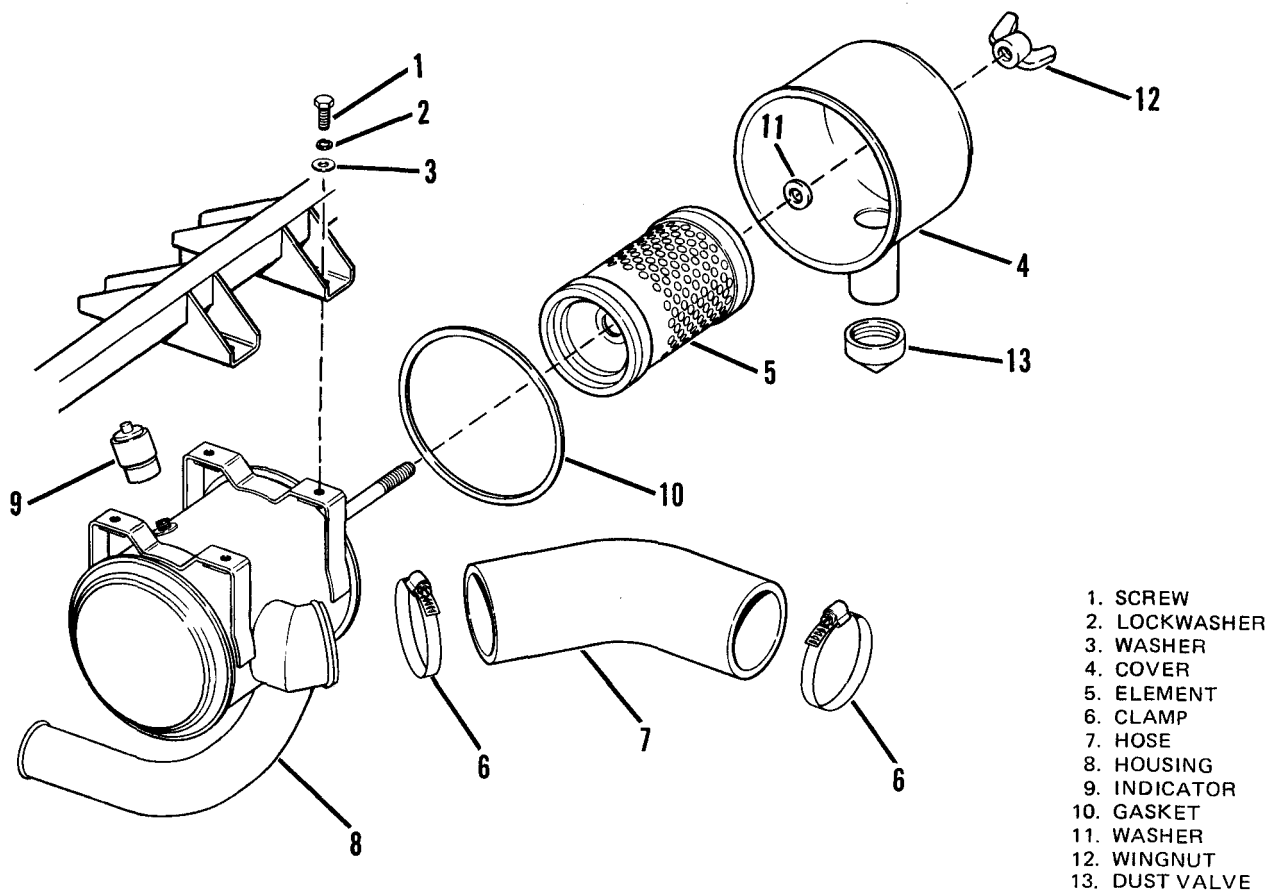


Figure 3-15. Air Filter Assembly, Exploded View.

3-30. OIL PAN AND OIL DRAIN. (See Figure 3-16)

- a. Inspect oil pan, oil drain hose, fittings and drain valve for damage or leaks. Make sure all connections are secure.
- b. Be sure that oil drain valve does not leak.
- c. Notify higher echelon of maintenance to tighten oil pan bolts, fittings or to replace components.

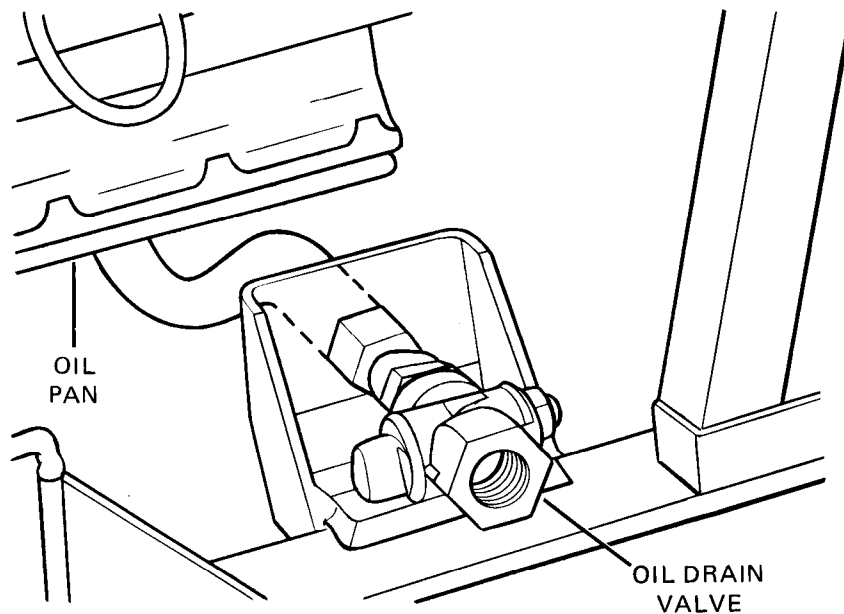


Figure 3-16. Oil Pan and Oil Drain.

3-31. GOVERNOR LINKAGE. (See Figure 3-17)

- a. Inspect governor linkage (11) for damage and secure mounting. With engine off, manually operate linkage to see if linkage operates freely and without obstruction or binding.
- b. Inspect manual speed control cable (30) for damage and secure mounting. Inspect to see that cable is not cut or kinked. Inspect to see that engine speed increases when the manual speed control (30) is turned in a clockwise direction, and that engine speed decreases when the speed control is turned in a counterclockwise direction.
- c. Inspect to see that the engine fuel cutoff solenoid (15) is mounted securely and that the wires are not cracked or frayed.

- d. Inspect oil line (21) for damage or leaks. Check to see that all fittings are secure.
- e. Notify higher echelon of maintenance to clean linkage, tighten hardware or fittings, repair or replace wiring, or replace components.

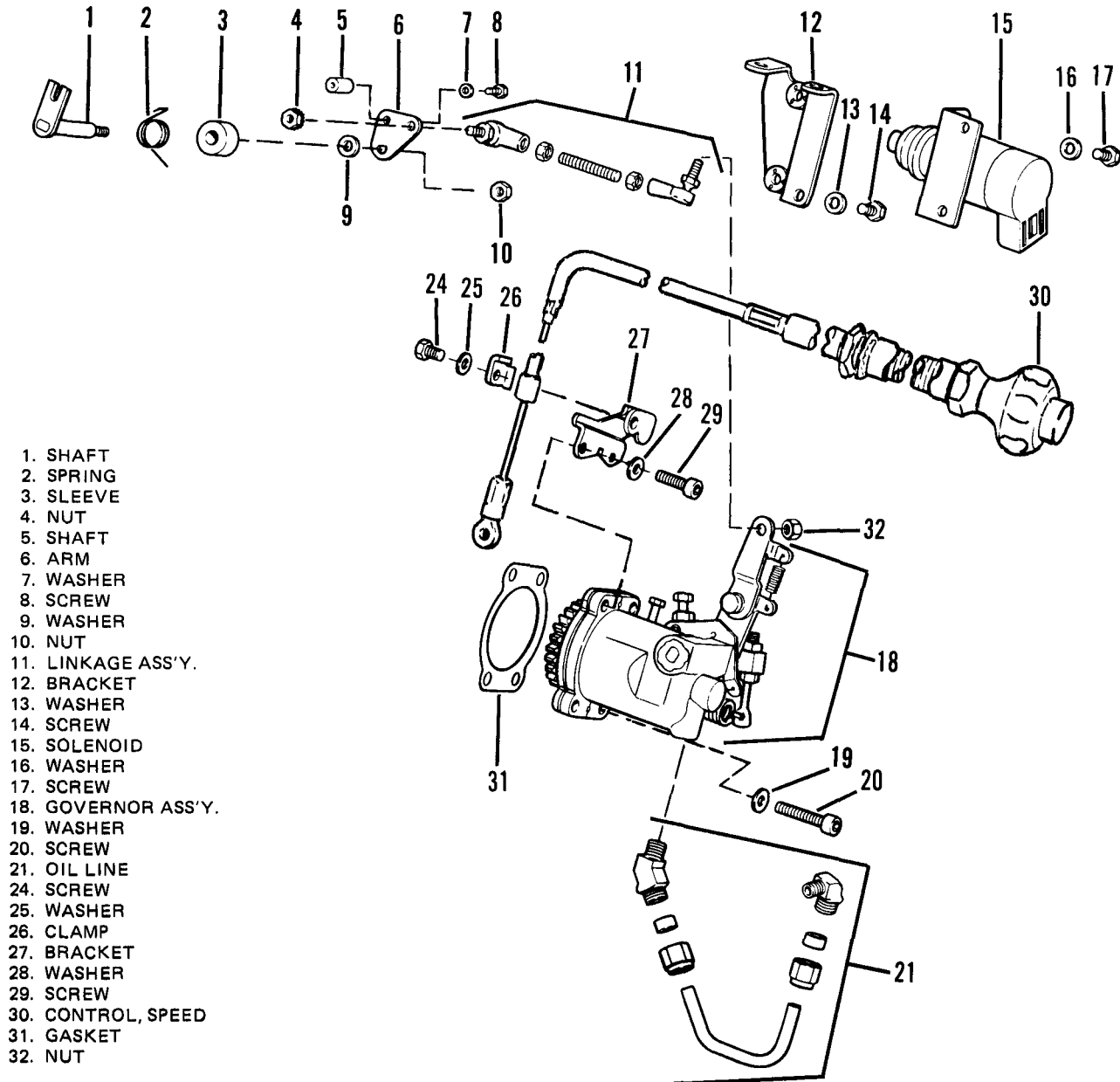


Figure 3-17. Governor Linkage, Exploded View.

3-32. OIL FILTER. (See Figure 3-18)

Inspect oil filter for leakage, damage and secure mounting. Notify higher echelon of maintenance to tighten or replace oil filter.

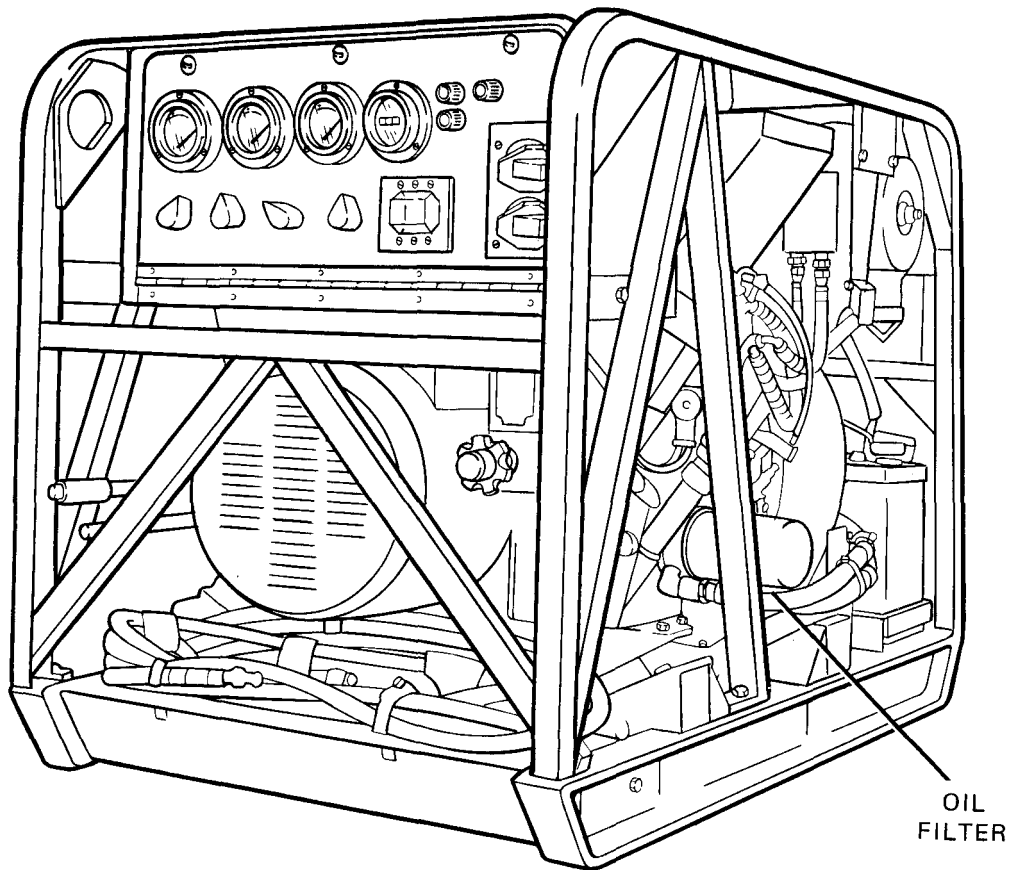


Figure 3-18. Engine Oil Filter.

3-33. ENGINE EXHAUST. (See Figure 3-19)

NOTE

Perform steps a through c if engine exhaust is excessively noisy.

- a. Remove screws (1), nuts (2) and clamps (3) from heat shield (4).
- b. Remove screws (5) and nuts (6). Remove heat shield (4) from frame.

- c. Inspect muffler (13) for dents, holes or corrosion.
- d. Check to see that clamps (7, 8 and 16) are securely attached and that they are not damaged.
- e. Inspect exhaust pipe (19) for damage, obstructions and secure mounting.
- f. Check mounting brackets (17) and (14) for damage and secure mounting.
- g. Notify higher echelon of maintenance to tighten hardware or to replace components.
- h. Put heat shield (4) in position and install screws (5), clamps (3), nuts (2 and 6) and screws (1).

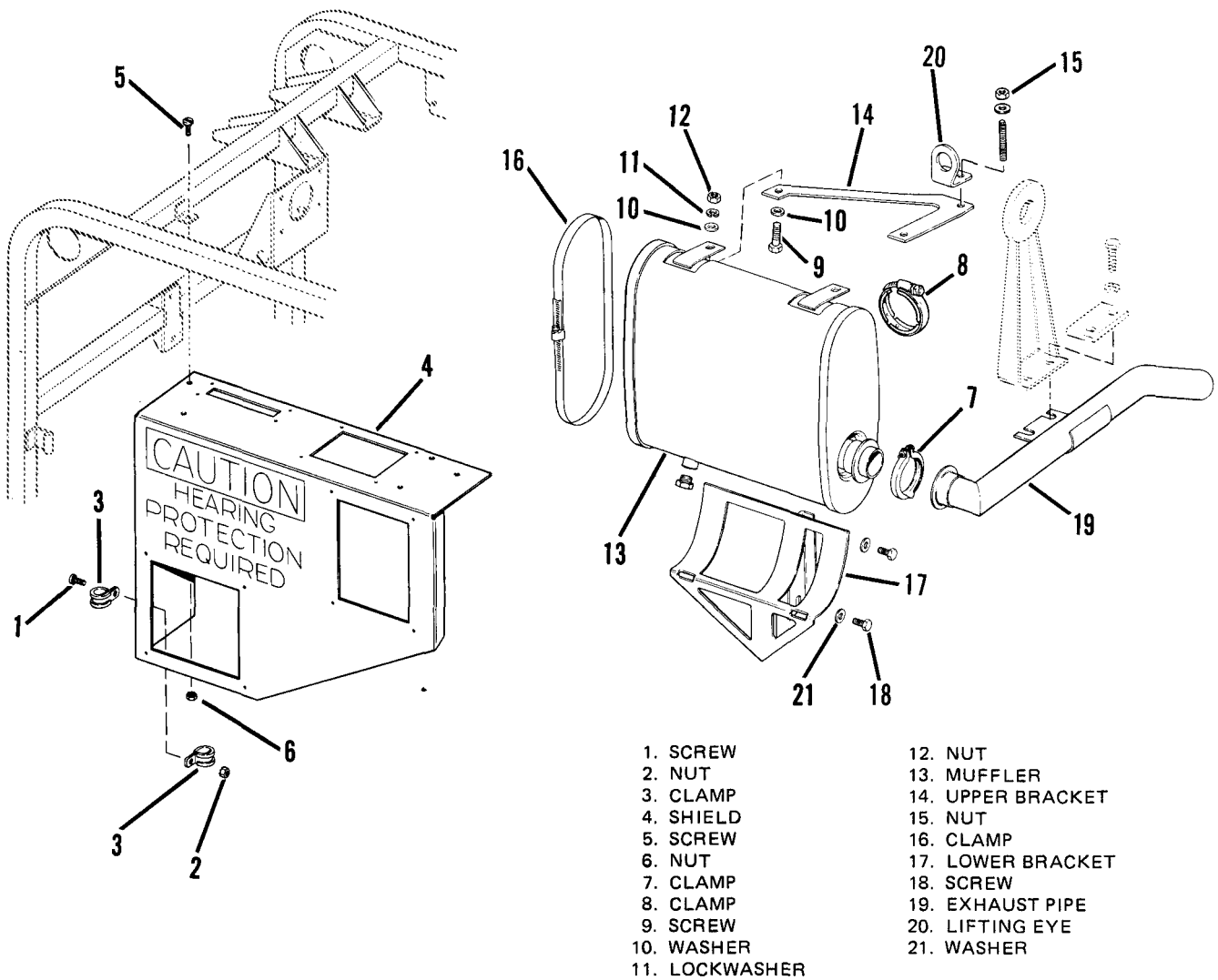


Figure 3-19. Engine Exhaust, Exploded View.

3-34. ENGINE CONTROLS AND INSTRUMENTS. (See Figures 3-20, 3-21 and 3-22)

3-34.1. Panel Assembly, Engine Control. Inspect the control panel assembly for cleanliness and damage. Clean panel as required. Inspect to see that all parts mounted to the panel are secure and that all hardware is in place. Loosen three fasteners and open control panel. Inspect to see that hinge is secure and operates properly. Inspect condition of retaining cord and be sure cord is mounted securely. Notify higher echelon of maintenance to tighten hardware or replace components.

3-34.2. Master Switch. Inspect master switch for physical damage. Inspect electrical connections to see that they are clean and tight. Inspect to see that when placed in the OFF, RUN AUX FUEL and RUN positions, the switch will remain in these positions. Inspect to see that when placed in the PREHEAT position and released, the switch will return to the OFF position. With the DC Control Circuit Breaker pulled out (unit will not crank), inspect to see that when released from the START position the switch will automatically return to the RUN position. Notify higher echelon of maintenance to tighten hardware or electrical connections, or to replace a damaged switch.

3-34.3. Hourmeter. Inspect hourmeter for physical damage, and be sure that meter face is clean and readable. Inspect electrical connections to see that they are clean and tight. Inspect to see that meter is mounted securely. Notify higher echelon of maintenance to tighten hardware or electrical connections or to replace damaged meter.

3-35. GENERATOR CONTROLS AND INSTRUMENTS. (See Figures 3-20, 3-21, 3-22 and 3-23)

3-35.1. Inspect Control Box Assembly (all models).

- a. Clean box as necessary and inspect for damage and secure mounting. Inspect condition of vibration isolators.
- b. Loosen three fasteners and open control panel to permit access to inside of control box. Inspect to see that all parts mounted to the box are secure and that all hardware is in place. Inspect for broken, frayed or damaged wires. Inspect to see that all electrical connections are clean and tight.
- c. Inspect load connection terminals for damage and secure mounting. Inspect to see that threads are in good condition and that nut retaining wire is in place. Inspect to see that all electrical connections are clean and tight.
- d. Check that all instruments and controls operate normally when the unit is running.
- e. Notify higher echelon of maintenance to tighten or replace hardware and vibration isolators, repair or replace electrical wiring, or to replace components as necessary.

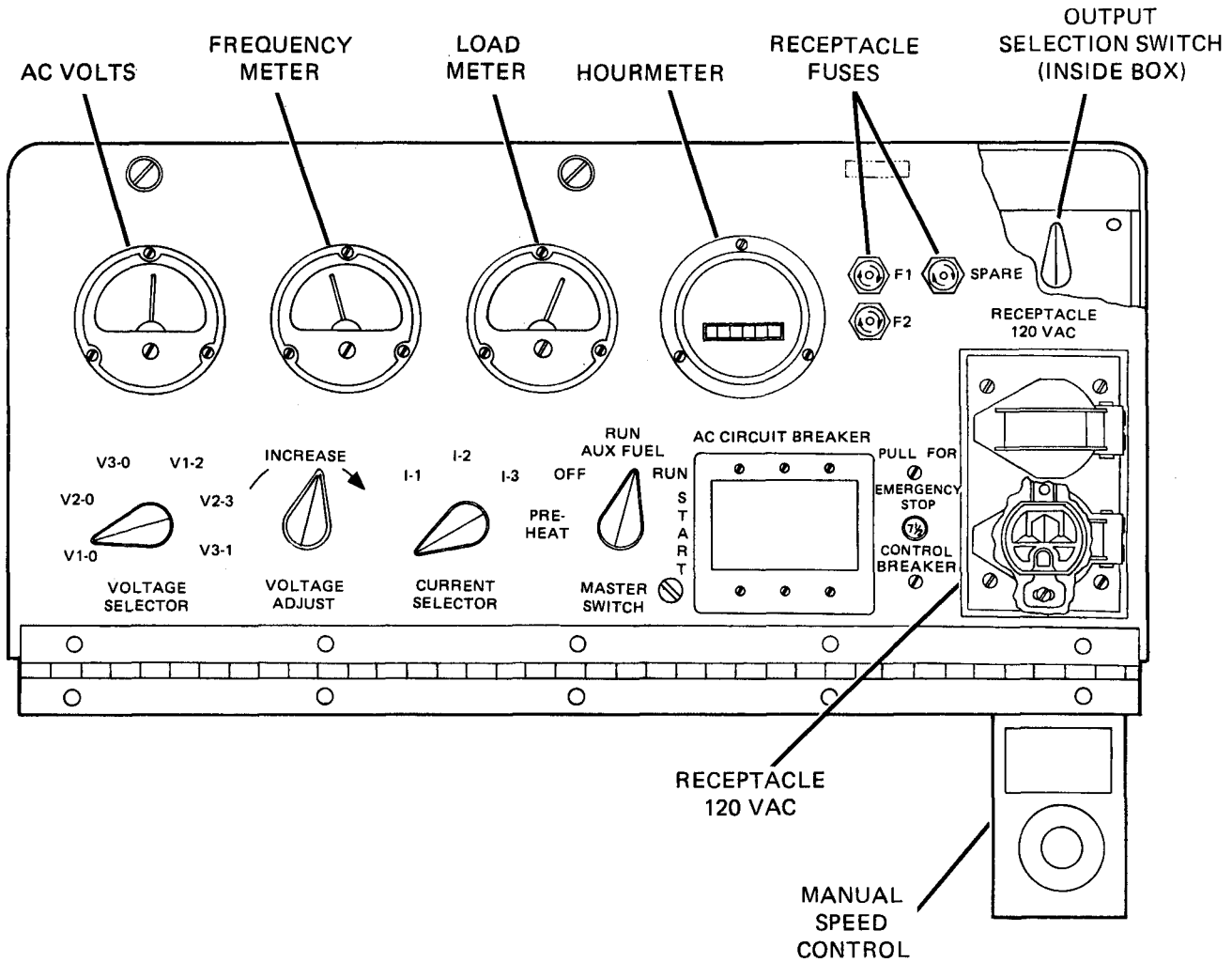


Figure 3-20. Controls and Instruments, Model MEP-016B.

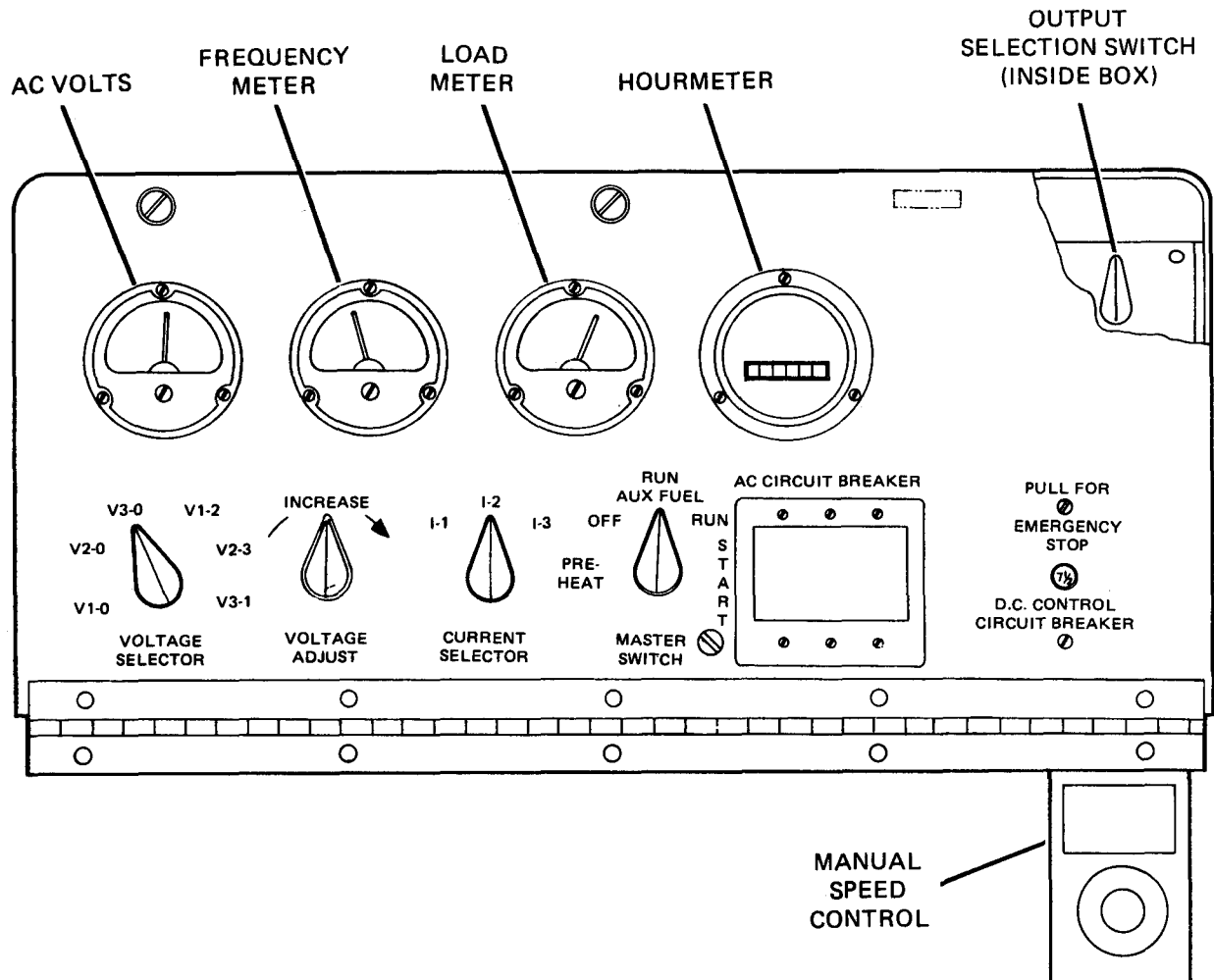


Figure 3-21. Controls end Instruments. Model MEP-021B.

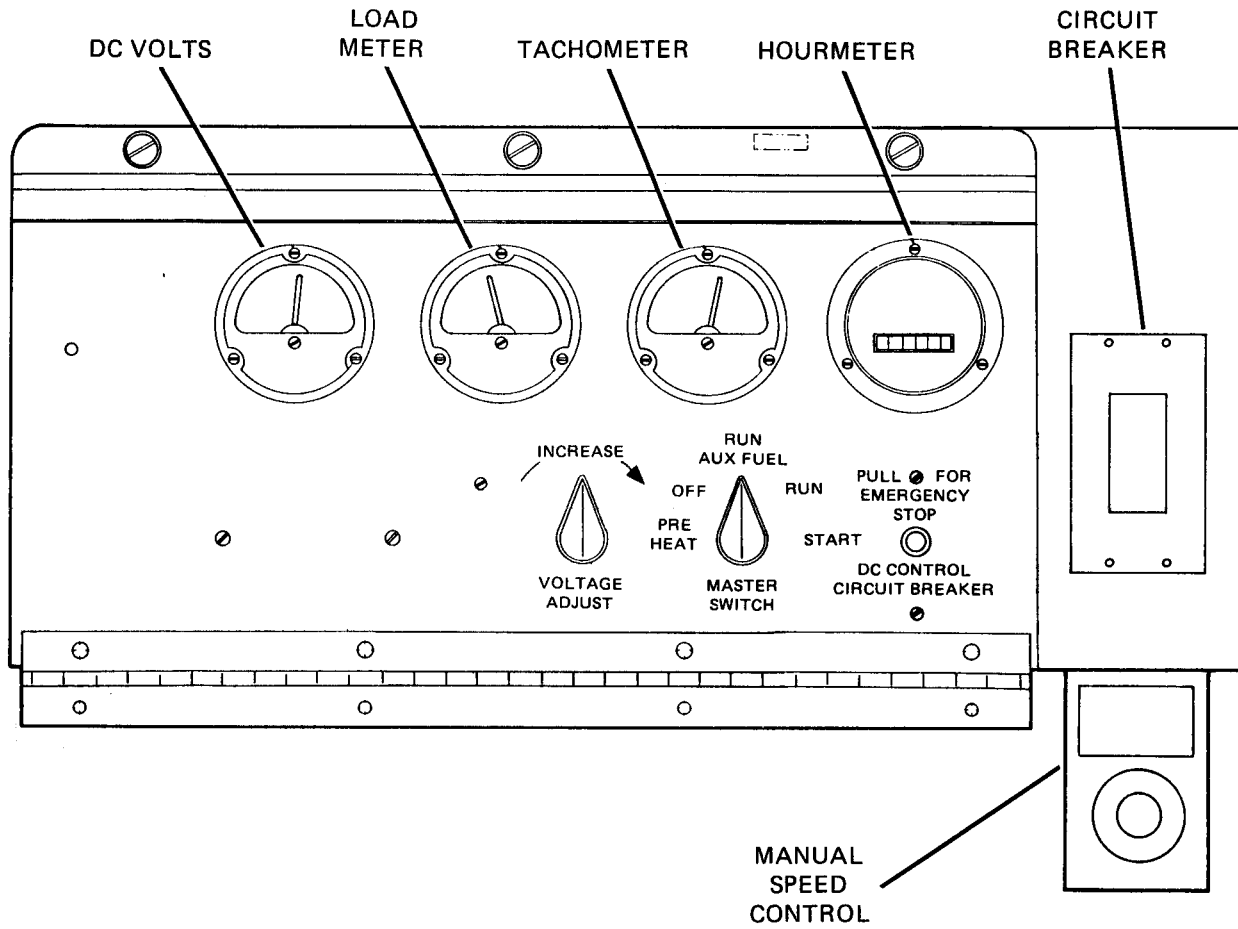


Figure 3-22. Controls and Instruments, Model MEP-026B.

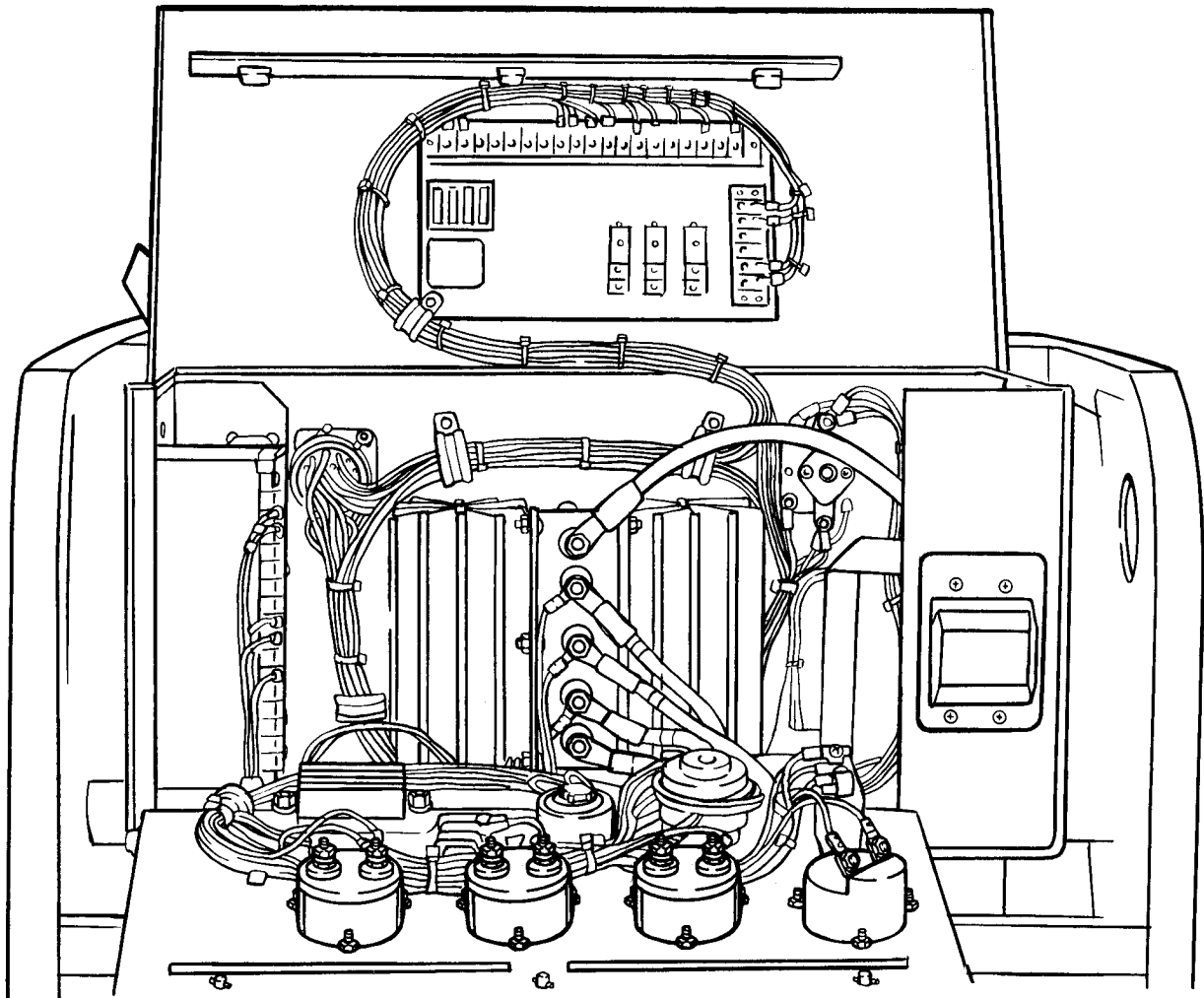


Figure 3-23. Inside of Control Box, Model MEP-026B Shown.

3-35.2. Voltage Selector (Models MEP-0 16B and MEP-021B) . Inspect voltage selector switch for physical damage, and make sure that knob is secure on post. Inspect to see that switch remains in any position it is turned to. Inspect to see that all electrical connections are clean and tight. Notify higher echelon of maintenance to tighten mounting hardware or to replace a damaged voltage selector switch.

3-35.3. Voltage Adjust (all models). Inspect voltage adjust rheostat for physical damage, and make sure knob is secure on post. Mark rheostat position and inspect to see that rheostat turns smoothly through its range. Return rheostat to its previously marked position. Inspect to see that all electrical connections are clean and tight. Notify higher echelon of maintenance to tighten mounting hardware or to replace a damaged rheostat.

- 3-35.4. Current Selector (Models MEP-016B and MEP-021B). Inspect current selector switch for physical damage and make sure that knob is secure on post. Inspect to see that switch remains in any position it is turned to. Inspect to see that all electrical connections are clean and tight. Notify higher echelon of maintenance to tighten mounting hardware or to replace a damaged current selector switch.
- 3-35.5. Main Circuit Breaker (all models). Inspect circuit breaker for damage. Inspect transparent cover for damage and secure mounting. Inspect to see that when the circuit breaker is switched to the ON or OFF positions, it will remain in these positions. Inspect to see that all electrical connections are clean and tight. Notify higher echelon of maintenance to tighten mounting hardware or to replace a damaged circuit breaker.
- 3-35.6. Volt Meters (all models). Inspect meter to see that glass is not cracked or broken, and that meter face is readable. Inspect to see that pointer is not bent. Inspect to see that all electrical connections are clean and tight. Notify higher echelon of maintenance to tighten mounting hardware or to replace a damaged meter. Meters can be adjusted by turning the adjustment screw on the meter face.
- 3-35.7. Frequency Meter (Models MEP-016B and MEP-021B). Inspect meter to see that glass is not cracked or broken, and that meter face is readable. Inspect to see that pointer is not bent. Inspect to see that all electrical connections are clean and tight. Notify higher echelon of maintenance to tighten mounting hardware or to replace a damaged meter. Meter can be adjusted by turning the adjustment screw on the meter face.
- 3-35.8. Load Meter (all models). Inspect meter to see that glass is not cracked or broken, and that meter face is readable. Inspect to see that pointer is not bent. Inspect to see that all electrical connections are clean and tight. Notify higher echelon of maintenance to tighten mounting hardware or to replace a damaged meter. Meter can be adjusted by turning the adjustment screw on the meter face.
- 3-35.9. Hourmeter (all models). Inspect meter to see that glass is not cracked or broken, and that meter face is readable. Inspect to see that all electrical connections are clean and tight. Notify higher echelon of maintenance to tighten mounting hardware or to replace a damaged meter.
- 3-35.10. DC Control Circuit Breaker (all models). Inspect circuit breaker for physical damage. Inspect to see that all electrical connections are clean and tight. Inspect to see that when circuit breaker is pushed in or pulled out it will remain in position. Notify higher echelon of maintenance to tighten mounting hardware or to replace a damaged circuit breaker.
- 3-35.11. Fuses, F1, F2, and Spare (Model MEP-016B only). Check fuseholders for damage and secure fit. Check condition of all three fuses. Check to see that all electrical connections are clean and tight. Notify higher echelon of maintenance to replace a damaged fuse holder.

WARNING

The output receptacle is connected to a floating ground system. The set MUST be grounded as specified in paragraph 2-5.1 to effectively ground the receptacle. Failure to do so may cause severe injury or death.

3-35.12. Receptacle (Model MEP-016B only). Inspect receptacle and cover for damage and secure mounting. Check to see that spring loaded covers remain closed. Check to see that all electrical connections are clean and tight. Notify higher echelon of maintenance to tighten mounting hardware or to replace a damaged receptacle.

3-35.13. Output Selection Switch (Models MEP-016B and MEP-021B). (Switch is located inside of control box.) Inspect switch for physical damage, and make sure that knob is secure on post. Check to see that switch remains in any position it is turned to. Check to see that all electrical connections are clean and tight. Notify higher echelon of maintenance to tighten mounting hardware or to replace a damaged switch.

3-35.14. RPM Indicator (Model MEP-026B only). Inspect meter to see that glass is not cracked or broken, and that meter face is readable. Check to see that pointer is not bent. Check to see that all electrical connections are clean and tight. Notify higher echelon of maintenance to tighten mounting hardware or to replace a damaged meter. RPM indicator can be adjusted by turning the adjustment screw on the meter face.

CHAPTER 4

ORGANIZATIONAL MAINTENANCE

Section I. SERVICE UPON RECEIPT OF MATERIEL.

4-1. INSPECTING AND SERVICING THE EQUIPMENT.

4-1.1. Unloading the Equipment. The dry weight of the generator set is 440 lbs (199 kg). The crated generator set may be lifted by forklift, crane or similar lifting device. If slings are used, take care in placing them around the crate to insure proper balance of the load and to minimize the danger of it slipping. The crate must be kept in the UP position at all times.

WARNING

Do not use a lifting device with a capacity of less than 600 lbs (272 kg). Do not allow the crated generator set to swing while it is suspended. Failure to observe this warning may result in serious injury or death to personnel.

4-1.2. Unpacking.

- a. Before unpacking, move the generator set as near as possible to the location where it will be operated.
- b. Remove the top and sides of the crate.

CAUTION

To avoid damaging the equipment, be careful When using bars, hammers or other tools to uncrate the generator set.

- c. Remove the unit from the wooden skid base.

4-1.3. Depreservation. Prepare the generator set for inspection and operation as outlined on DA Form 2258, attached on or near the operational controls.

4-1.4. Inspection.

- a. Inspect the generator set for damage or missing parts and accessories.
- b. Perform the Preventive Maintenance Checks and Services as outlined in Table 4-1.

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4-1.5. Servicing. Service the generator set in accordance with Tables 3-2, 4-1, and Lubrication Instruction/Lubrication Order LI 05926B/06509B-12/5 (See Figure 3-1).

4-2. INSTALLATION.

4-2.1. General. The generator set should be installed on a site clear of obstacles, with ample ventilation, and level within +15 degrees maximum.

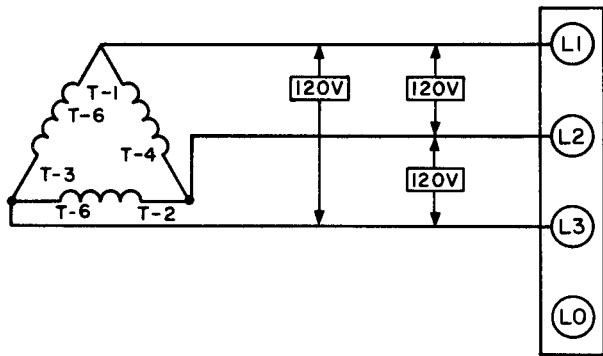
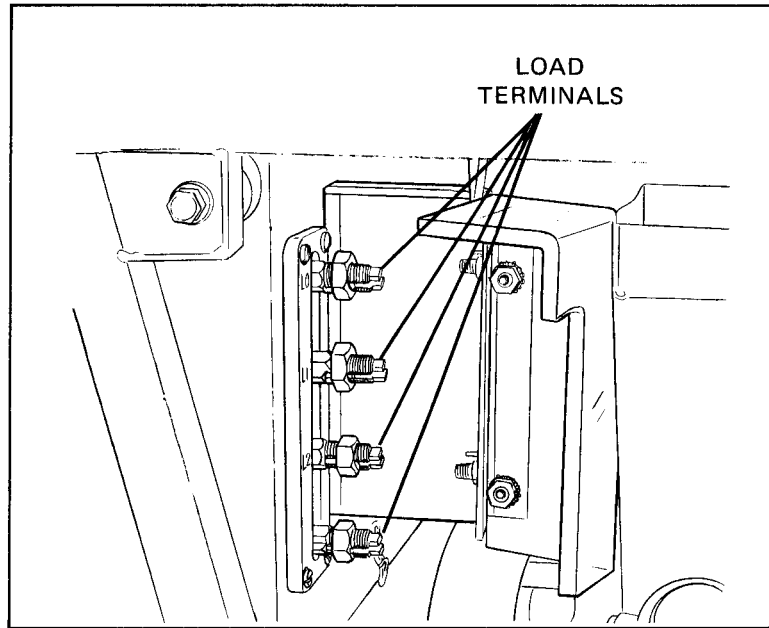
4-2.2. Outdoor Installation. When preparing for a permanent installation, be sure the base is solid enough to support the weight of the unit. See Figure 1-4 for dimensions of the base. Select a site where there will be sufficient space on all sides for operation and servicing of the set. When preparing a temporary installation, move the generator set as close to the worksite as practical. Use suitable planks, logs or other material for a base in an area where the ground is soft .

4-2.3. Indoor Installation. Keep the area well ventilated at all times so that the generator set receives a maximum supply of air. If a free supply of fresh air is not available, provide ductwork which will assure at least 600 cubic feet of air per minute. If louvers are used at the entrance, increase the size of the duct work by 25 to 50 percent. Install a gas tight metal pipe from the exhaust outlet of the unit to the outside of the installation. The termination of the exhaust pipe shall be such that hot gases or sparks will be discharged harmlessly, and will not be directed against combustible materials or into an area containing flammable gases or vapors. Use as few bends in the pipe and as short a pipe as possible. The exhaust pipe should include a low point with suitable means for draining condensation. Provide metal shields, 12 inches larger in diameter than the exhaust pipe, where the line passes through flammable walls.

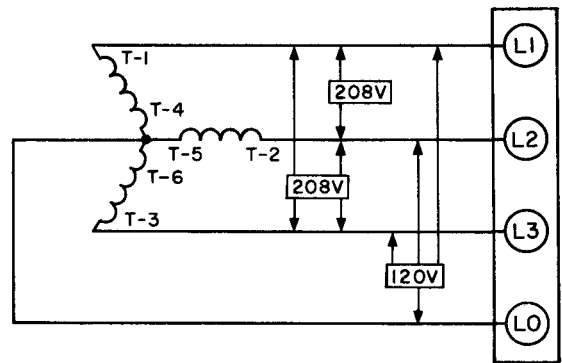
WARNING

Do not operate the generator set in an enclosed area unless the exhaust gases are piped to the outside. Inhalation of exhaust fumes will result in serious illness or death.

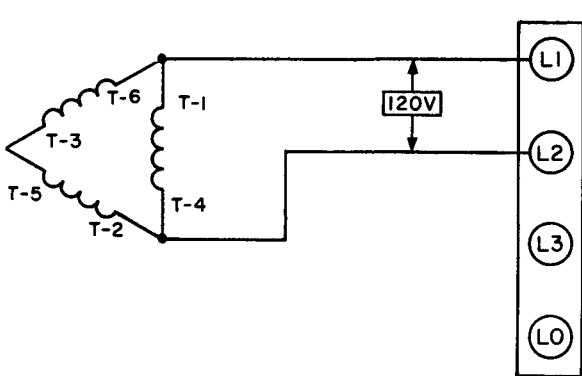
4-2.4. Leveling The generator set is a portable unit and is designed to operate satisfactorily up to 15 degrees out-of-level in all directions. Set up the unit as level as possible, and keep it as level as possible during operation.



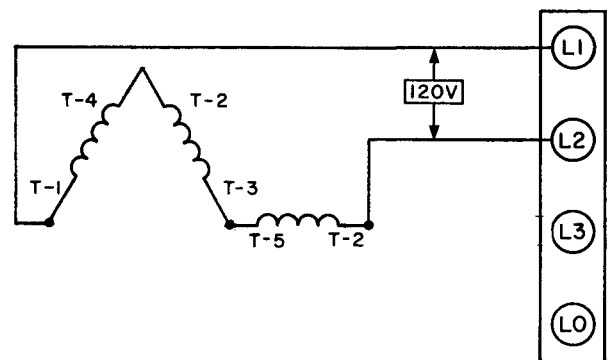
120 VOLT 3 PHASE CONNECTION



120/208 VOLTS 3 PHASE CONNECTION



120 VOLT 1 PHASE CONNECTION



240 VOLT 1 PHASE CONNECTION

Figure 4-1. Load Terminals and Load Connection Diagrams, Models MEP-016B and MEP-021B.

4-2.5. Connecting Load Cables to the Generator Set.

WARNING

Prior to connection of load cables, be certain all switches and circuit breakers are in the OFF or OPEN position and that the generator set is not running. Failure to do so can result in death from electrocution.

- a. Models MEP-016B and MEP-021B. Refer to Figure 4-1 and connect the load cables to the generator set as described below. Be sure that the output selection switch (located inside the control box) corresponds to the load terminal connections.
 - (1) For 120 volts, single phase; connect cables to terminals L1 and L2.
 - (2) For 240 volts, single phase; connect cables to terminals L1 and L2.
 - (3) For 120 volts, three phase; connect cables to terminals L1, L2, and L3.
 - (4) For 120/208 volts, three phase, four wire; connect cables to terminals L0, L1, L2, and L3.
- b. Model MEP-026B. Refer to Figure 4-2 and connect the negative (-) cable from the load to negative (-) terminal on the back of the control box. Connect the positive (+) cable from the load to the positive (+) terminal on the back of the control box.

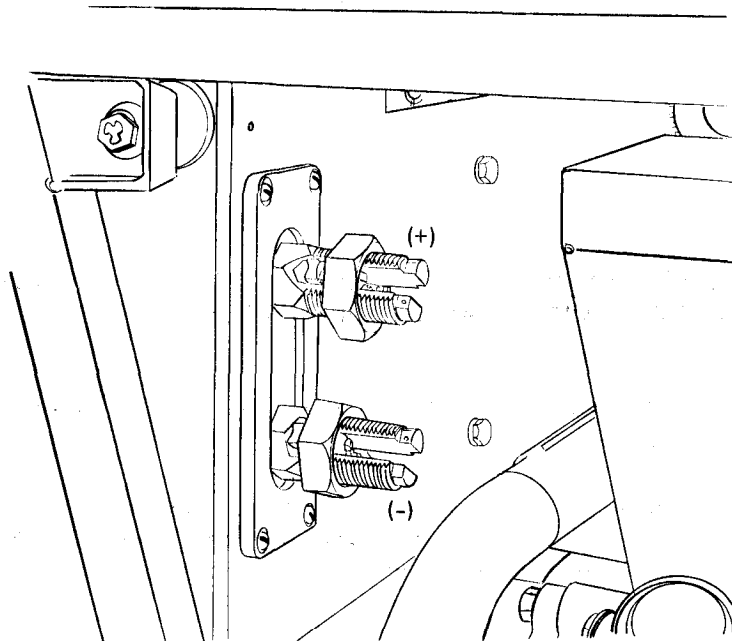


Figure 4-2. Load Terminals, Model MEP-026B.

Section II. MOVEMENT TO A NEW WORKSITE.

4-3. DISMANTLING GENERATOR SET FOR MOVEMENT.

4-3.1. Preparation for Movement.

- a. Stop operation of the generator set (see paragraph 2-7).
- b. Disconnect the load cables.
- c. Remove exhaust pipe extension if used.
- d. Close vent on underside of fuel filler cap.
- e. Disconnect the ground lead from the ground stud.
- f. Pull up, disassemble, and store ground rod.
- g. Disconnect the negative battery cable from the battery and secure cable to prevent contact with battery post during movement of set.
- h. Disconnect the auxiliary fuel line from the auxiliary fuel pump (if used) and secure protective cap to fitting on pump.

4-3.2. Movement. Preferred means of movement is to transport on a suitable vehicle. Towing for short distances is permissible if the terrain is suitable.

4-4. REINSTALLATION AFTER MOVEMENT.

Refer to paragraph 4-2 for instructions on installation after movement to a new worksite.

Section III. REPAIR PARTS; SPECIAL TOOLS; SPECIAL TEST, MEASUREMENT AND DIAGNOSTIC EQUIPMENT (TMDE); AND SPECIAL SUPPORT EQUIPMENT.

4-5. **SPECIAL TOOLS AND EQUIPMENT.** A 3/8 in. 6 point, deep socket (1/4 in. drive) is needed to replace glow plug.

4-6. **MAINTENANCE REPAIR PARTS.** Repair parts and equipment are listed and illustrated in the Repair Parts and Special Tools List SL-4-05926B/06509B/TM 5-6115-615-24P/NAVFAC P-8-646-24P/TO 35C2-3-386-34.

Section IV. LUBRICATION INSTRUCTIONS.

4-7. LUBRICATION.

4-7.1. Lubrication Order. Lubrication instructions for the generator set are contained in LI 05926B/06509B-12/5/LO 5-6115-615-12 (see Figure 3-1).

4-7.2. Oil Change. (See Figure 4-3.)

WARNING

Do not remove oil filler cap when engine is running.
Hot oil can splash up and cause burns.

- a. Run set for a minimum of 5 minutes to bring oil to operating temperature, then shut down set.

WARNING

Keep feet clear when tilting and working around tilted generator set. Failure to do so can result in personal injury.

CAUTION

Do not apply air pressure to the crankcase to speed the oil drain process. Air pressure can force the oil seals out of the crankcase.

- b. Using two people, tilt and block side of generator set opposite drain cock (1).
- c. Open drain cock (1) on skid base and allow oil to drain into a suitable container. The capacity of the engine lubrication system is 3.0 qts (2.8 l).
- d. Remove blocks and lower generator set to level position.
- e. Remove oil filter (2) from engine and allow oil to drain.
- f. Install a new oil filter. Be sure to lubricate the filter gasket with clean oil prior to installation. Turn filter on by hand until it contacts filter base, then tighten 3/4 turn more.
- g. Close drain cock (1) on skid base.
- h. Add oil through filler tube (3). Refer to Table 3-1 for oil specifications.

- i. Start engine and check for leaks. Check oil level and add oil as necessary. Do not overfill engine with oil.

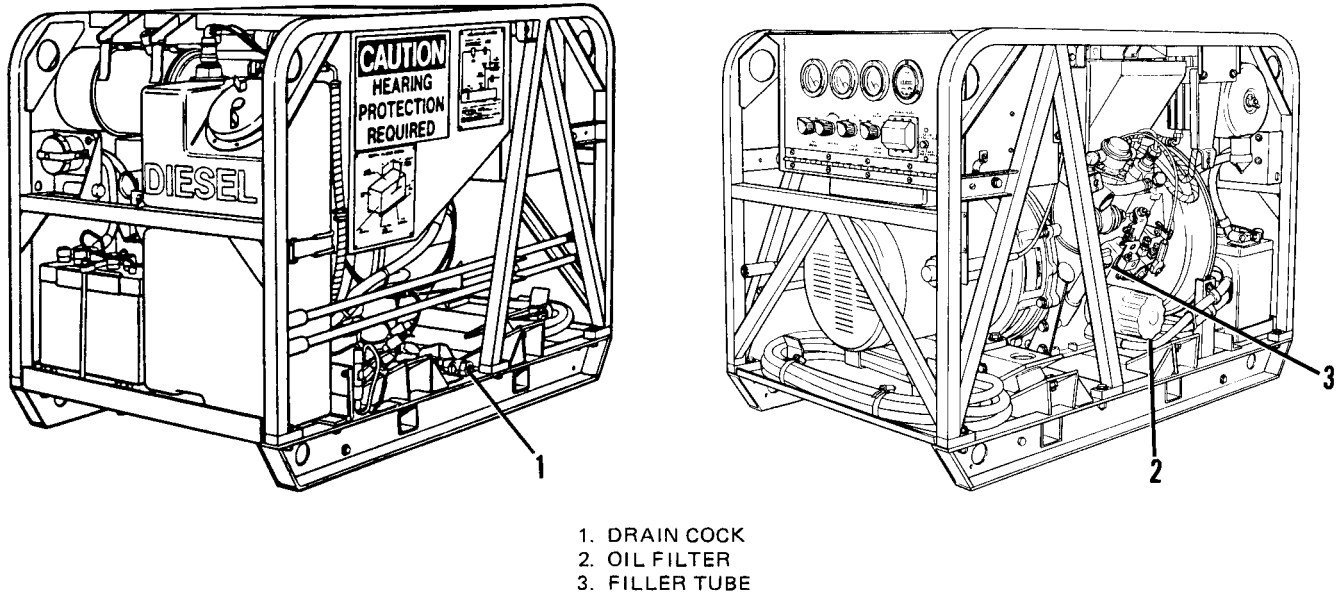


Figure 4-3. Engine Oil Change.

Section V. PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

4-8. PMCS, GENERAL. To ensure that the generator set is ready for operation at all times, it must be inspected systematically so defects may be discovered and corrected before they result in serious damage, failure, or present a safety hazard. The necessary Preventive Maintenance Checks and Services that are to be performed by organizational personnel are listed and described in the following paragraphs. Defects discovered during operation will be noted for future correction. stop operation immediately if a deficiency is noted which would damage the equipment or present a safety hazard. All faults will be recorded together with the corrective action taken on the applicable form.

(MC) Marine Corps users should refer to current issue of TM 4700-15/1.

4-9. DETERMINING PMCS INTERVALS. Organizational PMCS on this unit should be performed on a "per hours of operation" basis. The hourmeter on the control panel should be used to determine the generator set operating time.

4-10. PMCS FOR UNITS IN CONTINUOUS OPERATION. For PMCS performed on a "per hours of operation" basis, perform PMCS as close as possible to the time intervals indicated. For units in continuous operation, perform PMCS before starting operation if continuous operation will extend past the service interval indicated.

4-11. (MC, A, N) PREVENTIVE MAINTENANCE CHECKS AND SERVICES. Table 4-1 contains a tabulated listing of PMCS which shall be performed by Organizational personnel. The item numbers are listed consecutively and indicate the sequence of minimum requirements.

Table 4-1. Preventive Maintenance Checks and Services.

Interval		W = Weekly (40 Hrs)	M = Monthly (100 Hrs)	S = Semi Annual (500 Hrs)	Total M/H: 1.9
Organization	W	M	S	Items To Se Inspected Inspection Procedures	Work Time M/H
GENERAL					
1				Make a visual inspection of the entire generator set for any obvious faults such as loose or missing bolts, nuts, end pins, and check for bent, cracked or broken parts. Inspect all wires and terminals for damage and/or loose connections.	0.3
ENGINE					
2				Inspect engine for loose connections, leaks in oil and fuel systems, and free action of all moving parts.	0.3
3				Drain oil from crankcase and oil filter, and change lubricating oil every 125 operating hours as outlined in paragraph 4-7.	0.2
4				Replace oil filter element every 125 operating hours as outlined in paragraph 4-7.	0.2
WARNING					
Avoid prolonged contact and inhalation of fumes of dry cleaning solvent. Use dry cleaning solvent only in a well ventilated area.					
5				Clean governor linkage with dry cleaning solvent (Table 3-1, item 9).	0.2
6				Inspect muffler. Refer to paragraph 4-54.	0.2
7				Clean fins on oil cooler - Refer to paragraph 4-52.	0.2

Table 4-2. Troubleshooting, Continued.

Malfunction

Test Or Inspection

Corrective Action

1. ENGINE FAILS TO CRANK WHEN MASTER SWITCH IS HELD IN THE START POSITION (CONT'D).

Step 2. Inspect battery and starter cables for corrosion and loose connections.

Clean or tighten battery cables.

Step 3. Test START position of master switch (paragraph 4-59).

Replace defective master switch.

Step 4. Inspect and test starter relay ground (paragraph 4-26).

Replace defective solenoid.

2. STARTER TURNS BUT WILL NOT ENGAGE.

Step 1. Inspect starter drive assembly (paragraph 4-48).

Clean drive assembly if it is sticking.

Step 2. Inspect starter drive gear assembly for worn or broken teeth (paragraph 4-48).

Replace starter.

3. ENGINE CRANKS NORMALLY BUT FAILS TO START.

Step 1. Test fuel cutoff solenoid for proper operation (paragraph 4-37).

Replace defective solenoid.

Step 2. Inspect fuel filter element (paragraph 4-36).

Clean strainer element. Replace fuel filter element.

Step 3. Check for clogged fuel line to injector pump (paragraph 4-39).

Clean or replace clogged fuel line.

Step 4. Test for worn or damaged fuel transfer pump (paragraph 4-34).

Replace defective pump.

Table 4-2. Troubleshooting, Continued.

Malfunction

Test Or Inspection

Corrective Action

Step 5. Inspect and test glow plug (paragraph 4-50).

Replace defective glow plug.

4. ENGINE STARTS BUT DOES NOT RUN SMOOTHLY (MISFIRES, KNOCKS, OR MAKES UNUSUAL NOISES).

Check Steps 1, 2, 3, 4 and 5 under ENGINE CRANKS NORMALLY BUT FAILS TO START above.

Perform corrective action as necessary.

5. LOW ENGINE POWER, ESPECIALLY UNDER HEAVY LOAD.

Step 1. Check Steps 1, 2, 3, 4 and 5 under ENGINE CRANKS NORMALLY BUT FAILS TO START above.

Perform corrective action as necessary.

Step 2. Check air filter assembly for obstructions (paragraph 3-29).

Remove obstructions.

6. ENGINE HAS EXCESSIVE OIL CONSUMPTION.

Check air filter element.

Clean or replace air cleaner element as necessary (paragraph 3-29).

7. ENGINE VIBRATES.

Check for loose or worn engine mounts.

Tighten mounting hardware or replace as necessary (paragraph 4-17)

If vibration continues, notify higher echelon of maintenance.

Table 4-2. Troubleshooting, Continued.

Malfunction

Test Or Inspection

Corrective Action

8. MAIN CIRCUIT BREAKER WILL NOT CLOSE.

Test for short circuit in load: Shut down set and disconnect the load. Connect a multimeter (set to read ohms) across the load lines to check for a short circuit. A low reading (0 ohms) indicates a short circuit.

Correct short circuit before reconnecting load.

9. ENGINE OVERSPEEDS.

Step 1. Inspect for correct oil level (Figure 3-1).

Step 2. Inspect for free operation of governor linkage (paragraph 4-44).

Step 3. Inspect air filter element (paragraph 3-29).

Section VII. RADIO INTERFERENCE SUPPRESSION.

4-14. **GENERAL METHODS FOR PROPER SUPPRESSION.** For proper suppression of radio interference, a low resistance path to ground must be provided for stray currents. The methods used include shielding the high frequency wires, grounding the frame with bonding straps, and using filtering systems.

4-15. **RADIO INTERFERENCE SUPPRESSION COMPONENTS.**

4-15.1. Primary Suppression Components. The primary suppression components are those whose primary function it is to suppress radio interference. The primary suppression components are shown in Figure 4-4.

4-15.1.1. Model MEP-016B. The primary radio interference suppression components are four capacitors; C1, C2, C3 and C4. All of these four capacitors are 0.10 microfarad, 5 percent tolerance 1000V. They are recognizable by their tie-down straps. The silkscreened numbers "C1," etc. are clearly visible.

4-15.1.2. Model MEP-021B. The primary radio interference suppression components are four capacitors; C1, C2, C3 and C4. All of these four capacitors are 0.018 microfarad, 5 percent tolerance, 1000V. They are recognizable by their tie-down straps. The silkscreened numbers "C1," etc. are clearly visible.

4-15.1.3. Model MBP-026B. The primary radio interference suppression components are three capacitors: C1, C2, and C3. Two of these capacitors, C1 and C3, are 0.47 microfarad, 200V. These two are mounted to the side wall connected to the terminal block which has wires running to the output terminals. The third one, C2, is 50 microfarad, 50V, and is supported by a cable clamp.

4-15.2. Secondary Suppression Components. These components have radio interference suppression functions which are incidental or secondary to their primary function. They are internal-external tooth lockwashers on the fuel pump and battery charging regulator-rectifier.

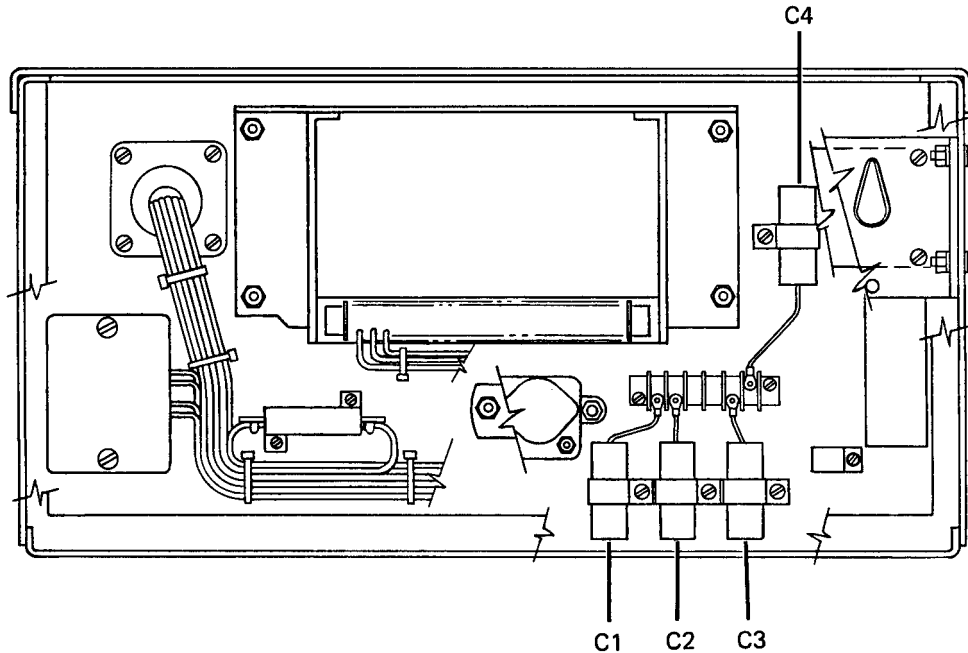


Figure 4-4. Primary Radio Interference Suppression Components.
 Models MBP-016B and MBP-021B Shown.

Section VIII. MAINTENANCE OF FRAME AND SKID BASE.

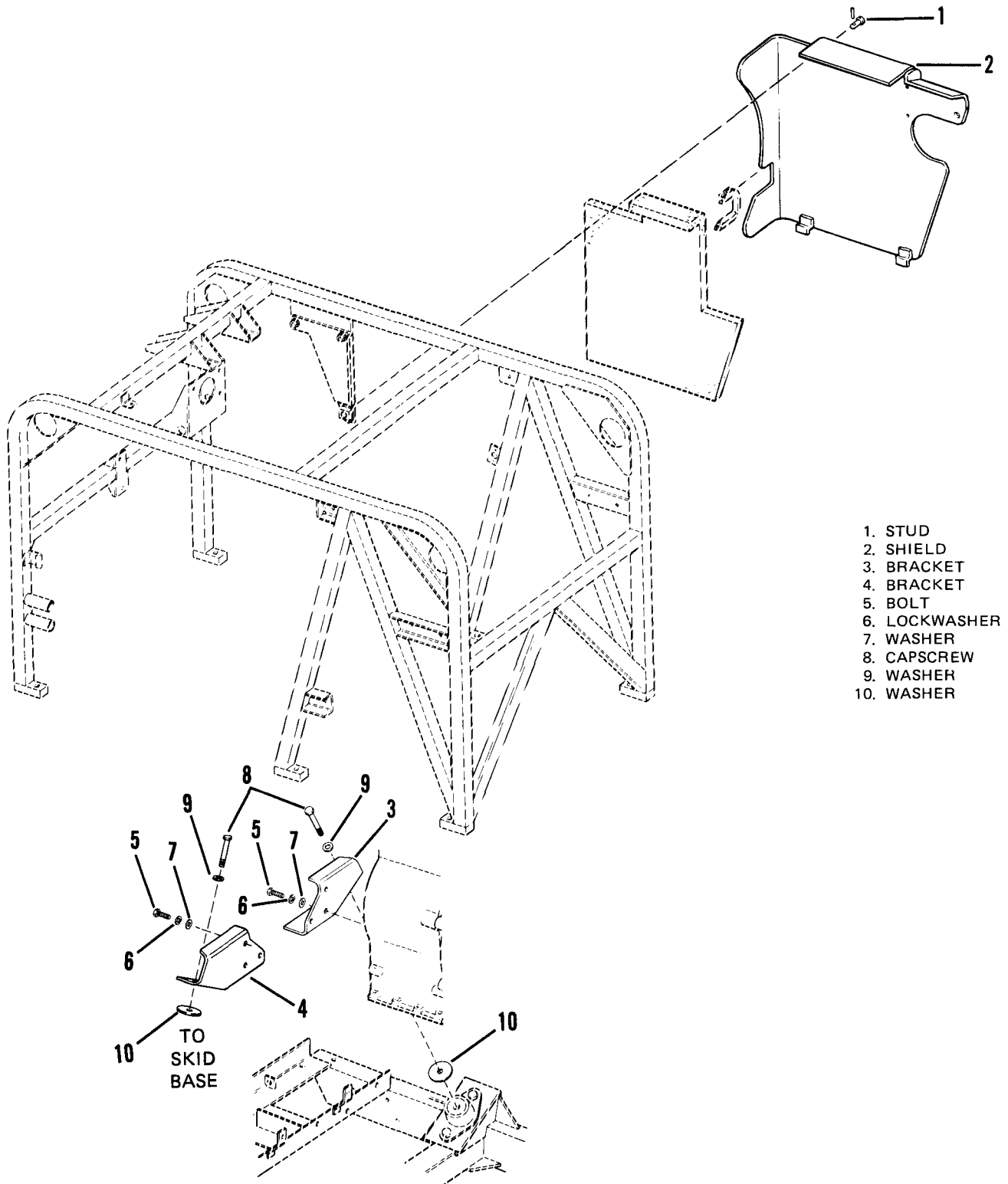
WARNING

Unless manual directs otherwise, do not attempt any of the following maintenance procedures when generator set is operating. Do not touch exposed electrical connections when a source of power such as utility power or another generator set is connected to the load terminals. Severe electrical shock or death from electrocution may result.

4-16. **GENERAL.** The frame and skid base consists of the frame (including the sound suppression panel and muffler shield), the skid base, lifting eye, battery box, battery holddown, and the related hardware.

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4-17. ENGINE MOUNTING BRACKETS. (See Figure 4-5)



- 1. STUD
- 2. SHIELD
- 3. BRACKET
- 4. BRACKET
- 5. BOLT
- 6. LOCKWASHER
- 7. WASHER
- 8. CAPSCREW
- 9. WASHER
- 10. WASHER

Figure 4-5. Engine Mounting Brackets.

It is necessary to loosen studs (1) and remove noise suppression shield (2) to gain access to one of the engine mounting brackets.

- a. Inspection. Inspect engine mounting brackets (3 and 4) to see that they are tightly secured and free of cracks, bends or other damage.
- b. Removal.
 - (1) Place a suitable block under end of engine (opposite generator) to support engine after mounting brackets are removed.
 - (2) Remove bolts (5), lockwashers (6) and washers (7).
 - (3) Remove capscrews (8), washers (9), brackets (3 and 4) and washers (10).
- c. Installation.
 - (1) Install capscrews (8), washers (9), brackets (3 and 4) and washers (10).
 - (2) Install bolts (5), lockwashers (6) and washers (7).
 - (3) Remove block from under engine.
 - (4) Install noise suppression shield (2) and secure with studs (1).

4-18. LIFTING EYE. (See Figure 4-6)

- a. Removal. Remove the two bolts (1), washers (2), and spacer (3) that secure lifting eye (4) to the top of the generator housing and remove the lifting eye.

1. BOLT
2. WASHER
3. SPACER
4. LIFTING EYE

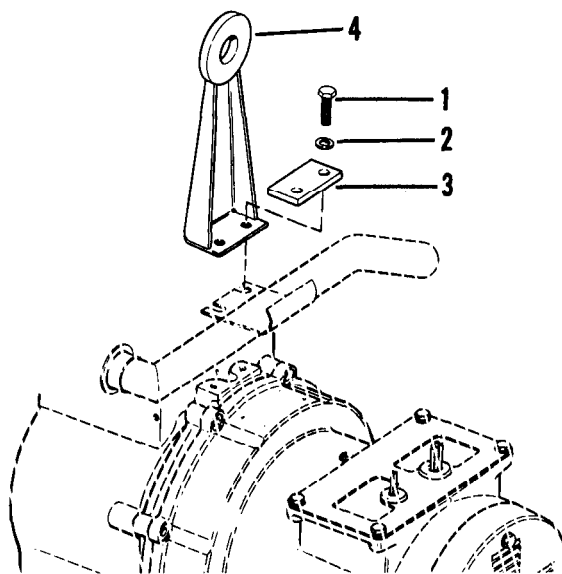


Figure 4-6. Lifting Eye.

- b. Installation. Put lifting eye (4) in position on top of the generator housing and install spacer (3), two bolts (1) and washers (2) that hold it.

4-19. BATTERY FRAME AND TRAY, BATTERY HOLDDOWN. (See Figure 4-7)

- a. Removal.

WARNING

Battery electrolyte is an acid solution that gives off flammable fumes. Do not smoke or use open flame when working around battery. Doing so can cause an explosion that could result in serious personal injury. If skin is exposed to electrolyte, flush exposed area with water immediately. If eyes are exposed to electrolyte, flush them with water and seek immediate medical attention.

NOTE

Disconnect negative (-) cable from battery first, and reconnect if last.

- (1) Disconnect battery cable assemblies (11 and 15) and rubber covers (10 and 22) from battery (8).
- (2) Remove nuts (19), lockwashers (20) and washers (21). Remove battery top frame (9) from battery (8) and remove battery.
- (3) Remove four nuts (1), lockwashers (2), washers (3) and bolts (7). Remove battery bottom frame (6) and battery tray (5) from skid base (4).
- (4) Remove two hook bolts (23) from skid base (4).

- b. Inspection and Repair.

- (1) Inspect battery tray (5), battery bottom frame (6), battery top frame (9), and hook bolts (23) for dents, rust, or bent condition. Repair by straightening and/or welding. Prime paint all items.
- (2) Inspect all bolts and screws for stripped threads or damaged heads. Replace hardware as necessary.

- c. Installation.

- (1) Install hook bolt (23) in rear position on skid base (4). Put battery tray (5) and battery bottom frame (6) in position on skid base (4). Install four bolts (7), washers (3), lockwashers (2) and nuts (1).

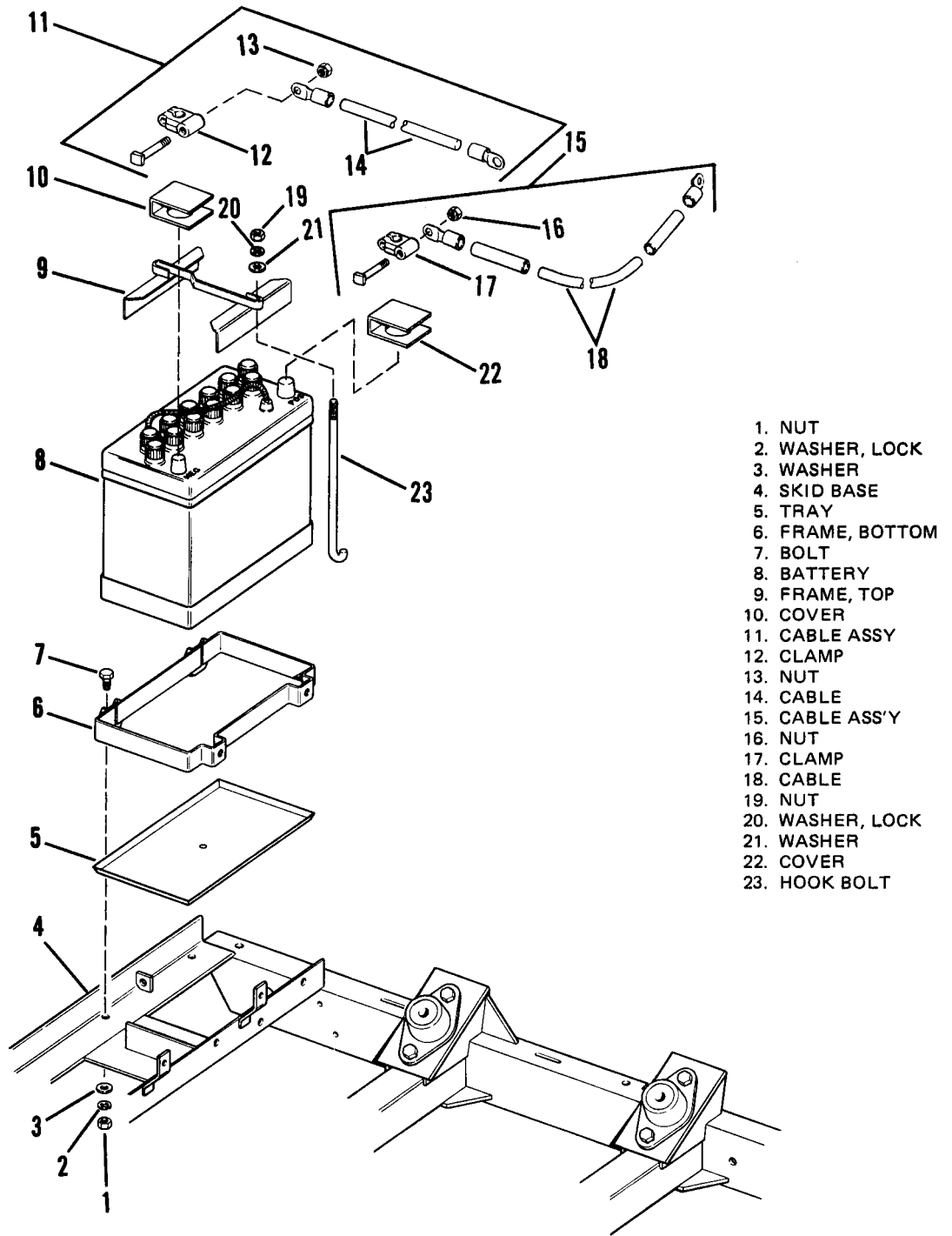


Figure 4-7. Battery, Battery Cables, Battery Tray and Holddown.

WARNING

Battery electrolyte is an acid solution that gives off flammable fumes. Do not smoke or use open flame when working around battery. Doing so can cause an explosion that could result in serious personal injury. If skin is exposed to electrolyte, flush exposed area with water immediately. If eyes are exposed to electrolyte, flush them with water and seek immediate medical attention.

- (2) Put battery (8) in position. Install hook bolt (23) on skid base. Put battery top frame (9) in position and install washers (21), lockwashers (20) and nuts (19) on hook bolts (23).

NOTE

Connect positive (+) cable to battery first, and negative (-) cable last.

- (3) Install rubber cable covers (10 and 22) and connect battery cables (11) and (15) to battery. Tighten clamping nut on cable clamp.

4-20. GROUND ROD - REPLACEMENT. (See Figure 4-8)

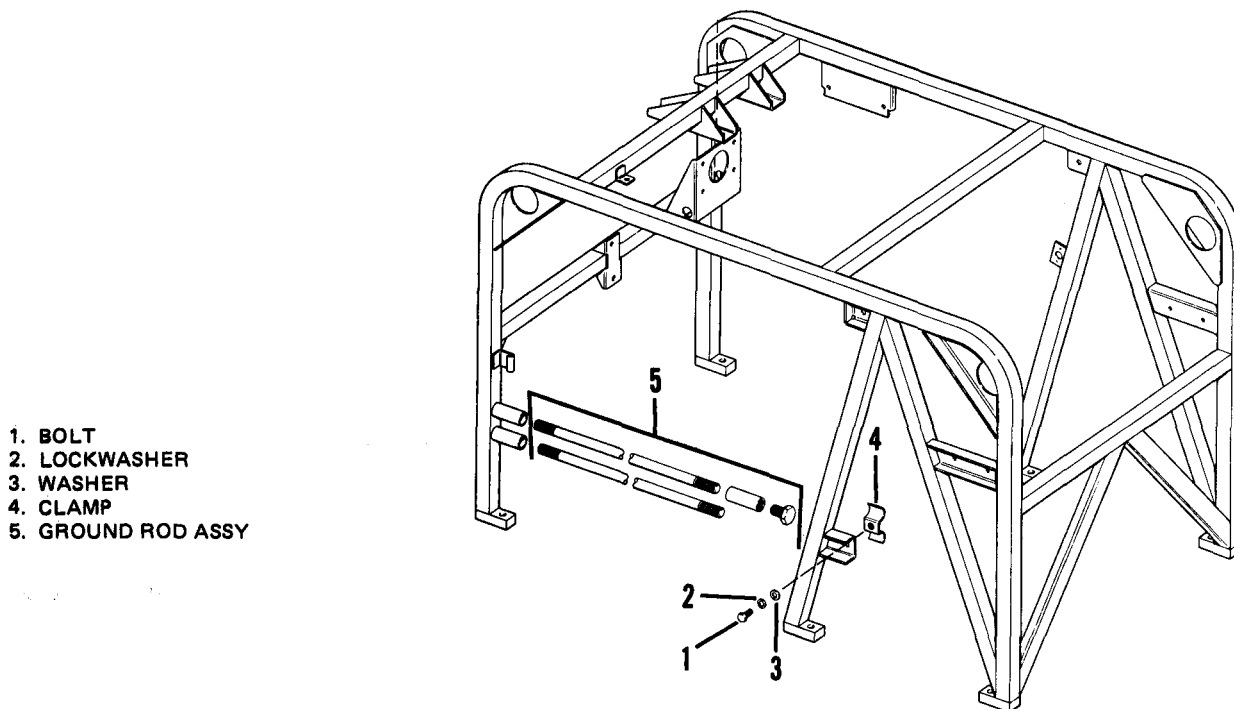


Figure 4-8. Ground Rod.

- a. Remove bolt (1), lockwasher (2), washer (3), and clamp (4). Remove ground rod (5).
- b. Put ground rod in position in frame and install clamp (4), washer (3), lockwasher (2), and bolt (1).

Section IX. MAINTENANCE OF DC ELECTRICAL SYSTEM.

WARNING

Unless manual directs otherwise, do not attempt any of the following procedures when generator set is operating. Do not touch exposed electrical connections when a source of power such as utility power or another generator set is connected to the load terminals. Severe electrical shock or death from electrocution may result.

4-21. PURPOSE, CONSTRUCTION, FUNCTION, AND OPERATION. The DC electrical control system provides starting power for the generator set and it charges the battery while the set is running. It consists of the battery, battery cables and slave receptacle, the starter relay, the voltage regulator the battery charger, the master switch, the DC control circuit breaker and the wiring harness.

4-22. BATTERY. (See Figure 4-7)

WARNING

Battery electrolyte can cause severe burns to the skin. Always flush exposed parts of the skin with clear water as soon as possible after contact with electrolyte.

Batteries generate explosive gas during charging. Utilize extreme caution. Do not smoke or use open flame in the vicinity of the generator set when servicing batteries.

a. **Test.** Charge battery long enough for the battery to be fully charged (1 to 2 hours). Test each cell of battery separately using a hydrometer. Remove cap from one cell of battery and draw fluid from that cell into hydrometer. Hydrometer must register a specific gravity of 1.260 to 1.280. If specific gravity is below 1.260, charge battery. Replace fluid into cell and replace cap. If one or more cells in a battery will not take a charge, replace the battery.

- b. Removal. (See Figure 4-7)

WARNING

Disconnect battery cables before servicing generator components. The high current output of the DC electrical system can cause arcing and/or burns if a short circuit occurs.

NOTE

Disconnect negative (-) cable from battery first and reconnect it last.

- (1) Disconnect battery clamps (12 and 17) and covers (10 and 22) from battery (8).
- (2) Remove nuts (19), lock washers (20) and washers (21). Remove battery top frame (9) from battery (8). Remove battery.

- c. Installation.

WARNING

Disconnect battery cables before servicing generator components. The high current output of the DC electrical system can cause arcing and/or burns if a short circuit occurs.

- (1) Put battery (8) in position. Put battery top frame (9) in position and install washers (21), lockwashers (20) and nuts (19) on hook bolts (23).

NOTE

Connect positive (+) cable to battery first.

- (2) Install rubber cable covers (10 and 22) and connect battery cables (11 and 15) to battery. Tighten clamping nuts on cable clamps (12 and 17).

4-23. BATTERY CABLES. (See Figure 4-9)

- a. Removal.

WARNING

Battery electrolyte is an acid solution that gives off flammable fumes. Do not smoke or use open flame when working around battery. Doing so can cause an explosion that could result in serious personal injury. If skin is exposed to electrolyte, flush exposed area with water immediately. If eyes are exposed to electrolyte, flush them with water and seek immediate medical attention.

NOTE

Always disconnect the negative (-) cable first and reattach it last.

- (1) Disconnect negative (-) cable assembly (1) from battery. Disconnect positive (+) cable assembly (2) from battery. Remove rubber covers (9 and 10).
- (2) Remove nut (3) and remove battery cable (5) and slave receptacle cable (not shown) from terminal (4). Remove nut (7) and remove battery cable (6) and slave receptacle cable (not shown) from terminal (8).
- (3) Tag and disconnect cables (5 and 6) from the starter case and starter solenoid.

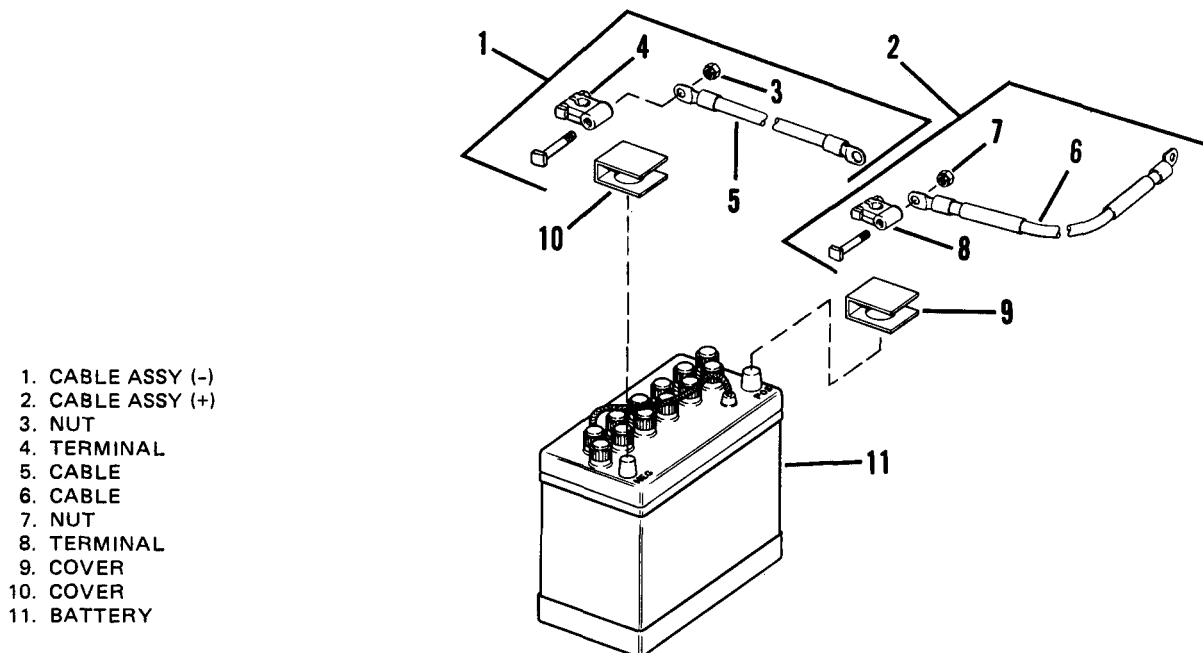


Figure 4-9. Battery Cables and Slave Receptacle.

b. Inspection and Repair.

- (1) Inspect battery cables for damaged terminals or insulation. Replace damaged cables.
- (2) Inspect terminals and hardware for damage or stripped threads. Replace damaged terminals.
- (3) Inspect battery post covers for torn condition. Replace damaged covers.

c. Installation.

- (1) Attach the positive (+) battery cable (6) to the stud on the starter motor solenoid. Attach the negative (-) battery cable (5) to the starter case.
- (2) Put positive (+) battery cable (6) and slave receptacle cable (not shown) in position on terminal (8) and install nut (7). Put negative (-) battery cable (1) and slave receptacle cable (10) in position on terminal (4) and install nut (3).

NOTE

Always disconnect the negative (-) cable first and reattach it last.

- (3) Put cover (9) in position and connect positive (+) cable assembly (2) to the positive (+) battery post. Put cover (10) in position and connect negative (-) cable assembly (1) to the negative (-) post on the battery. Tighten terminal connectors securely.

4-24. SLAVE RECEPTACLE. (See Figure 4-10)

a. Test. Using a voltmeter check the battery voltage at the battery terminals, and then check the battery voltage at the slave receptacle. If the voltage at the slave receptacle is not the same as the battery voltage, check for continuity between the battery and slave receptacle. Replace the defective component.

b. Removal.

NOTE

Always disconnect the negative (-) cable first.

- (1) Disconnect the negative (-) cable assembly from the battery. Disconnect the positive (+) cable assembly from the battery.
- (2) Remove nut (1) and remove slave receptacle cable (2) from negative terminal (4). Remove nut (5) and remove slave receptacle cable (3) from positive terminal (7).
- (3) Remove nuts (8), washers (9) and screws (10). Remove slave receptacle (11) from the frame.

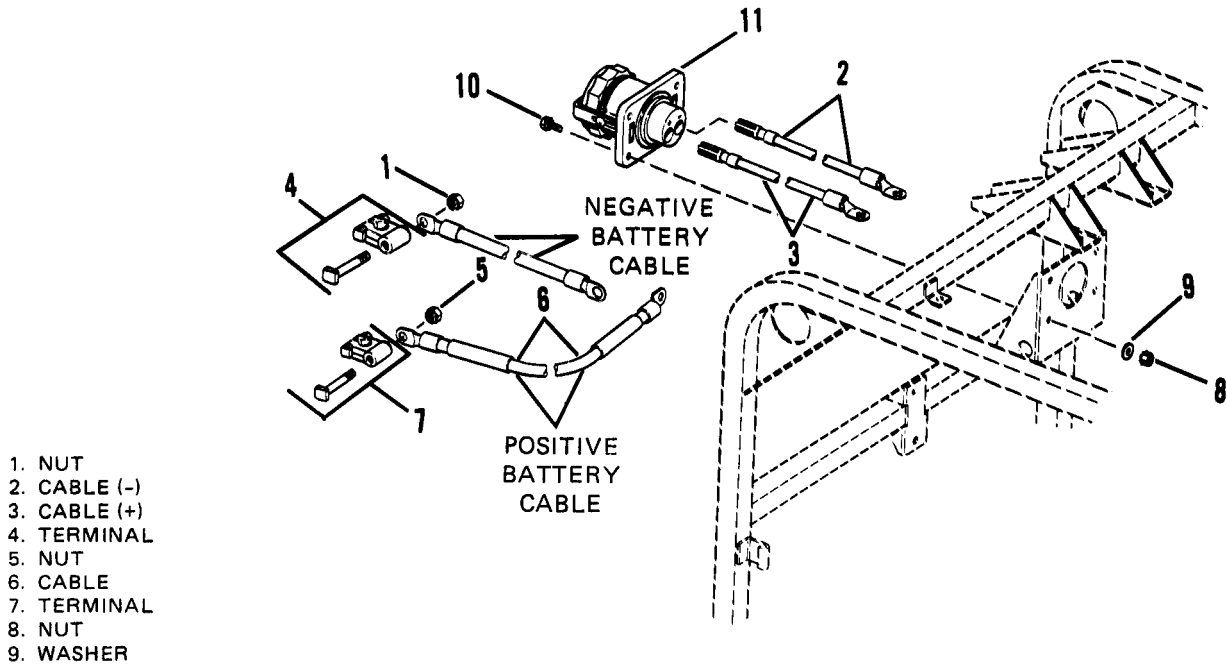


Figure 4-10. Slave Receptacle.

c. Installation.

- (1) Put slave receptacle (11, Figure 4-10) in position on the frame and install screws (10), washers (9) and nuts (8).
- (2) put slave receptacle cable (3) in position on positive terminal (7) and install nut (5). Put slave receptacle cable (3) in position on negative terminal (4) and install nut (1).

NOTE

Always connect the positive (-) cable first.

- (3) Connect the positive (+) and negative (-) cable assemblies to the battery.

4-25. VOLTAGE REGULAR BATTERY CHARGING.

a. General. The battery charging voltage regulator converts the AC current from the engine alternator to approximately 28 volts DC for charging the battery whenever the unit is running.

b. Test. Using a DC Voltmeter, test voltage regulator (see Figure 4-11 for test points). Check the voltage with the unit running. Output voltage from the regulator must be $28.5 \pm .7$ volts DC at 77°F (25°C). If voltage is not within specifications, the voltage regulator must be replaced.

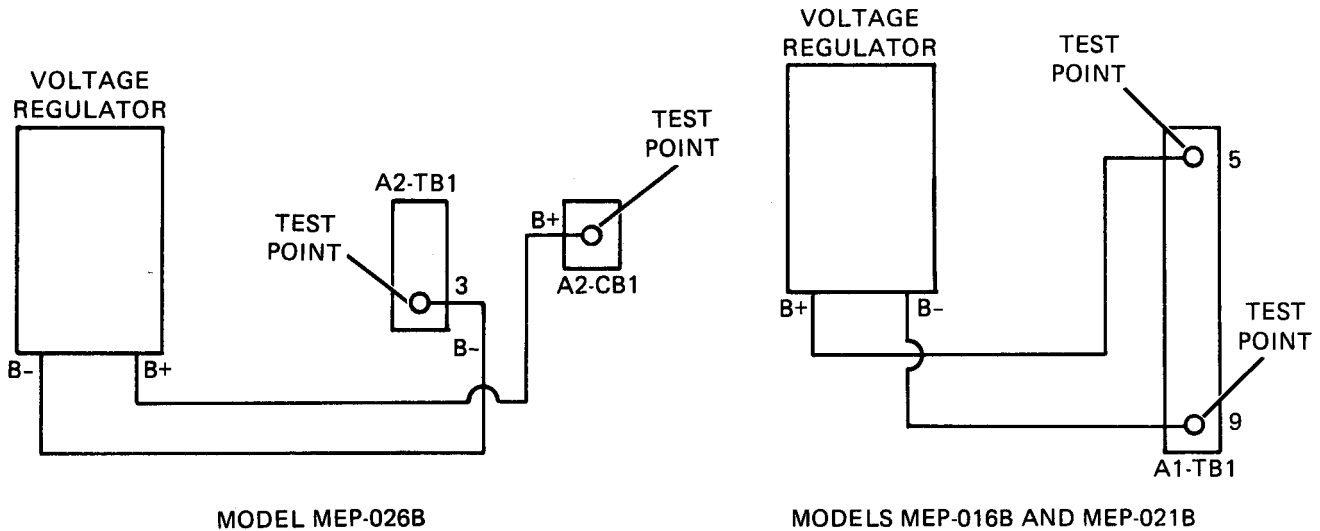


Figure 4-11. Voltage Regulator Test Points.

c. Removal. (see Figure 4-12)

- (1) Follow four wires from voltage regulator to connection points. Tag wires and note locations of terminals. Disconnect four wires. Cut plastic tie wraps as necessary.
- (2) Remove nuts (1), and screws (2). Remove the voltage regulator (3).

d. Installation.

- (1) Put voltage regulator (3) in position and install screws (2), and nuts (1).
- (2) Using tags for identification, connect four wires. Replace plastic tie wraps (4) (Table 3-1, item 18) as necessary.

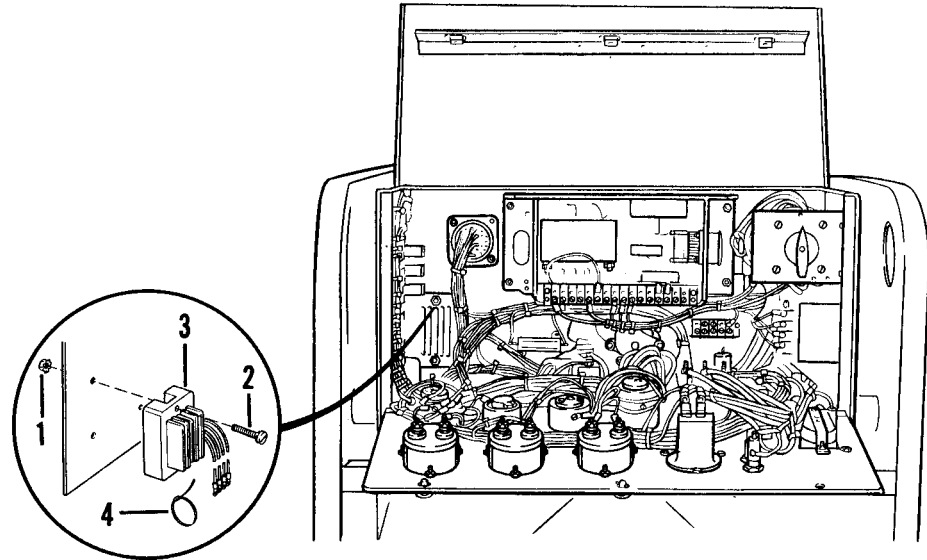
4-26. **STARTER RELAY.** (See Figure 4-13)

a. Inspect.

- (1) Inspect the starter relay for damage, secure mounting, and check to see that all wires are connected securely.
- (2) Tighten or replace hardware as necessary. Repair or replace damaged or loose wiring. Replace a damaged starter relay.

b. Test.

- (1) Tag and disconnect the wires from the starter relay.
- (2) Connect the leads of an ohmmeter to terminals (A1 and A2) of the starter relay. The resistance between (A1 and A2) should be high (infinite) when no voltage is applied to terminals (x1 and x2).



MODELS MEP-016B AND MEP-021B

- 1. NUT
- 2. SCREW
- 3. REGULATOR, VOLTAGE
- 4. PLASTIC TIE WRAP

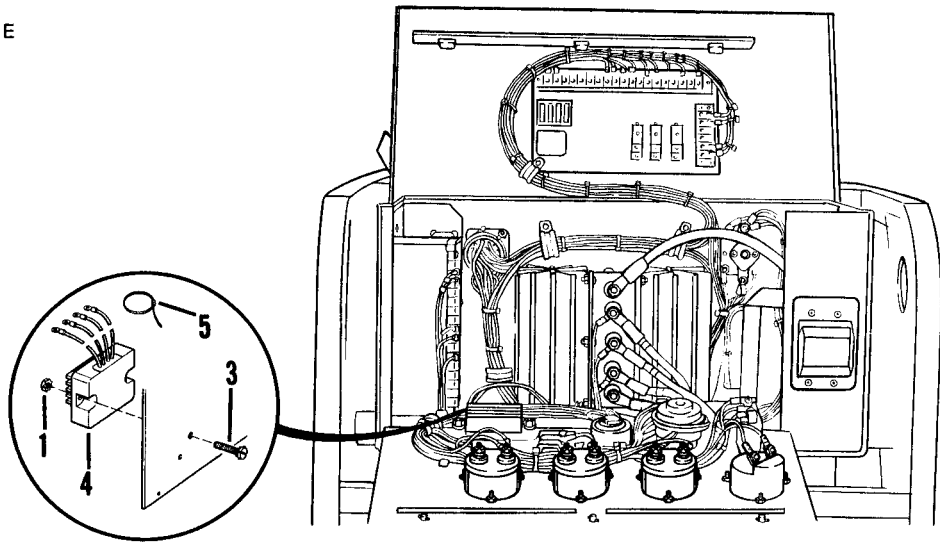


Figure 4-12. Voltage Regulator, Battery Charging.

(3) With the ohmmeter still connected to terminals (A1 and A2) ,apply battery voltage to terminals (X1 and X2). The resistance between terminals (A1 and A2) should drop to zero. If the resistance does not drop with battery voltage applied, replace the relay.

c. Removal.

- (1) Tag and disconnect all wires from the starter relay (3).
- (2) Remove screws (1) and nuts (2). Remove relay (3).

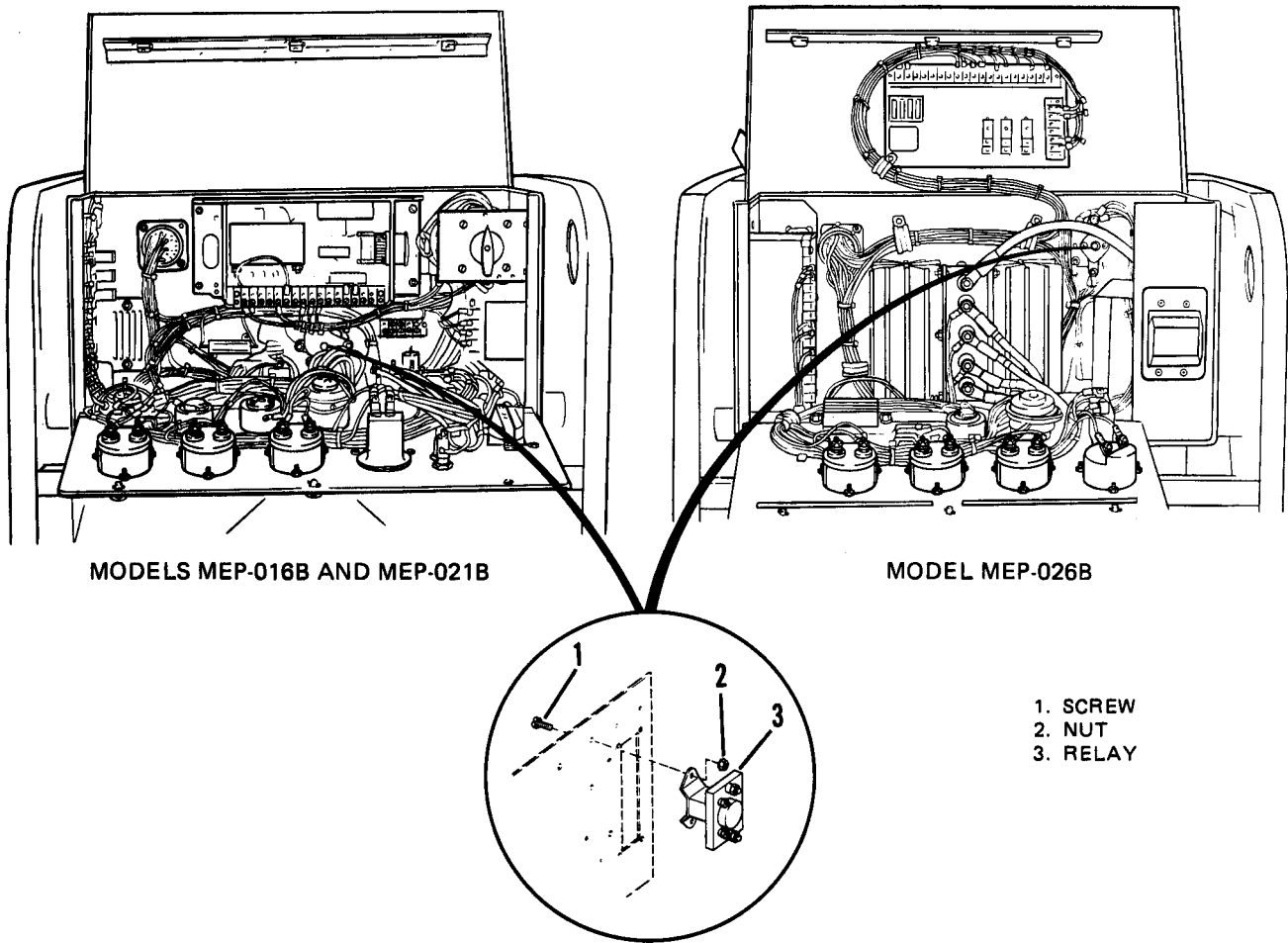


Figure 4-13. Starter Relay.

d. Installation.

(1) Put the starter relay (3) in position and install screws (1) and nuts (2).

(2) Using the tags for identification, connect the wires to the relay (3).

4-27. DC CONTROL CIRCUIT BREAKER. (Emergency Stop) (see Figure 4-14)

a. Test.

(1) Tag and disconnect wiring from circuit breaker.

(2) With circuit breaker off, use an ohmmeter to check for resistance between terminals.

(3) Ohmmeter should indicate no continuity (high ohms) between terminals.

(4) Flip circuit breaker to the ON position. Recheck resistance between terminals.

(5) Ohmmeter should now indicate continuity (low ohms) between terminals.

b. Removal.

NOTE

Procedures for all three sets MBP-016B, MEP-021B, and MEP-026B are the same. Figure 4-14 illustrates the MEP-021B (400 Hz) set.

(1) Tag and disconnect wiring from circuit breaker (1).

(2) Remove screws (2) and circuit breaker (1).

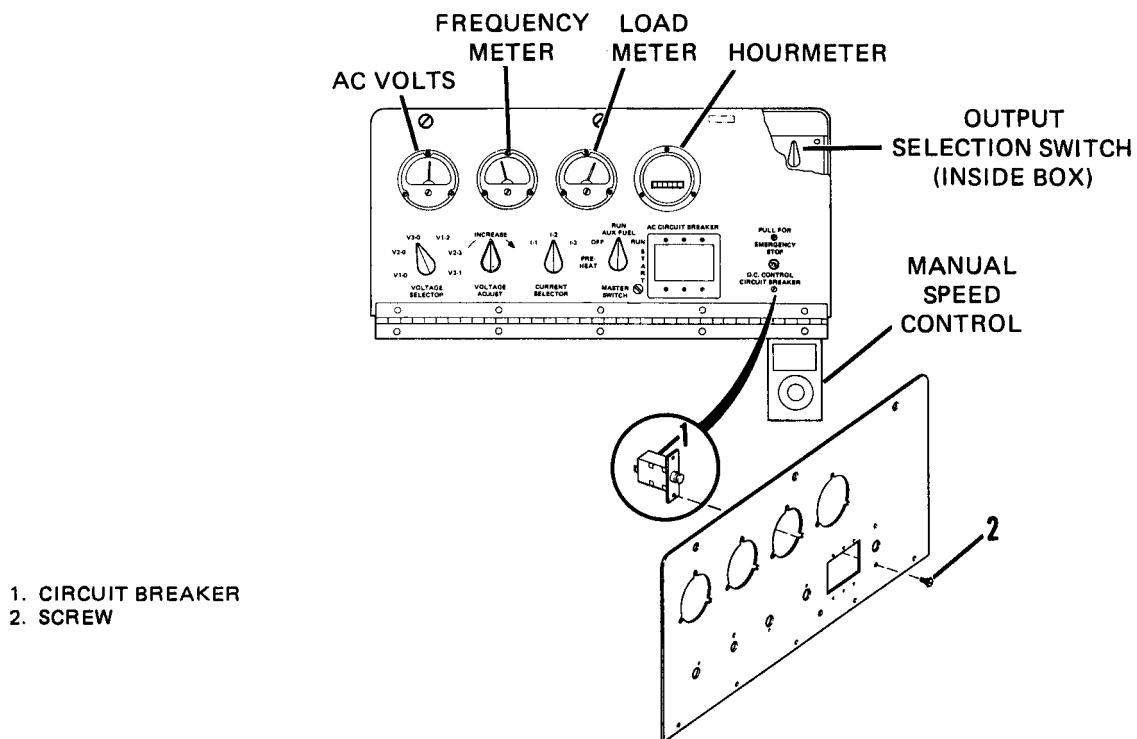


Figure 4-14. DC Control Circuit Breaker (Model MEP-021B Shown).

c. Installation.

(1) Secure circuit breaker (1) to front panel with screws (2).

(2) Using tags for identification, connect wiring to circuit breaker.

Section X. MAINTENANCE OF THE POWER GENERATION SYSTEM.

Unless manual directs otherwise, do not attempt any of the following maintenance procedures when generator set is operating. Do not touch exposed electrical connections when a source of power such as utility power or another generator set is connected to the load terminals. Severe electrical shock or death from electrocution may result.

4-28. GENERATOR ASSEMBLY. (See Figure 4-15)

- a. Inspect generator housing for cracks, distortion or other visible damage.

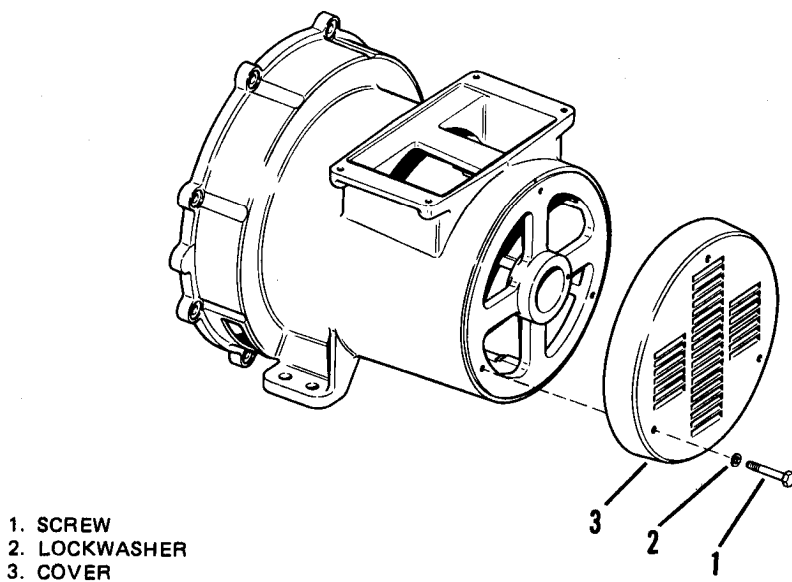
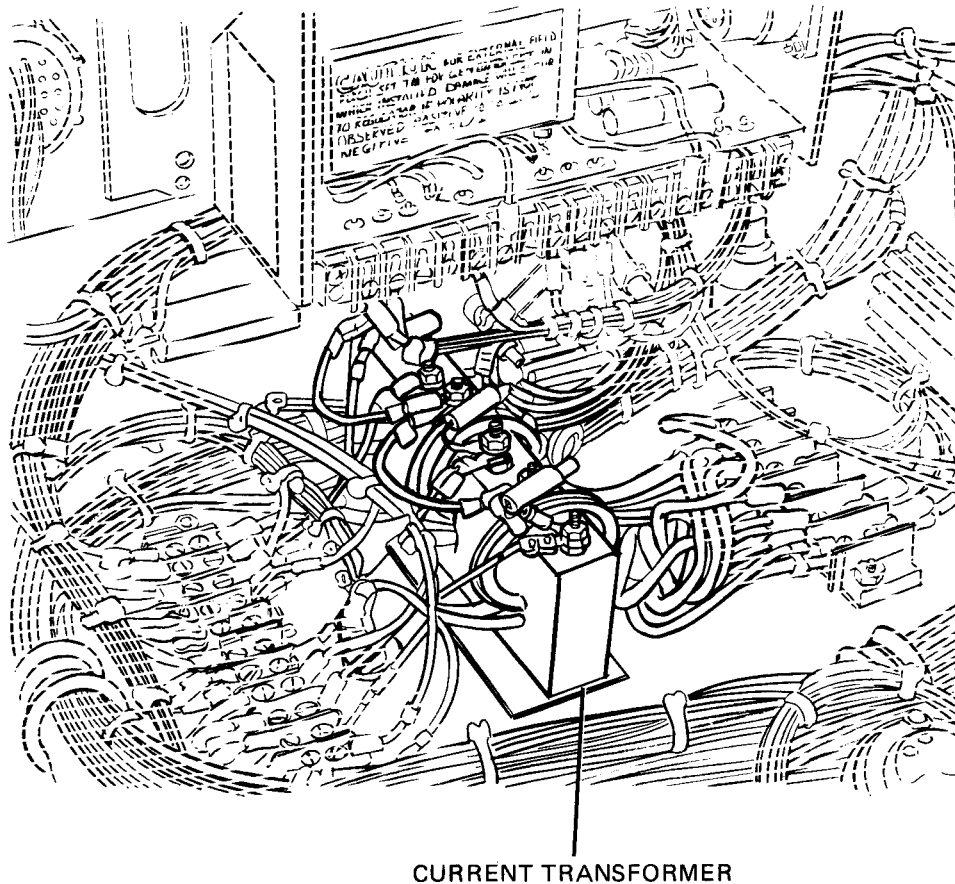


Figure 4-15. Generator (Model MEP-02113 Shown).

- b. Remove three screws (1), lockwashers (2) and cover (3).
- c. Visually inspect generator windings for signs of burning, shorting or other physical damage.
- d. Secure cover (3) with screws (1) and lockwashers (2).

4-29. **CURRENT TRANSFORMER.** (Models MEP-016B and MEP-021B Only) (See Figure 4-16)



CURRENT TRANSFORMER

Figure 4-16. Current Transformer, Models MEP-016B and MEP-021B Only.

- a. Inspect that current transformer is mounted securely.
- b. Check that all wiring is securely connected to terminals.
- c. Check that resistors are not damaged or loose.

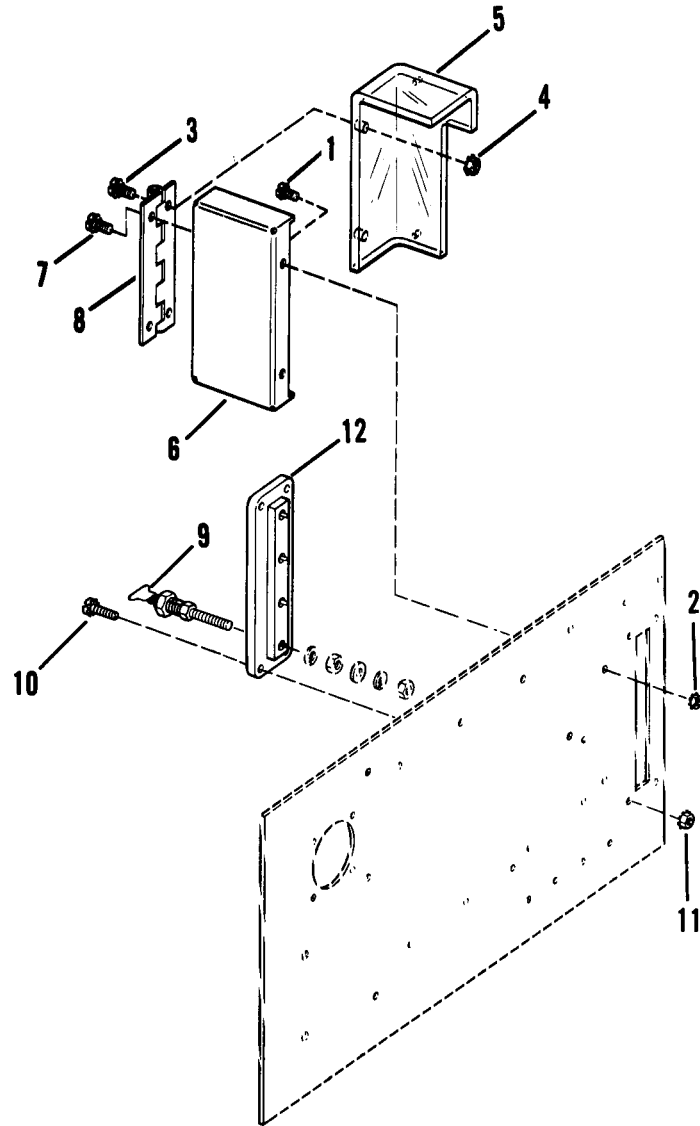
4-30. **LOAD TERMINAL BOARD.** (See Figures 4-17 and 4-18)

NOTE

Procedures for Models MEP-016B, MEP-021B and MEP-026B are similar. For Models MEP-016B and MEP-021B, refer to Figure 4-16. For Model MEP-026B, refer to Figure 4-17.

a. Removal.

- (1) If removal of cover is necessary remove screws (1) and nuts (2) to remove cover and bracket assembly from back of control box.



- 1. SCREW
- 2. NUT
- 3. SCREW
- 4. NUT
- 5. COVER
- 6. BRACKET
- 7. SCREW
- 8. HINGE
- 9. TERMINAL, LOAD
- 10. SCREW
- 11. NUT
- 12. BOARD

Figure 4-17. Load Terminal Board, Models MEP-016B and MEP-021B.

- (2) If necessary to remove cover (5), remove screws (3) and nuts (4) from bracket (6).
- (3) Remove screws (7) to remove hinge (8) from bracket (6).
- (4) Tag and disconnect wiring from load terminals (9)
- (5) Remove screws (10) and nuts (11) to remove terminal board (12).
- (6) Load terminals (9) are not removed from terminal board (12) unless visibly damaged.

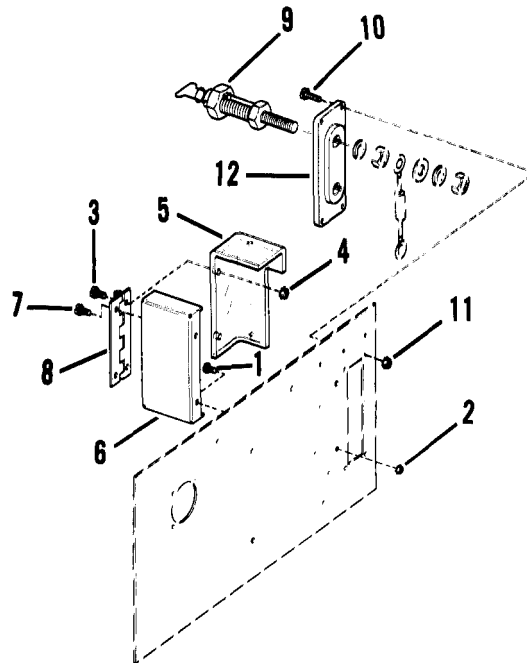


Figure 4-18. Load Terminal Board, Model MEP-026B.

b. Installation.

- (1) If removed, secure load terminals (9) to terminal board (12).
- (2) Secure terminal board (12) to control box with screws (10) and nuts (11).
- (3) Using tags for identification, attach leads to terminals.
- (4) Install bracket (6) on back of box with screws (1) and nuts (2)
- (5) Install hinge (8) to bracket (6) with screws (7).
- (5) Put cover (5) in position on hinge (8) and install screws (3) and nuts (4).

4-31. **CONVENIENCE OUTLET.** (Model MEP-016B Only) (See Figure 4-19)

a. Inspect.

- (1) Inspect convenience outlet and cover for damage and secure mounting. Open control box and check that wires are securely attached to the outlet terminals.
- (2) Tighten or replace hardware as necessary. Repair or replace damaged wiring. Replace a damaged outlet or cover.

b. Test.

- (1) Start and run generator set.

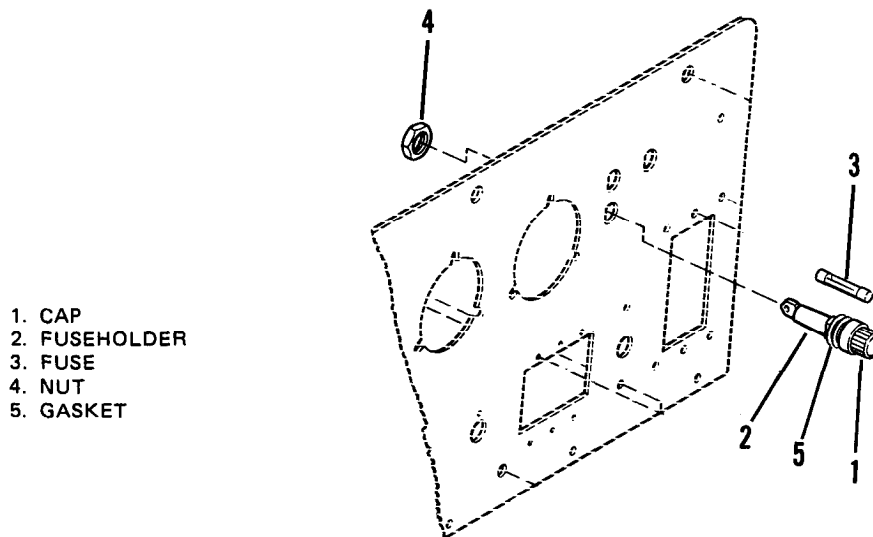


Figure 4-20. Convenience Outlet Fuses (Model MEP-016B Only).

- (2) Inspect that fuse filament is not broken. If unsure, test for continuity with a multimeter or test lamp. Inspect fuseholder for damage and secure mounting. Check that wires are securely connected to the fuse holder.
- (3) If fuseholder is damaged, disconnect wires and remove nut (4) to remove fuseholder.

c. Installation.

- (1) Put gasket (5) and fuseholder (2) in position and install nut (4). Connect wires to fuseholder.
- (2) Install fuse (3) and securely tighten cap (1).

Section XI. MAINTENANCE OF FUEL SYSTEM.

WARNING

Unless manual directs otherwise, do not attempt any of the following maintenance procedures when generator set is operating. Do not touch exposed electrical connections when a source of power such as utility power or another generator set is connected to the load terminals. Severe electrical shock or death from electrocution may result.

4-33. DESCRIPTION AND FUNCTION. The fuel system consists of the fuel tank, fuel filter, transfer pump, fuel injection pump, fuel injection nozzle, auxiliary fuel pump and a fuel shutoff solenoid. Refer to paragraph 1-9.1.1. for a functional description of the fuel system.

4-34. FUEL TRANSFER PUMP. (See Figures 4-21 and 4-22)

a. Test.

- (1) Connect a fuel pressure gage to outlet port of transfer fuel pump with a tee fitting.
- (2) Start and run generator set.
- (3) Fuel pressure gage should indicate a pressure of 4 to 7 psi (27 to 48 kPa) at engine idle.

b. Service. Remove and clean the transfer pump filter after every 500 hours of operation (See Figure 4-21).

- (1) Remove filter element (3) and gasket (4).
- (2) Clean filter element (3) and reinstall with gasket (4).

c. Removal.

- (1) Drain the fuel filter (see paragraph 4-36).
- (2) Remove hose (11, Figure 4-21).
- (3) Disconnect hose (2) from the pump.
- (4) Remove screws (5) and washers (6).
- (5) Remove fuel cutoff solenoid brackets (refer to paragraph 4-37).
- (6) Remove fuel transfer pump (7) and gasket (8).
- (7) If necessary, remove fittings (1 and 10).

- (8) Remove pump push rod (9) from crankcase bore. Use a magnetic retriever to raise rod out of bore.

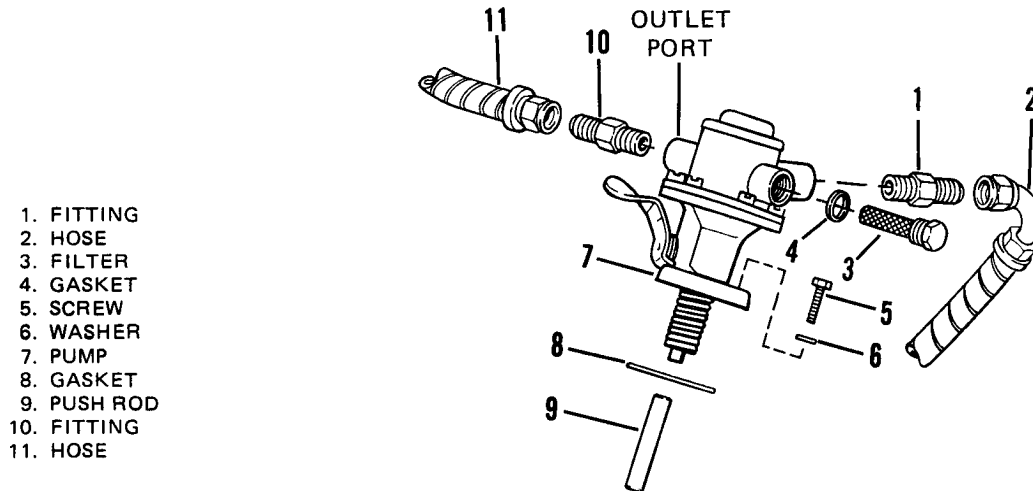


Figure 4-21. Fuel Transfer Pump.

d. Disassembly.

- (1) Notch pump cover and body with a file for location purposes when pump is reassembled.
- (2) Remove filter (3, Figure 4-21) and gasket (4).

CAUTION

Do not pry cover (2, Figure 4-22) off of pump. Damage to the diaphragm may result.

- (3) Remove six cover screws (1, Figure 4-22). Tap pump cover (2) with a soft plastic hammer to separate the two parts.
- (4) Compress push rod spring (3) against pump body and remove retaining ring (4), spring plate (5) and spring (3).
- (5) Remove diaphragm (6) from pump body.

e. Cleaning and Inspection.

- (1) Wipe parts with a clean lint-free cloth that has been slightly dampened with solvent.
- (2) Inspect parts for damaged threads, cracks, deformation, or other visible damage.

NOTE

Service kit contains gaskets, diaphragm, and filter.
If any other components are damaged or worn, replace
the pump assembly.

f. Assembly.

- (1) Lubricate diaphragm shaft (7, Figure 4-22) with clean diesel fuel and insert carefully through oil seal into pump body.
- (2) Place spring (3) and spring plate (5) onto diaphragm shaft (7). Compress spring and secure with retaining ring (4).
- (3) Push diaphragm shaft upward against spring force. Assemble cover (2) to body with notch marks aligned. Install screws (1) but do not tighten.
- (4) Release tension of diaphragm shaft and uniformly tighten screws (1) to 17 to 26 in lbs (2 to 3 N.m).
- (5) Install fuel filter (3, Figure 4-21) and gasket (4).

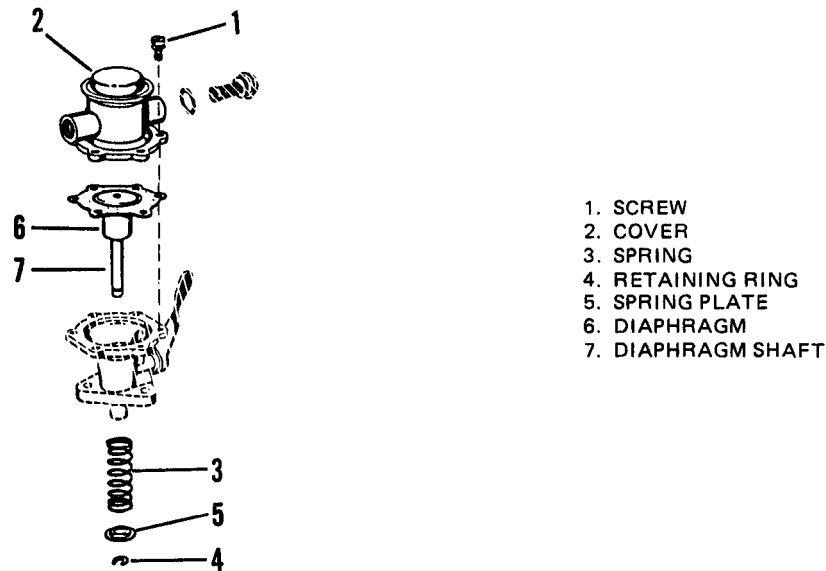


Figure 4-22. Fuel Transfer Pump, Exploded View.

g. Installation.

- (1) Lubricate pump push rod (9, Figure 4-21) with clean engine oil and push in bore until camshaft is contacted.

- (2) Install fittings (1 and 10) on pump.
- (3) Place gasket (8) on crankcase.
- (4) Place pump (7) on crankcase.
- (5) Install fuel cutoff solenoid (see paragraph 4-37).

NOTE

Fuel shutdown solenoid bracket is held down by two fuel pump mounting screws.

- (6) Apply loctite (Table 3-1, item 10) to screws (5) and install screws with washers (6). Do not tighten screws at this time.

CAUTION

Fuel priming lever must be held in the up position while tightening pump mounting screws. Failure to do this can result in damage to the pump plunger rod.

- (7) Tighten screws (5) a few turns at a time alternately while lifting up on fuel priming lever. This prevents pump plunger from jumping off transfer rod.
- (8) Tighten screws (5) securely.
- (9) Install hose (11). Connect hose (2) to pump.
- (10) Test fuel transfer pump for correct fuel pressure.
- (11) Check engine shutdown solenoid adjustment (refer to paragraph 4-37).

4-35. AUXILIARY FUEL PUMP. (See Figures 4-23 and 4-24)

- a. Test. Perform operational test for auxiliary fuel pump.

- (1) Connect an accurate fuel pressure gage to output port of auxiliary fuel pump .
- (2) Turn master switch to RUN AUX FUEL position. Pump should provide a fuel pressure of 6 to 7 psi. Replace defective fuel pump.

- b. Service. Every 6 months (or 500 operating hours), clean or replace the internal filter (4) of the auxiliary fuel pump. To do this, follow the removal procedures below, and steps (a and b) of the disassembly procedures.

c. Removal.

- (1) Remove ground rods to gain access to fuel pump (refer to paragraph 4-20).
- (2) Disconnect fuel pump electrical connector (3).
- (3) Disconnect fuel line (1, Figure 4-23) from fuel pump (2).
- (4) Remove cap (4).
- (5) Remove screws (5) and fuel pump (2).

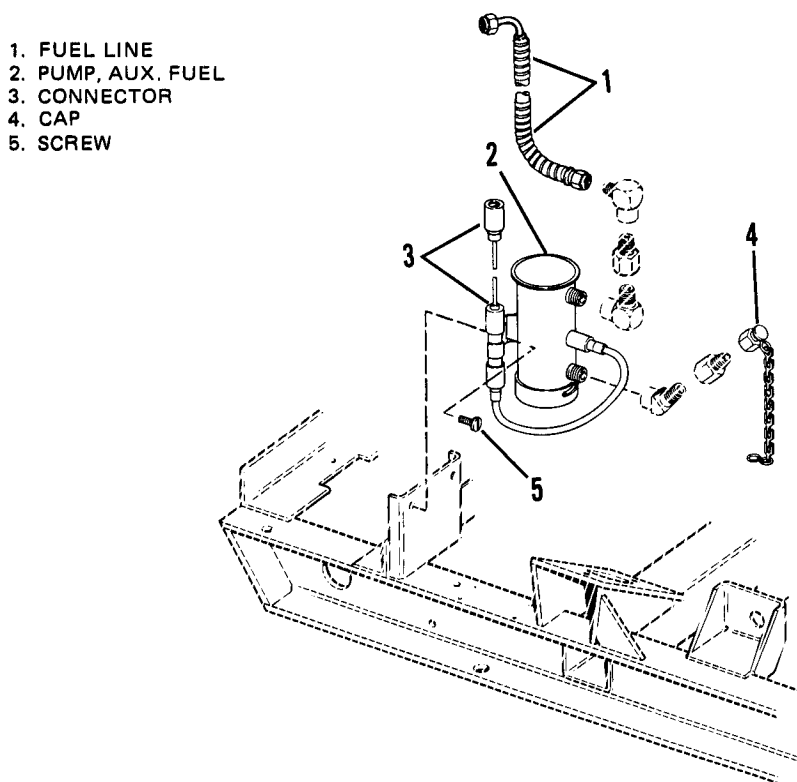


Figure 4-23. Auxiliary Fuel Pump.

d. Repair.

- (1) Disassembly.
 - (a) With a wrench, release bottom cover (1, Figure 4-24) from bayonet fittings. Twist cover by hand to remove from pump body.
 - (b) Remove filter (4) magnet (3) and cover gasket (2). Wash filter in cleaning solvent and blow out dirt and cleaning solvent with air pressure. Check cover gasket and replace if deteriorated. Clean cover.

- (c) Remove retainer spring (5) from plunger tube (11) using thin nose pliers to spread and remove ends of retainer from tube. Then remove washer (6), O-ring seal (7), cup valve (8), plunger spring (9) and plunger (10) from tube (11). Do not disassemble plunger (10).
- (d) Wash parts in cleaning solvent and blow out with air pressure. If plunger does not wash clean or if there are any rough spots, gently clean surface with crocus cloth. Wash the pump assembly in cleaning solvent. Blow out the tube with air pressure. Swab the inside of the tube with a clean, dry cloth.

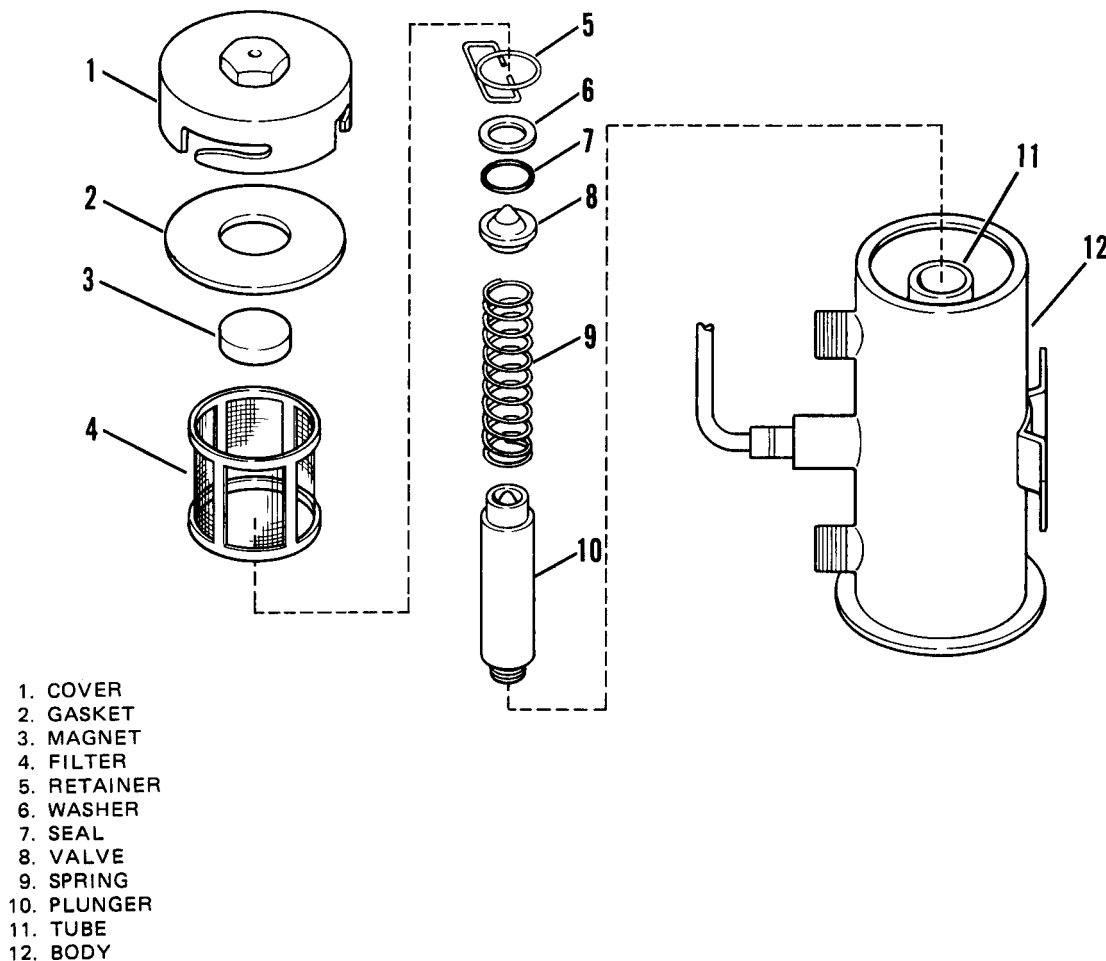


Figure 4-24. Auxiliary Fuel Pump, Exploded View.

(2) Assembly.

- (a) Moisten the plunger assembly and tube with engine oil. Insert the plunger assembly (10) in the tube with the buffer spring end first. Check fit by slowly raising and lowering the plunger in the tube. It should move fully without any tendency to stick. If a click cannot be heard, the interrupter assembly is not functioning properly in which case the pump should be replaced.

- (b) To complete the assembly, install the plunger spring (9), cup valve (8), O-ring seal (7) and washer (6) as shown. Compress spring (9) and assemble retainer (5) with ends of retainer in side holes of tube (11).
- (c) Place cover gasket (2) and magnet (3) in bottom cover (1) and assemble filter (4) and cover assembly. Twist cover by hand to hold in position on pump housing. Tighten bottom cover with a wrench.

e. Installation.

- (1) Secure fuel pump (2, Figure 4-23) to frame with screws (5).
- (2) Install cap (4).
- (3) Reconnect fuel line (1) to fuel pump (2).
- (4) Connect fuel pump electrical connector (3).
- (5) Reinstall ground rods (refer to paragraph 4-20).

4-36. FUEL FILTER. (See Figure 4-25)

a. Service. Daily (before operation) loosen bleed screw (3) and push up on drain valve (11) to drain any water or sediment from the fuel filter. Tighten bleed screw (3).

b. Replace. (Changing filter element)

- (1) Remove nut (4) and O-ring (5).
- (2) Remove cover (6) and O-ring (7). Remove and discard filter (8).
- (3) Install new filter (8) in filter cannister (9).
- (4) Install O-ring (7) and secure cover (6) with nut (4, and O-ring (5).

c. Removal.

- (1) Open bleed screw (3) and drain all fuel from filter canister (9) by pushing up on the drain valve (11).
- (2) Disconnect fuel lines (13) and (17).
- (3) Remove nuts (16), washers (15) and screws (10).
- (4) Remove filter assembly (1) with bracket (14).
- (5) If necessary, remove drain valve (11).

d. Installation.

- (1) If removed, install drain valve (11).

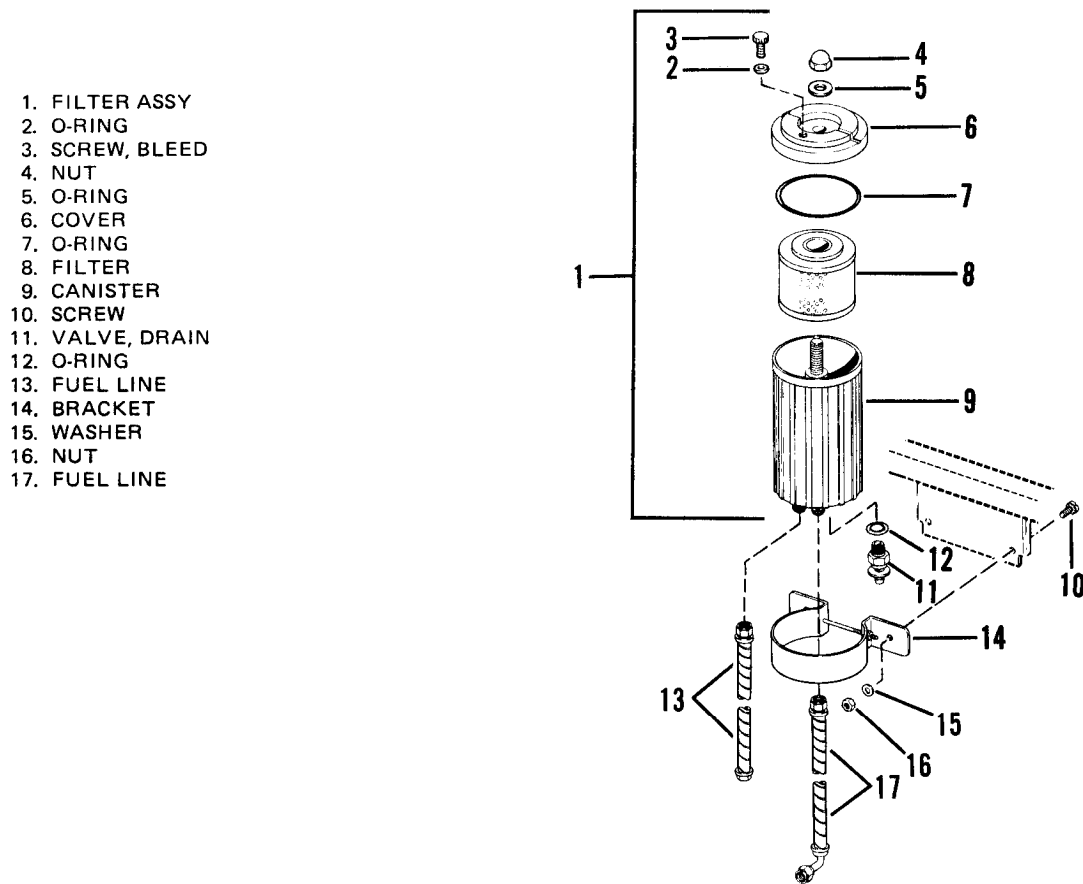


Figure 4-25. Fuel Filter.

- (2) Secure filter assembly (1) with bracket (14) to frame with screws (10), washers (15) and nuts (16).
- (3) Connect fuel lines (13) and (17).
- (4) After installation, make sure that bleed screw (3) on filter is closed and operate manual priming lever on fuel transfer pump to prime fuel system before starting the engine.

4-37. SOLENOID, FUEL CUTOFF. (See Figure 4-26 and 4-27)

a. Inspect. Inspect the fuel cutoff solenoid for damage and secure mounting. Check the electrical connections and the wires for damage. Check that retainer clip on plug engages with slot on solenoid. Check that governor and pump linkage are clean and move freely.

b. Test.

NOTE

A minimum of 1 gallon of fuel is required in the fuel tank to energize the solenoid.

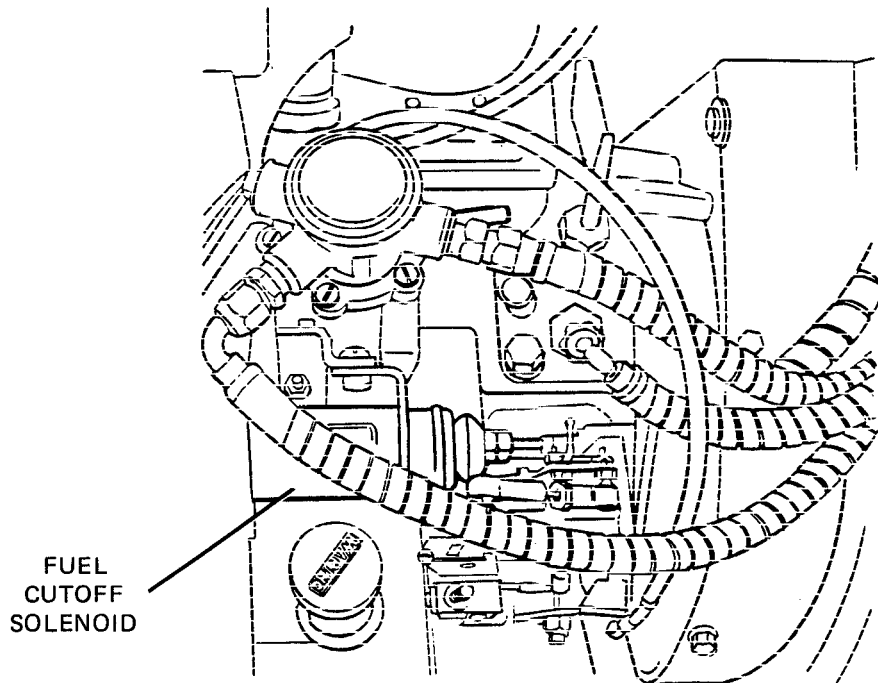


Figure 4-26. Location of Fuel Cutoff Solenoid.

- (1) With master switch in the RUN position, voltage across the solenoid connections should be 24 volts. If no or low voltage is read, check the solenoid circuit.
- (2) Disconnect negative (-) battery cable from battery.
- (3) Remove the connector from the solenoid.
- (4) Use a multimeter to measure the resistance across the solenoid terminals as follows:
 - (a) With the solenoid plunger in its de-energized (extended) position, the resistance should be 1.82 ohms + 10 percent.
 - (b) Manually push the plunger all the way in. The resistance should be 83.5 ohms + 10 percent.

c. Removal.

- (1) Disconnect negative (-) battery cable from battery.

CAUTION

Retainer clip on connector must be depressed to disconnect connector from solenoid. Failure to do so could damage wires.

- (2) Disconnect connector (4, Figure 4-27) from solenoid (1). Push in to release the retainer clip on the connector.

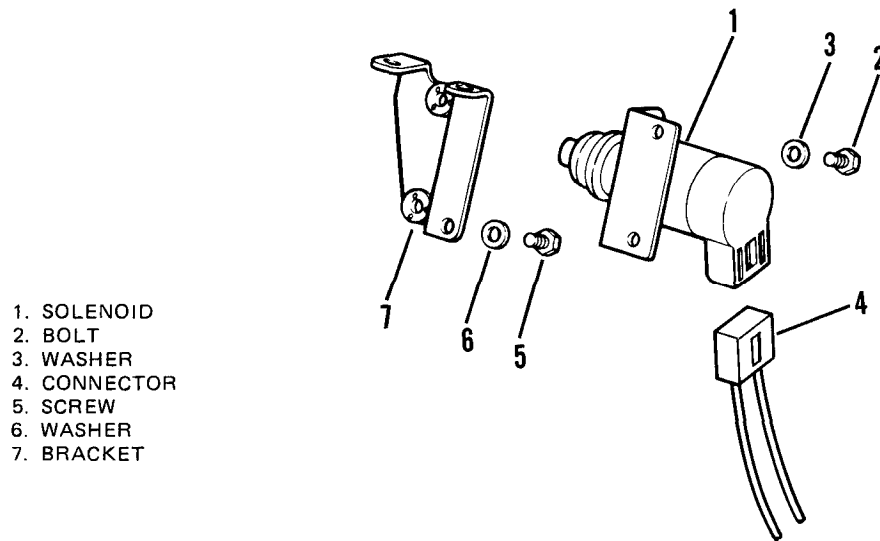


Figure 4-27. Fuel Cutoff Solenoid.

- (3) Remove bolts (2) and washers (3), and remove solenoid (1).
(4) If necessary, remove screws (5), washers (6) and bracket (7).

d. Installation.

- (1) If necessary, put bracket (7) in position and install screws (5) and washers (6).
(2) Put solenoid (1) in position and install bolts (2) and washers (3).
(3) Connect connector (4) to solenoid (1). Be sure retainer clip on connector engages with slot in solenoid.
(4) Reconnect negative (-) battery cable.
(5) The solenoid plunger should be adjusted so it fully stops fuel injection when in the de-energized position:
(a) Disconnect governor linkage at injection pump end and energize solenoid.
(b) With the injection pump external arm in full counterclockwise position, adjust solenoid plunger screw for 0.01 to 0.02 in. (0.25 to 0.50 mm) clearance with stop pin on external arm.
(c) Tighten locking nut on plunger shaft to lock shaft position.
(d) Reconnect governor linkage at injection pump end.

4-38. FUEL LEVEL FLOAT SWITCH. See Figure 4-28).

a. Inspect.

- (1) Inspect to see that fuel level float switch is securely mounted to fuel tank.
- (2) Inspect to see that fuel level float switch connectors are secure.

b. Test.

- (1) Unscrew electrical connector from top of fuel tank.
- (2) Drain fuel tank.
- (3) Use a multimeter to check for continuity across switch pins (1). The pins are labeled A, B, C, D, and E.
- (4) A multimeter across pins A and B should indicate an open circuit (high ohms).
- (5) A multimeter across pins D and E should indicate a closed circuit (0 ohms).
- (6) Fill fuel tank with diesel fuel.
- (7) Use a multimeter to check for continuity across the switch pins (1).
- (8) A Multimeter across pins A and B should now indicate a closed circuit (0 ohms).
- (9) A multimeter across pins D and E should indicate an open circuit (high ohms).
- (10) Replace switch if continuity requirements are not met.

c. Removal.

- (1) Unscrew electrical connector from switch connector pins (1).
- (2) Use a wrench to remove float switch (2) from fuel tank (3).

d. Installation.

- (1) Coat the threads of float switch (2) with sealing compound (Table 3-1, item 13) and install switch (2) on tank (3).
- (2) Connect electrical connector to switch connector pins (1).

4-39. FUEL LINES, FLEXIBLE. Refer to Figure 4-29 and replace fuel hoses (1), elbows (2), valves (3) and fittings (4) as necessary.

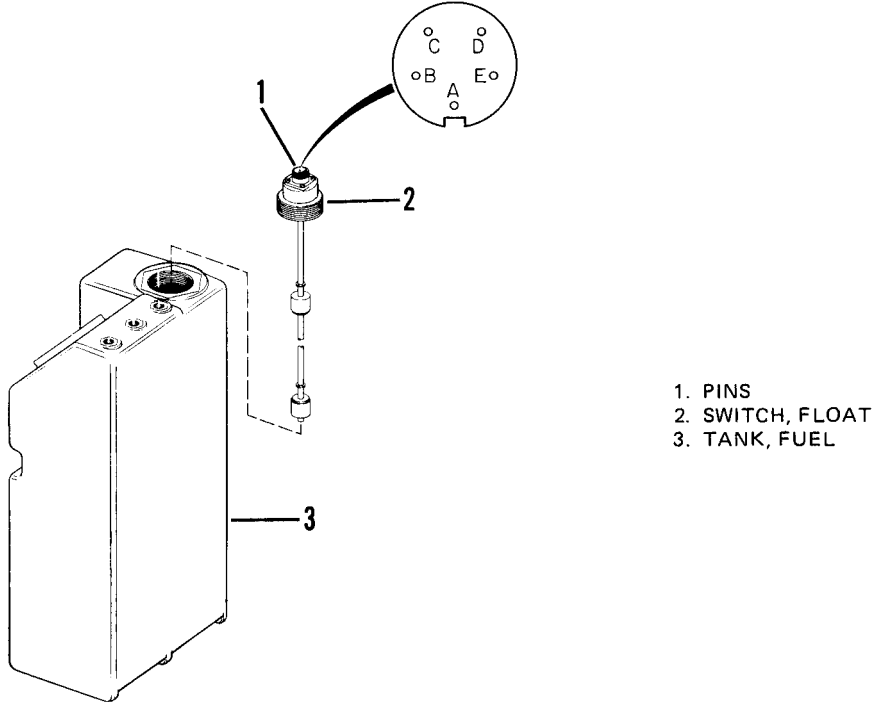


Figure 4-28. Fuel Level Float Switch.

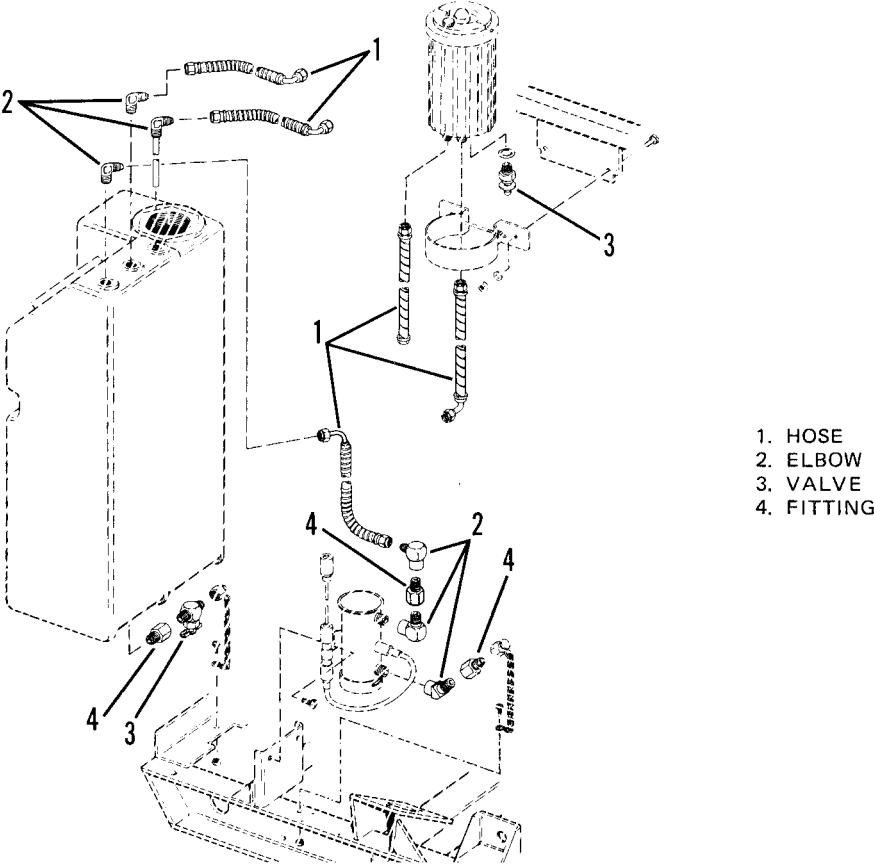


Figure 4-29. Flexible Fuel Lines.

MARINE CORPS TM 05926B/06509B-12
ARMY TM 5-6115-615-12
NAVY NAVFAC P-8-646-12
AIR FORCE TO 35C2-3-386-31

4-40. **FUEL INJECTION PUMP.** Refer to Figure 4-30 and inspect the fuel injection pump for physical damage or leaks around gaskets or fittings. If deficient notify higher echelon of maintenance.

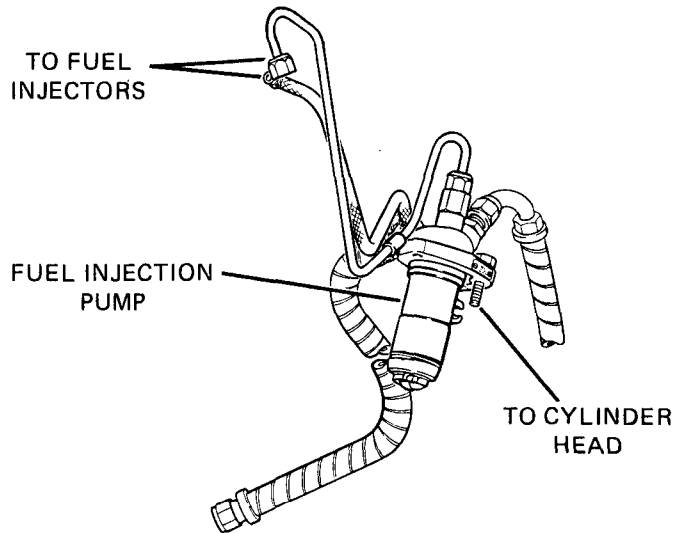


Figure 4-30. Fuel Injection Pump.

4-41. **FUEL INJECTOR.** Refer to Figure 4-31 and inspect the fuel injector for physical damage or leaks. If deficient notify higher echelon of maintenance.

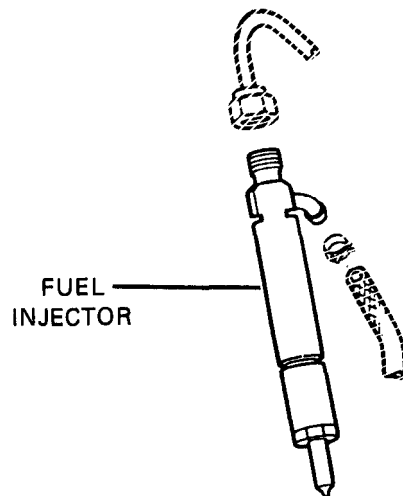


Figure 4-31. Fuel Injector.

Section XII. MAINTENANCE OF THE ENGINE.

WARNING

Unless manual directs otherwise, do not attempt any of the following maintenance procedures when generator set is operating. Do not touch exposed electrical connections when a source of power such as utility power or another generator set is connected to the load terminals. Severe electrical shock or death from electrocution can result.

4-42. AIR CLEANER. (See Figure 4-32)

a. Removal.

CAUTION

Before removing air cleaner, clean all external surfaces of air cleaner assembly and surrounding areas. Entry of dirt will cause premature engine wear.

- (1) Remove wingnut (1), cover (2), washer (3), filter element (4) and gasket (5).
- (2) Loosen clamps (6).
- (3) Remove bolts (7), lockwashers (8) and washers (9). Remove air cleaner housing (10) and hose (11) from frame.
- (4) Remove air filter indicator (12) from air cleaner housing (10).
- (5) If necessary, remove dust valve (13) from cover (2).

b. Installation.

- (1) If removed, install dust valve (13) on cover (2).
- (2) Install air filter indicator (12) on air cleaner housing (10).
- (3) Put air cleaner housing (10) in position and install bolts (7), lockwashers (8) and washers (9).
- (4) Put hose (11) in position and tighten clamps (6).
- (5) Install gasket (5), filter element (4), washer (3), cover (2) and wingnut (1).

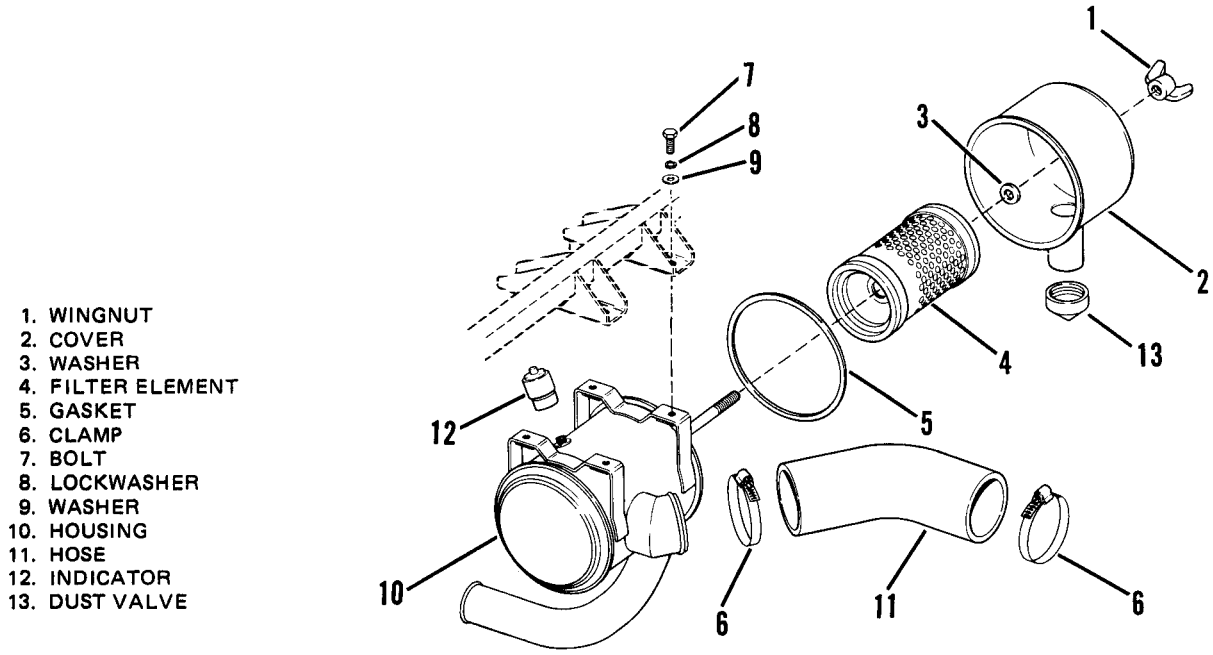


Figure 4-32. Engine Air Cleaner

4-43. Rocker Arms. (See Figure 4-33)

a. Inspection.

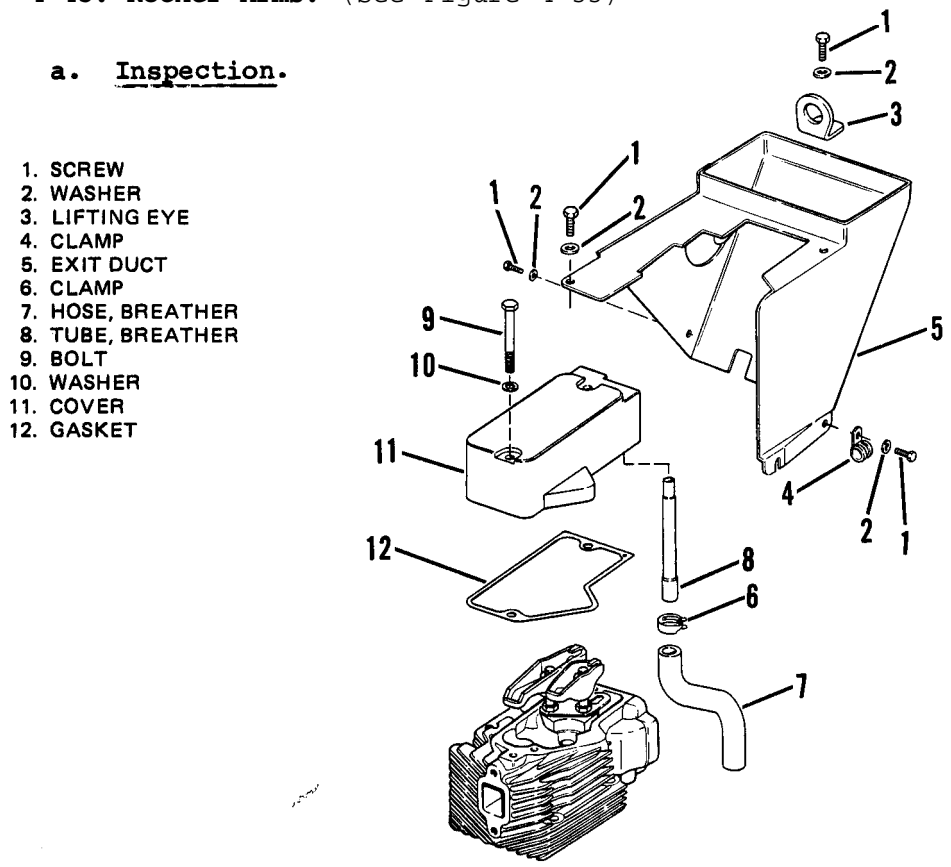


Figure 4-33. Rocker Arm Inspection.

- (1) Remove air cleaner (refer to paragraph 4-42) and remove air intake hose from intake manifold. Cover all openings to prevent entry of dirt.
- (2) Remove lifting eye (refer to paragraph 4-18).
- (3) Remove five screws (1), five washers (2), lifting eye (3), clamp (4) and exit duct (5).
- (4) Loosen clamp (6) and disconnect breather hose (7) from breather tube (8).
- (5) Remove two screws (9), washers (10), and rocker arm cover (11) with gasket (12). Discard gasket (12).
- (6) Inspect rocker arms for cracks or other visible damage.
- (7) Install rocker arm cover with new gasket. Be sure that small breather hole in rocker cover is alined with hole in rocker cover gasket.
- (8) Install breather hose (7) on breather tube (8) and tighten clamp (6).
- (9) Install exit duct (5), clamp (4) and lifting eye (3) with five screws (1) and five washers (2).
- (10) Connect air intake hose to intake manifold and install air cleaner assembly (refer to paragraph 4-42).

4-44. GOVERNOR AND LINKAGE. (See Figures 4-34, 35 and 36)

a. Cleaning and Inspection.

- (1) Clean governor and all linkage components. Inspect governor for secure mounting.
- (2) Ensure that governor linkage operates smoothly and that all springs are attached.
- (3) Check that the throttle cable is securely attached.
- (4) Tighten mounting hardware as necessary. Replace missing or damaged components.

b. Removal.

- (1) Remove oil filter (see paragraph 4-46).
- (2) Rotate engine support down.
- (3) Remove governor oil line (1, Figure 4-33).
- (4) Remove screw (2), washer (3), and clip (4).
- (5) Disconnect throttle cable (5), washer (6) and pin (7).
- (6) Remove governor linkage assembly (8) by removing locknuts (9) and (26).

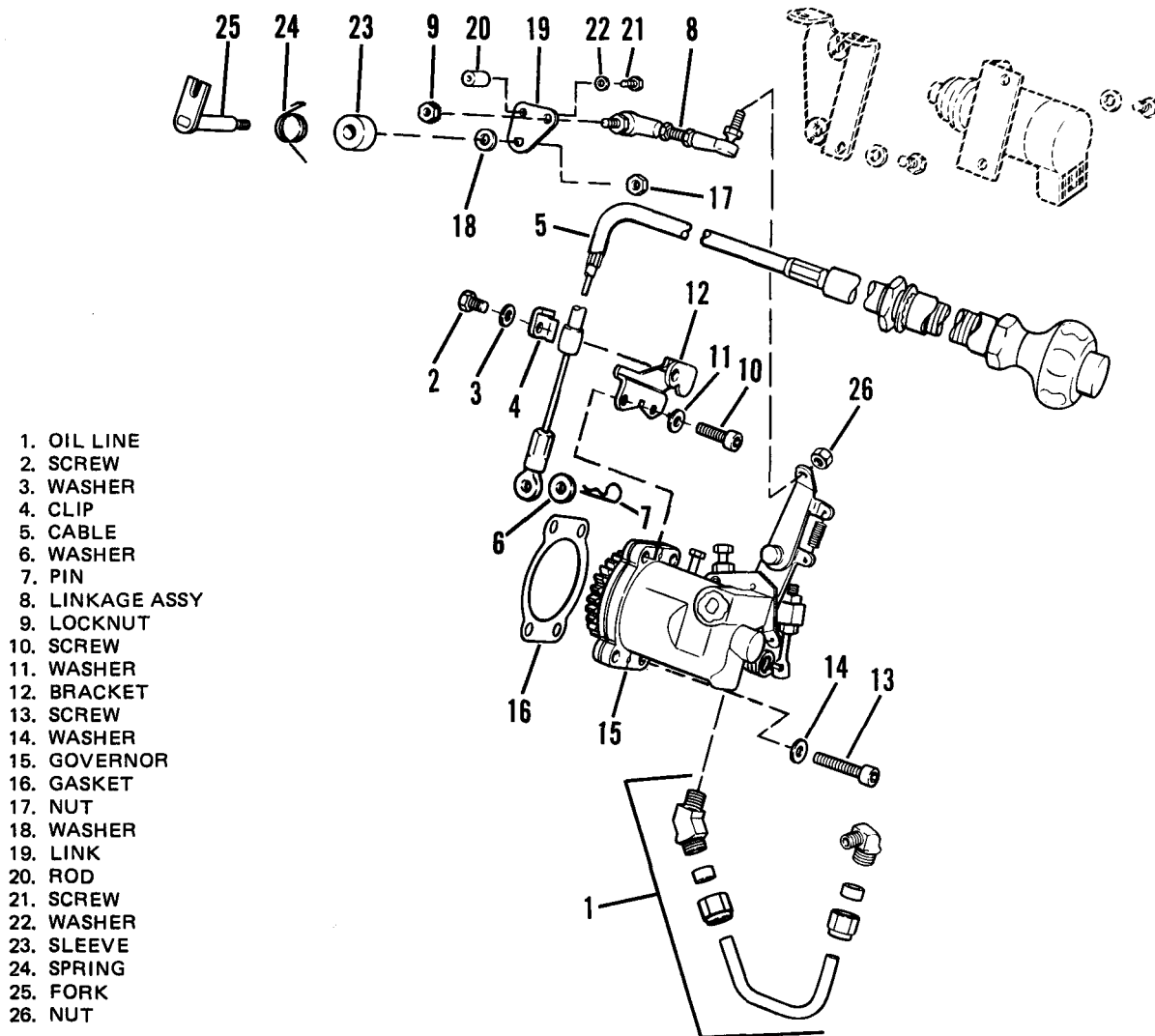


Figure 4-34. Governor and Linkage, Exploded View.

- (7) Remove two screws (10), washers (11), and bracket (12).
- (8) Remove two screws (13) and washers (14).
- (9) Remove governor (15) and gasket (16).
- (10) Remove screw (21), washer (22) and rod (20).

NOTE

Spring (24) and fork (25) are inside the engine and cannot be removed. They are shown here for reference only.

- (11) Remove nut (17), washer (18), link (19) and sleeve (23) from engine fork (25).

c. Installation.

- (1) Place sleeve (23) and link (19) on engine fork (25) and secure with washer (18) and nut (17).
- (2) Secure rod (20) to link (19) with washer (22) and screw (21).
- (3) Place gasket (16) on governor (15).
- (4) Place governor (15) into position. Make sure governor drive gear meshes with camshaft gear.

NOTE

Be sure that two short screws (10) are installed closest to the crankcase. Apply sealing compound (Table 3-1, item 13) to screws (12) and sealing compound (Table 3-1, item 10) to screws (10) before installation.

- (5) Install screws (10 and 13), washers (11 and 14) and bracket (12).

NOTE

Check governor linkage adjustment only if a new governor is being installed. If original governor is being installed do not check governor linkage adjustment.

- (6) Check governor linkage adjustment as follows:
 - (a) Check fuel cutoff solenoid adjustment (refer to paragraph 4-37).
 - (b) Rotate external arm counterclockwise toward the governor as shown in Figure 4-35.
 - (c) Governor linkage assembly (8, Figure 4-34) should fit easily into external link (19) hole and governor (15) link hole.
 - (d) Adjust length of governor linkage (8) as required by loosening lock nuts, turning ends in or out, and tighten locknuts.
- (7) Install governor linkage (8) and secure with locknuts (9).
- (8) Connect throttle cable (5) with washer (6) and clip (7).
- (9) Secure throttle cable (5) to bracket (12) with clip (4), washer (3) and screw (2).
- (10) Connect governor oil line (1).
- (11) Rotate engine support up.

d. Adjustment. If a new governor is being installed refer to higher echelon of maintenance for correct maximum fuel stop adjustment.

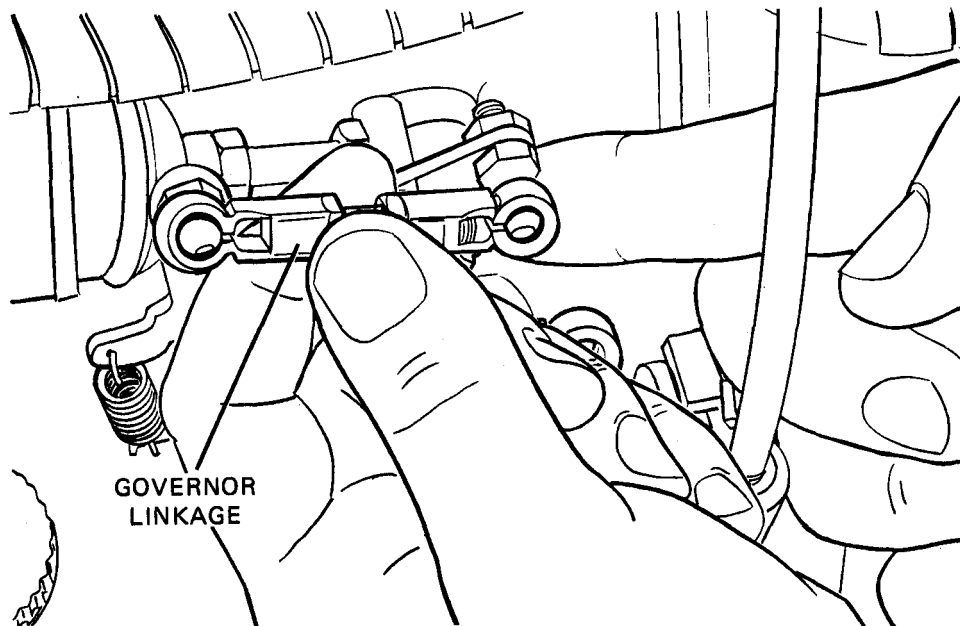


Figure 4-35. Governor Linkage Adjustment.

4-45. GOVERNOR DROOP ADJUSTMENT. (See Figure 4-36).

NOTE

To properly set the governor droop requires the use of a three kilowatt (3 kw) load bank; however, approximate field adjustments can be made when necessary. For proper droop specification, the change in rated speed or frequency between no load and full load (3 kw) should be 1.5-3.0 percent.

- (1) Operate generator set at rated speed and load until it reaches operating temperature.
- (2) Adjust set to rated speed at full load using manual speed control.
- (3) Remove load and record new stabilized speed (Hz).
- (4) Calculate droop. Use the following formula to calculate droop:
$$\text{Droop} = \frac{\text{no load speed (Hz)} - \text{full load speed (Hz)}}{\text{full load speed (Hz)}} \times 100 \text{ percent}$$
- (5) Adjust droop screw (1) and recheck droop.

NOTE

By adjusting droop screw, droop can be changed by moving governor spring closer to (less droop) or away from (more droop) the governor cross shaft.

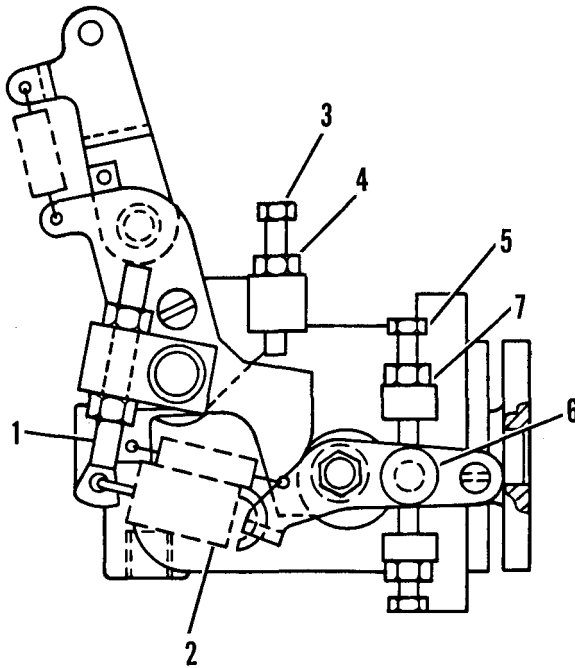


Figure 4-36. Governor Droop Adjustment.

NOTE

Check that flattened end of droop screw remains in line with spring (2) when adjusting nuts. If a further adjustment of the maximum fuel screw or governor linkage length is required for any reason following droop adjustment, the droop adjustment must be rechecked.

If the required droop adjustment cannot be obtained with droop screw, shut-down generator set and go to step 6.

- (6) Disconnect governor linkage by removing ball stud nut at either governor or injection pump end (see Figure 4-35). Shorten linkage length by one complete turn and tighten adjusting nuts.
- (7) Reconnect governor linkage (see Figure 4-35). Use two wrench method when tightening nut on ball stud to prevent movement of external arm or governor arm.
- (8) Loosen maximum fuel screw (3, Figure 4-36) using two wrench method and back out maximum fuel screw counterclockwise one quarter turn. Tighten locknut (4) using two wrench method.
- (9) Adjust droop screw (1) to the center of its travel.
- (10) Check droop. Repeat steps (1) through (5).

NOTE

The above adjustment of the maximum fuel screw is only approximate. For a more exact adjustment, notify higher echelon of maintenance.

- (11) Recheck no load high idle speed. The no load high idle speed should fall between 3850 and 3900 RPM (or equivalent frequency). If adjustment is required, proceed to step (12).
- (12) With no load connected, adjust speed to 3850-3900 RPM using the manual speed control. If speed cannot be obtained, back out high idle screw (5).
- (13) With unit operating at 3850-3900 RPM, adjust high idle screw (5) until it contacts throttle lever stop pin (6) and tighten adjusting screw nut (7).

4-46. OIL FILTER - REPLACEMENT. (See Figure 4-37)

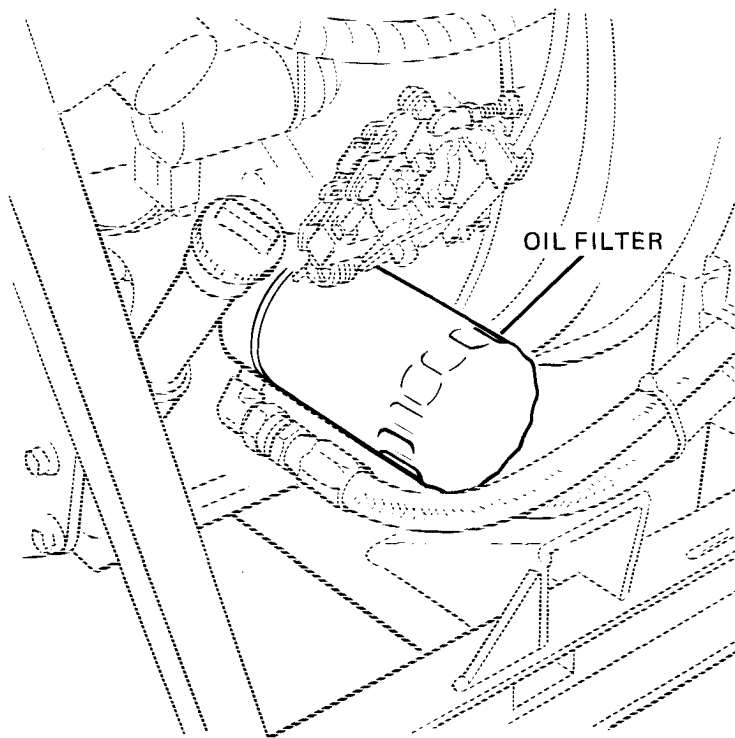


Figure 4-37. Oil Filter.

- (1) Unscrew filter from filter adapter. Discard filter.
- (2) Apply a light coating of oil to the gasket surface on the new filter.
- (3) Screw new filter onto filter adapter and hand tighten (refer to LI 05926/06509B-12, Note 4).

4-47. OIL FILTER ADAPTER - INSPECTION. (See Figure 4-38)

Inspect oil filter adapter, lines and fittings for damage or leakage of engine lubricant. Notify higher level of maintenance to tighten connections, or to replace damaged parts.

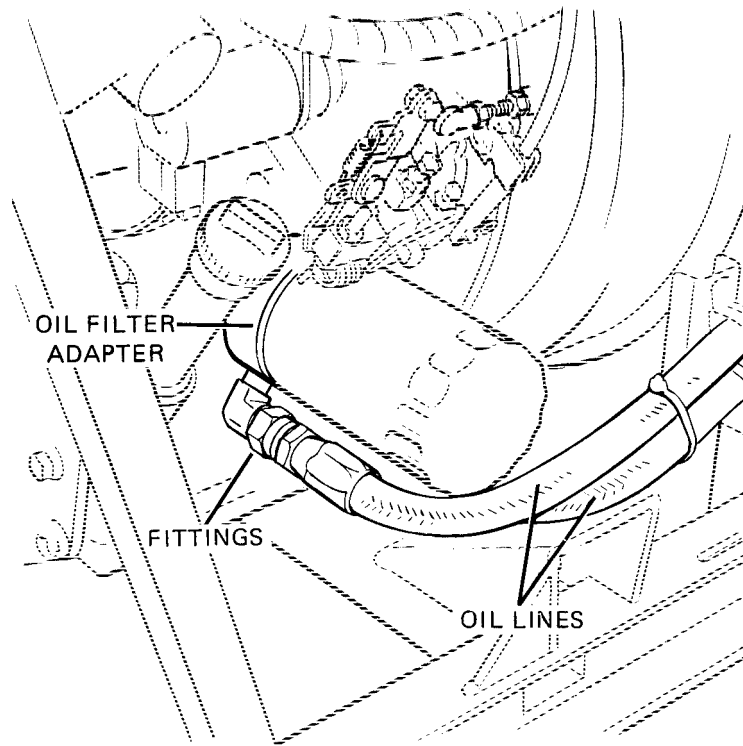


Figure 4-38. Oil Filter Adapter.

4-48. STARTER ASSEMBLY. (See Figures 4-39 and 4-40)

a. Inspection.

- (1) Inspect starter assembly for secure mounting.
- (2) Inspect wiring connected to starter assembly for damaged insulation and secure mounting. Inspect to see that all electrical connections are clean and tight.
- (3) Check that starter engages and turns flywheel when master switch is moved to the START position. If starter does not turn engine, refer to Troubleshooting (Table 4-2).
- (4) Repair or replace wiring as necessary. Replace starter if defective.

b. Test.

- (1) Make sure the batteries are fully charged and that all battery and starter cables are serviceable and properly installed.

- (2) Connect a voltmeter as shown in Figure 4-39 - Test A. If voltage is indicated, solenoid is defective.
- (3) Momentarily connect a jumper as shown in Figure 4-39 - Test B. Voltmeter should indicate battery voltage and starter should crank the engine. If voltmeter does not read battery voltage, the solenoid is defective. If the voltmeter indicates battery voltage, but starter does not operate, the starter is defective.

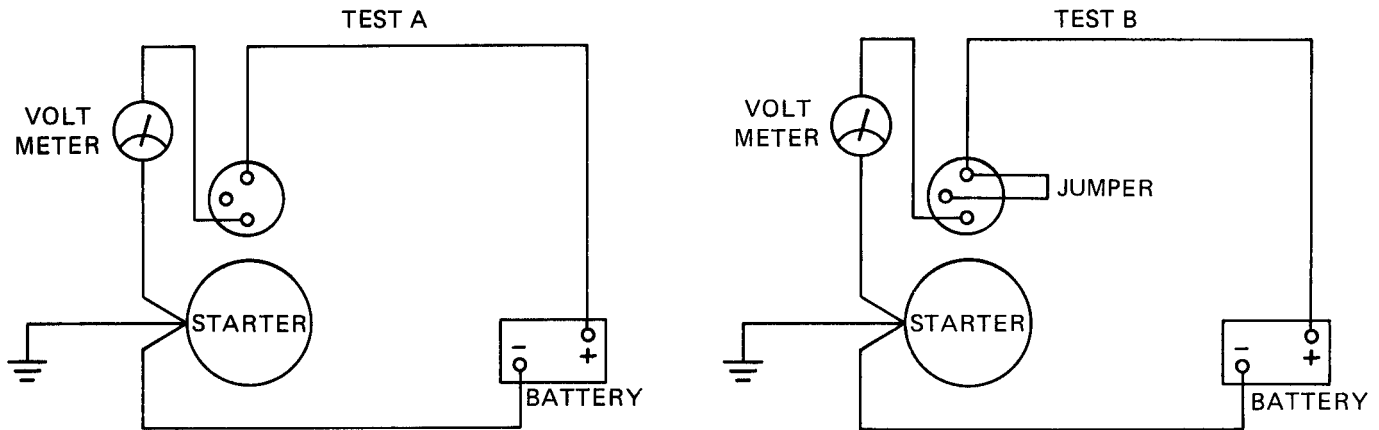


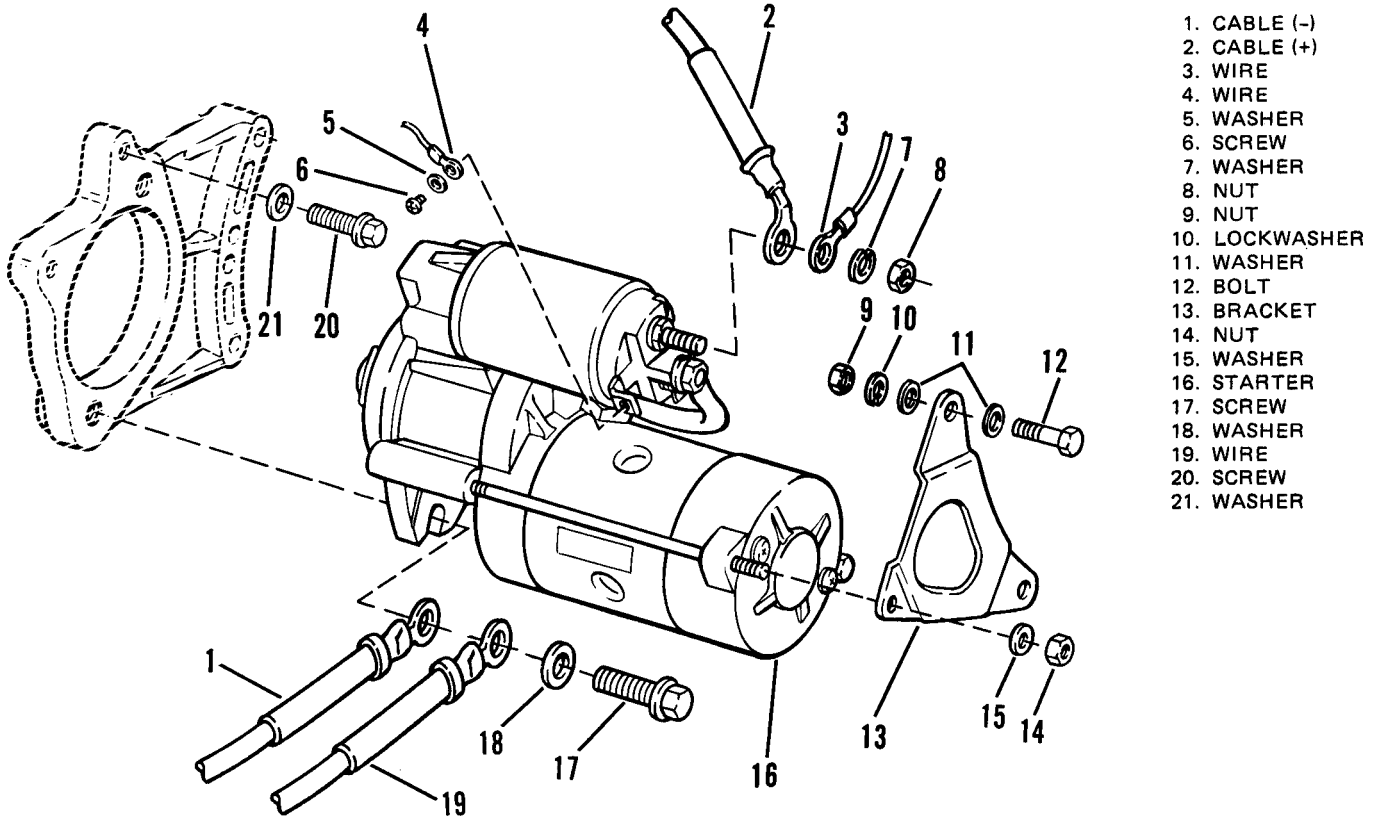
Figure 4-39. Starter Solenoid Test Circuit.

c. Removal.

NOTE

Always disconnect the negative (-) battery cable at the battery first and the positive (+) cable second.

- (1) Disconnect negative (-) battery cable and positive (+) battery cable from battery (see paragraph 3-17).
- (2) Tag battery cables (1 and 2, Figure 4-40) and remove nuts (8), washers (7), bolt (17), washer (18), battery cables (1 and 2) and wires (3 and 19) connected to starter assembly.
- (3) Remove screw (6), washer (5) and wire (4).
- (4) Remove two bolts (12), washers (11), lockwashers (10) and nuts (9).
- (5) Remove nut (14) and washer (15).
- (6) Remove rear starter bracket (13).
- (7) Remove screw (20), washer (21), and starter (16).



1. CABLE (-)
2. CABLE (+)
3. WIRE
4. WIRE
5. WASHER
6. SCREW
7. WASHER
8. NUT
9. NUT
10. LOCKWASHER
11. WASHER
12. BOLT
13. BRACKET
14. NUT
15. WASHER
16. STARTER
17. SCREW
18. WASHER
19. WIRE
20. SCREW
21. WASHER

Figure 4-40. Starter.

d. Installation.

NOTE

Apply sealing compound (Table 3-1, item 10) to all screws prior to installation.

- (1) Put starter (16) in position and install screw (20) and washer (21) in hole closest to crankcase.
- (2) Put rear starter bracket (13) in position and install nut (14) and washer (15).
- (3) Install two bolts (12), washers (11), lockwashers (10) and nuts (9).
- (4) Install wires (3 and 19), battery cables (1 and 2) washers (18 and 7), nut (8) and screw (17).
- (5) Connect wire (4) to starter solenoid with screw (6) and washer (5).
- (6) Connect negative (-) battery cable and positive (+) battery cable to battery (see paragraph 3-17).

4-49. INTAKE MANIFOLD. (See Figure 4-41)

a. Removal.

- (1) Remove air cleaner assembly (refer to paragraph 4-42), and remove clamp (1) and air intake hose (2) from intake manifold (3).

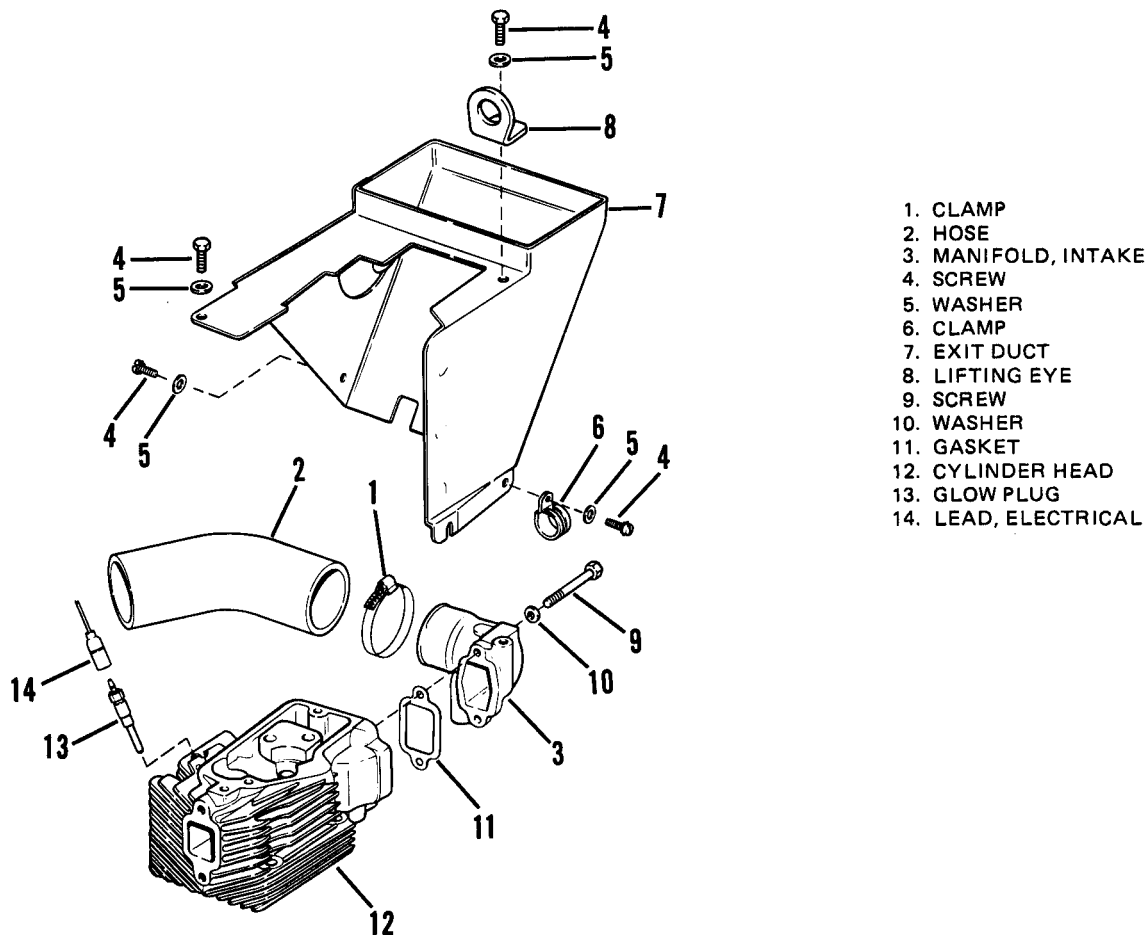


Figure 4-41. Intake Manifold and Glow Plug.

- (2) Remove five screws (4) washers (5), clamp (6) and remove exit duct (7) and lifting eye (8).
- (3) Remove two screws (9) and washers (10).
- (4) Remove intake manifold (3) and gasket (11) from cylinder head (12).

b. Inspection. Inspect intake manifold for cracks and damage.

c. Installation.

- (1) Place intake manifold (3) and gasket (11) in position on cylinder head (12).

- (2) Apply sealing compound (Table 3-1, item 10) to screws (9). Install screws (9) with washers (10).
- (3) Apply sealing compound (Table 3-1, item 10) to screws (4). Place exit duct (7) and lifting eye (8) in position and install screws (4), washers (5) and clamp (6).
- (4) Connect air intake hose (2) and clamp (1) to intake manifold (3) and install air cleaner assembly (see paragraph 4-42).

4-50. GLOW PLUG. (See Figure 4-41)

a. Test.

- (1) With electrical lead connected, use a multimeter to check voltage between glow plug connection and clean engine ground. With master switch in PREHEAT position, voltage should be 10 to 14 volts. If voltage is low, check glow plug circuit. If voltage is high, go to Step 2.
- (2) Disconnect negative (-) battery cable at battery.
- (3) Remove electrical lead (14) from glow plug (13).
- (4) Use a multimeter to test for continuity from terminal of glow plug to a clean engine ground.
- (5) An open circuit (infinite ohms) indicates a defective glow plug.

c. Removal.

- (1) Disconnect electrical lead (14) from glow plug (13).
- (2) Use a 3/8 in. 6 point, deep socket (1/4 in. drive) to remove glow plug (13) from cylinder head (12).

d. Installation.

- (1) Screw glow plug (13) into cylinder head (12) and tighten to 12-13 ft. lbs. (16-18 N.m).
- (2) Connect electrical lead (14) to glow plug (13).

4-51. OIL DRAIN VALVE AND HOSE. (See Figure 4-42)

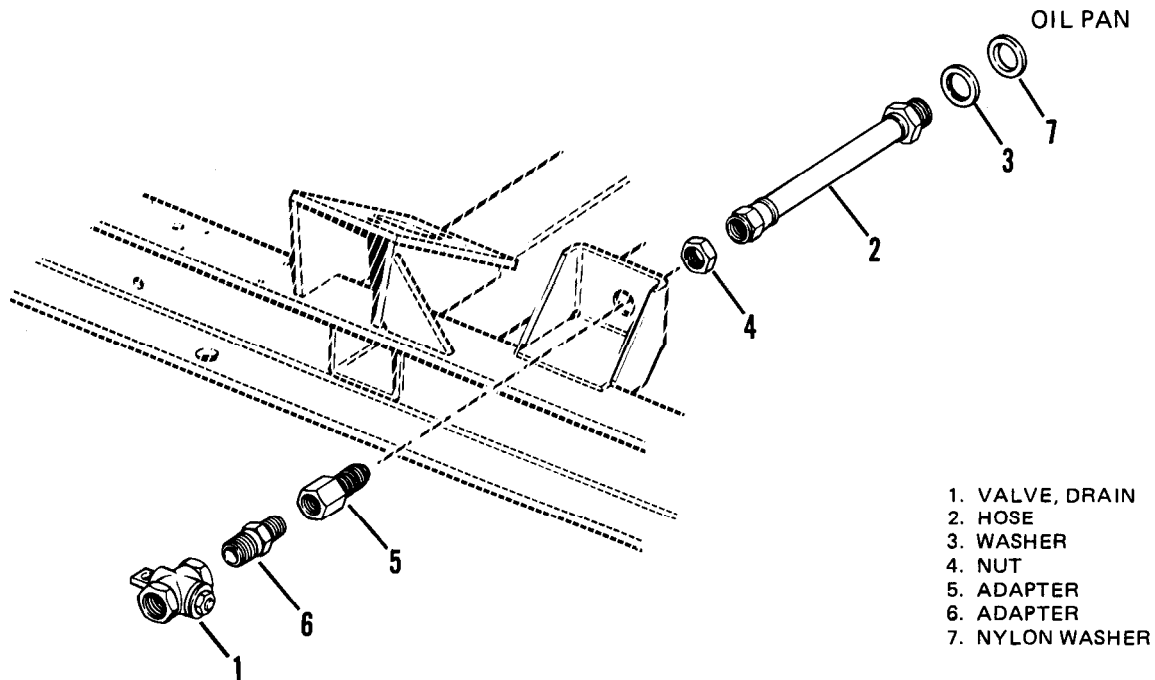


Figure 4-42. Engine Oil Drain Valve, Exploded View.

a. Removal.

CAUTION

Do not apply air pressure to the crankcase to speed the oil drain process. Air pressure can force the oil seals out of the crankcase.

- (1) Drain engine oil into a suitable container (refer to paragraph 4-7).
- (2) Disconnect hose (2) from fitting (5).
- (3) Remove nut (4) and remove valve (1) with adapters (5 and 6).
- (4) If necessary, disassemble adapters (5 and 6) from valve (1).
- (5) Remove hose (2) and washers (3 and 7) from oil pan.

b. Installation.

- (1) Install hose (2) and washers (3 and 7) on oil pan.
- (2) If necessary assemble adapters (5 and 6) to valve (1).
- (3) Put valve assembly in position on skid base and install nut (4).

(4) Connect hose (2) to fitting (5).

4-52. OIL COOLER. (See Figure 4-43)

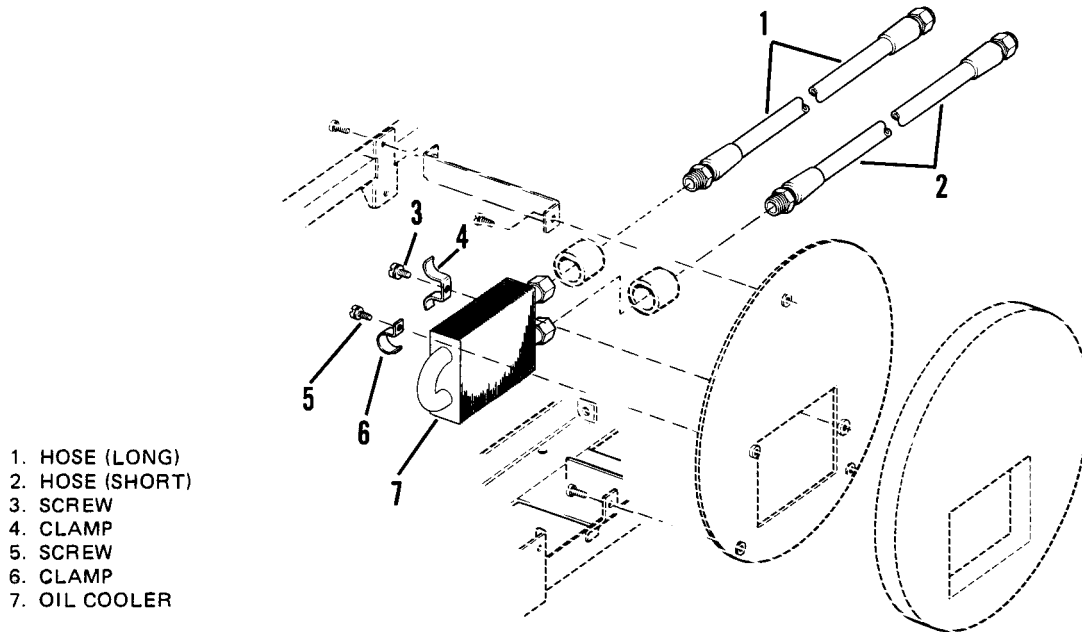


Figure 4-43. Engine Oil Cooler.

a. Inspection.

- (1) Remove battery (see para 4-22).
- (2) Inspect oil cooler for signs of leakage, bent cooling fins, or other visible damage.
- (3) Inspect cooling lines for signs of leakage or visible damage. Tighten or replace hoses and fittings as necessary. For replacement of oil cooler, notify higher echelon of maintenance.

b. Cleaning.

WARNING

Avoid prolonged contact and inhalation of fumes of dry cleaning solvent. Use dry cleaning solvent only in a well ventilated area. Do not direct pressurized air toward skin. Personal injury could result.

Clean engine oil cooler with dry cleaning solvent (Table 3-1, item 9) or pressurized air (do not exceed 15 psi).

Section XIII. ENGINE EXHAUST

WARNING

Unless manual directs otherwise, do not attempt any of the following maintenance procedures when generator set is operating. Do not touch exposed electrical connection when a source of power such as utility power or another generator set is connected to the load terminals. Severe electrical shock or death by electrocution may result.

4-53. DESCRIPTION AND FUNCTION. The engine exhaust system consists of the muffler, exhaust pipe and clamps. The muffler quiets the engine exhaust noises and the exhaust pipe routes the exhaust gases away from the operator.

4-54. MUFFLER. (See Figure 4-44)

WARNING

Make sure muffler is completely cooled off before performing any maintenance procedures.

a. Inspection.

- (1) Remove screws (1), nuts (2) and clamps (3) at three locations from heat shield (4).
- (2) Remove screws (5) and nuts (6). Remove heat shield (4) from frame.
- (3) Inspect muffler (14) for dents, holes or corrosion.
- (4) Check to see that clamps (8), (9) and (17) are securely attached and that they are not damaged.
- (5) Inspect exhaust pipe (20) for damage, obstructions and secure mounting.
- (6) Check mounting brackets (15) and (18) for damage, and secure mounting.
- (7) Install heat shield (4) with screws (1), nuts (2), clamps (3), screws (5) and nuts (6).

b. Removal.

- (1) Remove screws (1), nuts (2) and clamps (3) at three locations on heat shield (4).
- (2) Remove screws (5) and nuts (6). Remove heat shield (4) from frame.

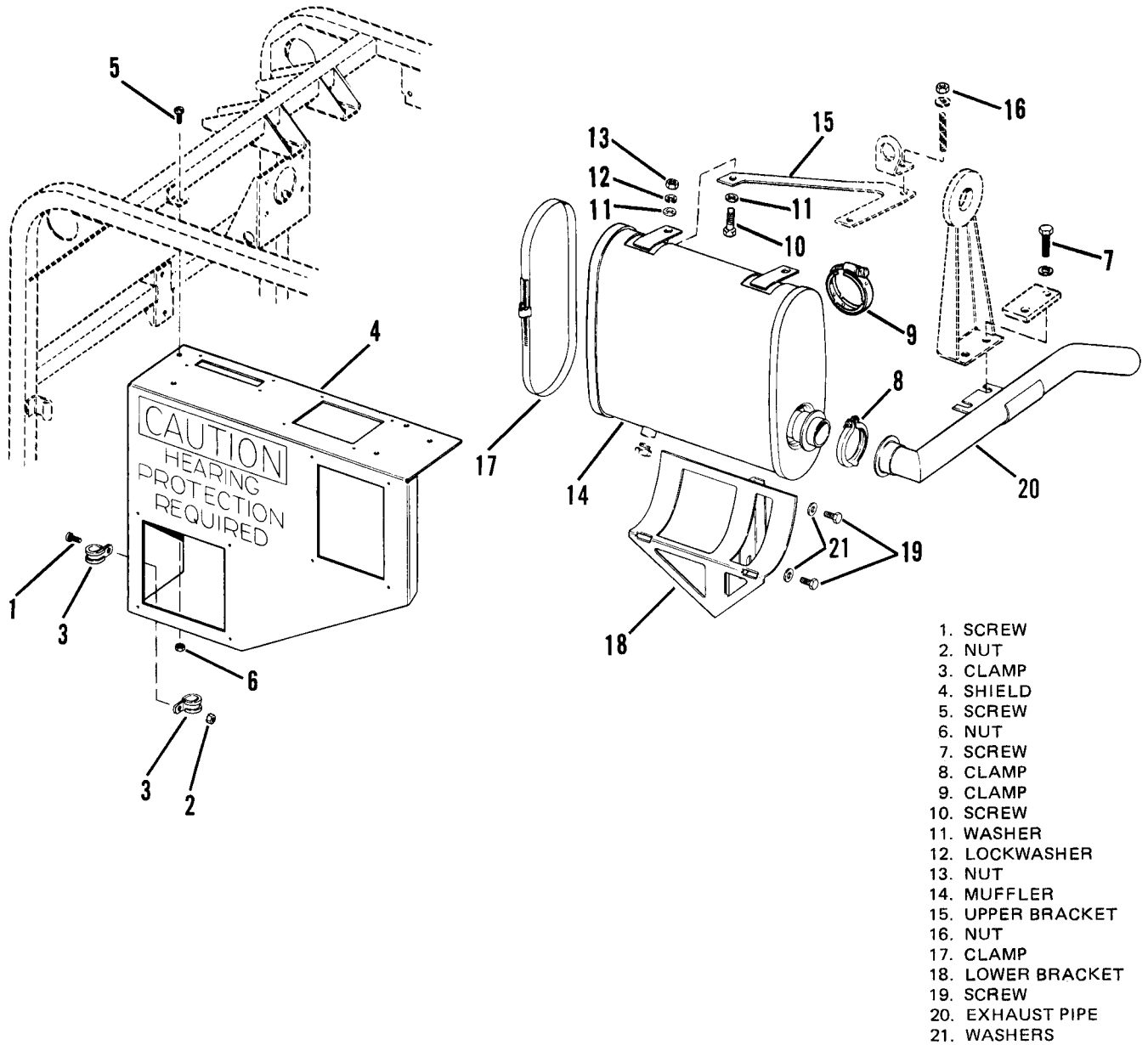


Figure 4-44. Engine Exhaust.

- (3) Remove clamp (8) and exhaust pipe (20).
- (4) Loosen clamp (9) from muffler inlet.
- (5) Remove screws (10), washers (11), lockwashers (12), and nuts (13) that secure muffler (14) to upper bracket (15). Loosen nut (16).
- (6) Remove two bands (17) that secure muffler (14) to lower bracket (18). Remove muffler (14).
- (7) If necessary, remove lower bracket (18) by removing screws (19) and washers (21).

b. Installation.

CAUTION

Failure to install muffler in correct sequence will result in premature failure of muffler.

- (1) If removed, loosely install lower bracket (18) with mounting screws (19) and washers (21).
- (2) Position muffler (14) on exhaust stub of engine and secure with clamp (9).
- (3) Tighten lower bracket mounting screws (19). Secure muffler (14) to lower bracket (18) with bands (17).
- (4) Install upper bracket (15) with screws (10), washers (11), lockwashers (12), and nuts (13). Tighten nut (16).
- (5) Install exhaust pipe (20) and secure with clamp (8).
- (6) Install heat shield (4) on frame with screws (5) and nuts (6).
- (7) Put wire harness and fuel line in position on heat shield (4). Install clamps (3) with screws (1) and nuts (2).

4-55. **EXHAUST PIPE AND CLAMP.** (See Figure 4-45)

a. Removal.

WARNING

Make sure exhaust pipe is completely cooled off before performing any maintenance procedures.

- (1) Remove clamp (1) that connects exhaust pipe (2) to muffler (not shown).
- (2) Remove screws (3), washers (4), spacer (5) and lifting eye (6).
- (3) Remove exhaust pipe (2).

1. CLAMP
2. EXHAUST PIPE
3. SCREW
4. WASHER
5. SPACER
6. LIFTING EYE

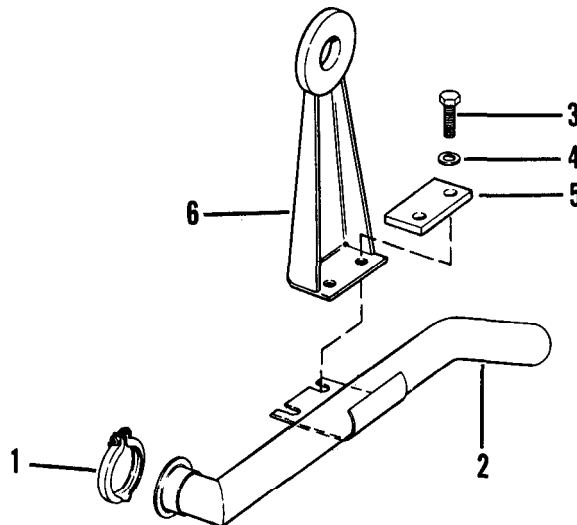


Figure 4-45. Exhaust Pipe and Clamp.

b. Installation.

- (1) Place exhaust pipe (2) in position.
- (2) Align fittings and install clamp (1) that connects exhaust pipe (2) to muffler (not shown).
- (3) Secure exhaust pipe (2) to lifting eye (6), with spacer (5), washer (4) and screws (3).

Section XIV. ENGINE CONTROLS AND INSTRUMENTS.

WARNING

Unless manual directs otherwise, do not attempt any of the following maintenance procedures when generator set is operating. Do not touch exposed electrical connections when a source of power such as utility power or another generator set is connected to the load terminals. Severe electrical shock or death by electrocution may result.

4-56. THROTTLE AND BRACKET. (See Figure 4-46)

a. Removal.

1. SCREW
2. WASHER
3. CLIP
4. NUT
5. LOCKWASHER
6. CABLE
7. BRACKET
8. SCREW
9. NUT

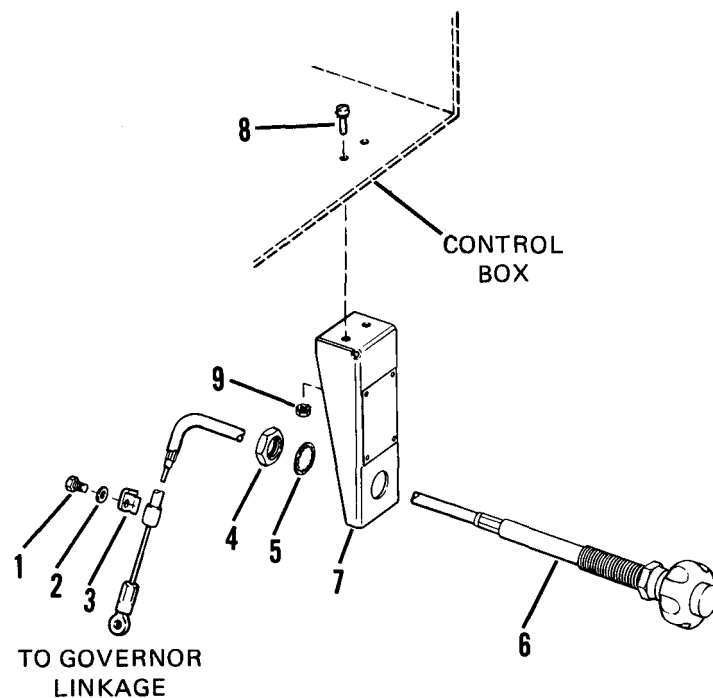


Figure 4-46. Throttle Assembly.

- (1) Remove screw (1), washer (2) and cable clip (3).
- (2) Disconnect throttle cable from governor (refer to paragraph 4-44).
- (3) Remove nut (4), lockwasher (5), and throttle cable (6).
- (4) Remove screw (8), nut (9) and bracket (7) from control box.

b. Installation.

- (1) Place bracket (7) in position on control box and secure with screw (8) and nut (9).
- (2) Install throttle cable (6) and secure to throttle bracket (7) with lockwasher (5) and nut (4).
- (3) Connect throttle cable to governor (refer to paragraph 4-44).
- (4) Install cable clip (3), washer (2) and screw (1).

4-57. **HOURLMETER.** (See Figure 4-47)

a. Test.

- (1) Start and run generator set.
- (2) With an accurate watch or clock, check the elapsed time reading on the hourmeter.

b. Removal.

1. HOURLMETER
2. NUT
3. SCREW

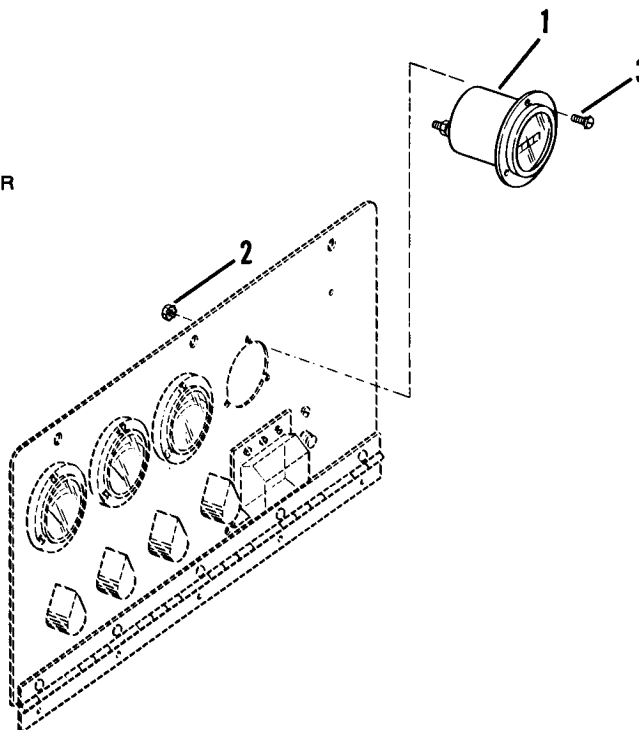


Figure 4-47. Hourmeter (Model MEP-021B Shown).

NOTE

Procedures for all three sets, MEP-016B, MEP-021B and MEP-026B are the same. Figure 4-47 illustrates the Model MEP-021B (400 Hz) set.

- (1) Disconnect the negative (-) battery cable from the battery.
- (2) Tag and disconnect wiring from the hourmeter (1, Figure 4-44
- (3) Remove nuts (2), screws (3) and hourmeter (1).

c. Installation.

- (1) Secure hourmeter (1) to front panel with screws (3) and nuts (2).
- (2) Using tags for identification, connect wiring to hourmeter.
- (3) Connect negative (-) battery cable to the battery.

4-58. CONTROL BOX ASSEMBLY. (See Figure 4-48)

a. Test.

- (1) Perform operational test on control box, checking for proper operation.
- (2) Check that generator set does come to an emergency stop when DC control circuit breaker is pulled out.
- (3) Test individual components of control box as indicated in paragraphs 4-59 through 4-73.

b. Removal.

- (1) Shut down set and disconnect load cables from load terminal board on back of control box.
- (2) Disconnect negative (-) battery cable from battery.
- (3) Refer to Table 4-3, tag and disconnect the wires that run from the generator to the control box. These wires must be fed through the holes in the bottom of the control box as the box is removed from the frame.
- (4) Unscrew electrical connector (1) from back of control box.
- (5) Remove two screws (2) and nuts (3), and remove throttle control bracket (4) from bottom of control box.
- (6) Remove screw (5), nut (6), and ground strap (7) from control box.
- (7) Remove bolts (8), lockwashers (9), and washers (10) that hold control box assembly to frame (four locations).

MARINE CORPS TM 05926B/06509B-12
 ARMY TM 5-6115-615-12
 NAVY NAVFAC P-8-646-12
 AIR FORCE TO 35C2-3-386-31

Table 4-3. Generator Wires and Connection Points.

Models MEP-016B and MEP-021B			Model MEP-026B		
Wire #	Terminal Board	Terminal	Wire #	Terminal Board	Terminal
F1	A1-TB2	1	F1	A1-TB1	1
F2	A1-TB2	2	F2	A1-TB1	2
T1	A1-TB1	1	T1	A3-TB1	4
T2	A1-TB1	2	T2	A3-TB1	2
T3	A1-TB1	3	T3	A3-TB1	3
T4	A1-TB1	4			
T5	A1-TB1	5			
T6	A1-TBI	6			

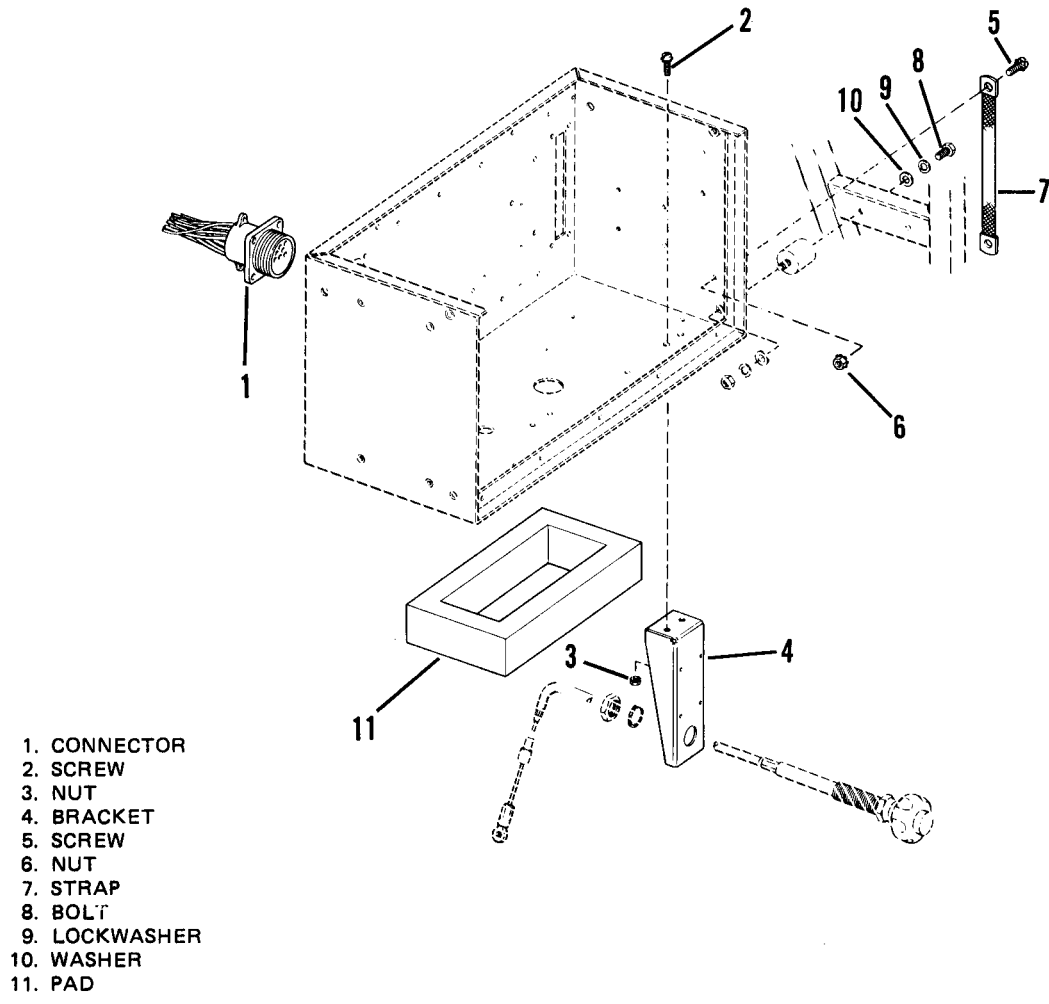


Figure 4-48. Control Box Removal.

CAUTION

Remove control box slowly to avoid damaging the wires that run from generator through the bottom of the control box.

- (8) Remove control box assembly.
- (9) Remove pad (11) if damaged.

c. Installation.

- (1) Install pad (11) if removed.
- (2) Feed wires from generator through grommets in bottom of control box as the box is positioned on the generator.
- (3) Refer to Table 4-3 for connection of wires.
- (4) Install washers (10), lockwashers (9), and bolts (8) that hold control box assembly to frame (four locations).
- (5) Connect ground strap (7) to control box with screw (5) and nut (6).
- (6) Connect throttle control bracket (4) to control box with two screws (2) and nuts (3).
- (7) Connect electrical connector (1) to back of control box.
- (8) Connect the negative (-) battery cable to the battery.

4-59. MASTER SWITCH. (See Figure 4-49)

a. Test.

- (1) Tag and disconnect wiring from master switch.
- (2) Refer to Table 4-4 and use a multimeter to check the continuity of the switch contacts for each position on the switch. Continuity will be indicated when the terminals are connected.
- (3) Replace switch if continuity requirements are not met.

Table 4-4. Blaster Switch Connections.

Models MEP-016B and MEP-021B		Model MEP-026B	
Position	Contacts Closed	Position	Contacts Closed
Pre-Heat off	11-15 None	Preheat off	11-15 None
Run/Aux Fuel	11-13-14-17	Run/Aux Fuel	11-13-14-17
Run	11-13-14	Run	11-13-14
Start	11-13-14-15 25-27-28	Start	11-13-14-15 25-27-28

b. Removal.

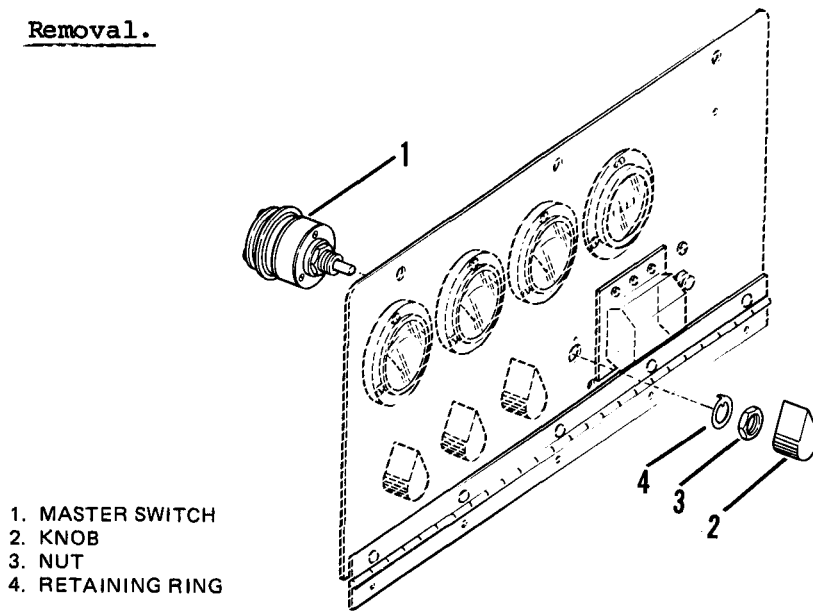


Figure 4-49. Master Switch (Model MEP-021B Shown).

- (1) Disconnect the negative (-) battery cable.
- (2) Tag and disconnect wiring from master switch (1).
- (3) Loosen setscrew in knob (2) and remove knob.
- (4) Remove retaining nut (3) and retaining ring (4).
- (5) Remove master switch.

c. Installation.

- (1) Secure master switch (1) to front panel with retaining ring (4) and nut (3).
- (2) Install knob (2) and tighten setscrew.
- (3) Using tags for identification, connect wiring to master switch.
- (4) Reconnect the negative (-) battery cable.

4-60. **CURRENT SELECTOR SWITCH.** (Models MEP-016B and MBP-021B only)
 (See Figure 4-50)

a. Test.

- (1) Disconnect the negative (1) battery cable.
- (2) Tag and disconnect wiring from master switch.

- (3) Refer to Table 4-5 and use a multimeter to check the continuity of the switch contacts for each position on the switch. Continuity will be indicated when terminals are connected.
- (4) Replace switch if continuity requirements are not met.
- (5) Connect wiring to master switch.
- (6) connect the negative (-) battery cable.

Table 4-5. Current Selector Switch Connections.

Position	Contacts Closed
I-1	11-12
I-2	11-13
I-3	11-14

b. Removal.

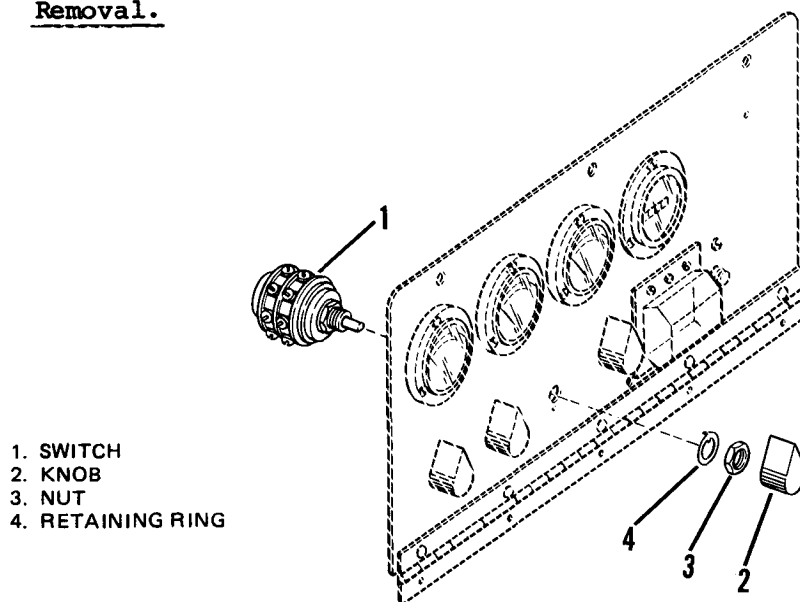


Figure 4-50. Current Selector Switch (Model MEP-021B Shown).

- (1) Disconnect the negative (-) battery cable.
- (2) Tag and disconnect wiring from current selector switch (1).
- (3) Loosen setscrew in knob (2) and remove knob .
- (4) Remove retaining nut (3) and retaining ring (4).
- (5) Remove current selector switch (1).

c. Installation.

- (1) Secure current selector switch (1) to front panel with retaining ring (4) and nut (3).
- (2) Install knob (2) and tighten setscrew.
- (3) Using tags for identification, connect wiring to current selector switch.
- (4) Connect the negative (-) battery cable.

4-61. VOLTAGE SELECTOR SWITCH. (Models MEP-016B and MEP-021B only)
 (See Figure 4-51)

a. Test.

- (1) Disconnect the negative (-) battery cable.
- (2) Tag and disconnect wiring from voltage selection switch.
- (3) Refer to Table 4-6 and use a multimeter to check the continuity of the switch contacts for each position on the switch. Continuity will be indicated when terminals are connected.
- (4) Replace switch if continuity requirements are not met.
- (5) Connect wiring to the voltage selection switch.
- (6) Connect the negative (-) battery cable.

Table 4-6. Voltage Selector Switch Connections.

Position	Contacts Closed	
V1-0	11-12-15	21-22
V2-0	11-13	21
V3-0	11-14	21
V1-2	11-12-15	21-25
V2-3	11-16-17	21-26
V3-1	11-17	21-27

b. Removal.

- (1) Disconnect the negative (-) battery cable.
- (2) Tag and disconnect wiring from voltage selector switch (1).
- (3) Loosen setscrew in knob (2) and remove knob.
- (4) Remove retaining nut (3) and washer (4).

1. SWITCH
2. KNOB
3. NUT
4. WASHER

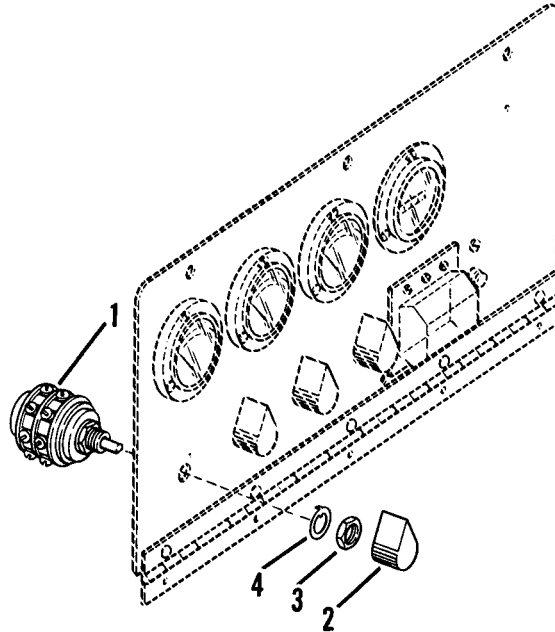


Figure 4-51. Voltage Selector Switch (Model MEP-021B Shown).

(5) Remove voltage selector switch (1).

c. Installation.

- (1) Secure voltage selector switch (1) to front panel with washer (4) and nut (3).
- (2) Install knob (2) and tighten setscrew.
- (3) Using tags for identification, connect wiring to voltage selector switch.
- (4) Connect the negative (-) battery cable.

4-62. OUTPUT SELECTION SWITCH (Models MEP-016B and MBP-021B Only)
(See Figure 4-52)

a. Test.

- (1) Disconnect the negative (-) battery cable.

NOTE

Removal of switch will make testing easier but is not required.

- (2) Tag and disconnect wiring from output selection switch.

- (3) Refer to Table 4-7 and use a multimeter to check the continuity of the switch contacts for each position on the switch. Continuity will be indicated when terminals are connected.
- (4) Replace switch if continuity requirements are not met.

Table 4-7. Voltage Reconnection Switch Connections.

Position	Contacts Closed
120/208V 3 Phase	1-2 5-6 7-8 9-10 17-18
120V 3 Phase	1-2 3-4 11-12 13-14 19-20
240V 1 Phase	3-4 9-10 21-22 None None
120V 1 Phase	3-4 11-12 13-14 15-16 23-24

- (5) Connect wiring to the output selection switch.
- (6) Connect the negative (-) battery cable.

b. Removal.

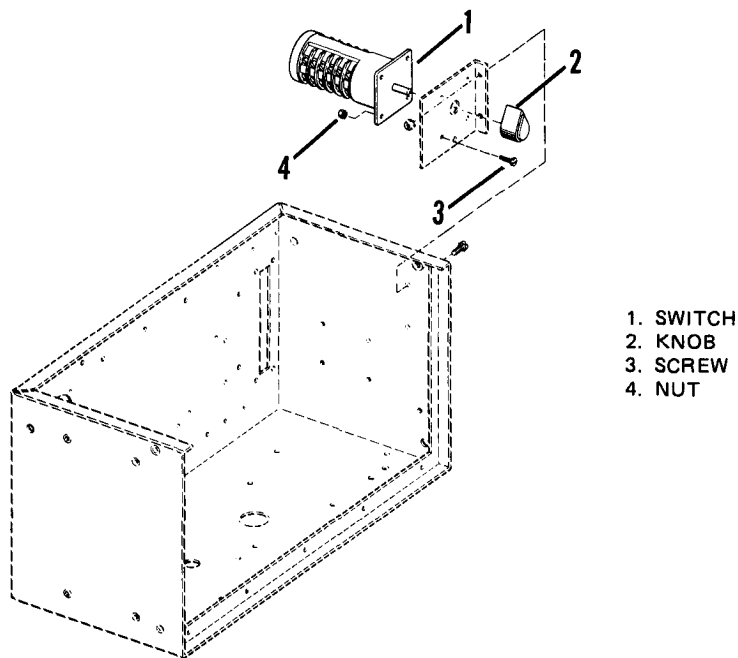


Figure 4-52. Output Selection Switch.

- (1) Disconnect the negative (-) battery cable.
- (2) Tag and disconnect wiring from output selection switch (1).
- (3) Loosen setscrew in knob (2) and remove knob.

(4) Remove four screws (3), nuts (4) and output selection switch (1).

c. Installation.

- (1) Secure output selection switch (1) to control box with screws (3) and nuts (4).
- (2) Install knob (2) and tighten setscrew.
- (3) Using tags for identification, connect wiring to output selection switch.
- (4) Connect the negative (-) battery cable.

4-63. VOLTMETERS. (Figure 4-53)

a. Test.

NOTE

Models MEP-016B and MEP-021B use a 0-250 VAC meter.
Model MEP-026B has a 0-50 VDC meter.

- (1) Adjust screw on bottom of voltmeter until needle reads zero.
- (2) Connect an accurate multimeter across the generator set voltmeter terminals.
- (3) Start and run generator set.
- (4) While varying the output, observe both the multimeter and the generator set voltmeter.
- (5) Readings on generator set voltmeter should agree with readings on multimeter.

b. Removal.

NOTE

Procedures for all three sets, MEP-016B, MEP-021B and MEP-026B are the same. Figure 4-53 illustrates the MEP-021B (400 Hz) set.

- (1) Disconnect the negative (-) battery cable.
- (2) Tag and disconnect wiring from voltmeter (1).
- (3) Remove nuts (2), screws (3) and voltmeter (1).

c. Installation.

- (1) Secure voltmeter (1) to front panel with screws (3) and nuts (2).
- (2) Using tags for identification, connect wiring to voltmeter.

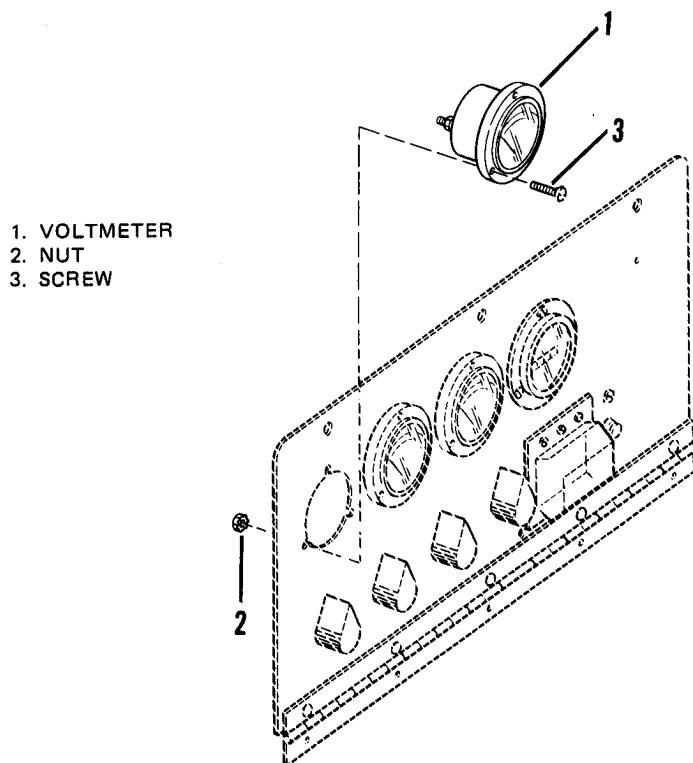


Figure 4-53. Voltmeter (Model MEP-021B Shown).

(3) Connect the negative (-) battery cable.

4-64. CURRENT INDICATING METER. (See Figure 4-54)

a. Test.

- (1) Adjust screw on bottom of current indicating meter until needle reads zero.
- (2) If a load meter is suspected of being faulty, replace meter with a meter that is known to be serviceable.
- (3) If problem persists, original meter was performing properly and should be re-installed. Further troubleshooting should be done to locate the problem.

b. Removal.

NOTE

Procedures for all three sets, MEP-016B, MEP-021B, and MBP-026B are the same. Figure 4-54 illustrates the Model MEP-021B (400 Hz) set.

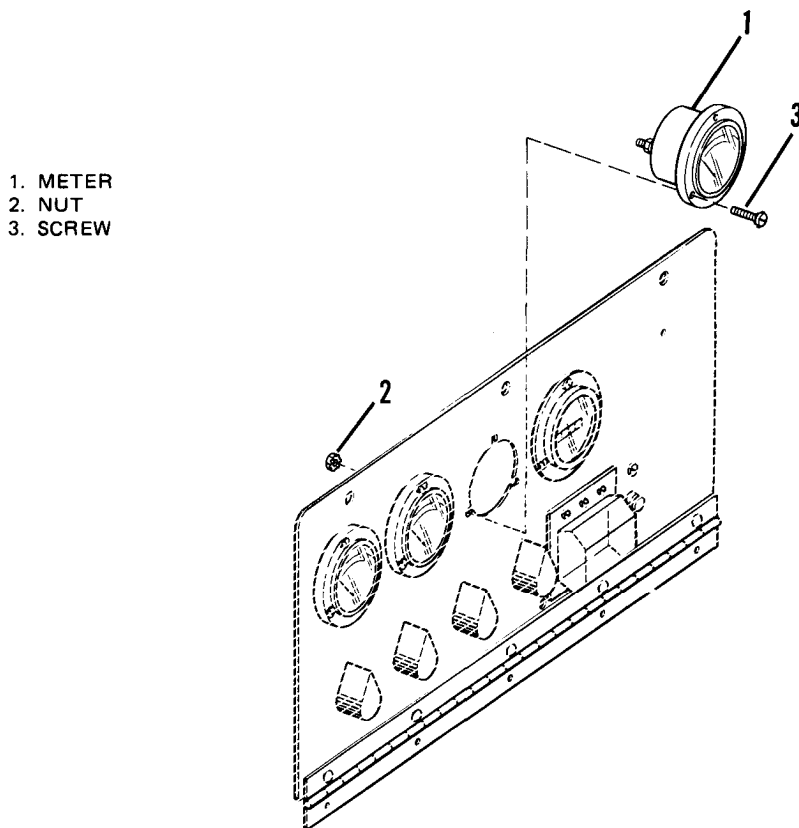


Figure 4-54. Current Indicating Meter (Model MEP-021B Shown).

- (1) Disconnect the negative (-) battery cable.
- (2) Tag and disconnect wiring from load meter (1).
- (3) Remove nuts (2), screws (3) and load meter (1).

c. Installation.

- (1) Secure load meter to front panel with screws (3) and nuts (2).
- (2) Using tags for identification, connect wiring to load meter.
- (3) Connect the negative (-) battery cable.

4-65. RHEOSTAT. (See Figure 4-55)

a. Test.

- (1) Disconnect the negative (-) battery cable.
- (2) Tag and disconnect wiring from rheostat.
- (3) Connect a multimeter across the terminals that the wires were removed from.

- (4) Viewing rheostat from shaft end, turn rheostat fully counterclockwise. Multimeter should indicate low (approximately 0) ohms.
- (5) Slowly turn rheostat fully clockwise while observing multimeter. Multimeter should indicate a gradual steady increase in resistance.
- (6) If multimeter indicates an erratic increase in resistance, rheostat should be replaced.
- (7) Connect wiring to rheostat.
- (8) Connect the negative (-) battery cable.

b. Removal.

NOTE

Procedures for all three sets, MEP-016B, MEP-021B, and MEP-026B are the same. Figure 4-55 illustrates the Model MEP-021B (400 Hz) set.

1. RHEOSTAT
2. KNOB
3. NUT
4. RING, RETAINING

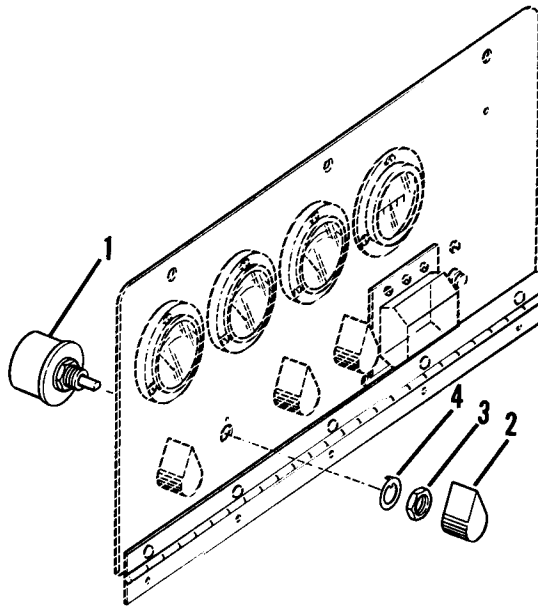


Figure 4-55. Voltage Adjust Rheostat (Model MEP-021B Shown).

- (1) Disconnect the negative (-) battery cable.
- (2) Tag and disconnect wiring from voltage adjust rheostat (1).
- (3) Loosen knob setscrew and remove knob (2).
- (4) Remove nut (3), retaining ring (4) and rheostat (1).

c. Installation.

- (1) Secure rheostat (1) with retaining ring (4) and nut (3).
- (2) Secure knob (2) on rheostat shaft with knob setscrew.
- (3) Using tags for identification, connect wiring to rheostat.
- (4) Connect the negative (-) battery cable.

4-66. **FREQUENCY METER.** (Models MEP-016B and MEP-021B Only) (See Figure 4-56)

a. Removal.

- (1) Disconnect the negative (-) battery cable.

NOTE

Procedures for the MEP-016B and MEP-021B sets are the same. Figure 4-56 illustrates the MEP-021B set.

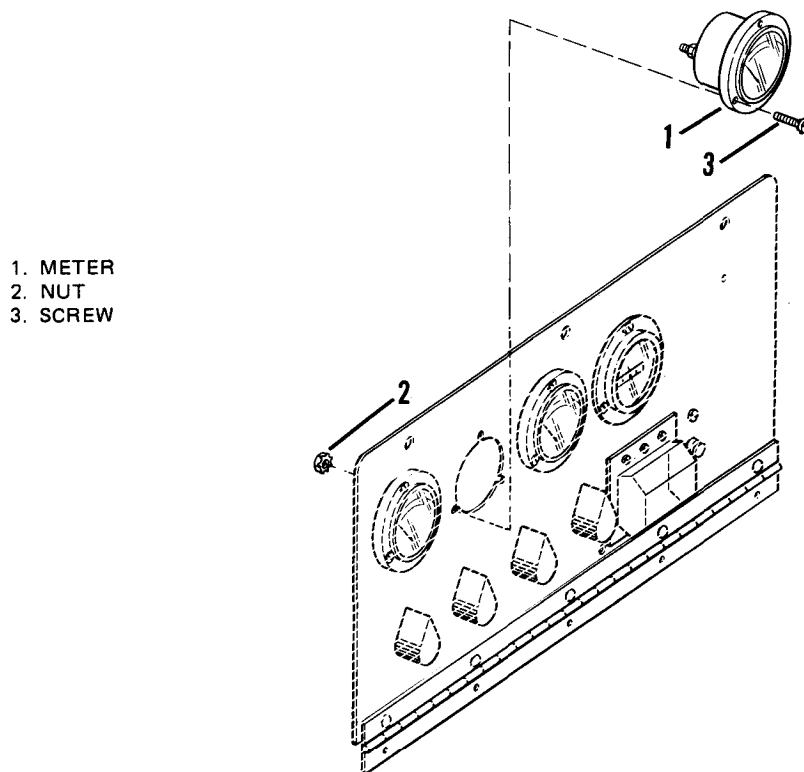


Figure 4-56. Frequency Meter (Model MEP-021J3 Shown).

- (2) Tag and disconnect wiring from frequency meter (1).
- (3) Remove nuts (2), screws (3), and meter (1).

b. Installation.

- (1) Secure frequency meter to front panel with screws (3) and nuts (2).
- (2) Using tags for identification, connect wiring to frequency meter.
- (3) Connect the negative (-) battery cable.

4-67. **TACHOMETER (RPM INDICATOR).** (Model MEP-026B Only) (See Figure 4-57)

a. Test.

- (1) Adjust screw on bottom of tachometer until needle reads zero.
- (2) Connect a known accurate tachometer across the generator set tachometer terminals.
- (3) Start and run generator set.
- (4) While varying engine speed observe both the test tachometer and the generator set tachometer.
- (5) Readings on generator set tachometer should agree with readings on test tachometer.

b. Removal.

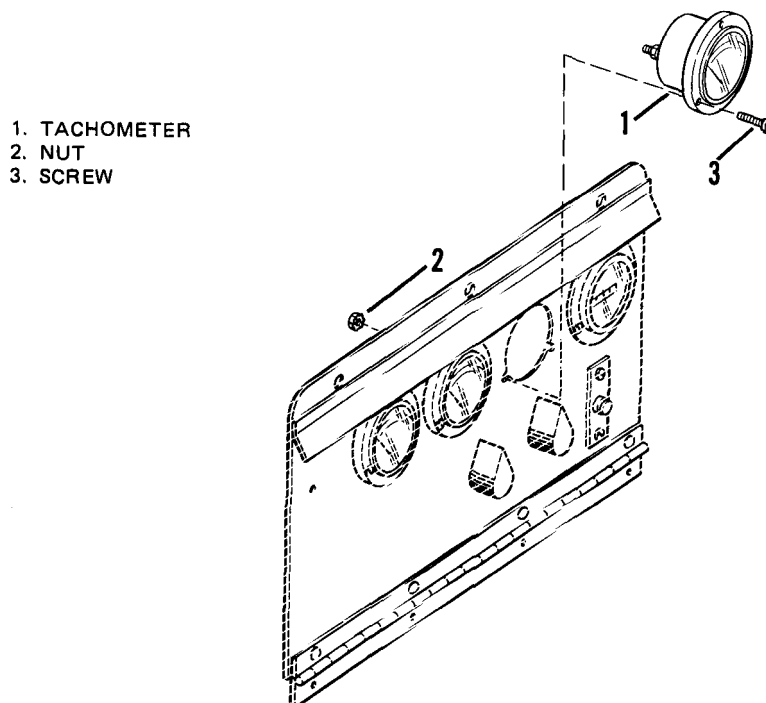


Figure 4-57. Tachometer (Model MEP-026B Only).

- (1) Disconnect the negative (-) battery cable.
- (2) Tag and disconnect wiring from tachometer (1).
- (3) Remove nuts (2), screws (3) and tachometer (1).

c. Installation.

- (1) Secure tachometer (1) to front panel with screws (3) and nuts (2).
- (2) Using tags for identification, connect wiring to tachometer.
- (3) Connect the negative (-) battery cable.

4-68. FREQUENCY TRANSDUCER. (See Figure 4-58)

a. Inspection.

- (1) Inspect that frequency transducer is securely mounted.
- (2) Inspect that frequency transducer connections are tight.
- (3) Inspect frequency transducer for cracks or other visible damage.

b. Removal.

NOTE

Procedures for all three sets, MEP-016B, MEP-021B, and MEP-026B are the same. Figure 4-58 illustrates the MEP-016B and MBP-021B set.

- (1) Disconnect the negative (-) battery cable.
- (2) Tag and disconnect wiring from frequency transducer (1).
- (3) Remove screws (2) and remove transducer (1).

c. Installation.

- (1) Secure transducer (1) with screws (2).
- (2) Using tags for identification, connect wiring to frequency transducer.
- (3) Connect the negative (-) battery cable.

4-69. RECTIFIER BRIDGE. (Model MEP-026B Only) (See Figure 4-59)

a. Inspection.

- (1) Inspect that bridge is securely mounted and that all wiring is tight.
- (2) Inspect heat sink fins for cracks, bent fins or other visible damage.

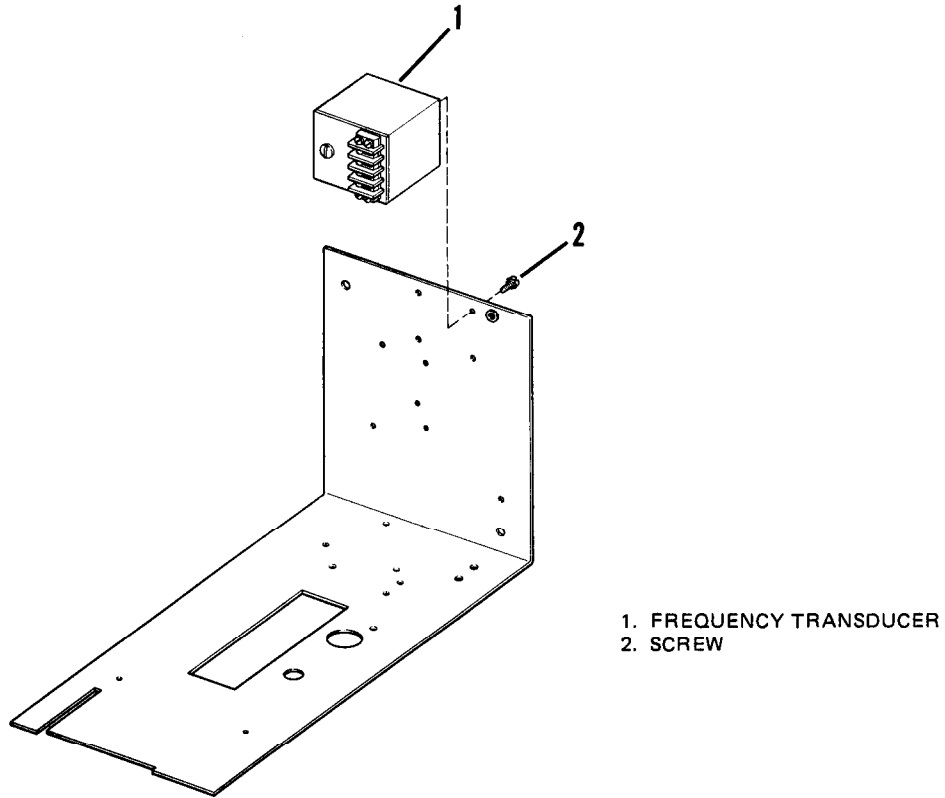


Figure 4-58. Frequency Transducer.

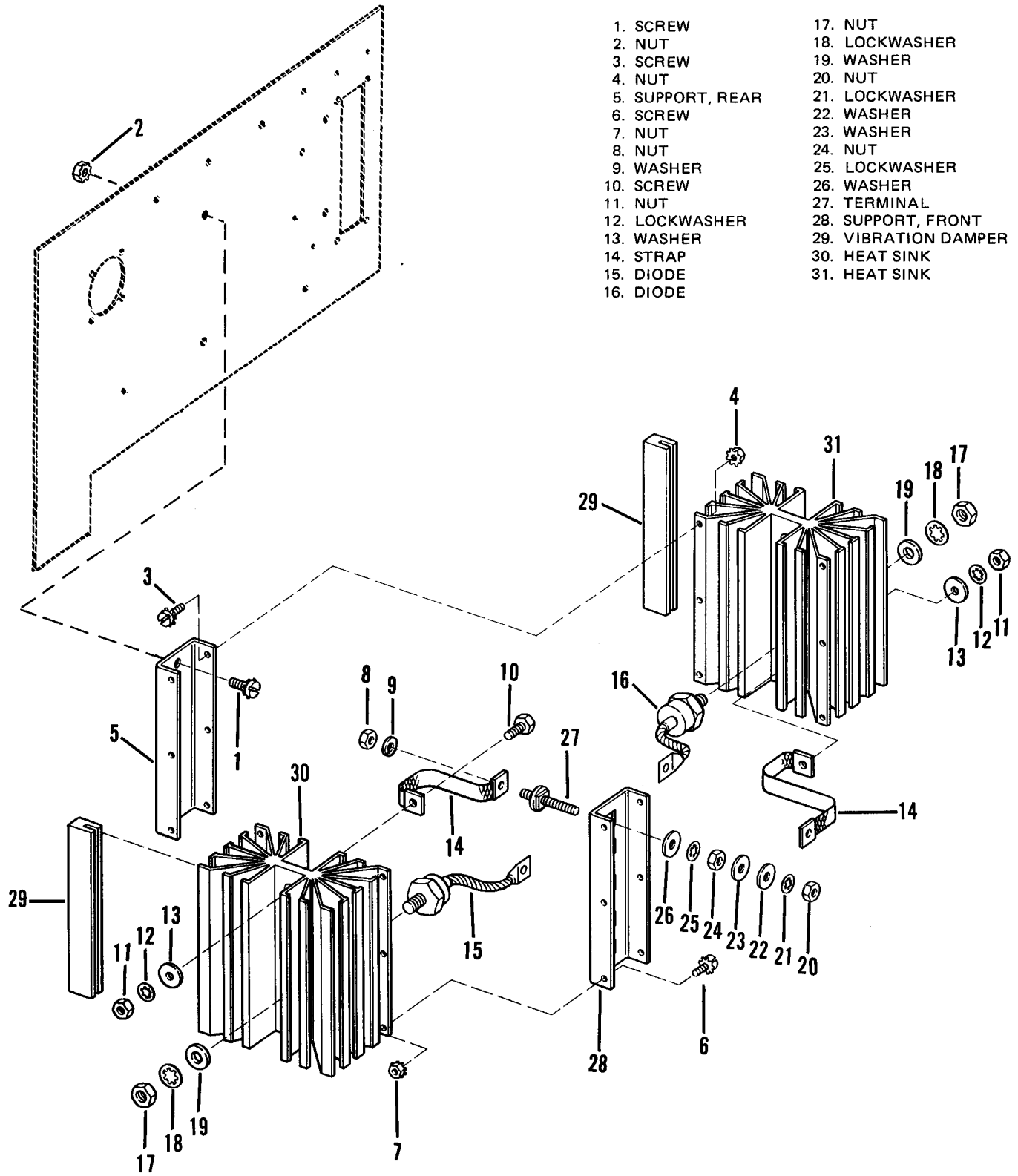
b. Removal

- (1) Disconnect negative (-) battery cable from battery.
- (2) Tag and disconnect eight wires from front of rectifier bridge. Note locations of mounting hardware as wires are removed.
- (3) Remove screws (1) and nuts (2). Carefully remove rectifier bridge assembly (3 through 31) from control box.
- (4) Remove screws (3) and nuts (4). Remove rear support (5).
- (5) Remove screws (6) and nuts (7).
- (6) Remove nuts (8) and washers (9).

NOTE

Note location of straps before removal.

- (7) Remove screws (10), nuts (11), lockwashers (12), and washers (13). Remove two ground straps (14).



- | | |
|------------------|----------------------|
| 1. SCREW | 17. NUT |
| 2. NUT | 18. LOCKWASHER |
| 3. SCREW | 19. WASHER |
| 4. NUT | 20. NUT |
| 5. SUPPORT, REAR | 21. LOCKWASHER |
| 6. SCREW | 22. WASHER |
| 7. NUT | 23. WASHER |
| 8. NUT | 24. NUT |
| 9. WASHER | 25. LOCKWASHER |
| 10. SCREW | 26. WASHER |
| 11. NUT | 27. TERMINAL |
| 12. LOCKWASHER | 28. SUPPORT, FRONT |
| 13. WASHER | 29. VIBRATION DAMPER |
| 14. STRAP | 30. HEAT SINK |
| 15. DIODE | 31. HEAT SINK |
| 16. DIODE | |

Figure 4-59. Rectifier Bridge (Model MEP-026B Only).

NOTE

Diodes (15 and 16) are not the same. Be sure they are installed in their original locations.

- (8) Remove nuts (17), lockwashers (18), and washers (19) to remove diodes (15 and 16).
- (9) If necessary, remove nuts (20), lockwashers (21), washers (22 and 23), nuts (24), lockwashers (25) and washers (26) to remove terminals (27) and front support (28).
- (10) Remove vibration dampers (29) from neat sinks (30 and 31).

c. Test.

- (1) Check diodes (15 and 16) with an ohmmeter.
- (2) Measure the resistance between the terminal end and the threaded base (heat sink) end of the diode.
- (3) Reverse ohmmeter leads and repeat the resistance measurement.
- (4) A diode in good condition will have a very high resistance for one measurement and a resistance near zero when ohmmeter probes are reversed.
- (5) Failure to obtain these two extremes in resistance measurement indicates a defective diode that should be removed and replaced.

d. Installation.

- (1) Install vibration dampers (29) on heat sinks (30 and 31).
- (2) Put terminals (27) in position in front support (28) and install washers (26), lockwashers (25), nuts (24), washers (23 and 22), lockwashers (21), and nuts (20).
- (3) Put diodes (15 and 16) in their original locations and install washers (19), lockwashers (18) and nuts (17).
- (4) Put ground straps (14) in position and install screws (10), washers (13), lockwashers (12) and nuts (11).
- (5) Connect ground straps (14) to terminals (27) and install washers (9) and nuts (8).
- (6) Put support (28) in position on heat sink (30) or (31) and install screws (6) and nuts (7).
- (7) put rear support (5) in position and install screws (3) and nuts (4).
- (8) Position rectifier bridge assembly in control box and install screws (1) and nuts (2).

- (9) Using tags for identification, connect eight wires to terminals on front of rectifier bridge.
- (10) Connect negative (-) battery cable to battery.

4-70. MAIN CIRCUIT BREAKER. (Models MEP-016B and MEP-021B) (See Figure 4-60)

a. Test

- (1) Tag and disconnect wiring from circuit breaker.
- (2) With circuit breaker OFF, use a multimeter to check for resistance between terminals A1 and B1, A2 and B2, and A3 and B3.
- (3) Multimeter should have indicated infinity (high ohms) between each pair of terminals.
- (4) Flip circuit breaker to the ON position. Recheck resistance between terminals A1 and B1, A2 and B2, and A3 and B3.
- (5) Multimeter should now indicate continuity (0 ohms) between each pair of terminals.
- (6) Replace the circuit breaker if the resistance requirements are not met.

b. Removal.

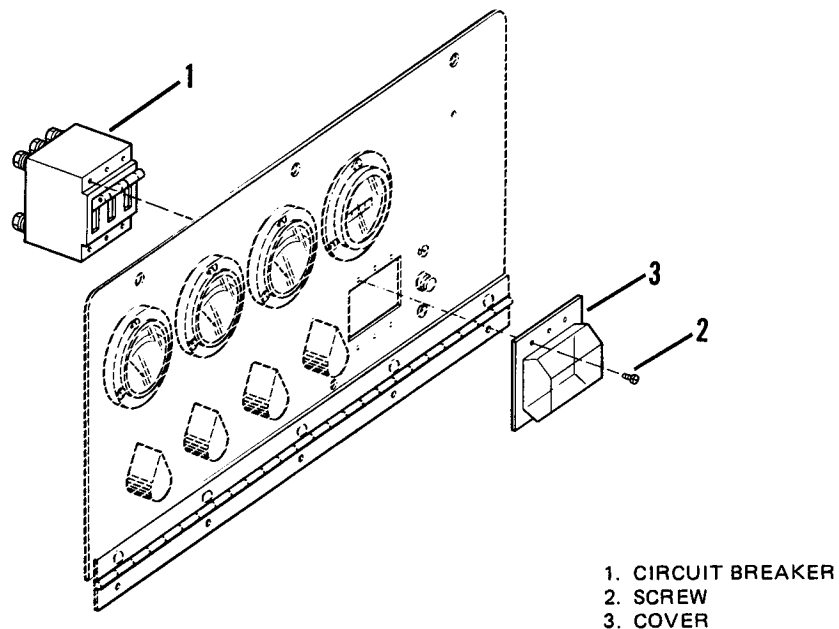


Figure 4-60. AC Circuit Breaker (Model MEP-021B Shown).

NOTE

Procedures for the MEP-016B and MEP-021B, (60 and 400 Hz) sets are the same. Figure 4-60 illustrates the MEP-021B (400 Hz) set.

- (1) Disconnect the negative (-) battery cable.
- (2) Tag and disconnect wiring from circuit breaker (1).
- (3) Remove six screws (2), cover (3) and circuit breaker (1).

c. Installation.

- (1) Install circuit breaker (1) and cover (3) with six screws (2).
- (2) Using tags for identification, connect wiring to circuit breaker.
- (3) Connect the negative (-) battery cable.

4-71. MAIN CIRCUIT BREAKER. (Model MEP-026B) (See Figure 4-61)

a. Test.

- (1) Disconnect the negative (-) battery cable.
- (2) Disconnect one cable, two wires, and three bus bars from circuit breaker.
- (3) With circuit breaker off, use an ohmmeter to check for resistance between terminals A- and B- and between terminals A+ and B+.
- (4) Ohmmeter should have indicated no continuity (high ohms) between both pairs of terminals.
- (5) Switch circuit breaker to the on position. Recheck resistance between terminals A- and B- and between terminals A+ and B+.
- (6) Ohmmeter should now indicate continuity (low ohms) between each pair of terminals.
- (7) Connect one cable, two wires, and three bus bars to the circuit breaker.
- (8) Connect the negative (-) battery cable.

b. Removal.

- (1) Disconnect the negative (-) battery cable.
- (2) Remove nuts (1) and lockwashers (2) and washer (3). Disconnect three bus bars (4), cable (5) and two wires from circuit breaker (6).
- (3) Remove four screws (7), cover (8), and circuit breaker (6).

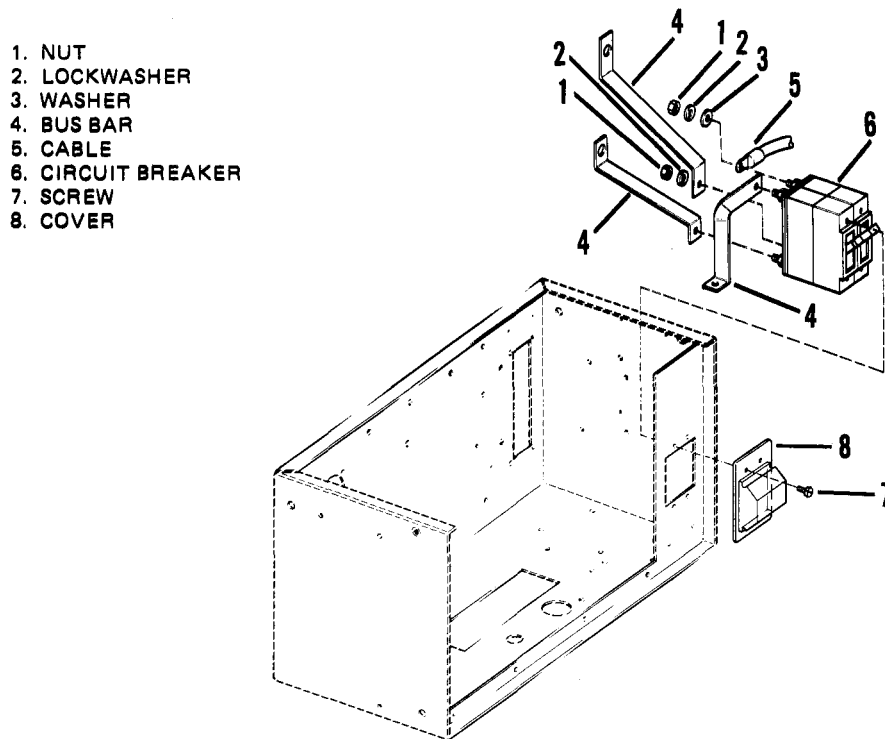


Figure 4-61. DC Circuit Breaker (Model MEP-026B Only).

c. Installation.

- (1) Secure circuit breaker (6) and cover (8) with four screws (7).
- (2) Connect three bus bars (4), cable (5), and two wires to circuit breaker (6) with nuts (1), lockwashers (2) and washer (3).
- (3) Connect the negative (-) battery cable.

4-72. **WIRING HARNESS.**

a. Inspection.

- (1) Inspect that all connections are tight.
- (2) Inspect harness for damaged wires, loose or missing ties, missing insulation or other visible damage.

b. Test. Test wiring harness by measuring continuity of wires from point of origin to point of termination. Continuity (low ohms) indicates a good wire. No continuity (high ohms) indicates a broken wire that must be replaced.

c. Removal.

- (1) Disconnect the negative (-) battery cable.

- (2) Tag and disconnect wiring from all terminals.
- (3) Remove ties and clamps securing wiring harness.
- (4) Carefully remove harness.

d. Repair. Repair consists of wrapping deteriorated insulation with electrical tape, or replacing damaged wires or terminals as necessary. Be sure to use the same size, color and length of wire when making repairs. Solder connections where applicable. Tag each wire and corresponding terminal at time of removal to ensure correct reassembly. The following tables and illustrations give the wire number, gauge, color, and terminal lugs for each wire in the harnesses.

(1) Control Harnesses. Models MEP-016B and MEP-021B are listed in Table 4-8 and illustrated in Figures 4-62, 4-63, and 4-64. Model MEP-026B is listed in Table 4-9 and illustrated in Figures 4-65, 4-66, and 4-67.

(2) Engine Harness (All Models). Listed in Table 4-10 and illustrated in Figure 4-68.

e. Installation.

- (1) Using tags for identification, attach leads to components.
- (2) Secure harness with ties and clamps.

Table 4-8. Control Wiring Harness (Models MEP-016B and MEP-021B).

NOTE

Notes concerning repair and installation of this harness, and the key to the "terminal find numbers" are found at the end of the table.

Wire Ref No.	From	Term Find No.	TO	Term Find No.	Wire Find No.	Wire Stamp No.	Wire stamp Color
1	A1-J1-A	.25 strip	A3-TB2-6	4	1	P1A16	BLACK
2	A1-J1-J	.25 strip	A3-TB2-5	4	1	P2B16	BLACK
3	A1-J1-N	.25 strip	A1-TB2-9	4	1	P3B16N	BLACK
4	A1-J1-L	.25 strip	A3-TB2-2	4	1	P4A16	BLACK
5	A1-J1-Z	.25 strip	A1-TB2-8	4	1	P5B16N	BLACK
6	A1-J1-X	.25 strip	A3-TB2-1	4	1	P6A16	BLACK
7	A1-J1-W	.25 strip	A2-S1-17	4	1	P7A16	BLACK
8	A1-J1-T	.25 strip	A1-R2-1	11	2	H8A12	BLACK
9	A1-J1-E	.25 strip	A1-TB2-4	4	1	x9B16V	BLACK
10	A1-J1-G	.25 strip	A1-TB2-3	4	1	X10B16V	BLACK
11	A1-J1-V	.25 strip	A1-TB2-5	4	2	P11B12	BLACK
12	A1-J1-P	.25 strip	A1-TB2-8	4	2	P5E12N	BLACK

Table 4-8. Control Wiring Harness (Models MEP-016B and MEP-021B), Continued.

Wire Ref No.	From	Term Find No.	To	Term Find No.	Wire Find No.	Wire Stamp No.	Wire stamp Color
13	A1-K1-X2	4	A3-TB1-14	4	1	P12A16	BLACK
14	A1-K1-X1	4	A3-TB1-10	4	1	P13A16	BLACK
15	A1-K1-A1	9	A1-TB2-5	9	2	P11E12	RED
16	A1-K1-A2	4	A3-TBI-8	4	1	K14A16	BLACK
17	A1-J1-S	.25 strip	A1-K1-A2	11	2	K14C12	BLACK
18	A1-TB2-9	4	A1-TB2-GRD	4	1	P3E16N	BLACK
19	A2-M4-(+)	10	A2-S1-14	4	1	P15A16	BLACK
20	A3-TB1-7	4	A2-M2-(-)	10	1	P38A16	BLACK
21	A2-M1-(+)	10	A2-S3-21	4	1	D17A16	BLACK
22	A2-M1-(-)	10	A2-S3-11	4	1	D16A16	BLACK
23	A1-FC-(+)	4	A2-M3-(+)	10	1	D18A16	BLACK
24	A1-FC-(-)	4	A2-M3-(-)	10	1	D19A16	BLACK
25	A1-FC-TL	4	A1-TB2-6	4	1	X20A16A	BLACK
26	A1-FC-BL	4	A1-TB2-11	4	1	X49D16A	BLACK
27	A2-CB2-2	6	A2-S1-25	4	1	P22A16	RED
28	A1-S1-18	4	A2-S2-11	4	1	P23A16	BLACK
29	A2-M2-(+)	10	A4-CT1-C2	6	1	P37A16	BLACK
30	A1-TB1-4	6	A1-TB2-6	4	1	Z20816A	BLACK
31	A1-VR1-27	4	A1-TB2-10	4	1	X25D16A	BLACK
32	A1-VR1-28	4	A2-R1-c	.375s	1	P24A16	BLACK
33	A1-VR1-26	4	A2-R1-B	.375s	1	P26A16	BLACK
34	A2-CB2-2	6	A2-S1-11	4	1	P22B16	BLACK
35	A1-VR1-21	4	A1-TB2-2	4	1	V27A16	BLACK
36	A1-VR1-20	4	A1-TB2-1	4	1	V28A16	BLACK
37	A2-S3-12	4	AI-TB2-10	4	1	X25E16A	BLACK
38	A2-S3-24	4	A1-TB3-6	4	1	X35C16N	BLACK
39	A1-R1-1	10	A1-R2-1	.25S	1	H8C16	BLACK
40	NOT USED						
41	A3-TB1-11	4	A2-S1-15	4	1	K31A16	BLACK
42	A1-TB2-4	4	A3-TB1-1	4	1	X9C16V	BLACK
43	NOT USED						
44	NOT USED						
45	A1-TB2-3	4	A3-TB1-2	4	1	X10C16V	BLACK
46	A1-TB2-1	4	A3-TB1-9	4	1	V28B16	BLACK
47	A1-K1-X2	4	A1-TB2-7	4	1	P21A16N	BLACK
48	A1-TB2-9	4	A2-M4-(-)	10	1	P3c16N	BLACK
49	A3-TB1-13	4	A2-CB2-1	6	1	P11F16	RED
50	A1-TB2-2	4	A3-TB1-18	4	1	V27B16	BLACK
51	A1-TB2-5	4	A3-TB1-13	4	1	P11D12	RED
52	A1-K1-A2	9	A1-R2-2	11	2	K14B16	BLACK
53	A1-R2-2	.25 strip	A3-TB1-19	4	1	H32A16	BLACK
54	A3-TB1-17	4	A2-S1-27	4	1	P33A16	BLACK
55	A3-TB1-15	4	A2-S1-13	4	1	P34A16	BLACK
56	A1-TB3-6	4	A1-LO	10	1	X35B16N	BLACK
57	A1-TB3-2	4	A1-L2	10	1	X36c 16B	BLACK
58	A1-TB3-5	4	A1-L1	10	1	x39C16A	BLACK

MARINE CORPS TM 05926B/06509B-12
 ARMY TM 5-6115 -615-12
 NAVY NAVFAC P-8-646-12
 AIR FORCE TO 35C2-3-386-31

Table 4-8. Control Wiring Harness (Models MEP-016B and MEP-021B), Continued.

Wire Ref No.	From	Term Find No.	To	Term Find No.	Wire Find No.	Wire Stamp No.	Wire Stamp Color
59	A1-TB3-1	4	A1-L3	10	1	X40B16C	BLACK
60	A1-J1-K	.25 strip	A3-TB2-2	4	1	P4C16	BLACK
61	A1-J1-H	.25 strip	A1-TB2-8	4	1	P5D16N	BLACK
62	A1-TB1-5	7	A1-S1-3	5	3	X29A10C	BLACK
63	A1-S1-B		A3-TB1-12	4	1	P63A16	BLACK
64	A1-S1-2	5	A1-TB1-3	5	3	X41A10B	BLACK
65	A1-S1-10	5	A1-TB1-6	5	3	x42A10B	BLACK
66	A1-S1-11	5	A1-TB1-4	5	3	X20D10A	BLACK
67	NOT USED						
68	NOT USED						
69	A1-S1-23	4	A3-TB1-5	4	1	P43A16	BLACK
70	A1-S1-19	4	A3-TB1-4	4	1	P11A16	BLACK
71	A1-S1-17	4	A3-TB1-3	4	1	P45A16	BLACK
72	A1-S1-21	4	A3-TB1-6	4	1	P46A16	BLACK
73*	A1-TB1-4	6	A2-F1-1	.375s	2	X20C12A	BLACK
74	A1-S1-13	5	A1-TB1-1	7	3	x25A10A	BLACK
75	A1-TB1-2	5	A2-CB1-A2	11	3	X47B10C	BLACK
76	A1-TB1-2	5	A1-TB2-12	5	3	X47C10C	BLACK
77	A1-S1-1	5	A2-CB1-A3	11	3	x48A10C	BLACK
78	A1-S1-5	5	A1-L0	11	3	X35A10N	BLACK
79	A1-TB1-1	7	A1-TB2-10	5	3	x25B10A	BLACK
80	A1-TB1-1	7	A1-TB2-11	5	3	x25C10A	BLACK
81*	A1-TB2-11	5	A2-F2-1	.375s	2	X49A12A	BLACK
82*	A2-F2-2	.375 strip	A2-J1-L	25s	2	X50A12A	BLACK
83*	A2-J1-gnd	9	A1-ground	7	2	x51A12N	BLACK
84*	A2-F1-2	.375 strip	A2-J1-L	9	2	X52A12A	BLACK
85	A2-CB1-B1	11	A1-L1	11	3	X39A10A	BLACK
86	A2-CB1-B1	11	A1-L1	11	3	X39B10A	BLACK
87	A1-TB2-10	5	A2-CB1-A1	11	3	X49B10A	BLACK
88	A1-TB2-11	5	A2-CB1-A1	11	3	X49C10A	BLACK
89	NOT USED						
90	NOT USED						
91	A4-CT1-A1	6	A2-S2-12	4	1	P53A16	BLACK
92	A4-CT2-B1	6	A2-S2-13	4	1	P54A16	BLACK
93	A1-TB2-12	5	A2-CB1-A2	11	3	X47D10C	BLACK
94	A2-CB1-B2	11	A1-L2	11	3	X36A10B	BLACK
95	A2-CB1-B2	11	A1-L2	11	3	X36B10B	BLACK
96	A2-CB1-B3	11	A1-L3	11	3	X40A10C	BLACK
97	A2-CB1-A3	10	A2-S3-17	4	1	X48B16C	BLACK
98	A1-TB2-12	4	A2-S3-26	4	1	X47E16C	BLACK
99	A1-S1-12	5	A1-TB1-2	7	3	X47A10C	BLACK
100	A4-CT1-C1	6	A2-S2-14	4	1	P55A16	BLACK
101	A1-TB2-6	4	A1-VR1-24	4	1	X20F16A	BLACK

* Used on Model MEP-016B (60 Hertz) harness only.

Table 4-8. Control Wiring Harness, Models MEP-016B and MEP-021B, Continued.

Key For Table 4-8				
Find No.	Part Or Identifying No.	Qty Reqd	Nomenclature Or Description	Specification
1	MS5086/2-16-9	A/R	Wire, elect, 600V aircraft white, #16 AWG	MIL-W-5086/2C
2	MS5086/2-12-9	A/R	Wire, elect, 600V aircraft white, #12 AWG	MIL-W-50862C
3	MS5086/2-10-9	A/R	Wire, elect, 600V aircraft white, #10 AWG	MIL-W-50862C
4	MS25036-107	101	Terminal lug, crimp, #16 AWG-#6 stud	MIL-T-7928/5B
5	MS17143-15	26	Terminal lug, crimp, #10/12 AWG - #6 stud	MIL-T-7928/5B
6	MS-25036-153	13	Terminal lug, crimp, #16 AWG - #8 stud	MIL-T-7928/5B
7	MS-25036	6	Terminal lug, crimp, #10/12 AWG - #8 stud	MIL-T-7928/5B
8	MS-25036-108	1	Terminal lug, crimp, #16 AWG - #10 stud	MIL-T-7928/5B
9	MS-25036-112	5	Terminal lug, crimp, #10-12 AWG - #10 stud	MIL-T-7928/5B
10	MS-25036-154	15	Terminal lug, crimp, #16 AWG .25 stud	MIL-T-7928/5B
11	MS-25036-157	19	Terminal lug, crimp, #10/12 AWG - .25 stud	MIL-T-7928/5B
12	MS3100R32-7P	1	Connector	
13	MS-3367-4	120	Tie wrap	MIL-5-23190
14	SN60WPR2	A/R	Solder, tin aly	QQ-S-571
15	MS3368-1-9A	1	Tag, identification	MIL-S-23190
16	13213E4128	1	Current transformer	

Table 4-8. Control Wiring Harness (Models MEP-016B and MEP-021B), Continued.

NOTES FOR TABLE 4-8

1. Position tie-down straps (Find No. 13) at approximately 3 inch intervals and at branch-offs.
 2. For electrical wiring diagram (Models MEP-016B and MEP-021B) see Figure 4-63.
 3. For electrical schematic (Models MEP-016B and MEP-021B) see Figure 4-64.
 4. Installed crimp style terminals shall meet the performance requirements of MIL-T-7928.
 5. Leads not terminating in a crimp style terminal shall be stripped 0.50 inch and tinned in accordance with MIL-STD-454, require-merit No. 5.
 6. Mark each wire with appropriate wire number and color. Permanency, legibility, and type of lettering shall be in accordance with MIL-STD-130. Marking shall be repeated at 15 inch maximum intervals. The final 15 inches at each end shall be marked at 3 inch maximum intervals. Lengths of less than 3 inches need not be marked.
 7. Solder in accordance with MIL-STD-454, requirement No. 5, using solder, Find No. 14.
 8. Dimensions shown are for general routing and may be altered to facilitate installation.
 9. For interpretation of drawing, DOD-STD-100 applies.
 10. Mark item 16 "30554-84-13154" in accordance with MIL-STD-130. Locate approximately as shown.
 11. Connect battery charging voltage regulator leads only after the harness is installed in the control box.
- * Wire reference No's 73, 81, 82, 83, and 84 are used on Model MEP-016B (60 Hertz) harness only.
-

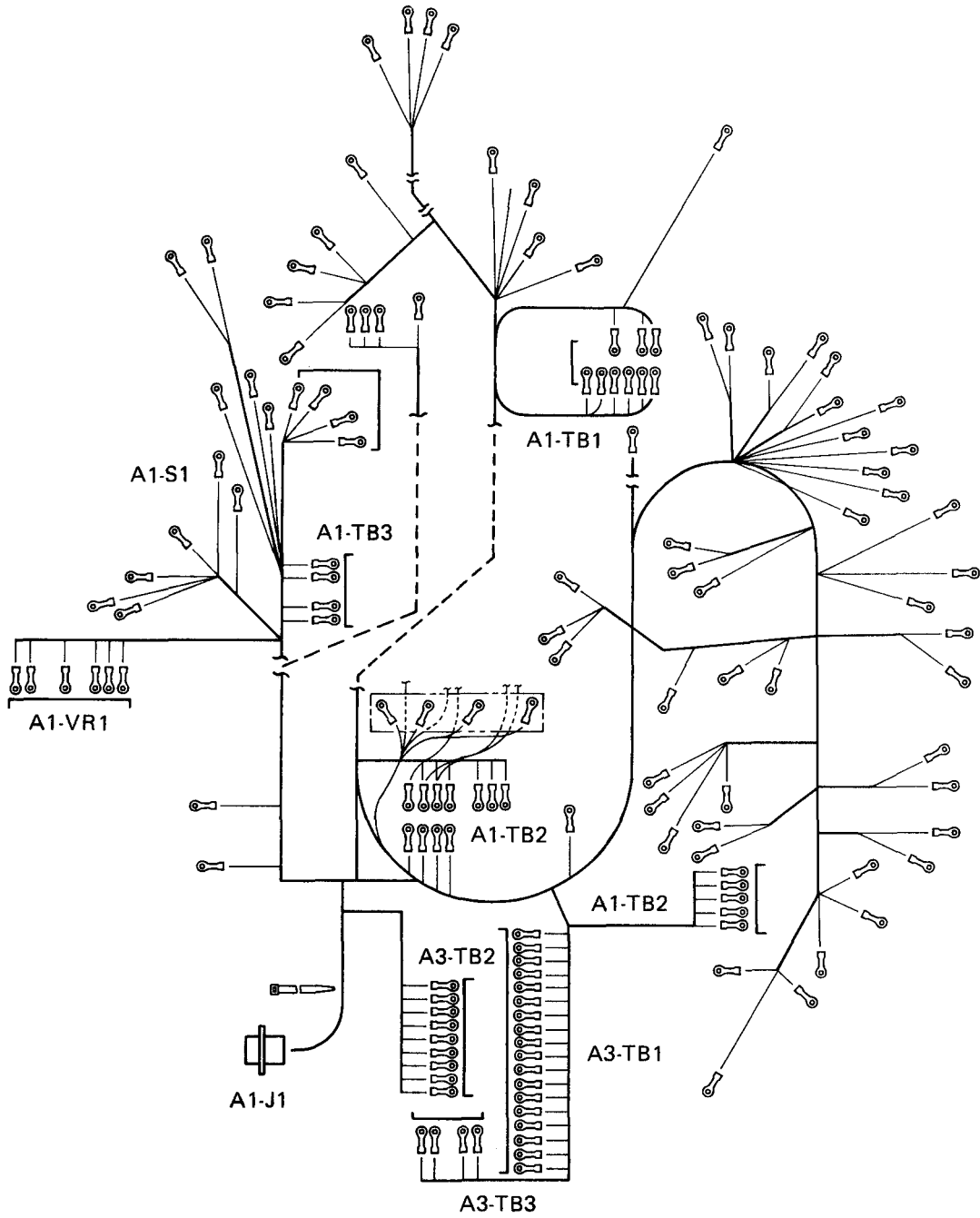


Figure 4-62. Control Box Wiring Harness (Models MEP16B and MEP-021B).

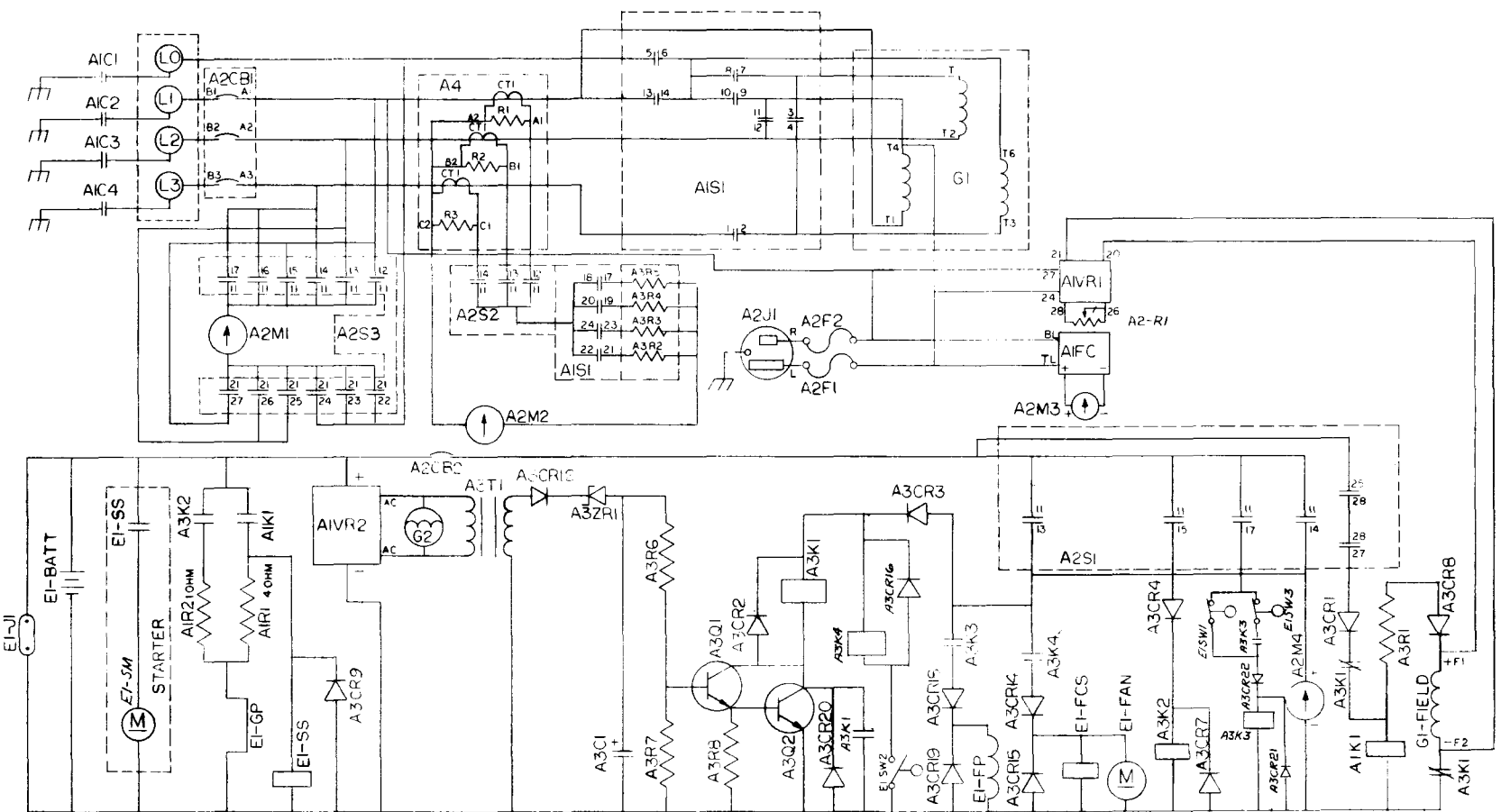


Figure 4-64. Schematic Diagram (Models MEP-016B and MEP-021B) (Sheet 1 of 2).

A1-CONTROL BOX ASSEMBLY

C1, C2, C3, C4 EMI CAPACITORS
 K1 AUXILIARY START RELAY
 L0, L1, L2, L3 OUTPUT TERMINALS
 FC FREQUENCY CONVERTER
 S1 VOLTAGE RECONNECTION SW
 TB1, TB2, TB3 TERMINAL BOARDS
 VR1 GEN SET VOLTAGE REGULATOR
 VR2 BATT. CHARGING VOLTAGE REGULATOR
 R1 PRE-HEAT RESISTOR
 R2 AFTER GLOW RESISTOR

A2-SUB-ASSEMBLY-FRONT PANEL

CB1 LOAD CIRCUIT BREAKER
 CB2 DC CONTROL BREAKER
 U1 AC RECEPTACLE
 M1 AC VOLTMETER
 M2 LOAD CURRENT METER
 M3 FREQUENCY METER
 M4 RUNNING TIME METER
 R1 VOLTAGE ADJUST POT
 S2 CURRENT SELECTOR SWITCH
 S3 VOLTAGE SELECTOR SWITCH
 S1 MASTER SWITCH
 F1, F2 AC RECEPTACLE FUSE

A3-SUB-ASSEMBLY-CIRCUIT BOARD

R2, R3, R4, R5 VOLTMETER RESISTORS
 K2 PRE-HEAT RELAY
 T1 START DISCONNECT TRANSFORMER
 R6, R7, R8 START DISCONNECT RESISTORS
 ZR1 START DISCONNECT ZENER
 C1 START DISCONNECT CAPACITOR
 Q1, Q2 START DISCONNECT TRANSISTORS
 K1 START DISCONNECT RELAY
 K4 LOW FUEL SHUTDOWN RELAY
 K3 FUEL LEVEL RELAY
 CR1-23 DIODES
 R1 FIELD FLASHING RESISTOR

A4-SUBASSEMBLY-CURRENT TRANSFORMER

CT1, CT2, CT3 CURRENT TRANSFORMERS
 R1, R2, R3 BURDEN RESISTORS

E1-ENGINE ASSEMBLY

E1-BATT - BATTERY
 E1-GP - GLOW PLUGS
 E1-SS - STARTER SOLENOID
 E1-FCS - FUEL CUTOFF SOLENOID
 E1-FAN - NOISE KIT FAN
 E1-FP - FUEL PUMP
 E1-SW1 - FUEL LEVEL SWITCH
 E1-SW2 - LOW FUEL SWITCH
 E1-J1 - AUXILIARY BATTERY JACK

-GENERATOR ASSEMBLIES

G1-T1, T2, T3, T4, - STATOR FIELD WINDINGS
 T5, T6
 G1-F1, F2 - GENERATOR FIELD
 G2 - BATTERY CHARGING ALTERNATOR

A2S3	VOLTAGE SELECTOR SWITCH
POSITION	TERMINALS CONNECTED
V1-0	11 AND 12 AND 15, 21 AND 22
V2-0	11 AND 13, 21 AND 23
V3-0	11 AND 14, 21 AND 24
V1-2	11 AND 12 AND 15, 21 AND 25
V2-3	11 AND 16, 21 AND 26
V3-1	11 AND 17, 21 AND 27

A2S2	CURRENT SELECTOR SWITCH
POSITION	TERMINALS CONNECTED
I-1	11 AND 12
I-2	11 AND 13
I-3	11 AND 14

A1S1	VOLTAGE RECONNECTION SWITCH
POSITION	TERMINALS CONNECTED
120/208 30	1 AND 2, 5 AND 6, 7 AND 8, 9 AND 10, 17 AND 18
120 30	1 AND 2, 3 AND 4, 11 AND 12, 13 AND 14, 19 AND 20
240 30	3 AND 4, 9 AND 10, 21 AND 22
120 10	3 AND 4, 11 AND 12, 13 AND 14, 15 AND 16, 23 AND 24

A2S1	MASTER SWITCH
POSITION	TERMINALS CONNECTED
PRE-HEAT	11 AND 15
OFF	NONE
RUN/AUX. FUEL	11 AND 13, 14 AND 15 AND 16 AND 17
RUN	11 AND 13 AND 14
START	11 AND 13 AND 14 AND 15, 25 AND 27 AND 28

THE 400 Hz MODEL DOES NOT CONTAIN THE AC RECEPTACLE A2J1 OR THE FUSES A2F1 OR A2F2.

FRONT PANEL SWITCH A253 HAS JUMPERS INSTALLED:

- BETWEEN A253-16 AND A253-17
- BETWEEN A253-22 AND A253-23 AND A253-24
- BETWEEN A253-25 AND A253-26

FRONT PANEL SWITCH S251 HAS JUMPER INSTALLED BETWEEN A251-13 AND A251-13.

Figure 4-64. Schematic Diagram (Models MEP-016B and MEP-021B) (Sheet 2 of 2).

Table 4-9. Control Wiring Harness (Model MEP-026B) .

NOTE

Notes concerning repair and installation of this harness, and the key to the "terminal find numbers" in the table are found at the end of the table.

Wire Ref No.	From	Term Find No.	To	Term Find No.	Wire Find No.	Wire Stamp No.	Wire stamp Color
1	A1-J1-A	.25 strip	A4-TB2-6	4	1	P1A16	BLACK
2	A1-J1-J	.25 strip	A4-TB2-5	4	1	P2B16	BLACK
3	A1-J1-N	.25 strip	A1-TB1-11	4	1	P3B16N	BLACK
4	A1-J1-L	.25 strip	A4-TB2-2	4	1	P4A16	BLACK
5	A1-J1-Z	.25 strip	A1-TB1-10	4	1	P5B16N	BLACK
6	A1-J1-X	.25 strip	A4-TB2-1	4	1	P6A16	BLACK
7	A1-J1-W	.25 strip	A2-S1-17	4	1	P7A16	BLACK
8	A1-J1-T	.25 strip	A1-R3-1	10	2	H8A12	BLACK
9	A1-J1-E	.25 strip	A1-TB1-4	4	1	X9B16V	BLACK
10	A1-J1-G	.25 strip	A1-TB1-3	4	1	X10B16V	BLACK
11	A1-J1-V	.25 strip	A1-TB1-5	5	2	P11B12	RED
12	A1-J1-P	.25 strip	A1-TB1-10	5	2	P29B12N	BLACK
13	A1-K1-X2	4	A4-TB1-14	4	1	P12A16	BLACK
14	A1-K1-X1	4	A1-TB1-10	4	1	P13A16	BLACK
15	A1-K1-A1	7	A1-TB1-5	4	1	P11E16	RED
16	A1-K1-A2	4	A4-TB1-8	4	1	K14A16	BLACK
17	A1-J1-S	.25 strip	A1-R3-2	10	2	K14C12	BLACK
18	A1-TB1-8	4	A1-TB1-mtg	4	1	P29A16N	BLACK
19	A2-M4-(+)	4	A2-S1-14	4	1	P15A16	BLACK
20	A1-R1-S+	6	A2-M2-(+)	9	1	D16A16	BLACK
21	A1-R1-S-	6	A2-M2-(-)	9	1	D17A16	BLACK
22	A2-M1-(-)	9	A2-M2-(+)	9	1	D16B16	BLACK
23	A1-FC-(+)	4	A2-M3-(+)	9	1	D18A16	BLACK
24	A1-FC-(-)	4	A2-M3-(-)	9	1	D19A16	BLACK
25	A1-FC-TL	4	A3-TB1-3	9	1	X20A16C	BLACK
26	A1-FC-BL	4	A3-TB1-2	9	1	X21B16B	BLACK
27	A2-CB1-2	6	A2-S1-25	4	1	P22A16	BLACK
28	NOT USED						
29	NOT USED						
30	A1-VR1-22	4	A1-FC-BL	4	1	X21C16B	BLACK
31	A1-VR1-27	4	A3-TB1-4	9	1	X25B16A	BLACK
32	A1-VR1-F	4	A1-CB1-A-	9	1	P24A16	BLACK
33	A1-VR1-26	4	A2-R1-B	. 375s	1	P26A16	BLACK
34	A2-CB1-2	6	A2-S1-11	4	1	P22B16	BLACK
35	A1-VR1-21	4	A1-TB1-2	4	1	V27A16	BLACK
36	A1-VR1-20	4	A1-TB1-1	4	1	V28B16	BLACK
37	A2-M1-(+)	9	A2-R1 -A	. 375s	1	P23B16	BLACK
38	A1-CB1-A+	9	A2-M1-(+)	9	1	P23A16	BLACK
39	A1-R2-2	.25 strip	A1-R3-1	9	1	H8C16	BLACK

Table 4-9. Control Wiring Harness (Model MEP-026B), Continued.

Wire Ref No.	From	Term Find No.	To	Term Find No.	Wire Find No.	Wire Stamp No.	Wire Stamp Color
40	A1-TB1-11	4	A2-TB1-3	4	1	P3C16N	BLACK
41	A4-TB1-11	4	A2-S1-15	4	1	P30A16	BLACK
42	A1-TB1-4	4	A4-TB1-1	4	1	X9E16V	BLACK
43	A1-TB1-4	4	A2-TB1-1	4	1	X9C16V	BLACK
44	A1-TB1-3	4	A2-TB1-2	4	1	X10C16V	BLACK
45	A1-TB1-3	4	A4-TB1-2	4	1	X10E16V	BLACK
46	A1-TB1-1	4	A4-TB1-9	4	1	V28C16	BLACK
47	A1-K1-X2	4	A1-TB1-9	4	1	P12B16N	BLACK
48	A1-TB1-9	4	A2-M4-(-)	4	1	P12C16N	BLACK
49	A1-K1-A1	7	A2-CB1-1	6	1	P11D16	RED
50	A1-TB1-2	4	A4-TB1-18	4	1	V27C16	BLACK
51	A1-TB1-5	4	A4-TB1-13	4	1	P11F16	RED
52	A1-K1-A2	8	A1-R3-2	10	2	K14B12	BLACK
53	A1-R2-1	.25 strip	A4-TB1-19	4	1	H31A16	BLACK
54	A4-TB1-17	4	A2-S1-27	4	1	P32A16	BLACK
55	A4-TB1-15	4	A2-S1-13	4	1	P33A16	BLACK
56	NOT USED						
57	NOT USED						
58	NOT USED						
59	NOT USED						
60	A1-J1-K	.25 strip	A4-TB2-2	4	1	P4C16	BLACK
61	A1-J1-H	.25 strip	A1-TB1-10	4	1	P5D16N	BLACK
62	A1-J1-C	.25 strip	A1-R3-1	9	1	H8D16	BLACK

Key For Table 4-9

Find No.	Part Or Identifying No.	Qty Reqd	Nomenclature Or Description	Specification
1	MS5086/2-16-9	A/R	Wire, elect, 600V aircraft white, #16 AWG	MIL-W-5086/2C
2	MS5086/2-12-9	A/R	Wire, elect, 600V aircraft white, #12 AWG	MIL-W-5086/2C
3	MS25036-107	4	Terminal lug, crimp, #16 AWG-#6 stud	MIL-T-7928/5B
4	MS25036-111	2	Terminal lug, crimp #12 AWG-#6 stud	MIL-T-7928/5B
5	MS25036-153	5	Terminal lug, crimp #16 AWG-#8 stud	MIL-T-7928/5B

Table 4-9 Control Wiring Harness (Model MEP-026B), Continued.

Key For Table 4-9, Continued

Find No.	Part Or Identifying No.	Qty Reqd	Nomenclature Or Description	Specification
6	MS25036-108	2	Terminal lug, crimp #16 AWG-#10 stud	MIL-T-7928/5B
7	MS25036-112	1	Terminal lug, crimp #12 AWG-#10 stud	MIL-T-7928/5B
8	MS25036-154	17	Terminal lug, crimp #16 AWG-#1/4" stud	MIL-T-7928/5B
9	MS25036-157	3	Terminal lug, crimp #12 AWG-1/4" stud	MIL-T-7928/5B
10	MS3100R32-7P	1	Connector, recp, elect	
11	MS3367-4	125	Tie wrap	MIL-S-23190
12	SN60WRP2	A/R	Solder, tin aly, wire, resin core 2.2 percent flux	QQ-S-571
13	MS3368-7-9A	1	Tag, identification	MIL-S-23190

NOTES FOR TABLE 4-9

1. Position tie-down straps (Find No. 14) at approximately 3 inch intervals and at branch-offs.
2. For electrical wiring diagram (Model MEP-026B) see Figure 4-65.
3. For electrical schematic (Model MEP-026B) see Figure 4-66.
4. Installed crimp style terminals shall meet the performance requirements of MIL-T-7928.
5. Leads not terminating in a crimp style terminal shall be stripped .50 inch and tinned in accordance with MIL-STD-454, requirement No. 5.
6. Mark each wire with appropriate wire number and color. Permanency, legibility, and type of lettering shall be in accordance with MIL-STD-130. Marking shall be repeated at 15 inch maximum intervals. The final 15 inches at each end shall be marked at 3 inch maximum intervals. Lengths of less than 3 inches need not be marked.
7. Solder in accordance with MIL-STD-454, requirement No. 5, using solder, Find No. 15.

MARINE CORPS TM 05926B/06509B-12
ARMY TM 5-6115-615-12
NAVY NAVFAC P-8-646-12
AIR FORCE TO 35C2-3-386-31

Table 4-9. Control Wiring Harness (Model MEP-026B), Continued.

NOTES FOR TABLE 4-9, Continued.

8. Dimensions shown are for general routing and may be altered to facilitate installation.
 9. For interpretation of drawing, DOD-STD-100 applies.
 10. Mark item 16 "30554-84-13156" in accordance with MIL-STD-130. Locate approximately as shown.
 11. Connect battery charging voltage regulator leads only after the harness is installed in the control box.
-

MARINE CORPS TM 05926B/06509B-12
 ARMY TM 5-615-615-12
 NAVY NAVFAC P-8-646-12
 AIR FORCE TO 35C2-3-386-31

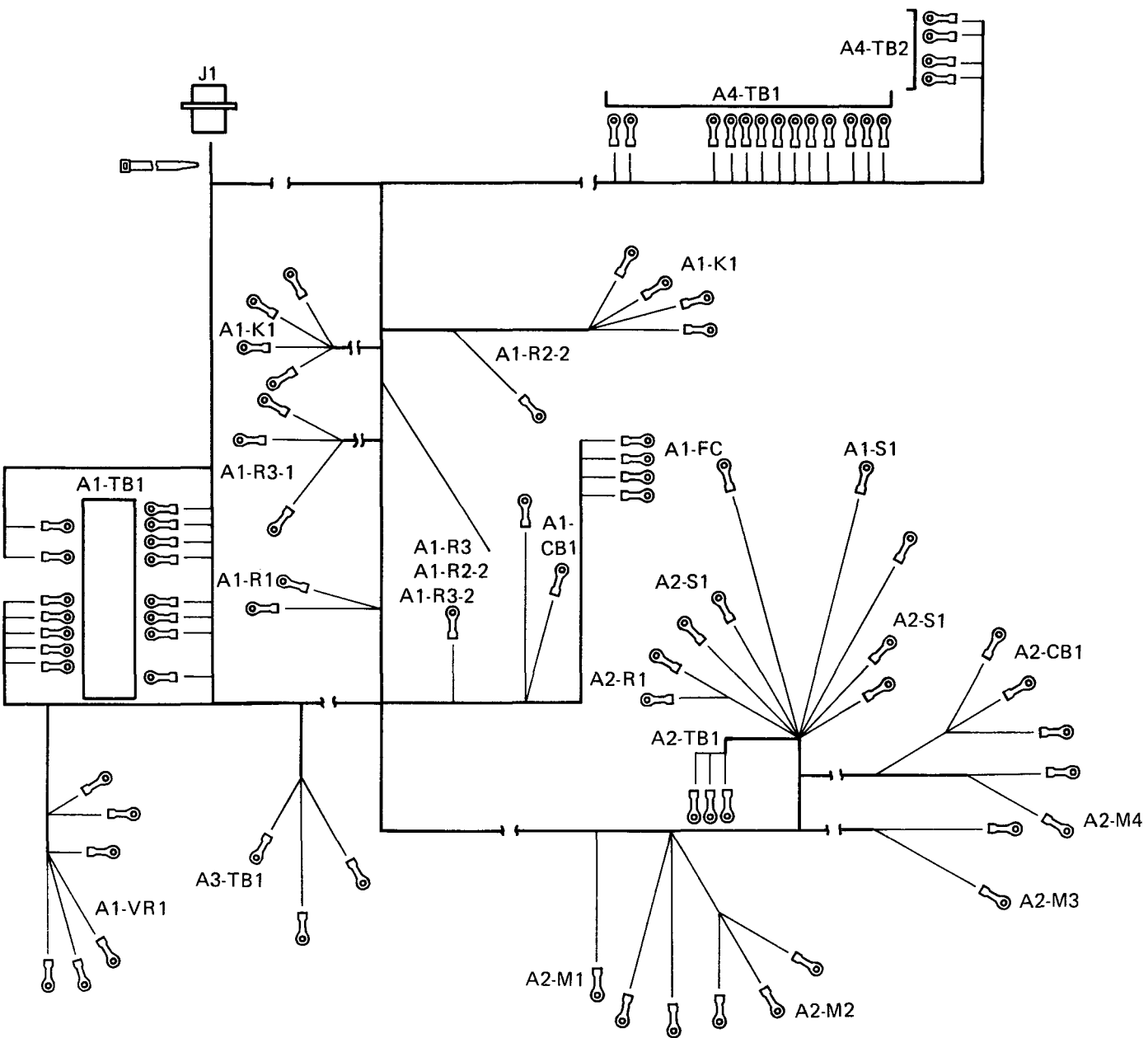


Figure 4-65. Control Wiring Harness (Model MEP-026B).

1. —○— indicates a jumper between terminals.
2. FOR INTERPRETATION OF DRAWING, SEE NOTE 1 OF DRAWING 84-1380.
3. FOR 3 KW, 28 VDC, ELECTRICAL SCHEMATIC DIAGRAM, SEE DRAWING 84-1392.
4. FOR 3 KW, 28 VDC, WIRING HARNESS, SEE DRAWING 84-1366.
5. FOR 3 KW, 28 VDC, ASSEMBLY, SEE DRAWING 84-026.
6. MARKINGS OF IN-PC TERMINALS MARKED L:
 —BL IS THE TERMINAL MARKED L NEAREST THE BOTTOM OF THE CONTROL BOX
 —TL IS THE TERMINAL MARKED L NEAREST THE TOP OF THE CONTROL BOX

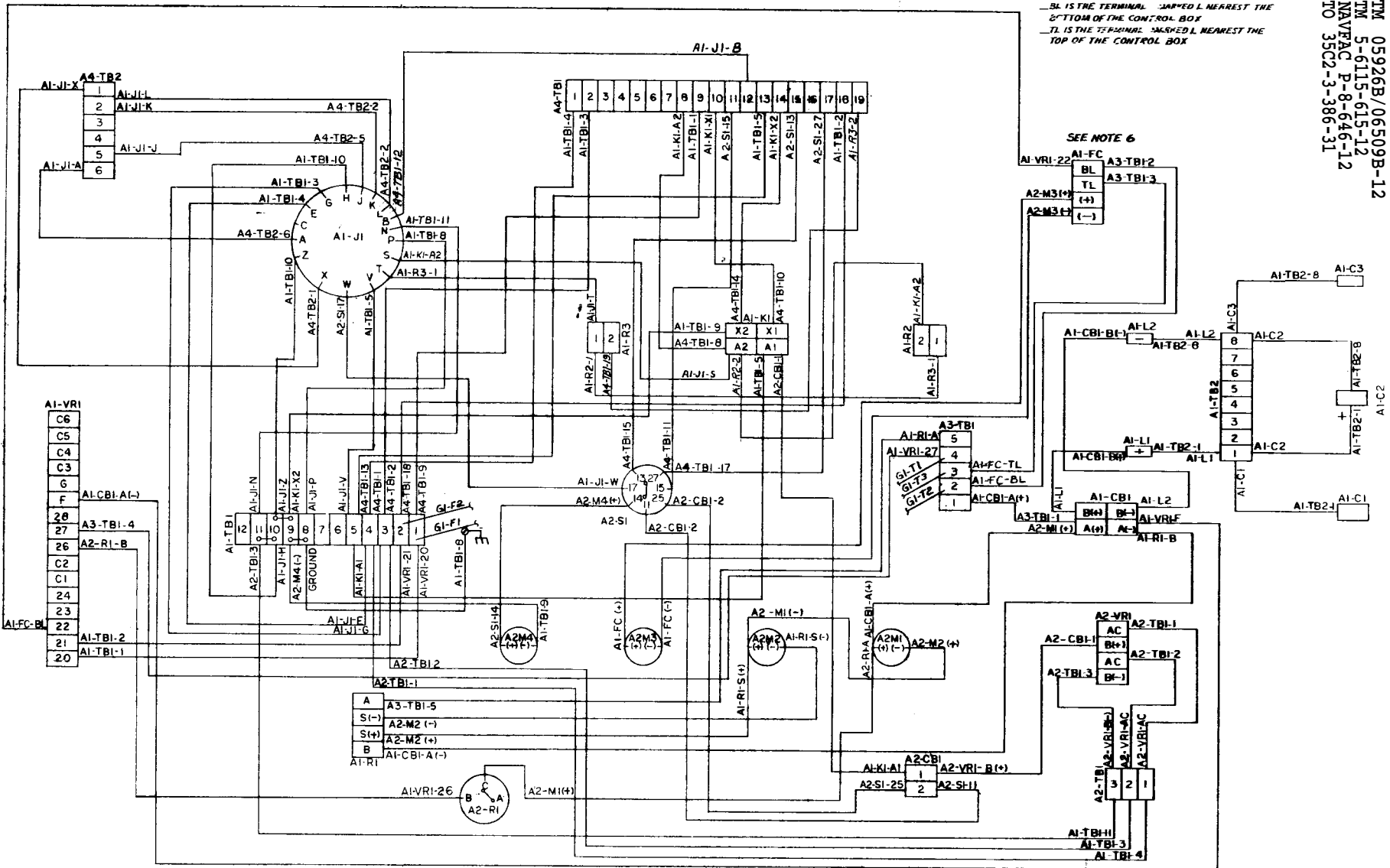


Figure 4-66. Wiring Diagram (Model MEP-026B).

MARINE CORPS TM 05926B/06509B-12
 ARMY TM 5-6115-615-12
 NAVY NAVFAC P-8-646-12
 AIR FORCE TO 35C2-3-386-31

A1 CONTROL BOX ASSY
 A1, C1, C2, C3 EMI CAPACITOR
 K1 AUXILIARY START RELAY
 L1, L2 OUTPUT TERMINALS
 FC FREQUENCY CONVERTER
 VR1 . GENERATOR SET VOLTAGE REGULATOR
 CB1 LOAD CIRCUIT BREAKER
 R1 LOAD CURRENT SHUNT
 R2 PRE-HEAT RESISTOR
 R3 AFTER GLOW RESISTOR

A2-SUB-ASSEMBLY-FRONT PANEL

CB1 DC CIRCUIT BREAKER
 M1 DC VOLTMETER
 M2 DC LOAD CURRENT METER
 R3 RPM METER
 R1 VOLTAGE ADJUST POT
 S1 MASTER SWITCH
 VR2 . . . BATTERY CHARGING VOLTAGE REG.
 TB3 TERMINAL BOARD
 M4 RUNNING TIME METER

A3-SUB-ASSEMBLY-RECTIFIER STACK

A4-SUB-ASSEMBLY-CIRCUIT BOARD

R2, R3, R4, R5 VOLTMETER RESISTORS
 K2 PRE-HEAT RELAY
 T1 START DISCONNECT TRANSFORMER
 R6, R7, R8 . . . START DISCONNECT RESISTORS
 ZR1 START DISCONNECT ZENER
 C1 START DISCONNECT CAPACITOR
 Q1, Q2 . . . START DISCONNECT TRANSISTORS
 K1 START DISCONNECT RELAY
 K4 LOW FUEL SHUTDOWN RELAY
 K3 FUEL LEVEL RELAY
 CR1-23 DIODES
 R1 FIELD FLASHING RESISTORS

E1 ENGINE ASSEMBLY
 E1BATT - BATTERY
 E1GP - GLOW PLUG
 E1SS - STARTER SOLENOID
 E1FCS - FUEL CUTOFF SOLENOID
 E1FAN - NOISE KIT FAN
 E1FP - AUXILIARY FUEL PUMP
 E1SW1 - FUEL LEVEL SWITCH
 E1SW2 - LOW FUEL SWITCH
 E1J1 - AUXILIARY BATTERY JACK

GENERATOR ASSEMBLIES

G1-T1, T2, T3 STATOR FIELD WINDINGS
 G1-F1, F2 FIELD WINDING
 G2 - BATTERY CHARGING ALTERNATOR

A2S1	MASTER SWITCH
POSITION	TERMINAL CONNECTIONS
PRE-HEAT	11 AND 15
OFF	NONE
RUN/AUX. FUEL	11 AND 13 AND 14 AND 15 AND 17
RUN	11 AND 13 AND 14
START	11 AND 13 AND 15, 25 AND 27 AND 28

Figure 4-67. Schematic Diagram (Model MEP-026B) (Sheet 2 of 2).

Table 4-10. Engine Wiring Harness (All Models).

NOTE

Notes concerning repair and installation of this harness, and the key to the "terminal find numbers" are located at the end of the table.

Wire Ref No.	From	Term Find No.	Term Find No.	To	Wire Find No.	Wire Stamp No.	Wire stamp Color
1	A1-P1-A	.25 strip	E1-P6		3	1	P1B16
2	A1-P1-Z	.25 strip	E1-P4-8		12,13	1	P5F16N
3	A1-P1-L	.25 strip	E1-P4-A		12,13	1	P4B16
4	A1-P1-N	.25 strip	E1-P5-A		.25s	1	P3A16N
5	A1-P1-X	.25 strip	E1-P5-B		.25s	1	P6B16
6	A1-P1-J	.25 strip	E1-P5-C		.25s	1	P2A16
7	A1-P1-W	.25 strip	E1-P5-D		.25s	1	P7B16
8	A1-P1-H	.25 strip	E1-P8		4	1	P5C16N
9	A1-P1-K	.25 strip	E1-P7		3	1	P4D16
10	A1-P1-T	.25 strip	E1-P3		4	1	H8B16
11	A1-P1-G	.25 strip	E1-P1		3	1	X10A16V
12	A1-P1-E	.25 strip	E1-P2		3	1	X9A16V
13	A1-P1-P	.25 strip	E1-GND		7	2	P29C12N
14	A1-P1-S	.25 strip	E1-SS		9	2	K14D12
15	A1-P1-V	.25 strip	E1-BATT		8	2	P11A12

Key For Table 4-10

Find No.	Part Or Identifying	Qty No.	Reqd	Nomenclature Or Description	Specification
1	MS5086/2-16-9	A/R		Wire, elect, 600V aircraft white, #16 AWG	
2	MS5086/2-12-9	A/R		Wire, elect, 600V aircraft white, #12 AWG	
3	MS27144-2	4		Connector, electrical	
4	MS27142-3	2		Connector, electrical	
5	MS3106R145-25	1		Connector, electrical	
6	MS3106R32-75	1		Connector, electrical	
7	MS25036-158	1		Terminal, lug, crimp style cop, ins, cli, 12-10 AWG No.1/2 stud size, blue	

Table 4-10. Engine Wiring Harness (All Models), Continued.

Key For Table 4-10, Continued				
Find No.	Part Or Identifying No.	Qty Reqd	Nomenclature Or Description	Specification
8	MS25036-1 13	1	Terminal, lug, crimp style cop, ins, cli, 12-10 AWG No. 5/16 stud size, yellow	
9	MS25036-112	1	Terminal, lug, crimp style cop, ins, cli, 12-10 AWG No. 10 stud size, yellow	
10	MS3367-4-9	50	Strap, tie-down, adj, type I class I, 5/8 max. dia.	
11	SN60WRP2	A/R	Solder, tin sly, wire, resin core, 2.2 percent flux	
12	84-13120	1	Body, connector	
13	84-13121	2	Terminal, lock receptacle	
14	MS3368-1-9A	1	Tag, identification	
15	8724494	1	Connector, shell, electrical	
16	8724495	1	Connector, shell, electrical	

NOTES FOR TABLE 4-10

- Position tie-down straps (Find No. 10) at approximately 3 inch intervals and at branch-offs.
- For control box wiring diagrams, see Figures 4-62 and 4-65.
- For control box schematic diagrams, see Figures 4-63 and 4-66.
- Installed crimp style terminals shall meet the performance requirements of MIL-T-7928.
- P6 = Fuel Pump
 P4 = Fuel Cut-Off Solenoid
 P5 = Fuel Tank Jack
 P8 = Extra
 P7 = Extra
 P3 = Glow Plug
 P1 = Battery Charge
 P2 = Battery Charge

Table 4-10. Control Wiring Harness (All Models), Continued.

NOTES FOR TABLE 4-10, Continued

5. Leads not terminating in a crimp style terminal shall be stripped .50 inch and tinned in accordance with MIL-STD-454, requirement No. 5.
 6. Mark each wire with appropriate wire number and color. Permanency, legibility, and type of lettering shall be in accordance with MIL-STD-130. Marking shall be repeated at 15 inch maximum intervals. The final 15 inches at each end shall be marked at 3 inch maximum intervals. Lengths of less than 3 inches need not be marked.
 7. Solder in accordance with MIL-STD-454, requirement No. 5, using solder, Find No. 11.
 8. Dimensions shown are for general routing and may be altered to facilitate installation.
 9. For interpretation of drawing, DOD-STD-100 applies.
 10. Mark item 16 "30554-84-13118" in accordance with MIL-STD-130. Locate approximately as shown.
 11. Upon completion of assembly, install Find No. 16 into Find No. 3.
 12. Upon completion of assembly, install Find No. 18 into Find No. 4.
-

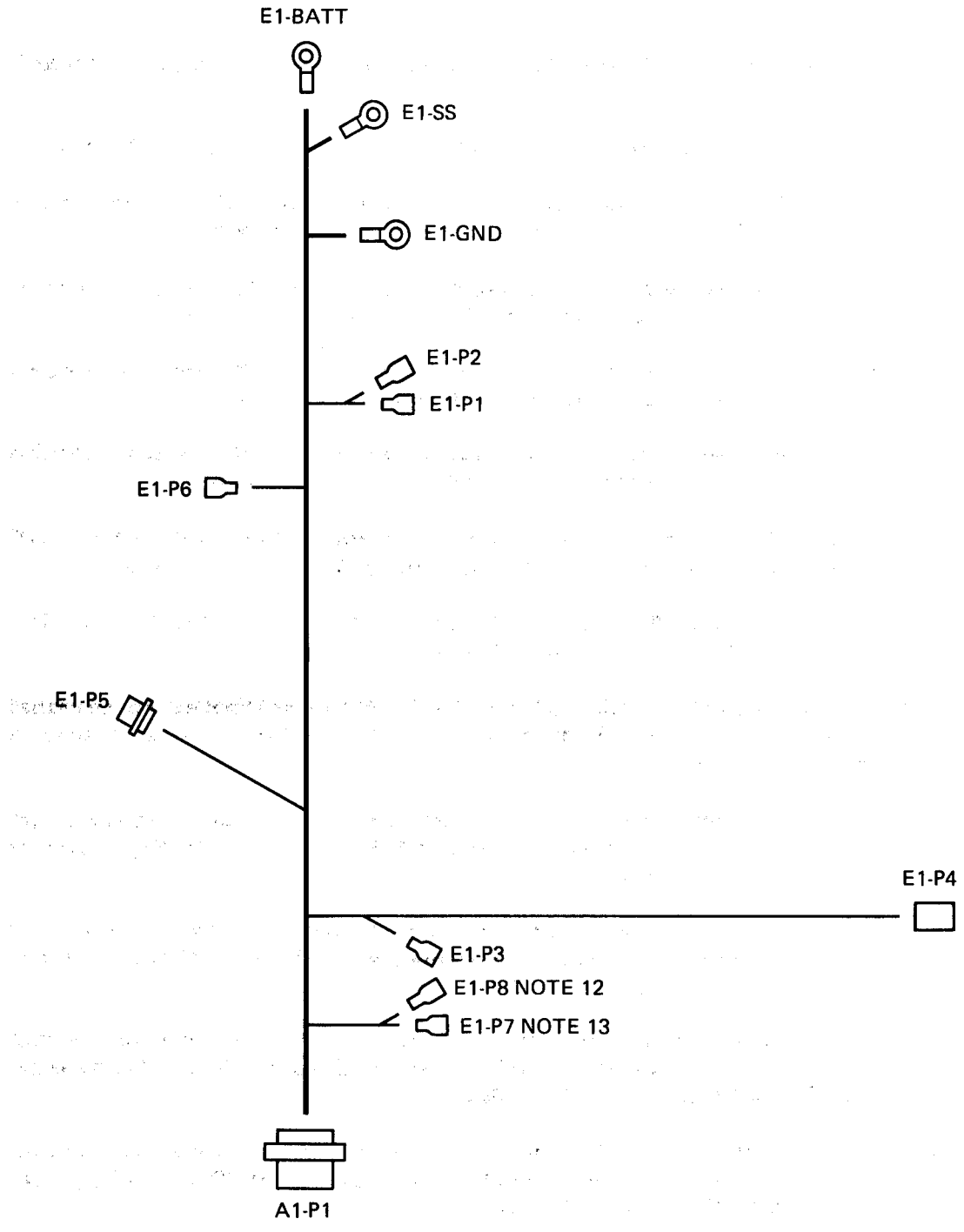


Figure 4-68. Engine Wiring Harness (All Models).

4-73. ENGINE CONTROL CIRCUIT BOARD.

a. Testing.

- (1) Locate terminal board TB1 and TB2 on the engine control circuit board assembly.
- (2) Check the ammeter scaling resistors R2, R3, R4, and R5 as follows:
 - (a) Connect an ohmmeter across terminals #6 and #7 of TB1 to test resistor R2. R2 should have a resistance of 7,604 - 7,756 ohms.
 - (b) Connect an ohmmeter across terminals #5 and #7 of TB1 to test resistor R3. R3 should have a resistance of 17,346 - 17,594 ohms.
 - (c) connect an ohmmeter across terminals #4 and #7 of TB1 to test resistor R4. R4 should have a resistance of 9,000 = 9,180 ohms.
 - (d) Connect an ohmmeter across terminals #3 and #7 of TB1 to test resistor R5. R5 should have a resistance of 4,277 - 4,363 ohms.
- (3) Check resistor R1 by connecting an ohmmeter across terminal #10 of TB1 and the anode of CR8. Resistance of R1 should be 24.4 - 25.4 ohms.
- (4) Check diodes CR1, CR2, CR3, CR4, CR7, CR8, CR9, CR12, CR14, CR15, CR16, CR17, CR18, CR19, CR20, CR21, and CR22 as follows:
 - (a) Check CR9 by connecting the red (+) lead of the voltmeter to terminal #14 of TB1 and the black (-) lead to terminal #8 of TB1. Voltage drop across CR9 should be 0.5 - 1.1 VDC.
 - (b) Check CR8 by connecting the red (+) lead of the voltmeter to terminal #10 of TB1 and the black (-) lead to terminal #9 of TB1. Voltage drop across CR8 should be 0.5 - 1.1 VDC.
 - (c) Check CR1 by connecting the red (+) lead of the voltmeter to terminal #17 of TB1 and the black (-) lead to terminal #10 of TB1. Voltage drop across CR1 should be 0.5 - 1.1 VDC.
 - (d) Check CR15 by connecting the red (+) lead of the voltmeter to terminal #14 of TB1 and the black (-) lead to terminal #2 of TB2. Voltage drop across CR15 should be 0.5 - 1.1 VDC.
 - (e) Check CR19 by connecting the red (+) lead of the voltmeter to terminal #14 of TB1 and the black (-) lead to terminal #6 of TB2. Voltage drop across CR19 should be 0.5 - 1.1 VDC.
 - (f) Check CR18 by connecting the red (+) lead of the voltmeter to anode of CR18 and the black (-) lead to terminal #6 of TB2. Voltage drop across CR18 should be 0.5 - 1.1 VDC.
 - (g) Check CR17 by connecting the red (+) lead of the voltmeter to terminal #3 of TB2 and the black (-) lead to terminal #4 of TB2. Voltage drop across CR17 should be 0.5 - 1.1 VDC.

- (h) Check CR12, CR20, CR3, CR4, CR7, CR2, CR14, CR21, CR22 and CR16 by connecting the red (+) lead of the voltmeter to the anode and the black (-) lead to the cathode of the diode. The voltage drop across the diodes should be 0.5 - 1.1 VDC.

- (5) Check continuity of normally open contacts A1 and A2 of relay K2. Continuity of contacts is checked with an ohmmeter across terminal #13 of TB1 and terminal #19 of TB1.
 - (a) With relay K2 de-energized, discontinuity (resistance greater than 100,000 ohms) should be indicated across contacts A1 and A2.

 - (b) Apply 18 VDC to relay K2. Positive voltage lead is connected to terminal #11 of TB1 and negative (ground) lead is connected to terminal #14 of TB1. Ohmmeter should now indicate continuity (resistance less than 5 ohms) across contacts A1 and A2.

- (6) Check continuity of normally open contacts A1 and A2 of relay K4. Continuity of contacts is checked with an ohmmeter red (+) lead to terminal #15 of TB1 and the black (-) lead to terminal #2 of TB2.
 - (a) With relay K4 de-energized, discontinuity (resistance greater than 100,000 ohms) should be indicated across contacts A1 and A2.

 - (b) Apply 18 VDC to relay K4. Positive voltage lead is connected to terminal #15 of TB1 and negative (ground) lead is connected to terminal #1 of TB2. Ohmmeter should now indicate continuity (resistance less than 5 ohms) across contacts A1 and A2.

- (7) Check the start disconnect circuit.
 - (a) Connect an ohmmeter across terminal #18 of TB1 and terminal #14 of TB1. Ohmmeter should indicate continuity (resistance less than 5 ohms) across the terminals.

 - (b) With ohmmeter still connected, apply 18 VDC to the circuit. Positive voltage lead should be connected to terminal #15 of TB1 and negative (ground) lead is connected to terminal #14 of TB1. Ohmmeter should still indicate continuity (resistance less than 5 ohms).

 - (c) With the ohmmeter and 18 VDC supply still connected, apply an AC ramp voltage to terminal #1 of TB1 and terminal #2 of TB1. The ramp voltage applied should be 10 - 20 Vrms at 540 Hz.

 - (d) Slowly increase the ramp voltage from 10 Vrms to 20 Vrms while observing the ohmmeter.

 - (e) The ohmmeter should change from a reading of continuity (resistance less than 5 ohms) to a reading of discontinuity (resistance greater than 100,000 ohms) when the ramp voltage is between 14.8 and 17 Vrms.

 - (f) Remove the ramp voltage from the circuit. The ohmmeter should still indicate discontinuity (resistance greater than 100,000 ohms).

(g) Remove the 18 VDC supply. The ohmmeter should now indicate continuity (resistance less than 5 ohms).

b. Removal.

(1) Tag and disconnect wiring from engine circuit board (1, Figure 4-69) for MEP-016B and MEP-021B (60/400 Hz) sets or (1, Figure 4-70) for MEP-026B (28 VDC) set.

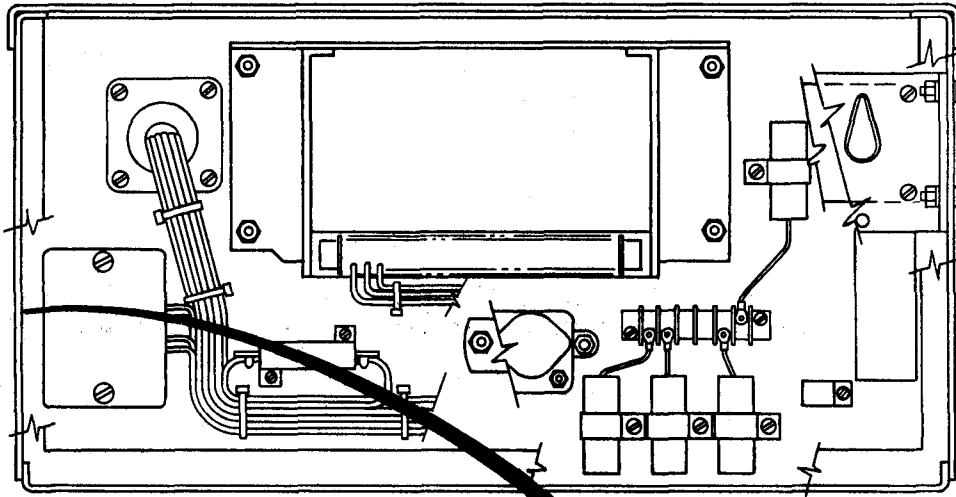
(2) Remove screws (2) and remove engine circuit board.

c. Installation.

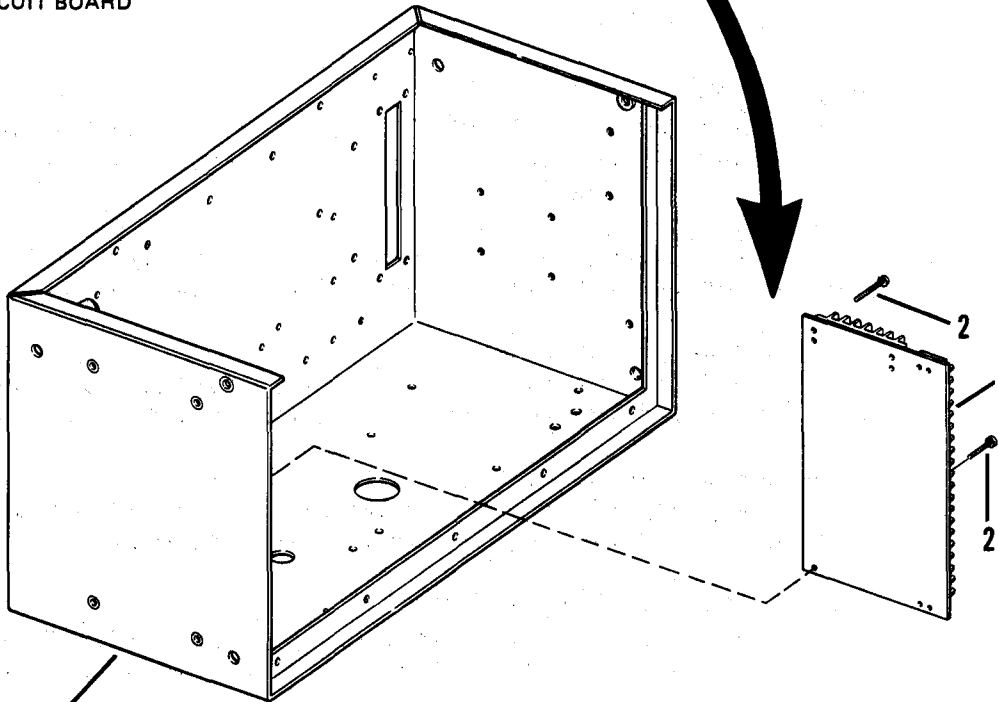
(1) Secure engine circuit board (1) with screws (2).

(2) Using tags as lead identification, connect wiring to circuit board terminals.

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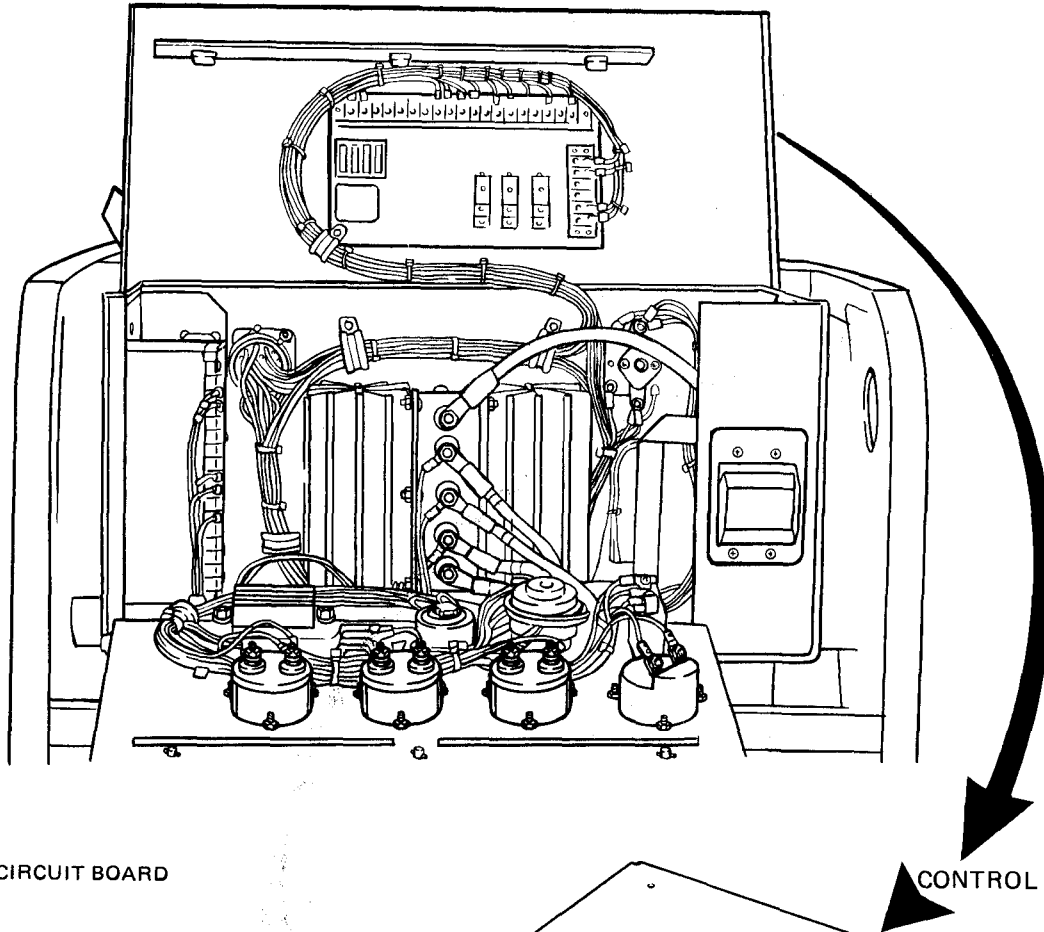


- 1. ENGINE CIRCUIT BOARD
- 2. SCREW



CONTROL BOX CHASSIS

Figure 4-69. Engine Circuit Board (MEP-016B and MEP-021B).



- 1. ENGINE CIRCUIT BOARD
- 2. SCREW

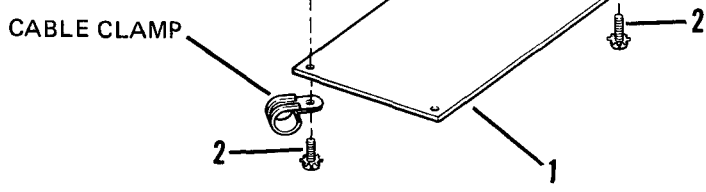


Figure 4-70. Engine Circuit Board (Model MEP-026B).

CHAPTER 5

(A) GENERATOR SET ACOUSTIC SUPPRESSION KIT

Section I. GENERAL.

5-1. **INFORMATION.** This chapter contains information on the Acoustic Suppression Kit (ASK) which is part of the modified 3 KW generator set Model MEP-016B only. The ASK is intended to suppress the high noise level inherent in a diesel-driven generator. Any data contained in previous chapters 1 thru 4 of this manual which will undergo a change due to the addition of this kit will be shown in the tabulated data.

Section II. DESCRIPTION AND DATA.

5-2. **DESCRIPTION.** The ASK consists of six individual sound-insulated panels (Figure 5-1) labeled as panels 1 thru 6, two panel-mounted fans, and fan wiring harness. The panels are made of lightweight aluminum bonded on one side with a fiberglass insulation which is coated to protect it against fuel spills and absorption. The insulating material is enclosed by an aluminum mesh to protect it against puncturing and to provide rigidity to the sound panels. This ASK is only used on the MEP-016B generator set and is mounted to the frame of the generator. The ASK and the modified generator, together, comprise Model MEP-701A.

5-3. **TABULATED DATA.**

5-3.1. Identification and Instruction Plates. All identification and instruction plates are explained in Table 5-1 with illustrations shown in Figures 5-2 and 5-3.

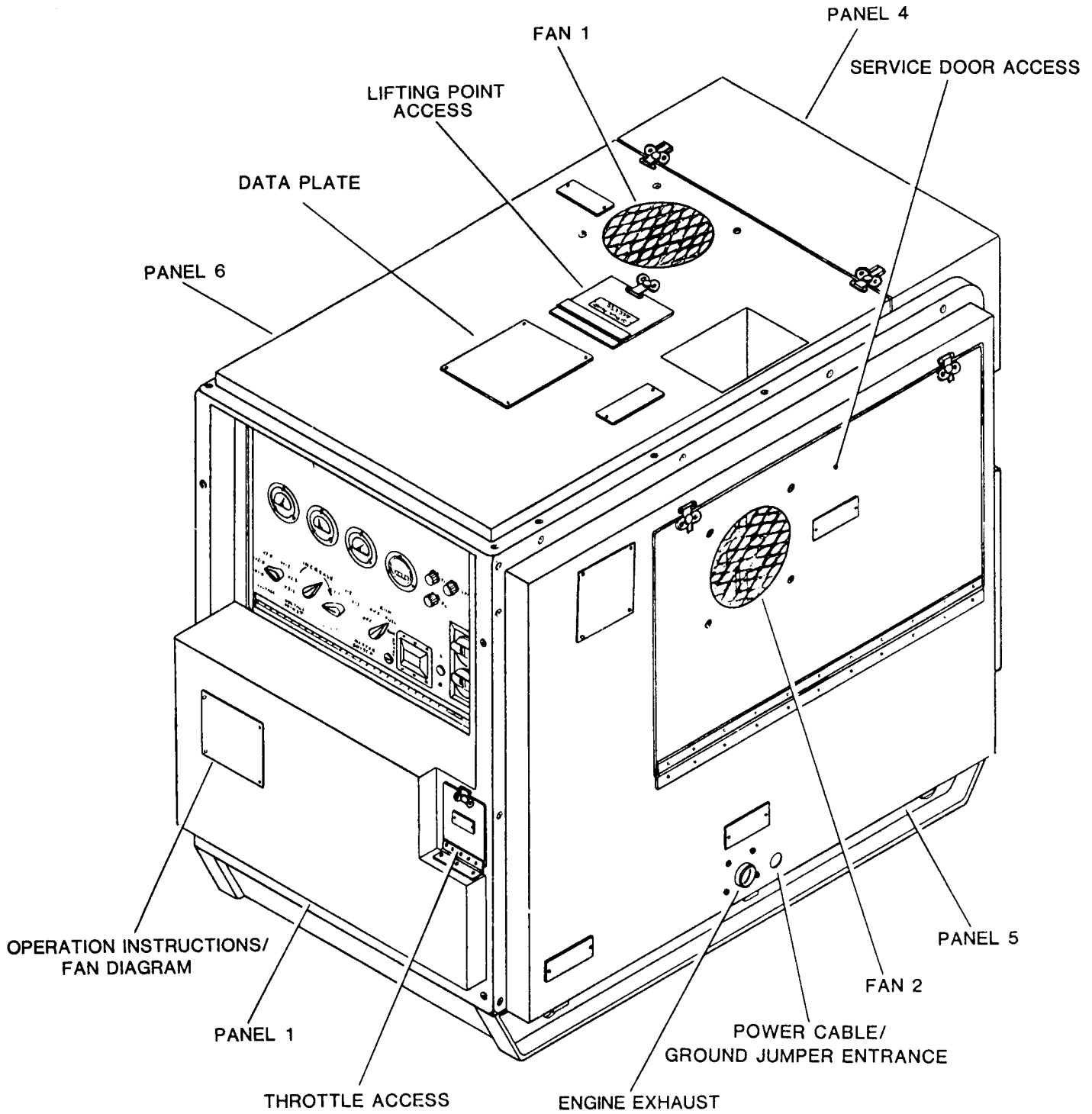


Figure 5-1. Acoustic Suppression Kit (Sheet 1 of 2).

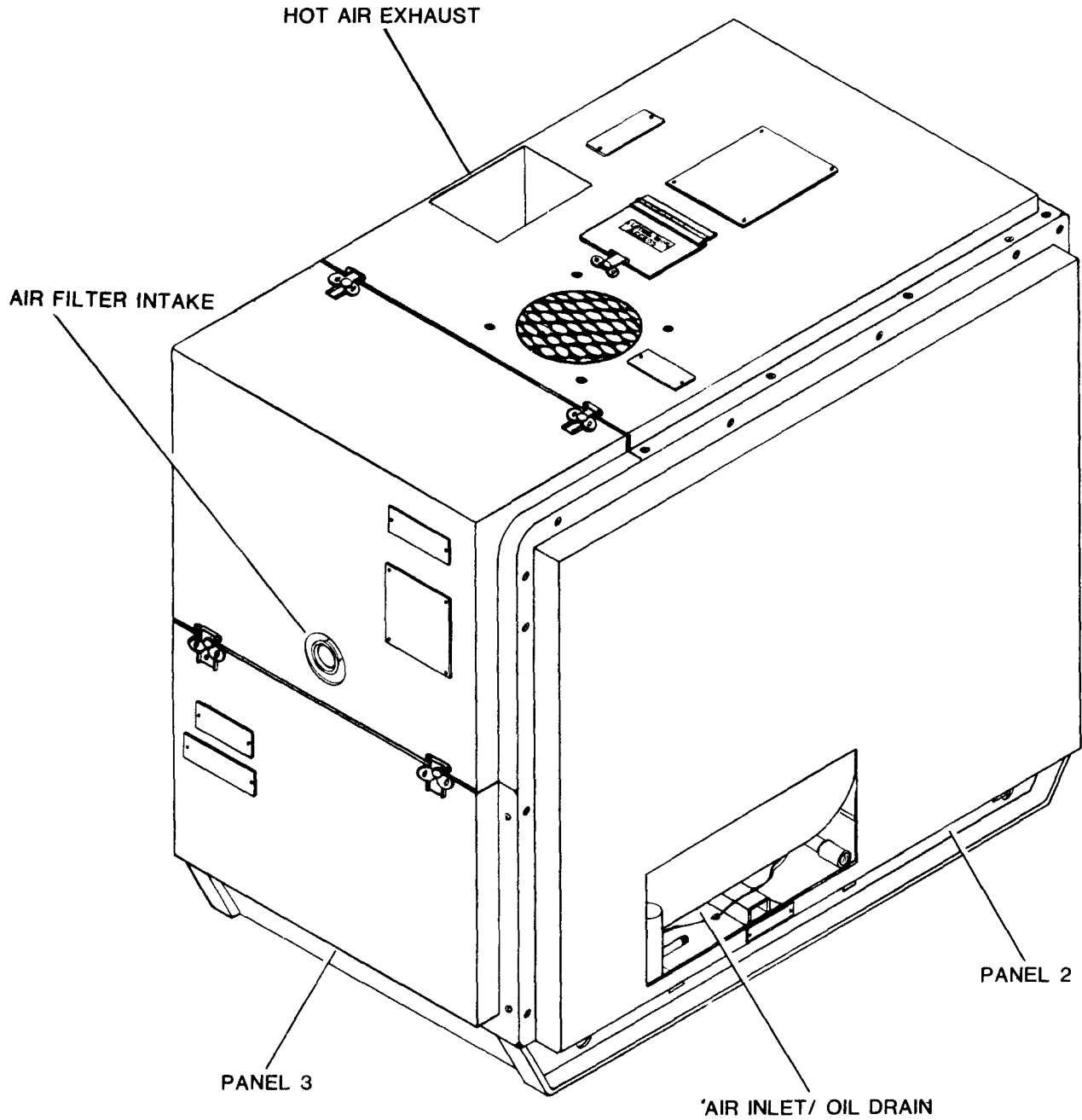
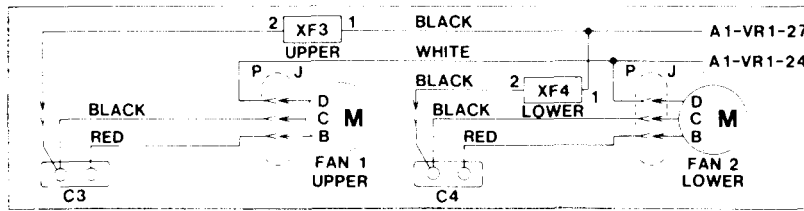


Figure 5-1. Acoustic Suppression Kit (Sheet 2 of 2).

MARINE CORPS TM 05926B/06509B-12
 ARMY TM 5-6115-615-12
 NAVY NAVFAC P-8-646-12
 AIR FORCE TO 35C2-3-386-31

Table 5-1. Identification and Instruction Plates.

Location	Type	Description
Panel 1	Schematic/ Instruction	Fan schematic/Operation instructions
Access door	Identification	Identifies throttle location
Panel 2	Identification	Identifies oil drain
Panel 3	Identification Instruction	Identifies battery location Instruction for disconnecting and connecting the battery
Panel 4	Diagram Identification	Block diagram of fuel system Identifies fuel tank location
Panel 5	Warning Identification Instruction	Danger - hot exhaust (engine) Identifies ground terminal Instructions for connecting load cables
Access door	Identification	Identifies area of oil level check and filter
Panel 6	Caution Caution Identification	Hot air exhaust Disconnect fan connector U.S. Department of Defense Data Plate. Contains model, serial number, and rating information for the set
Access Door	Identification	Identifies equipment lifting point



OPERATION INSTRUCTIONS

BEFORE STARTING SET

1. FILL CRANKCASE (DO NOT OVERFILL) AND FUEL TANK.
2. WARNING: GROUND SET TO AVOID SHOCK HAZARD.
3. CONNECT LOAD TERMINALS.
4. USE WINTERIZATION KIT FOR STARTING SET AT TEMPERATURES BELOW -25°F.

STARTING SET

1. MOVE "MASTER SWITCH" TO "PREHEAT" POSITION AND HOLD FOR 30 SECONDS.
NOTE: PREHEAT IS NOT REQUIRED WHEN ENGINE IS HOT.
2. MOVE "MASTER SWITCH" TO "START" POSITION AND HOLD UNTIL ENGINE FIRES CONTINUOUSLY. (IF ENGINE DOES NOT START WITHIN 30 SECONDS, REPEAT STEPS 1 AND 2).
3. "MASTER SWITCH" WILL RETURN TO "RUN" POSITION WHEN RELEASED.
NOTE: IF RUNNING FROM AUXILIARY FUEL SOURCE, MOVE "MASTER SWITCH" TO "RUN AUX" POSITION.
4. AFTER WARMING UP, ADJUST FREQUENCY AND VOLTAGE IF NECESSARY.
5. MOVE "CIRCUIT BREAKER" TO "ON" POSITION.

STOPPING SET

1. MOVE "CIRCUIT BREAKER" TO "OFF" POSITION.
2. MOVE "MASTER SWITCH" TO "OFF" POSITION.
3. FOR EMERGENCY STOP, PULL "DC CONTROL CIRCUIT BREAKER".

Figure 5-2. Fan Schematic/Operation Instructions.

US DEPARTMENT OF DEFENSE			
3KW GENERATOR SET, DIESEL ENGINE			
SERIAL NO. [REDACTED]		MODEL MEP 701A	
TM 5-6115-615-12/24P/34			
NSN 6115-01-234-5966 (INCLUDES GEN SET			
NSN 6115-01-150-4140 AND ACOUSTIC			
KIT NSN 6115-01-271-1584)			
VOLTS: 120/208 V 3 PH, 120 V 3 PHASE			
240 V 1 PH, 120 V 1 PHASE			
DRY WT	532.00 LB	L	44.00 IN
		W	28.50 IN
H	30.00 IN	INSP	[REDACTED]
MFR KIT	TOBYHANNA ARMY DEPOT	STAMP	[REDACTED]
30554-88-13603 MFR-14850			

Figure 5-3. U.S. Department of Defense Data Plate.

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5-3.2. Tabulated Data. The tabulated data for the ASK is contained in Table 5-2 with overall dimensions and weights of the ASK generator.

5-3.3. Installation Plan. The installation plan with the ASK is shown in Figure 5-4.

Table 5-2. ASK Tabulated Data.

 Dimensions and Weights

Panel 1

Overall Height.....	25" (63.5 cm)
Overall Width.....	23.5" (59.6 cm)
Overall Depth.....	2.09" (5.3 cm)
Overall Weight.....	8.5 lb (3.9 kg)

Panel 2

Overall Height.....	25.5" (64.7 cm)
Overall Width.....	39.0" (99 cm)
Overall Depth.....	2.0" (5.1 cm)
Overall Weight.....	16.7 lb (7.6" kg)

Panel 3

Overall Height.....	13.0" (33 cm)
Overall 1 Width.....	23.5" (59.6 cm)
Overall 1 Depth.....	2.0" (5.1 cm)
Overall 1 Weight.....	5.9 lb (2.7 kg)

Panel 4

Overall Height.....	13.0" (33 cm)
Overall Width.....	23.5" (59.6 cm)
Overall Depth.....	2.0" (5.1 cm)
Overall Length.....	8.87" (22.5 cm)
Overall Weight.....	7.2 lb (3.3 kg)

Table 5-2. ASK Tabulated Data, Continued.

Dimensions and Weights

Panel 5 (including fan assembly)

Overall Height.....	25.5" (64.7 cm)
Overall Width.....	39.0" (99 cm)
Overall Depth	2.0" (5.1cm)
Overall Weight	22.3 lb (10.1 kg)

Panel 6 (including fan assembly)

Overall Height.	32.0" (81.2 cm)
Overall Width.....	23.5" (59.6 cm)
Overall Depth	1.0" (2.5cm)
Overall Weight.....	13.1 lb (5.9 kg)

ASK Generator

Overall Height.	28.0" (71.1 cm)
Overall Width.....	28.0" (71.1 cm)
Overall Depth.....	43.0" (109.2 cm)
Net Weight Empty	532 lb (241.3 kg)
Net Weight Filled.....	590 lb (267.6 kg)
Shipping Weight	Not available at this time
Cubage.....	19.4 ft ³ (552 dm ³)

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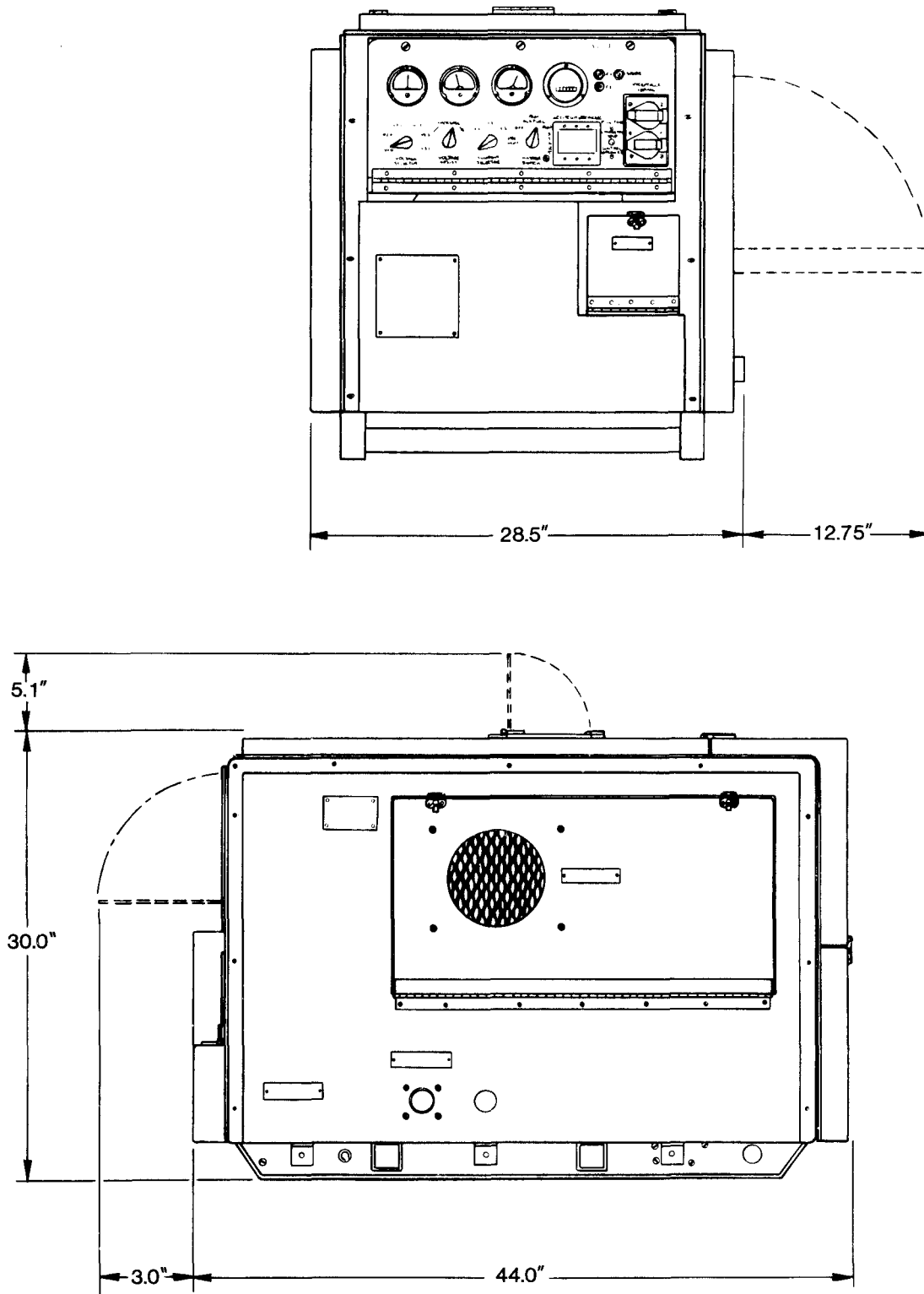


Figure 5-4. Acoustic Suppression Kit Installation plans

Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS).

5-4. GENERAL. To ensure that the ASK does not hamper the overall operation of the generator set, the ASK should be inspected systematically so that defects may be discovered and corrected before they result in any serious damage or failure to the generator. The necessary PMCS to be performed by the operator and organizational personnel are listed and described in paragraph 5-6.

5-5. CORRECTING AND REPORTING DEFICIENCIES. Defects discovered during operation will be noted for future correction. Stop operation immediately if a deficiency is noted which could damage the generator or present a safety hazard. All deficiencies will be recorded together with the corrective actions on DA Form 2404. Refer to current issue of DA Pam 738-750.

5-6. OPERATOR AND ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

Table 5-3 contains a tabulating listing of PMCS to be performed by the operating personnel. Table 5-4 contains a tabulating listing of the PMCS to be performed by the organizational personnel. The item numbers are listed consecutively and indicate the sequence of minimum requirements.

WARNING

The noise level of the generator set with the Acoustic Suppression Kit has been found to exceed the allowable limits for unprotected personnel. Wear ear muffs or ear plugs.

WARNING

The generator should be shut down before performing any maintenance on the Acoustic Suppression Kit.

NOTE

Operator personnel are only allowed to remove panel 4 or open service/access doors for PMCS

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Table 5-3. Operator Preventive Maintenance Checks and Services.

Interval B - Before Operation		A- After Operation	Total M/H 0.2
D - During Operation		Daily - 8 Hours	
Operator	Items to Be Inspected		Equipment Is Not
Daily	Inspection Procedures		Ready or Available
B D A			If:
GENERAL			
1		Make a visual inspection of the entire ASK for loose or missing hardware and for any bent, cracked, or broken parts. Tighten all loose hardware.	Damaged components, loose or missing hardware.
2	6	Check air intake on Panel 2 (See figure 5-1). Make sure that intake area is free from obstructions or accumulation of dirt, grease, etc. which would hinder air flow.	Air flow is restricted.
3	7	Check fans for proper operation. Make sure that fan area is free from dust, dirt, or grease that would hinder air flow.	Fan is inoperative; fan or fan area is damaged.
4		Check dual fan wiring harness inside service door access (Figure 5-1).	Wiring is chafed, frayed, broken, or burnt.
5	8	Check flexible hose, clamps, modified exhaust pipe, and exhaust pipe assembly.	Any exhaust leak exists due to missing or damaged items.

Table 5-4. Organizational Preventive Maintenance Checks and Services.

Interval W = Weekly (40 Hrs) M = Monthly (100 Hrs) s = Semi Annual (500 Hrs)				Total M/H: 1.9
Organization				Work Time
W	M	S	Items to Be Inspected Inspection Procedures	M/H
GENERAL				
	1		Make a visual inspection of the entire ASK for loose or missing hardware and for any bent, cracked, or broken parts. Inspect all wires and terminals for damage and/or loose connectors.	0.3
	2		Check air intake on Panel 2 (See figure 5-1) and remove any obstructions or accumulation of dirt, grease, etc. which would hinder air flow.	0.2
	3		Check fans for proper operation and remove any dust, dirt, or grease from fan area that would hinder air flow.	0.2
	4		Check flexible hose, lamps, modified exhaust pipe and exhaust pipe for any exhaust leaks.	0.2
	5		Check that panel gaskets are in place and not missing or deteriorated.	0.5

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Section IV. TROUBLESHOOTING.

5-7. GENERAL. This section contains information for locating and correcting troubles which may develop in the ASK. Table 5-5 is confined to troubleshooting involving the fans located in panels 5 and 6. The malfunction is followed by a list of tests or inspections which will help you to determine probable causes and corrective actions to take. The first mention of the malfunction will be directed towards Operator/Crew (C); second mention towards Organizational (O). Perform the tests/inspections and corrective actions in the order listed.

Table 5-5. Troubleshooting.

Malfunction	Test or Inspection	Corrective Action
-------------	--------------------	-------------------

1. FAN(s) INOPERATIVE (C).

Open Panel 5 service door access (paragraph 5-21) for Fan 2.

Visually inspect Fan 1 without removing panel 6.

Tighten loose connections on Fan 2; if wiring is broken, notify higher echelon of maintenance. Notify higher echelon of maintenance if Fan. 1 is inoperative (blades not rotating).

2. FAN(s) INOPERATIVE (O).

Step 1. Open the generator controls and instrument panel and check the ASK wiring on voltage regulator terminal strap A1-VRI (Figure 5-5).

Tighten loose connections.

Table 5-5. Troubleshooting, Continued.

Malfunction	Test or Inspection	Corrective Action
<hr/>		
2. FAN(S) INOPERATIVE (O).		
	Step 2. Check appropriate fan fuse in fuse block assembly. or remove	If fuse is blown, replace. If replaced fuse continues to blow, proceed to Step 3.
	Step 3. Open Panel 5 service door access (paragraph 5-21) for Fan 2 and remove Panel 6 (paragraph 5-22) for Fan 1 and make voltage or continuity checks. See Figure 5-6.	Replace fan, cabling, or capacitor.

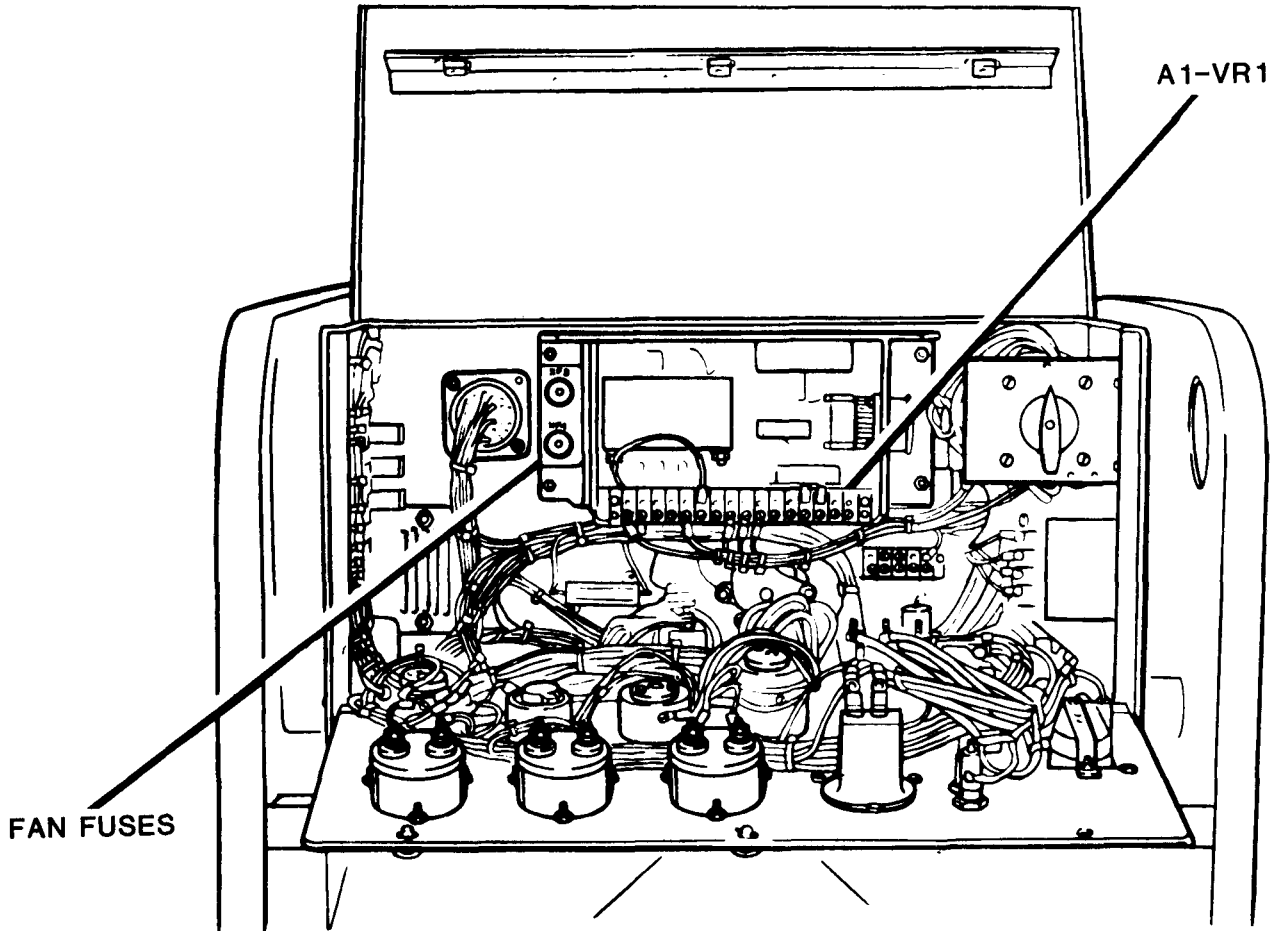


Figure 5-5. Fuse Assembly, Fans.

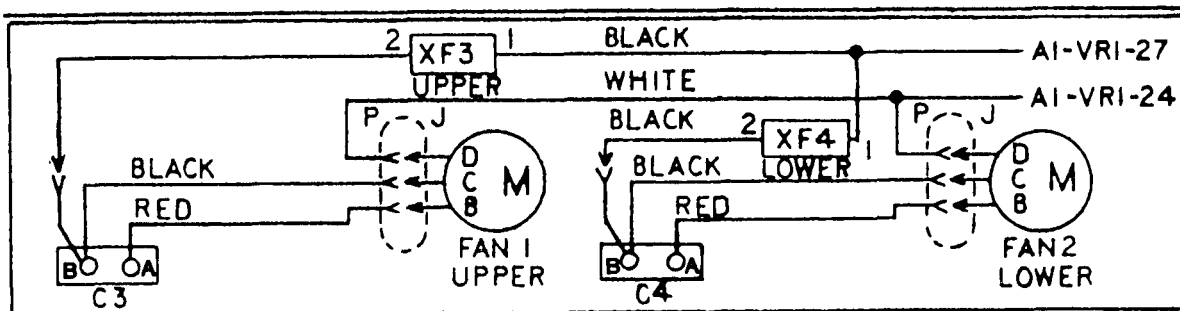


Figure 5-6. Wiring Diagram, Fan Assembly.

Section V. GROUND JUMPER AND LOAD CABLES INSTALLATION.

5-8. GENERAL. This section contains information on the installation of the ground jumper and load cables, as mentioned in Chapters 2 and 4, for the ASK.

NOTE

The ground jumper and load cables are not part of the ASK.
Installation procedures are for information only.

5-9. INSTALLATION.

5-9.1. Ground Jumper.

- a. Open the service door access (as described in paragraph 5-21a(1)) on Panel 5.
- b. Reaching in through the door, guide the ground jumper through the power cable entrance (Figure 5-1) on Panel 5.
- c. Loosen the two 3/4-inch clamps (Figure 5-7) and route the ground jumper through the clamps. (Figure is shown with panels removed.)
- d. Connect one end of jumper to ground stud located in generator skid base and connect the other end of jumper to the proper load terminal (Figure 4-1).

5-9.2. Load Cables.

- a. Perform steps given in paragraph 5-9.1a thru c for the load cables.
- b. Connect one end of load cables to proper load terminals (Figure 4-1) and tighten clamps. Connect other end of load cables to unit requiring power.

Section VI. OPERATOR MAINTENANCE PROCEDURES.

5-10 GENERAL. This section contains information on the maintenance of the equipment that is the responsibility of the operators.

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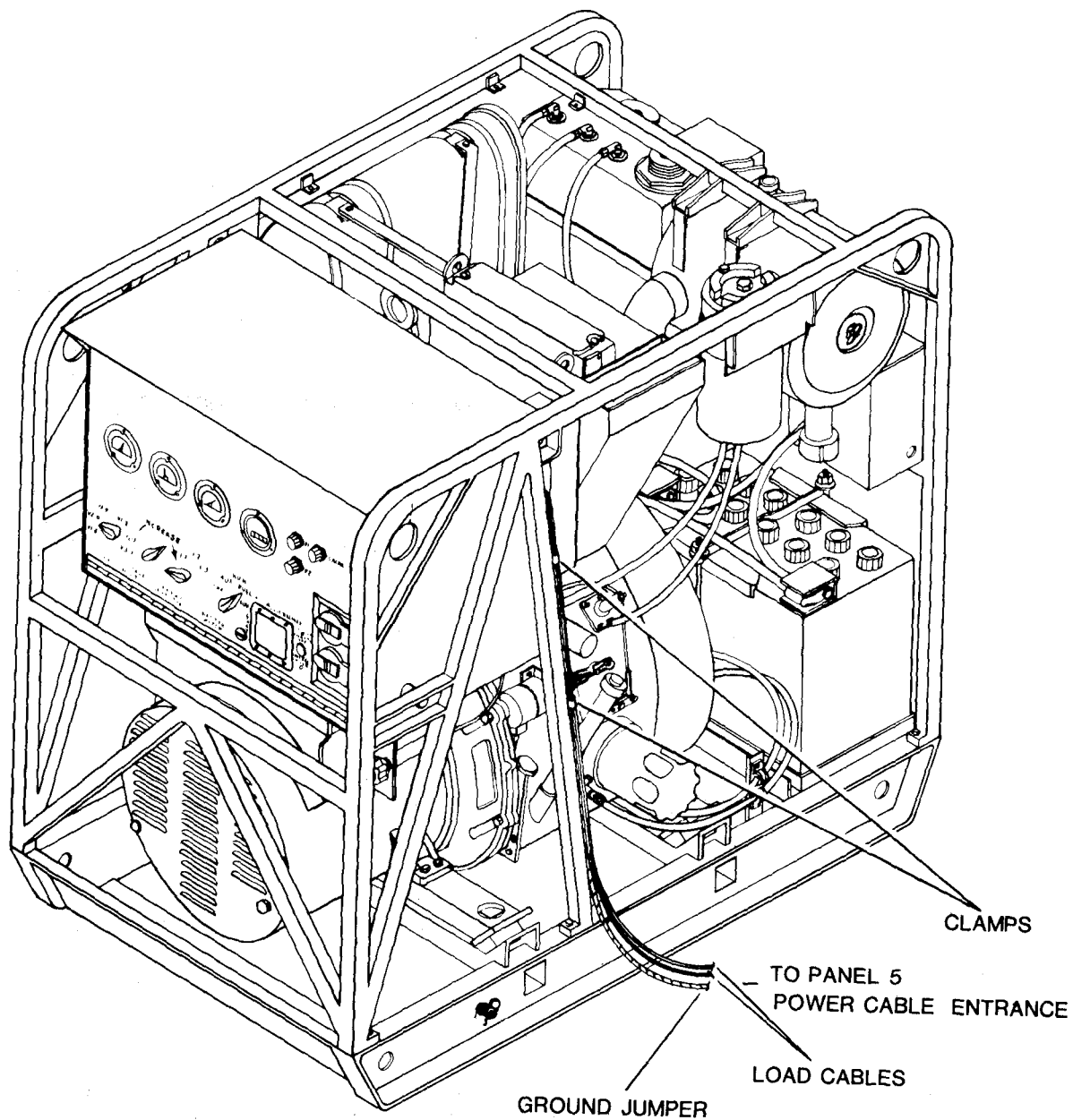


Figure 5-7. Ground Jumper and Load Cables Installation.

5-11. PANELS. (See Figure 5-8.)

- a. Inspect surface of panels for damage such as cracks, dents, and missing hardware (items 1, 2, 3, 7, 12, 14, 15, 16, 17, and 22 thru 30). Notify higher echelon of maintenance for repair or replacement of panels or hardware.

NOTE

Operator is only allowed to remove Panel 4 and to open the service/access doors of the panels.

- b. Inspect panel items such as fans (6, 18), various latches (7, 12, and 17), and sound insulation (32) for damage. Notify higher echelon of maintenance if above items need replacement or repair.

Section VII. ORGANIZATIONAL MAINTENANCE PROCEDURES.

5-12. GENERAL. This section contains information on the repair and removal/installation procedures of the ASK panels 1 thru 6, ASK items contained in the modified generator, gaskets, and information on the common and special tools required. Table 5-6 lists the items called out in the maintenance sections of chapter 3 and chapter 4 and the ASK panels which are to be removed or the access door to be opened in order to gain entry to the item.

CAUTION

Do not overtighten mounting screws when installing ASK panels. Damage to the rivet fasteners located in generator frame can occur.

5-13. COMMON TOOLS AND EQUIPMENT. For common tools and equipment refer to the Modified Tables of Organization and Equipment (MTOE) applicable to your unit.

5-14. SPECIAL TOOLS. Special tools consist of a drill stop 1/16" - 1/4") P/N V1577 which is listed and illustrated in the Repair Parts and Special Tools List TM 5-6115-615-24P.

5-15. PANEL REPAIR. Repair of the ASK panels is limited to the replacement of a defective latch assembly or hinge. Removal of panels, if necessary, to repair latch or hinge is given in paragraphs 5-17 thru 5-22.

CAUTION

Do not allow drill bit to extend beyond surface of material when drilling out pop rivets. Damage to the noise absorber insulation can occur.

a. Removal-Large Latch Assembly.

- (1) Loosen drill bit stop until opening becomes large enough to insert a No. 10 drill bit.
- (2) Insert bit into drill stop and tighten drill stop. Tapered part of drill stop should be towards bit tip; part of drill bit extending from tapered end of drill stop should be such that bit will not damage the sound insulation of panel when drilling. See Figure 5-8.

NOTE

As a quick check, place drill bit along edge of area to be drilled. Bit tip should be flush with or less than the surface of panel.

- (3) Place drill bit stop into drill chuck and tighten.
- (4) Carefully drill out latch pop rivets (2, Figure 5-9) from section of latch assembly (1).

b. Installation

- (1) Place section of latch assembly (1, Figure 5-9) into position on
- (2) Install 3/16" pop rivet (2) using pop rivet gun.

CAUTION

Do not allow drill bit to extend beyond surface of material when drilling out pop rivets. Damage to the noise absorber can occur.

- c. Removal-Small Latch Assembly and Hinges. Perform same Removal procedures used for the large latch assembly in paragraph 5-15a(1) thru (4) except use a No. 30 bit.
- d. Installation. Perform same Installation procedures used for the large latch assembly in paragraph 5-15b(1) and (2), except use a 1/8" pop rivet.

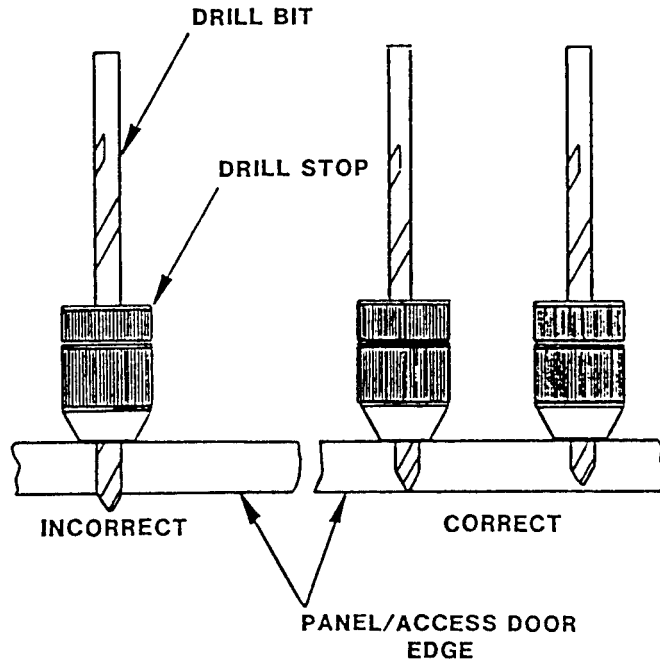


Figure 5-8. Panel Repair Setup.

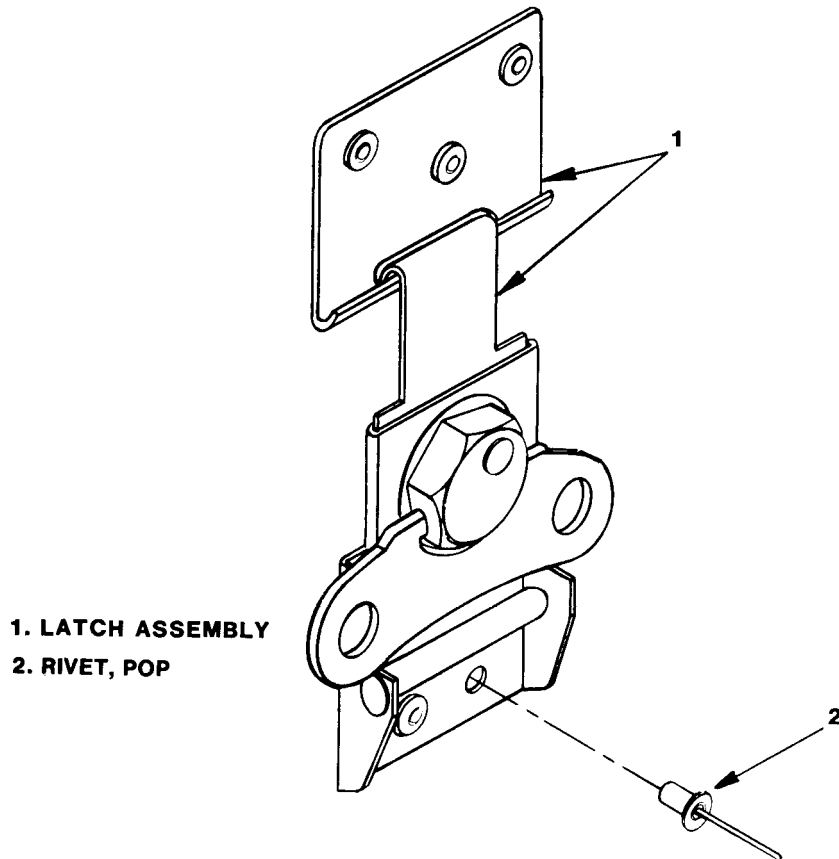


Figure 5-9. Latch Assembly, Exploded View.

5-16. **REMOVAL/INSTALLATION.** The following paragraphs 5-17 thru 5-33, contain information on the removal/installation of the acoustic suppression kit (ASK) panels, along with the removal/installation of the remaining ASK items including any testing and repair.

5-17. **PANEL 1.** (See Figure 5-10).

a. Removal.

- (1) Remove two screws (9), lockwashers (10), and washers (11) holding Panel 6 (5) to Panel 1 (31).
- (2) Remove screw (1) lockwasher (2), and washer (3) holding Panel 2 (4) to Panel 1.
- (3) Remove screw (25), lockwasher (26), and washer (27) holding Panel 5 (20) to Panel 1.
- (4) Remove six screws (28), lockwashers (29), and washers (30) from Panel 1 and pull panel straight out.

b. Installation.

- (1) Place Panel 1 (31) into position of generator frame and install six washers (30), lockwashers (29), and screws (28).
- (2) Install washer (27), lockwasher (26) and screw (25) holding Panel 5 (20) to Panel 1.
- (3) Install washer (3), lockwasher (2), and screw (1) holding Panel 2 (4) to Panel 1.

5-18. **PANEL 2.** (See Figure 5-10.)

a. Removal.

- (1) Remove three screws (33), lockwashers (34) and washers (35) from Panel 2 (4).
- (2) Remove 11 screws (1), lockwashers (2), and washers (3) and remove panel.

b. Installation.

- (1) Place Panel 2 in position on generator frame and install 11 washers (3), lockwashers (2), and screws (1).
- (2) Install three washers (35), lockwashers (34), and screws (33).

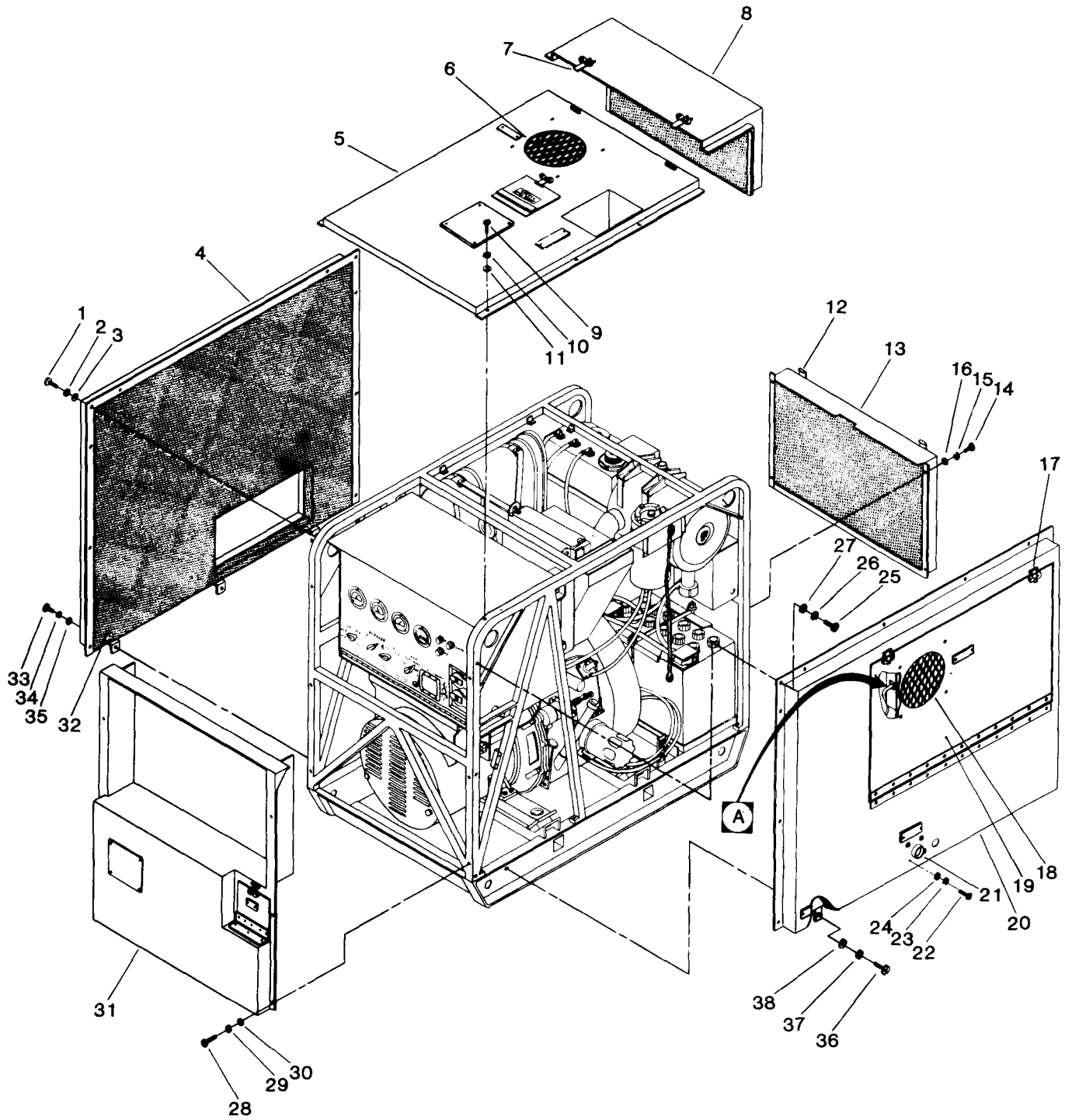


Figure 5-10. Acoustic Suppression Kit, Exploded View (Sheet 1 of 2).

- | | | | |
|----------------|------------------|----------------|----------------|
| 1. SCREW | 11. WASHER | 21. HOSE | 31. PANEL 1 |
| 2. LOCKWASHER | 12. LATCH | 22. SCREW | 32. INSULATION |
| 3. WASHER | 13. PANEL 3 | 23. LOCKWASHER | 33. SCREW |
| 4. PANEL 2 | 14. SCREW | 24. WASHER | 34. LOCKWASHER |
| 5. PANEL 6 | 15. LOCKWASHER | 25. SCREW | 35. WASHER |
| 6. FAN 1 | 16. WASHER | 26. LOCKWASHER | 36. SCREW |
| 7. LATCH | 17. LATCH | 27. WASHER | 37. LOCKWASHER |
| 8. PANEL 4 | 18. FAN 2 | 28. SCREW | 38. WASHER |
| 9. SCREW | 19. SERVICE DOOR | 29. LOCKWASHER | |
| 10. LOCKWASHER | 20. PANEL 5 | 30. WASHER | |

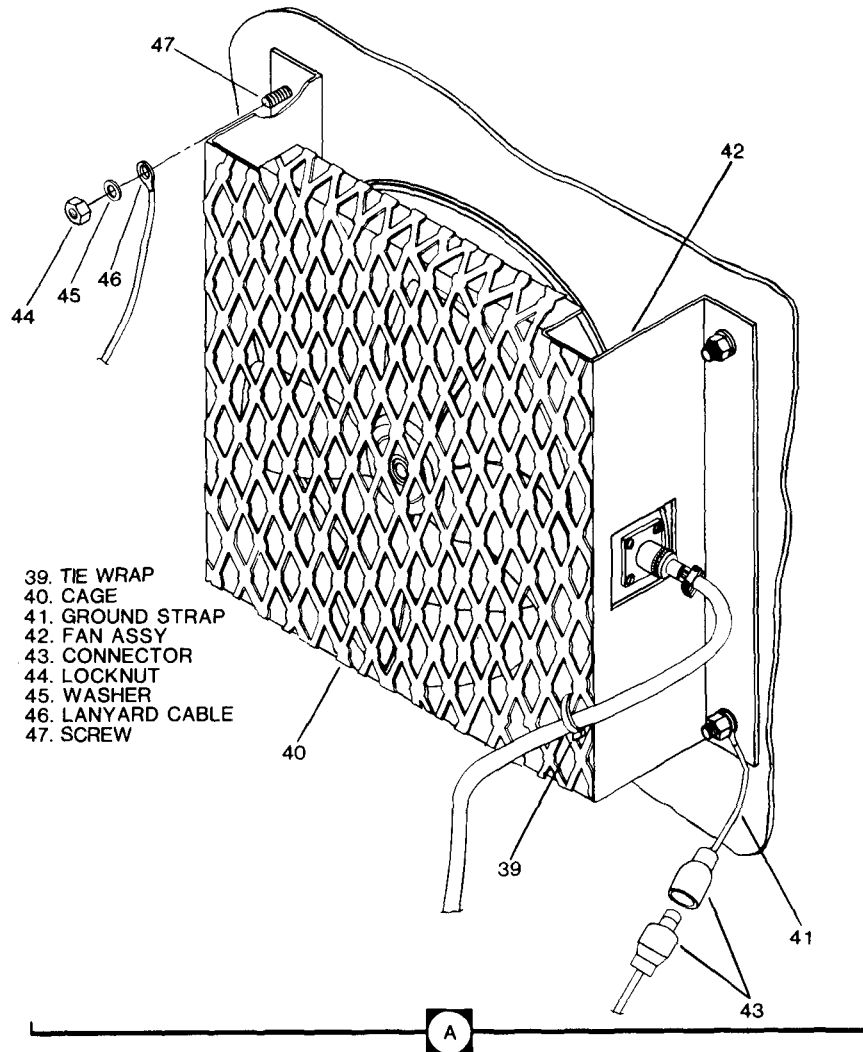


Figure 5-10. Acoustic Suppression Kit, Exploded View (Sheet 2 of 2).

5-19. **PANEL 3.** (See Figure 5-10.)

a. Removal.

- (1) Loosen two large quarter-turn latches (12) by turning in a counter-clockwise direction.
- (2) Remove four screws (14), lockwashers (15), and flat washers (16) from Panel 3 (13) and remove panel.

b. Installation.

- (1) Place Panel 3 in position on generator frame and install four flat washers (16), lockwashers (15), and screws (14).
- (2) Tighten two large quarter-turn latches (12) by turning in a clockwise direction.

5-20. **PANEL 4.** (See Figure 5-10.)

a, Removal. Loosen two large quarter-turn latches (12) from Panel 3 (13) and two large quarter-turn latches (7) from Panel 6 (5) by turning latches in a counterclockwise direction. Remove Panel 4 (8) from generator frame.

b. Installation. Put Panel 4 into position on generator frame and tighten four large quarter-turn latches.

5-21. **PANEL 5.** (See Figure 5-10.)

a. Removal.

- (1) Loosen two small quarter-turn latches (17). counterclockwise direction, and open the service door access (19) of Panel 5 (20).
- (2) Disconnect fan wiring harness plug from Fan 2 (18).
- (3) Remove tie-wrap (39) securing harness to protective cage (40).
- (4) Disconnect the ground strap (41) from fan mounting assembly (42) by pulling apart male-female connector (43).
- (5) Remove the wrap(s) as necessary.
- (6) Remove lanyard cable assembly (46) by removing locknut (44) and washer (45). Reinstall locknut and washer onto screw (47) and close service access door.
- (7) Remove four screws (22), lockwasher (23), and flat washers (24) which mount the engine-pipe assembly (21) to Panel 5.

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- (8) Remove three screws (36), lockwashers (37), and washers (38) from
- (9) Remove 11 screws (25), lockwasher (26) and washers (27) and remove panel .

b. Installation.

- (1) Place Panel 5 (20) into position on generator frame and install 11 washers (27), lockwashers (26), and screws (25).
- (2) Install three washers (38), lockwashers (37) and screws (36).
- (3) Install lanyard cable assembly (46) by removing locknut (44) and washer (45) previously reinstalled on fan mounting screw (47) in Removal procedure, step 6.
- (4) Place lanyard onto screw and install washer and locknut.
- (5) Reach in through open service access door (19) and position exhaust pipe assembly (21) against Panel 5.
- (6) Holding pipe assembly in place install four washers (24), lockwashers (23), and screws (22).
- (7) Reconnect fan wiring harness plug to Fan 2 (18).
- (8) Replace tie-wrap (39) and secure wiring harness to protective cage (40).
- (9) Replace tie-wrap(s) removed in step (5) of Removal Procedure
- (10) Reconnect ground strap (41).
- (11) Close service door access by turning latches (17) in clockwise direction.

5-22. PANEL 6. (See Figure 5-10.)

a. Removal.

- (1) Loosen two large quarter-turn latches (7) which secure Panel 4 (8) to Panel 6 (5).
- (2) Remove 10 screws (9), lockwashers (10), and washers (11) from
- (3) Carefully lift panel to the point where the fan cable (41) can be disconnected from Fan 1 (6).

(4) Disconnect fan cable assembly from fan and remove Panel 6 from generator frame.

b. Installation.

(1) Place Panel 6 (5) onto generator frame and position panel in order to reconnect fan cable assembly (41) to Fan 1 (6).

(2) Install 10 washers (11), lockwashers (10), and screws (9).

(3) Tighten two large quarter-turn latches (7) and secure Panel 4 to Panel 6.

5-23. BLIND RIVET FASTENER (See Figure 5-11.)

a. Removal.

(1) Drill through the rivet fastener with same size drill that drilled original hole; 1/4-inch bit for small rivet fastener (1) or "Q" bit for large rivet fastener (2).

(2) Punch out shank of fastener.

b. Installation.

(1) Screw rivet fastener (1 or 2) onto pull-up stud (4) of blind hand riveter (3) as illustrated. Use a 10/32" hand riveter for small fastener (1) or a 1/4" hand riveter for large fastener (2). Beveled edge (5) of pull-up stud should extend just beyond the end of the fastener when fastener head rests against anvil (6) of hand riveter. If not...

(2) Adjust pull-up stud head (7) to shorten or lengthen pull-up stud and perform step (1) above.

(3) Place fastener into drilled-out hole on generator.

CAUTION

When installing fastener, do not overtighten. Damage to fastener threading can occur.

(4) Using a wrench, hold hand riveter nut (8) in place while turning pull-up stud head (7) with Allen wrench handle (9).

1. RIVET FASTENER (SMALL)
2. RIVET FASTENER (LARGE)
3. HAND RIVETER
4. PULL-UP STUD
5. BEVELED EDGE
6. ANVIL
7. STUD HEAD
8. RIVETER NUT
9. WRENCH HANDLE

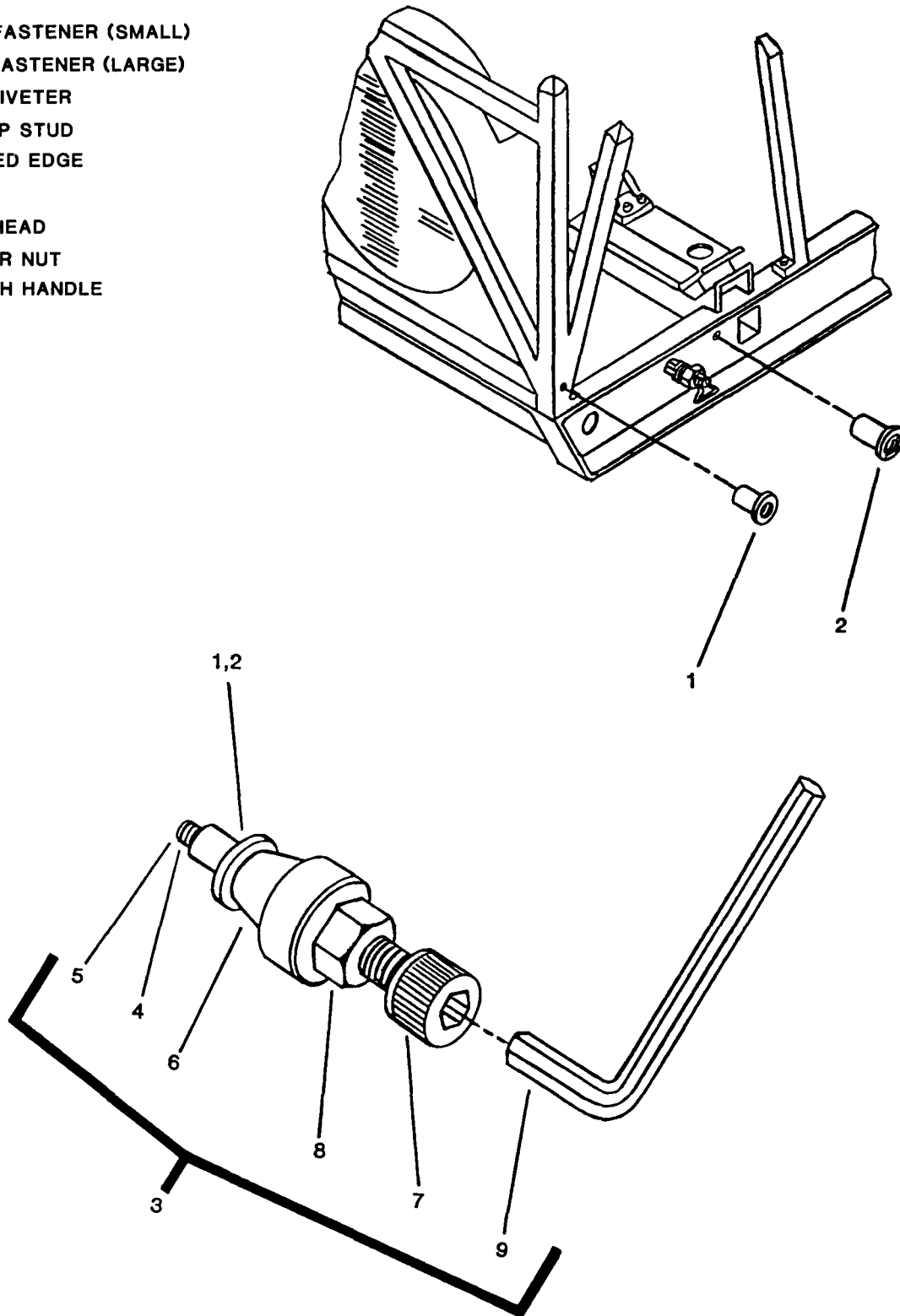


Figure 5-11. Blind Rivet Fastener and Installation Tool.

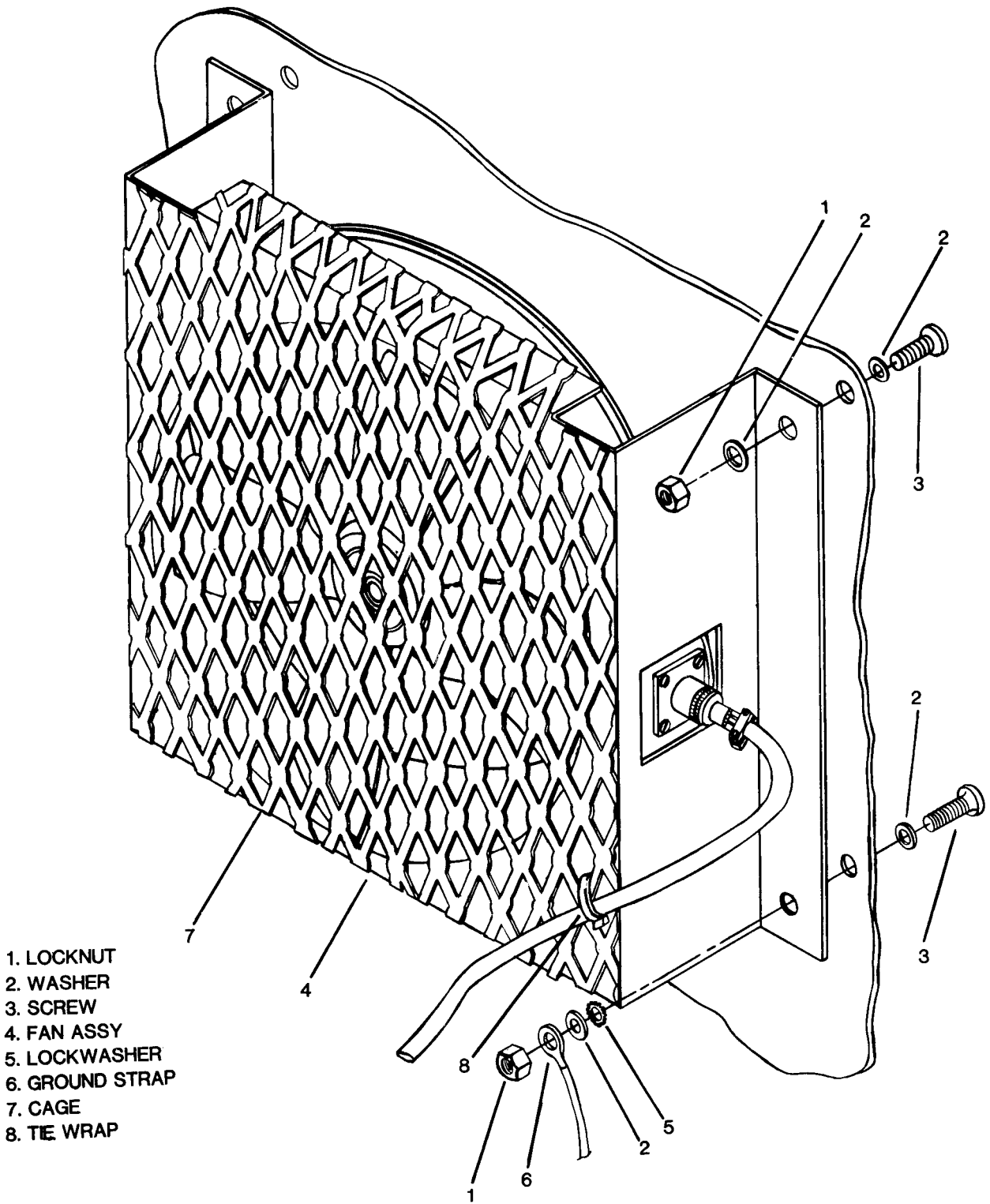
5-24. **FAN 1.** (See Figure 5-12).

- a. Test. Using a multimeter, check continuity between pins (12, Figure 5-12) of Fan 1. Pins D to C and D to B should read between 200-300 ohms; pins C to B, approximately 500 ohms (Pins are labeled consecutively in a counterclockwise direction from the top keyway).
- b. Repair. Repair consists of replacing blown fuse or replacing or repairing the wiring harness as described in paragraph 5-27.
- c. Removal.
 - (1) Perform Removal steps for Panel 6 given in paragraph 5-22a(1) thru a(4).
 - (2) Remove four locknuts (1, Figure 5-12), eight washers (2), and four screws (3), which secure the fan assembly (4) to Panel 6, and remove fan mount.
 - (3) Loosen four locknuts (9) just enough to slide the four fan mount clips (10) away from fan rim. Note fan position with regard to fan plug.
 - (4) Remove fan (11) from mounting assembly.
- d. Installation

NOTE

Before installing fan into fan mounting assembly, ensure that blade rotation is such that air will blow out of generator set.

- (1) Place fan (11) into housing in same position as it was removed and as shown in Figure 5-12.
- (2) Slide four fan mount clips (10) forward and tighten locknuts (9) securing fan in place.
- (3) Place fan assembly into designated panel section; fan plug pointing towards lifting point access (Figure 5-1), and align holes.
- (4) Install four screws (3), eight washers (2), and four locknuts (1).
- (5) Perform Installation steps for Panel 6 given in paragraph 5-22b(1) thru (3).



NOTE: ITEMS 5, 6, 7, & 8 NOT APPLICABLE TO FAN 1

Figure 5-12. Fan Assembly (Sheet 1 of 2).

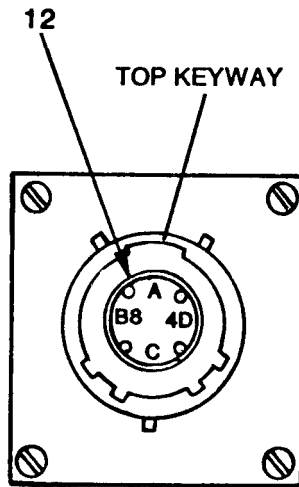
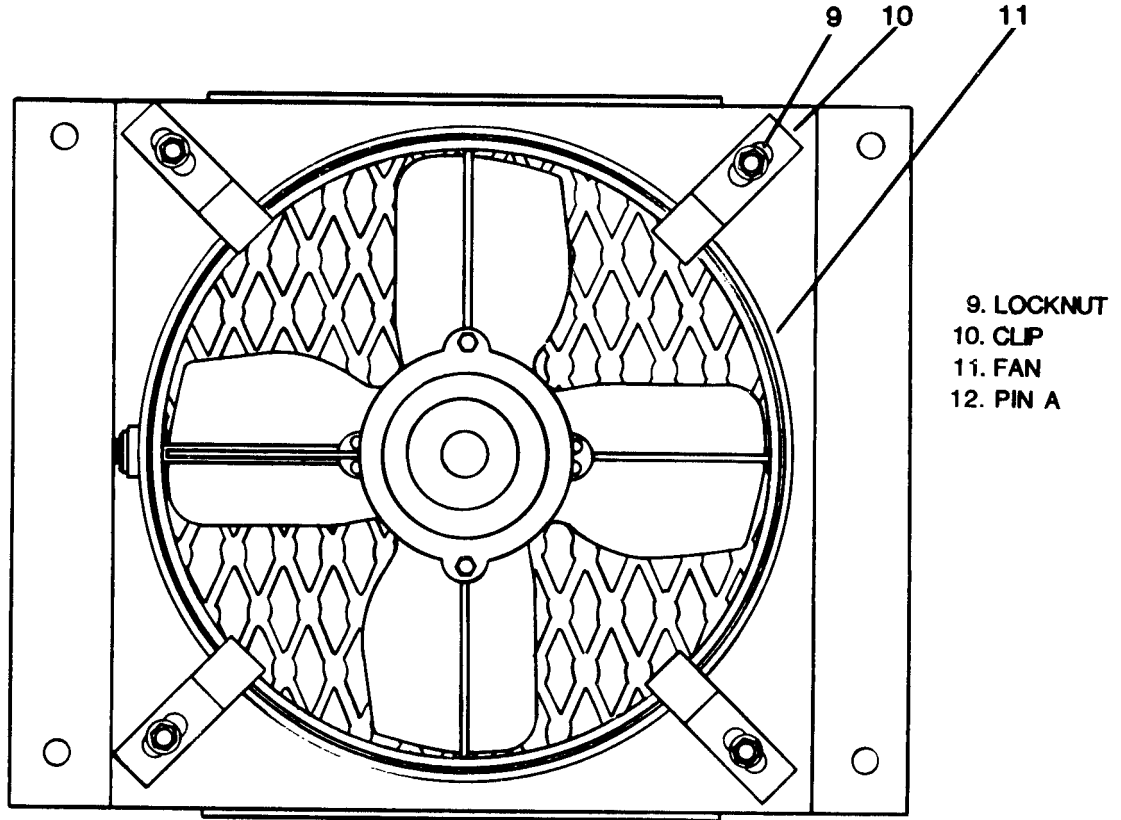


Figure 5-12. Fan Assembly (Sheet 2 of 2).

5-25. **FAN 2.** (See Figure 5-12.)

- a. Test. Perform same test as given in paragraph 5-24a for Fan 1.
- b. Repair. Perform same repair instructions as given in paragraph 5-24b for Fan 1.
- c. Removal.
 - (1) Perform Removal steps for Panel 5 given in paragraph 5-21a(1) thru (3).
 - (2) Remove ground strap (6) by removing locknut (1), lockwasher (5), washer (2), and screw (3).
 - (3) Remove the remaining three nuts (1), six washers (2), and three screws (3) which secure the fan assembly (4) to the service door access of Panel 5 and remove the fan assembly.
 - (4) Loosen four locknuts (9) just enough to slide the four fan mount clips (10) away from the fan rim. Note fan position with regard to fan plug.
 - (5) Remove fan (11) from mounting assembly and protective cage (7).
- d. Installation

NOTE

Before installing fan into fan mount, ensure that blade rotation is such that air will blow out of generator set.

- (1) Perform Installation steps given for Fan 1, paragraph 5-19d(1) thru (3) with Fan 2 plug pointing towards instrument panel.
- (2) Connect ground strap (6) by installing screw (3) washer (2), lockwasher (5), and locknut (1).
- (3) Install remaining three screws (3), six washers (2), and three locknuts (1).
- (4) Replace tie-wrap (8) and secure wiring harness to protective cage (7).
- (5) Reconnect wiring harness plug to fan.

5-26. FUSE BLOCK ASSEMBLY, MODIFIED GENERATOR. (See Figure 5-13.)

a. Test.

- (1) Open generator control panel (Figure 1-1) and check fuses.
- (2) perform steps b(3) and b(4) of Removal procedure below.
- (3) Using a multimeter, check for continuity between point of origin to point of termination.

b. Removal.

- (1) Open generator control panel (Figure 1-1).
- (2) Remove Panel 6 according to paragraph 5-22a(1) thru (4).
- (3) Remove black wire (6), A1-VR1-27, from terminal 27 on voltage regulator assembly.
- (4) Tag wires and disconnect the two insulated male tabs (7) of the fuse assembly from the insulated female receptacles (8) of the fan wiring harness.
- (5) Remove tie-wraps, as necessary.
- (6) Remove bracket (4) from voltage regulator assembly by removing four nuts (5) and pulling the voltage regular forward just enough to remove bracket.

c. Repair. Repair consists of wrapping deteriorated insulation with electrical tape, replacing damaged wires or tabs, or replacing the fuse fuse holders as follows:

- (1) Perform Removal steps given in paragraph 5-26a above (1) thru (6).
- (2) Remove fuse from fuseholder (1) and remove fuseholder by resoldering, tagging wires, and removing nut (3) and lockwasher (2).
- (3) Remove tie-wraps, as necessary.
- (4) Install fuseholder (1) into bracket and tighten with lockwasher (2) and nut (3).
- (5) Solder wires to fuseholder and reinstall fuse.

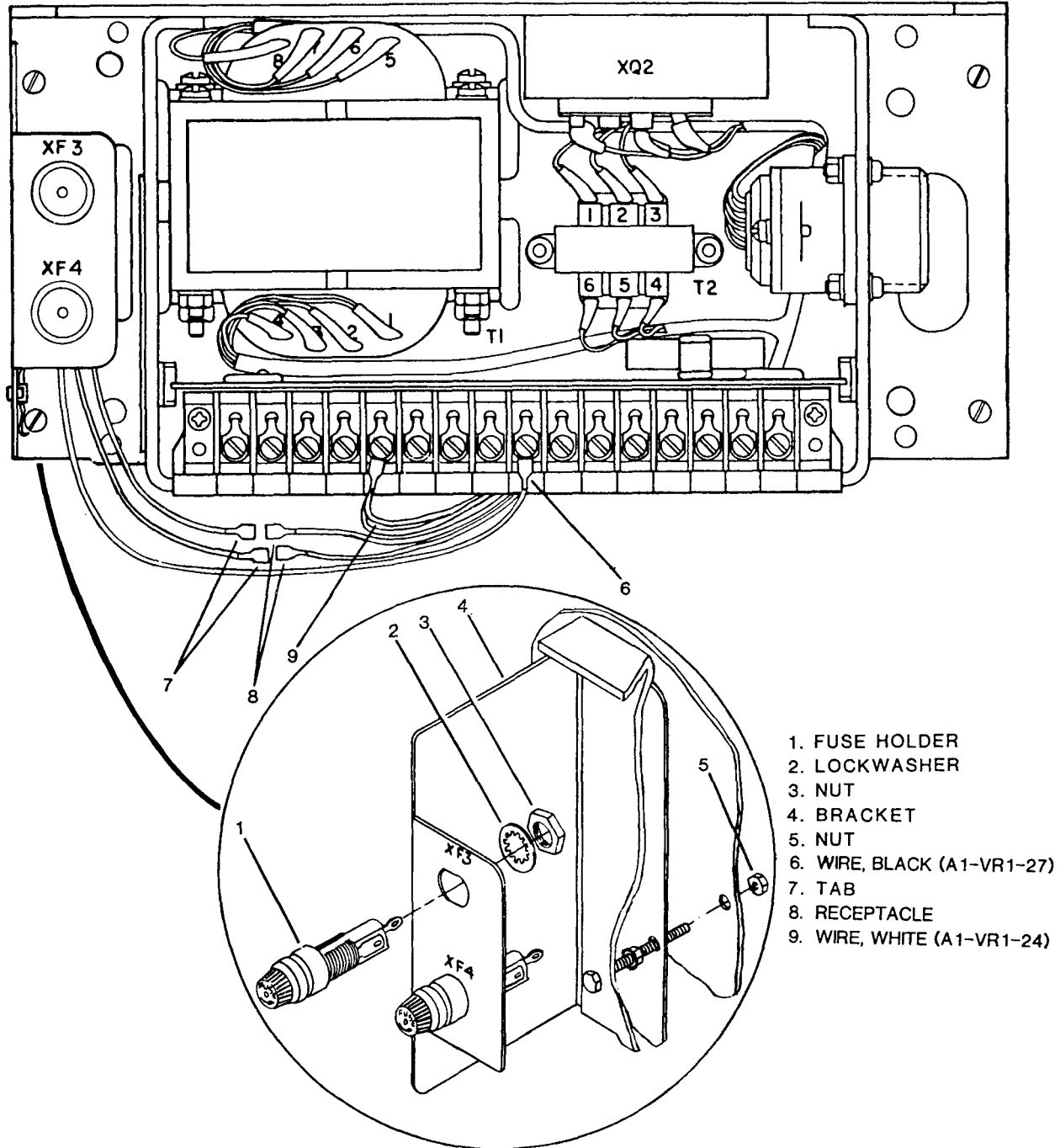


Figure 5-13. Fuse Block Assembly.

d. Installation.

- (1) Place bracket (4) onto voltage regulator assembly and secure regulator assembly with four nuts (5).
- (2) Reconnect wiring removed in paragraph 5-26a(3) and (4) above.
- (3) Close generator control panel.

5-27. **FAN WIRING HARNESS, MODIFIED GENERATOR.**

WARNING

To prevent electrical shock, discharge capacitors C3 and C4, Figure 5-14, before attempting to test wiring harness.

a. Inspection.

- (1) Inspect that all connections are tight.
- (2) Inspect harness for damaged wires, loose or missing ties, missing insulation, or other visible damage.

- b. Test. Test wiring harness by measuring continuity of wires from point of origin to point of termination. Continuity (low ohms) indicates a good wire. No continuity (high ohms) indicates a broken wire that must be replaced by replacing entire wire harness.

WARNING

Disconnect battery cables before servicing fan wiring harness. The high current output of the DC electrical system can cause arcing and/or burns if a short circuit occurs near the area adjacent to the wiring harness.

- c. Repair. Repair consists of wrapping deteriorated insulation with electrical tape or replacing damaged terminals, or open or shorted capacitors as necessary. Be sure to use the same size, color, and length of wire when making repairs. Solder connections where applicable. Tag each wire and corresponding terminals at time of removal to ensure correct reassembly. Repair the wiring harness by removing capacitors C3 or C4 as follows:

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d. Removal.

- (1) Perform Removal steps for Panel 2, 3, 5, and 6 paragraphs 5-18, 5-19, 5-21 and 5-22, respectively.
- (2) Disconnect the negative (-) battery cable.
- (3) Open generator control panel.
- (4) Tag and disconnect white wire, A1-VR1-24, from terminal 24 of the regulator assembly A1-VR1 and disconnect the two male tabs (7, Figure 5-13) of the fuse block assembly from the two female receptacle(s) of the fan wiring harness.
- (5) Remove ties and clamps securing wiring harness.
- (6) Carefully remove harness from generator control panel bottom (7, Figure 5-14).

WARNING

To prevent electrical shock, discharge capacitor C3 before attempting to remove leads from capacitor terminals.

- (1) Capacitor C3. (See Figure 5-14.)

(a) Removal

1. Perform Panel 2 Removal step, paragraph 5-18a.
2. Slide terminal boot (1) away from capacitor C3 (2) and desolder wires from terminals.
3. Remove C3 from holding bracket (3)

(b) Installation

1. Solder Leads to capacitor C3 (2) terminals: two black wires on one terminal; red wire on remaining terminal.
2. Place C3 into holding bracket (3).
3. Slide terminal boot (1) back into place over terminals.
4. Replace Panel 2 according to paragraph 5-18b.

- 1. TERMINAL BOOT
- 2. C3
- 3. BRACKET
- 4. TERMINAL BOOT
- 5. C4
- 6. BRACKET
- 7. PANEL BOTTOM

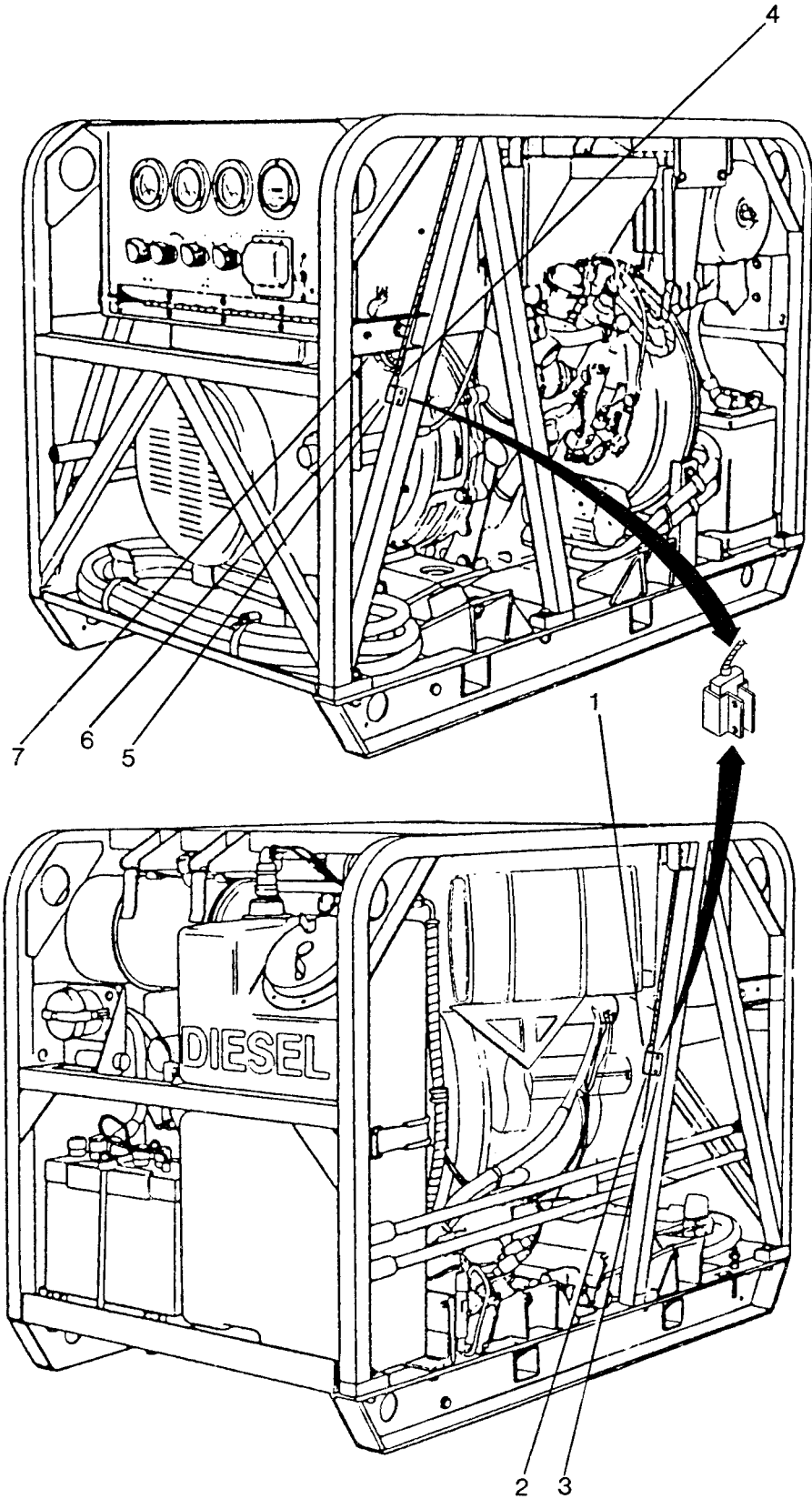


Figure 5-14. Capacitors C3 and C4.

(2) Capacitor C4. (See Figure 5-14.)

WARNING

To prevent electrical shock, discharge capacitor C4 leads before attempting to remove leads from capacitor terminals.

(a) Removal.

1. Perform Panel 5 Removal step, paragraph 5-21a above.
2. Slide terminal boot (4) away from capacitor C4 and desolder wires from terminals.
3. Remove C4 from holding bracket (6).

(b) Installation.

1. Solder leads to capacitor C4 (5) terminals: two black wires on one terminal; red wire on remaining terminal.
2. Place C3 into holding bracket (6).
3. Slide terminal boot (4) back into place over terminals,
4. Replace Panel 5 according to paragraph 5-21b.

e. Installation.

- (1) Using tags of identification, attach leads to components.
- (2) Secure harness with ties and clamps.

5-28. CAPACITOR BRACKET, MODIFIED GENERATOR. (See Figure 5-15.)

a. Removal.

- (1) Perform Removal steps for Panel 5, given in paragraph 5-21a, for capacitor C4 bracket on Panel 2, paragraph 5-14b, for capacitor C3 bracket.
- (2) Remove four screws (1, figure 5-15) from bracket (2) and remove bracket from generator frame (3).

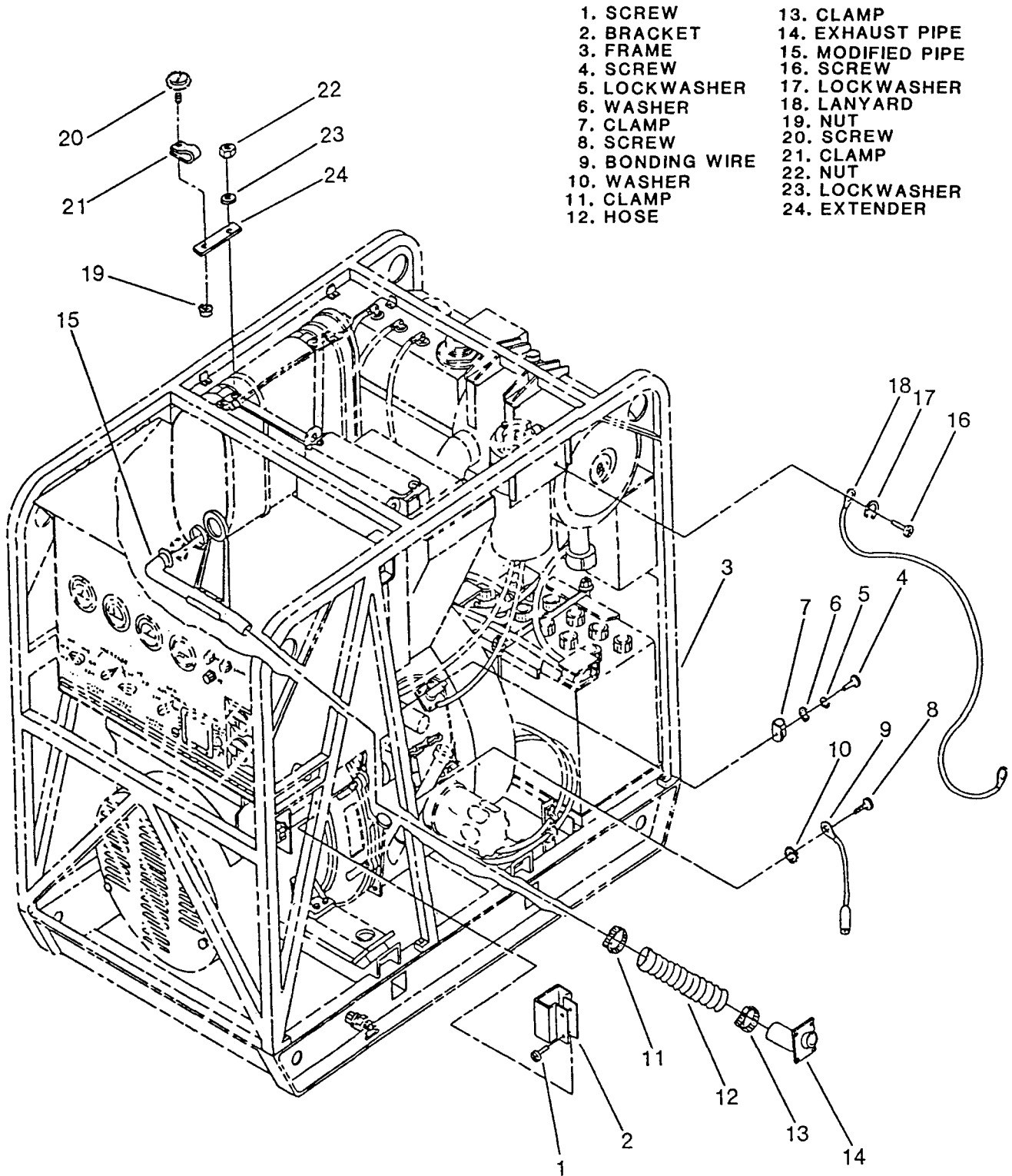


Figure 5-15. Generator ASK Items, Right Front, Three-Quarter View.

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b. Installation.

- (1) Place bracket (2) onto generator frame (3) and secure with four screws (1).
- (2) perform Installation steps for Panel 5, paragraph 5-21b, or Panel 2, paragraph 5-18b.

5-29. LOAD CABLE CLAMP, MODIFIED GENERATOR. (See Figure 5-15.)

a. Removal.

- (1) Open the service door access (19, Figure 5-10) for Panel 5.
- (2) Remove screw (4, figure 5-15), lockwasher (5), and washer (6) from frame (3) and remove clamp (7).

b. Installation.

- (1) Place clamp (7) onto frame (3) and secure with washer (6), lockwasher (5) and screw (4).
- (2) Close service door access for panel 5.

5-30. BONDING WIRE ASSEMBLY, MODIFIED GENERATOR. (See figure 5-15).

a. Removal.

- (1) Open the service access door (19, Figure 5-10) for Panel 5.
- (2) Remove screw (8, figure 5-15), wire (9), and washer (10) from frame (2).

b. Installation.

- (1) Place washer (10) and wire (9) onto frame (2) and secure with screw (8).
- (2) Close service access door for Panel 5.

5-31. MODIFIED EXHAUST PIPE, FLEXIBLE EXHAUST TUBE, AND EXHAUST PIPE ASSEMBLY, MODIFIED GENERATOR. (See figure 5-15).

a. Modified Exhaust Pipe.

- (1) Removal.
 - (a) Perform Removal steps for Panel 6 given in paragraph 5-22a.
 - (b) Perform Removal steps for Panel 2 (if necessary) given in paragraph 5-18a.

(c) Loosen clamp (11) and remove flexible exhaust tube (12).

(d) Perform Removal steps for EXHAUST PIPE and CLAMP given in paragraph 4-55a(1) and (2).

(e) Remove modified exhaust pipe (15).

(2) Installation.

(a) Perform Installation steps given in paragraph 4-55b.

(b) Place flexible hose (12) onto pipe (15) and tighten clamp (11).

(c) Perform Installation steps for Panel 2 given in paragraph 5-18b.

(d) Perform Installation steps for Panel 6 given in paragraph 5-22b.

b. Flexible Exhaust Tube.

(1) Removal.

(a) Perform Removal steps for Panel 5 given in paragraph 5-21a.

(b) Perform Removal steps for Panel 6 given in paragraph 5-22a.

(c) Loosen clamp (11) and remove tube (12) from modified pipe (15).

(d) Loosen clamp (13) and remove exhaust pipe assembly (17) from tube (12).

(2) Installation.

(a) Place tube (12) onto modified pipe (15) and tighten clamp (11).

(b) Place other end of tube (12) onto exhaust pipe assembly (14) and tighten clamp (13).

(c) Perform Installation steps for Panel 5 given in paragraph 5-21b.

(g) Perform Installation steps for Panel 6 given in paragraph 5-22b.

c. Exhaust Pipe Assembly.

(1) Removal.

(a) Perform Removal steps for Panel 5 given in paragraph 5-21a.

(b) Loosen clamp (13) and remove exhaust pipe assembly (14) from flexible exhaust tube (12).

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(2) Installation.

(a) place exhaust pipe assembly (14) into flexible exhaust tube (12) and tighten clamp (13).

(b) Perform Installation steps for Panel 5 given in paragraph 5-21b.

5-32. LANYARD CABLE ASSEMBLY, MODIFIED GENERATOR. (See Figure 5-15.)

a. Removal.

(1) Open the service door access (19, Figure 5-10) for Panel 5.

(2) Remove locknut (38) and washer (39) securing lanyard to Fan 2 Mounting and remove one end of lanyard. Reinstall locknut and washer back onto Fan 2 screw.

(3) Completely remove lanyard cable (18, Figure 5-15) by removing screw (16) and lockwasher (17).

b. Installation.

(1) Install one end of lanyard cable (18, Figure 5-15) by removing locknut (38, Figure 5-10) and washer (39) previously reinstalled on fan mounting screw in Removal procedure, step (b) above.

(2) Place lanyard cable onto screw and install washer (39) and locknut

(3) Holding service door access in place, secure other end of lanyard cable by installing lanyard (18, Figure 5-15), lockwasher (17), and screw (16).

5-33. GASKETS.

a. Removal. Remove gasket material from panel area by scrapping or peeling.

b. Installation.

(1) Mark edge of panel holes with white chalk on side of panels where new gasket is to be installed.

(2) Cut gasket to correct length and peel off protective adhesive strip.

(3) Lay gasket on panel area to be mounted and then remove gasket. Hole markings should appear on gasket.

(4) Punch out hole markings using a 5/16-inch punch.

(5) Reinstall gasket onto pane

5-34. CABLE CLAMP EXTENDER, MODIFIED GENERATOR. (See Figure 5-15.)

a. Removal.

- (1) Remove cable clamp (21) from cable clamp extender (24) by removing nut (19) and screw (20). Remove wiring harness from clamp.
- (2) Remove nut (22) and lockwasher (23) and remove clamp extender (24) from upper muffler bracket.

b. Installation.

- (1) Place cable clamp extender (24) on to upper muffler bracket and secure extender with lockwasher (23) and nut (22).
- (2) Place wiring harness into cable clamp (21) and install clamp onto extender using screw (20) and nut (19).

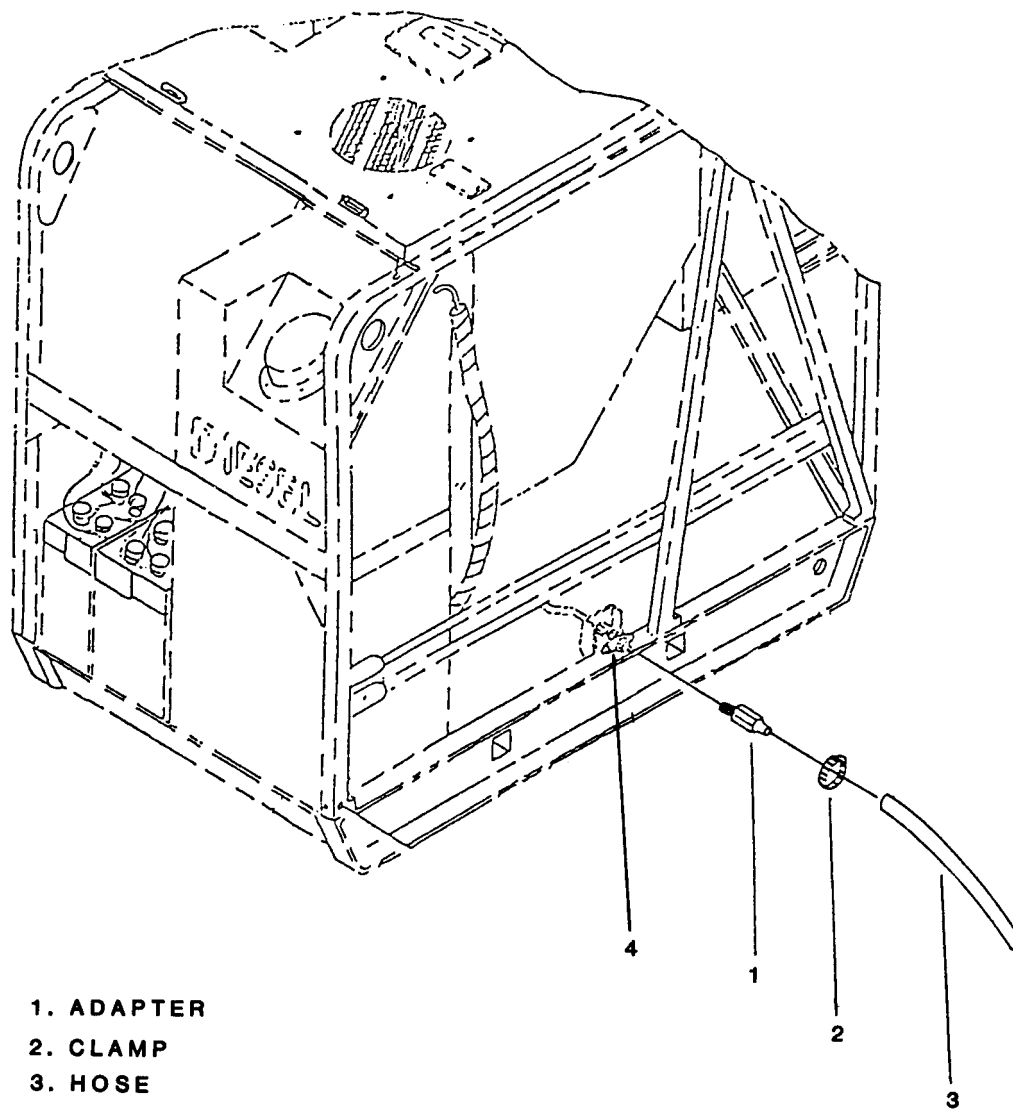
5-35. OIL DRAIN ADAPTER, HOSE, AND CLAMP, MODIFIED GENERATOR. (See Figure 5-16.)

a. Removal.

- (1) Loosen clamp (1) and remove hose (2) from oil drain adapter (3).
- (2) Remove oil-drain adapter from drain valve (4)

b. Installation.

- (1) Place oil drain adapter (3) onto drain valve (4) and tighten adapter.
- (2) Install hose (2) onto adapter (3) and tighten clamp (1).



- 1. ADAPTER
- 2. CLAMP
- 3. HOSE
- 4. DRAIN VALVE

Figure 5-16. Oil Drain Adapter, Hose, and Clamp.

Table 5-6. Maintenance Item/Panel Removal List.

NOTE

Operator/crew personnel authorized to only remove Panel 4 or open the various service/access doors of the panels.

Item	Chapter	Page	Paragraph	Access/Removal	Paragraph
Air Cleaner	4	4-47	4-42	Panels 4, 5 (Service Door), and 6	5-20, 5-21, and 5-22
Air Filter	3	3-31	3-29	Panel 5 Service Door	5-21
Auxiliary Fuel Pump	3/4	3-27/4-37	3-24/4-35	Panel 2	5-18
Battery	3/4	3-18/4-19	3-16/4-22	Panels 3, 4, and Panel 5 (Service Door)	5-19, 5-20, 5-21
Battery Cables- Slave Recept.	3/4	3-20/4-20	3-17/4-23	Panel 4 and Panel 5 (Service Door)	5-20 and 5-21
Battery Frame- Tray & Holdown	3/4	3-18/4-16	3-15/4-19	Panel 4, 5, and 6	5-20, 5-21, and 5-22
Control Box Assy	4	4-67	4-58	Panels 2, 3, 5, and 6	5-18, 5-19, 5-21, and 5-22
Control Box Assy Switches and Meters	4	4-66; 4-69 thru 4-85	4-57; 4-59 thru 4-70	Panel 3	5-19

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Table 5-6. Maintenance Item/Panel Removal List, Continued.

Item	Chapter	Page	Paragraph	Access/ Removal	Para- graph
Engine Assy	3	3-31	3-28	All Panels	5-17 thru 5-22
Engine Exhaust	3	3-35	3-33	Panel 2, 5, and 6	5-18, 5-21, and 5-22
Engine Mounting Brackets	4	4-14	4-17	Panels 2 and 5	5-18 and 5-21
Exhaust Pipe and Clamp	4	4-64	4-55	Panels 2, 5, and 6	5-18, 5-21, and 5-22
Frame	3	3-16	3-12	All Panels	5-17 thru 5-22
Fuel Filter Assy	3/4	3-29/4-40	4-25/4-36	Panels 5 and 6	
Fuel Injection Pump	4	4-46	4-40	Panel 5 Service Door	5-21
Fuel Injector	4	4-46	4-41	Panel 6	5-22
Fuel Lines-Valves	3/4	3-31/4-44	3-27/4-39	Panels 2 and 4; Panel 5 Service Door	5-18, 5-20, and 5-21
Fuel Tank	3	3-29	3-26	Panels 2, 3, and 4	5-18, 5-19, and 5-20
Fuel Transfer Pump	4	4-34	4-34	Panel 5 Service Door	5-21
Generator Assy	4	4-28	4-28	Panels 1, 2, and 5	5-17, 5-18, and 5-21
Glow Pump	4	4-59	4-50	Panel 6	5-22

Table 5-6. Maintenance Item/Panel Removal List, Continued.

Item	Chapter	Page	Paragraph	Access/ Removal	Para- graph
Governor Linkage	3/4	3-33/4-49	3-31/4-44	Panel 5	5-21
Grounding Assy	3/4	3-24/4-18	3-21/4-20	Panel 2	5-18
Intake Manifold	4	4-58	4-49	Panels 4, 5 (Service Door), and 6	5-20, 5-21, and 5-22
Lifting Eye	3/4	3-16/4-15	3-13/4-18	Panel 6	5-22
Load Terminal Board	4	3-25/4-29	3-22/4-30	Panel 5	5-21
Muffler	4	4-62	4-54	Panels 2 and 6	5-18, 5-22
Oil Cooler	4	4-61	4-52	Panels 3 and 4	5-19, 5-20
Oil Filter	3/4	3-35/4-54	3-32/4-46	Panel 5	5-21
Oil Pan-Drains	3/4	3-33/4-60	3-30/4-51	Panel 2	5-18
Rocker Arms	4	4-48	4-43	Panel 6	5-22
Skid Base-Ground Stud	3	3-16	3-14	Panels 1 thru 5	5-17 thru 5-21
Solenoid, Fuel cutoff	4	4-41	4-37	Panel 5 Service Door	5-21
Starter	4	4-55	4-48	Panels 2 and 4	5-18 and 5-20
Throttle and Bracket	4	4-65	4-56	Panels 1 and 5	5-17 and 5-21

APPENDIX A

1. PAINTING:
 - T.O.35-1-3 Painting and marking of USAF Aerospace Ground Equipment.
2. RADIO SUPPRESSION:
 - MIL-STD-461 Radio Interference Suppression.
3. MAINTENANCE :
 - T.O.1-1-1 Cleaning of Aerospace Equipment.
 - T.O.1-1-2 Corrosion Control and Treatment for Aerospace Equipment.
 - T.O.35-1-11 Organization, Intermediate and Depot Level Maintenance for FSC 6115 Equipment.
 - T.O.35-1-12 Components and Procedures for Clening Aerospace Ground Equipment.
 - T.O.35-1-26 Repair/Replacement Criteria for FSC 6115 Aerospace Ground Equipment.
 - T.O.35-1-524 USAF Equipment Registration Number System Applicable to FSC 6115 Equipment.
 - TM 5-764 Electric Motor and Generator Repair.
 - TM 5-766 Electric Power Generation in the Field.
 - TM 5-6115-615-24P (A) Organizational, Intermediate (field) Direct Support and General Support and Depot Maintenance Repair
 - SL-4-05926B/06509B-24P/2 (MC) Parts Lists.
4. SHIPMENT AND STORAGE:
 - T.O.35-1-4 Processing and Inspection of Aerospace Ground Equipment for Storage and Shipment.
 - T.O.38-1-5 Processing and Inspection of Non-Mounted, Non-Aircraft Gasoline and Diesel Engines for Storage and Shipment.
5. DESTRUCTION OF MATERIEL:
 - TM 750-244-3 procedures for Destruction of Equipment to Prevent Enemy Use.
6. MAINTENANCE FORMS AND RECORDS:
 - DA PAM 738-750 The Army Maintenance Management System.
 - DA PAM 310-1 Consolidated Index of Army Forms and Publications.
 - SL-1-2 Marine Corps Index of Authorized Publications for EuiPMENT support.
 - AFM 66-1 Air Force Maintenance Forms and Records.
 - TM 4700.15/1 Marine Corps Forms and Records Procedures.
 - NAVMC Form 10772 Recommendations for Changes and Improvements for Technical publications.
 - AFTO Form 22 Recommendations for Changes and Improvements for Technical Publications.
 - DA Form 2028 Recommendations for Changes and Improvements for Technical Publications.

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APPENDIX B

AUTHORIZED ITEMS LIST

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APPENDIX C

MAINTENANCE ALLOCATION CHART

Section 1. INTRODUCTION

1. GENERAL.

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

b. Section II designates overall responsibility for the performance of maintenance functions on the identified end item or component. The implementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.

c. Section III lists the tools and test equipment required for each maintenance function as referenced from Section II.

d. Section IV contains supplemental instructions, explanatory notes and/or illustrations required for particular maintenance functions.

2. EXPLANATION OF COLUMNS IN SECTION II.

a. Group Number. Column 1. The assembly group is a numerical group assigned to each assembly in a top down breakdown sequence. The applicable assembly groups are listed on the MAC in disassembly sequence beginning with the first assembly removed in a top down disassembly sequence.

b. Assembly. Group. Column 2. This column contains a brief description of the components of each assembly group.

c. Maintenance Functions. Column 3. This column lists the various maintenance functions (A through K) and indicates the lowest maintenance category authorized to perform these functions. The symbol designations for the various maintenance categories are as follows:

- C - Operator or crew
- O - Organizational maintenance
- F - Direct support maintenance
- H - General support maintenance
- D - Depot maintenance

The maintenance functions are defined as follows:

A -- Inspect. To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards.

B -- Test. To verify serviceability and to detect electrical or mechanical failure by use of test equipment.

C -- Service. To clean, to preserve, to charge, and to add fuel, lubricants, cooling agents, and air. If it is desired that elements, such as painting and lubricating, be defined separately, they may be so listed.

D -- Adjust. To rectify to the extent necessary to bring into proper operating range.

E -- Align. To adjust specified variable elements of an item to bring to optimum performance.

F -- Calibrate. To determine the corrections to be made in the readings of instruments or test equipment used in precise measurement. Consists of the comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared with the certified standard.

G -- Install. To set up for use in an operational environment such as an emplacement, site, or vehicle.

H -- Replace. To replace unserviceable items with serviceable like items.

I -- Repair. Those maintenance operations necessary to restore an item to serviceable condition through correction of material damage or a specific failure. Repair may be accomplished at each category of maintenance.

J -- Overhaul. Normally, the highest degree of maintenance performed by the Army in order to minimize time work in process is consistent with quality and economy of operation. It consists of that maintenance necessary to restore an item to completely serviceable condition as prescribed by maintenance standard in technical publications for each item of equipment. Overhaul normally does not return an item to like new, zero mileage, or zero hour condition.

K -- Rebuild. The highest degree of material maintenance. It consists of restoring equipment as nearly as possible to new conditions in accordance with original manufacturing standards. Rebuild is performed only when required by operational considerations or other paramount factors and then only at the depot maintenance category. Rebuild reduces to zero the hours or miles the equipment, or component thereof, has been in use.

d. Symbols. The uppercase letter placed in the appropriate column indicates the lowest level at which that particular maintenance function is to be performed.

e. Tools and Equipment, Column 4. This column is provided for referencing by code, the special tools and test equipment, (Section III) required to perform the maintenance functions (Section II).

f. Remarks, Column 5. This column is provided for referencing by code, the remarks (Section IV) pertinent to the maintenance functions.

3. EXPLANATION OF COLUMNS IN SECTION III.

a. Reference Code. This column consists of a number and a letter separated by a dash. The number references the T and TE requirements column on the MAC. The letter represents the specific maintenance function the item is to be used with. The letter is representative of columns A through K on the MAC.

b. Maintenance Category. This column shows the lowest level of maintenance authorized to use the special tool or test equipment.

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c. Nomenclature. This column lists the name or identification of the tool or test equipment

d. Tool Number. This column lists the manufacturer's code and part number, or National Stock Number of tools and test equipment.

4. EXPLANATION OF COLUMNS IN SECTION IV.

a. Reference Code. This column consists of two letters separated by dash, both of which are references to Section II. The first letter references column 5 and the second letter references a maintenance function, column 3, A through K.

b. Remarks. This column lists information pertinent to the maintenance function being performed, as indicated on the MAC, Section II.

SECTION II - MAINTENANCE ALLOCATION CHART

(1) GROUP NO.	(2) ASSEMBLY GROUP	(3) MAINTENANCE FUNCTIONS											(4) TOOLS AND EQUIPMENT	(5) REMARKS
		A	B	C	D	E	F	G	H	I	J	K		
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
01	DC ELECTRICAL AND CONTROL SYSTEM Batteries Battery Cables Battery Frame and Tray Battery Hold Down Slave Receptacle Voltage Regulator Battery Chg. Engine Wiring Harness	C C C C C C C C	O O O O	C C O O					O O O O O O	F O O O O			1-B 4-B, 5-B 5-B	
02	FRAME Frame Grounding Rod Grounding Strap	C C C C		C C				C C C	F O					
03	ELECTRICAL POWER GENERATION SYSTEM Generator Assy Bearings Rectifier Assy Rotating Diode Generator Fan Rotor Assy Housing Assy Exciter = Parts Rotor	O F F F F F F	F F F F F						F F F F F	F			5-B 5-B	
04	FUEL SYSTEM AND OIL DRAIN Fuel Pump, Transfer Fuel Pump, Auxiliary Filters	C C C C	O O	O O O					O O O	O O				

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SECTION II - MAINTENANCE ALLOCATION CHART

(1) GROUP NO.	(2) ASSEMBLY GROUP	(3) MAINTENANCE FUNCTIONS											(4) TOOLS AND EQUIPMENT	(5) REMARKS				
		A	B	C	D	E	F	G	H	I	J	K						
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD						
05	ENGINE (Cont) Oil Filter Camshaft Bearings Crankcase Intake Manifold Flywheel Assembly Timing Gears Oil Pan Crankshaft Assembly Engine Mounts Starter Assy Starter Solenoid Oil Filter Adapter Glow Plug Oil Cooler Low Fuel Solenoid, Shutdown	C H H O F H C H O O O O O O O															10-A 10-A	
06	ENGINE EXHAUST Muffler Clamps Exhaust Pipes & Ducts Lifting Eye	C C C C C																
07	ENGINE CONTROLS Governor Speed Control	C																
08	GENERATOR CONTROLS and INSTRUMENTS Control Box Assembly Voltsmeters Current Indicating Meter	C C C C	O O O O														4-B	

SECTION III. TOOLS, TEST AND SUPPORT EQUIPMENT REQUIREMENTS

REFERENCE CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NSN
1-B	0	Tester, Battery, Electrolyte solution	6630-00-171-5126
4-B	F	Multimeter	6625-00-553-0142
5-B	0	Ohmmeter	6625-00-581-2466
7-B & D	F	Tool, Test Set, Diesel Injector	4910-00-317-8265
10-A	H	Micrometers, Inside & outside	
11-H	H	Puller Kit, universal	5180-00-701-8046
12-D	0	Gage, thickness	5210-00-221-1999
13-I	F	Grinding machine, valve face	4910-00-540-4679
15-I	F	Grinding Kit, Valve seat	4910-00-473-6437
17-I	0	Tool Kit, Blind Rivet	5180-01-201-4978
19-I	0	Drill Stop	
20-I	0	Drill, Electric	5130-00-889-8994
21-I	0	Soldering Gun	3439-00-618-6623

Section IV. REMARKS

REFERENCE CODE	REMARKS
A-A	Visual insepction
C-A	Visual inspection
D-C	Lubriate hinges and latches
E-I	Welding and staighthen
G-B	Operational Test
H-B	Pressure Test after repair
I-B	Continuity Ted
J-K	Fabricate new harness
K-B	Continuity Test
M-B	Continuity Test
O-K	Fabricate new harness
P-I	Repair by replacement of components
Q-B	Operational Teat
R-D	Zero adjustment
S-B	Continuity Test
U-B	Continuity Test
V-B	Operational Test
A-H	Operator to replace Panel 4 only
W-I	Repair by replacement of latch assembly
X-I	Repair by replacement of capacitors or receptacles
Y-I	Repair by replacement of fuses or tabs

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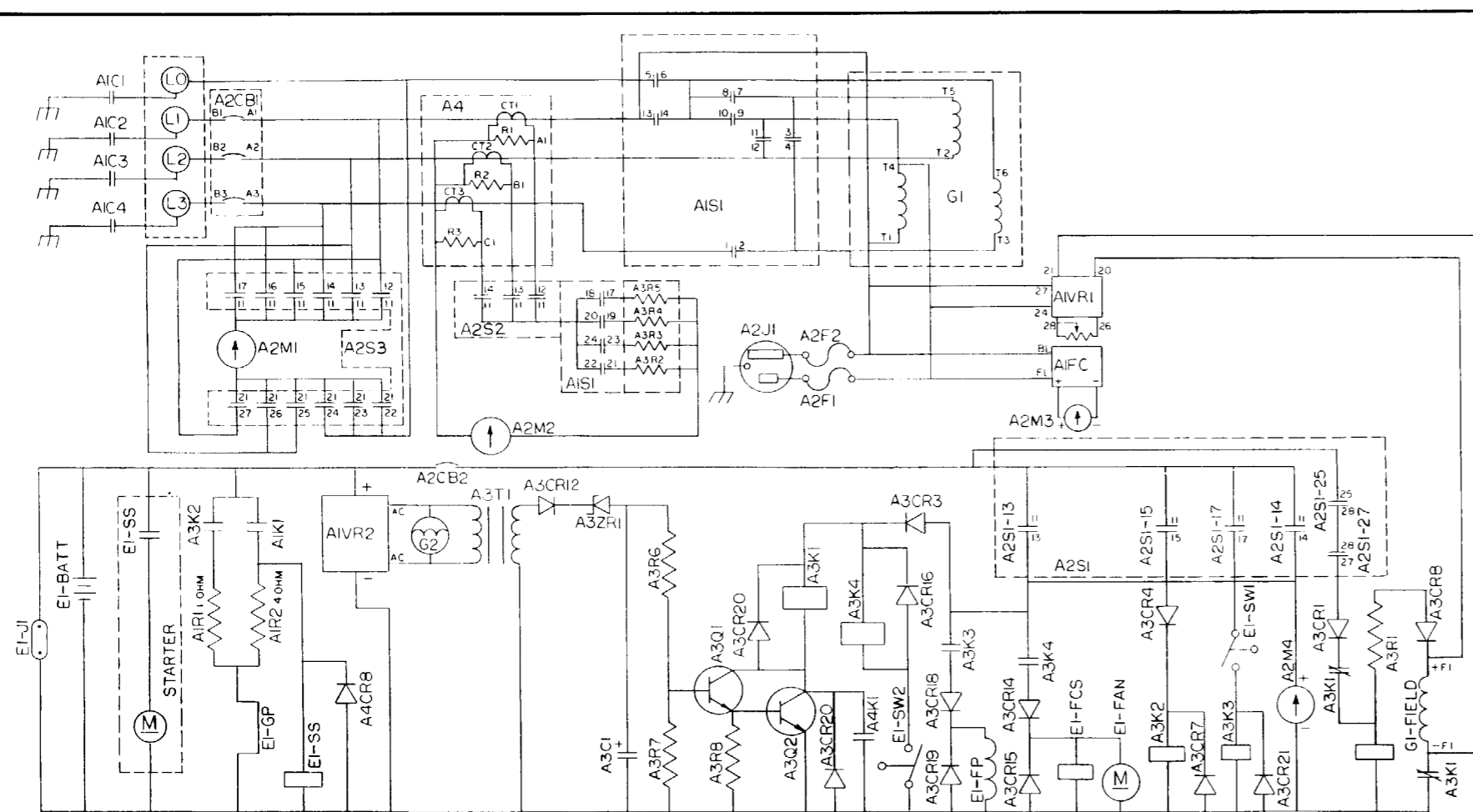
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- A1-CONTROL BOX COMPONENTS**
 C1, C2, C3, C4 EMI CAPACITORS
 K1 AUXILIARY START RELAY
 L0, L1, L2, L3 OUTPUT TERMINALS
 FC FREQUENCY CONVERTER
 S1 VOLTAGE RECONNECTION SWITCH
 TB1, TB2, TB3 TERMINAL BOARDS
 VR1 GEN SET VOLTAGE REGULATOR
 VR2 BAIT. CHARGING VOLTAGE REGULATOR
 R1 PRE-HEAT RESISTOR
 R2 AFTER GLOW RESISTOR
- A2-SUB-ASSEMBLY-FRONT PANEL**
 CB1 LOAD CIRCUIT BREAKER
 CB2 DC CONTROL BREAKER
 J1 AC RECEPTACLE (60 Hz ONLY)
 M1 AC VOLTMETER
 M2 LOAD CURRENT METER
 M3 FREQUENCY METER
 M4 RUNNING TIME METER
 R1 VOLTAGE ADJUST POT
 S2 CURRENT SELECTOR SWITCH
 S3 VOLTAGE SELECTOR SWITCH
 S1 MASTER SWITCH
 F1, F2 AC RECEPTACLE FUSE (60 Hz ONLY)

- A3-SUB-ASSEMBLY-CIRCUIT BOARD**
 R2, R3, R4, R5 AMMETER RESISTORS
 K2 PRE-HEAT RELAY
 T1 START DISCONNECT TRANSFORMER
 R6, R7, R8 START DISCONNECT RESISTORS
 ZR1 START DISCONNECT ZENER
 C1 START DISCONNECT CAPACITOR
 Q1, Q2 START DISCONNECT TRANSISTORS
 K1 START DISCONNECT RELAY
 K4 LOW FUEL SHUTDOWN RELAY
 K3 FUEL LEVEL RELAY
 CR1-23 DIODES
 R1 FIELD FLASHING RESISTOR
- A4-SUB-ASSEMBLY-CURRENT TRANSFORMER**
 CT1, CT2, CT3 CURRENT TRANSFORMERS
 R1, R2, R3 BURDEN RESISTORS
- G1-GENERATOR ASSEMBLIES**
 G1 - T1, T2, T3, T4, T5, T6 GENERATOR OUTPUT LEADS
 G1 - F1, F2 GENERATOR FIELD LEADS
 G2 BATTERY CHARGING ALTERNATOR

- E1-ENGINE COMPONENTS**
 E1 - BATT BATTERY
 E1 - GP GLOW PLUG
 E1 - SS STARTER SOLENOID
 E1 - FCS FUEL CUTOFF SOLENOID
 E1 - FAN NOISE KIT FAN
 E1 - FP AUXILIARY FUEL PUMP
 E1 - SW1 LOW FUEL LEVEL SWITCH
 E1 - SW2 LOW FUEL SHUTDOWN SWITCH
 E1 - J1 AUXILIARY BATTERY JACK
 E1 - SW3 HIGH FUEL LEVEL SWITCH
 E1 - SW STARTER MOTOR
8. CONTROL BOX SWITCH AISI HAS JUMPERS INSTALLED
 - BETWEEN AISI-2 AND AISI-4
 - BETWEEN AISI-3 AND AISI-7
 - BETWEEN AISI-6 AND AISI-8 AND AISI-10 AND AISI-14
 - BETWEEN AISI-9 AND AISI-11
 - BETWEEN AISI-18 AND AISI-20 AND AISI-22 AND AISI-24

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	FIRST ARTICLE CONFIGURATION AUDIT	7/21/86	
	B	REVISED PER ONAN ER NO 28768	86/9/24	
A-3	C	ADD PART LABEL "AIK1"	86/10/8	
	D	REVISED PER ONAN ER NO 29370	87/1/15	
	E	REVISED PER ONAN ER NO 29,475	87/1/29	
	F	REVISED PER ONAN ER NO 29,519	87/2/9	
	G	SERVICE SIGN-OFF	3/12/87	

A2S3	VOLTAGE SELECTOR SWITCH
POSITION	CONTACTS CLOSED
V1-0	11 AND 12 AND 15, 21 AND 22
V2-0	11 AND 13, 21 AND 23
V3-0	11 AND 14, 21 AND 24
V1-2	11 AND 12 AND 15, 21 AND 25
V2-3	11 AND 15, 21 AND 26
V3-1	11 AND 17, 21 AND 27

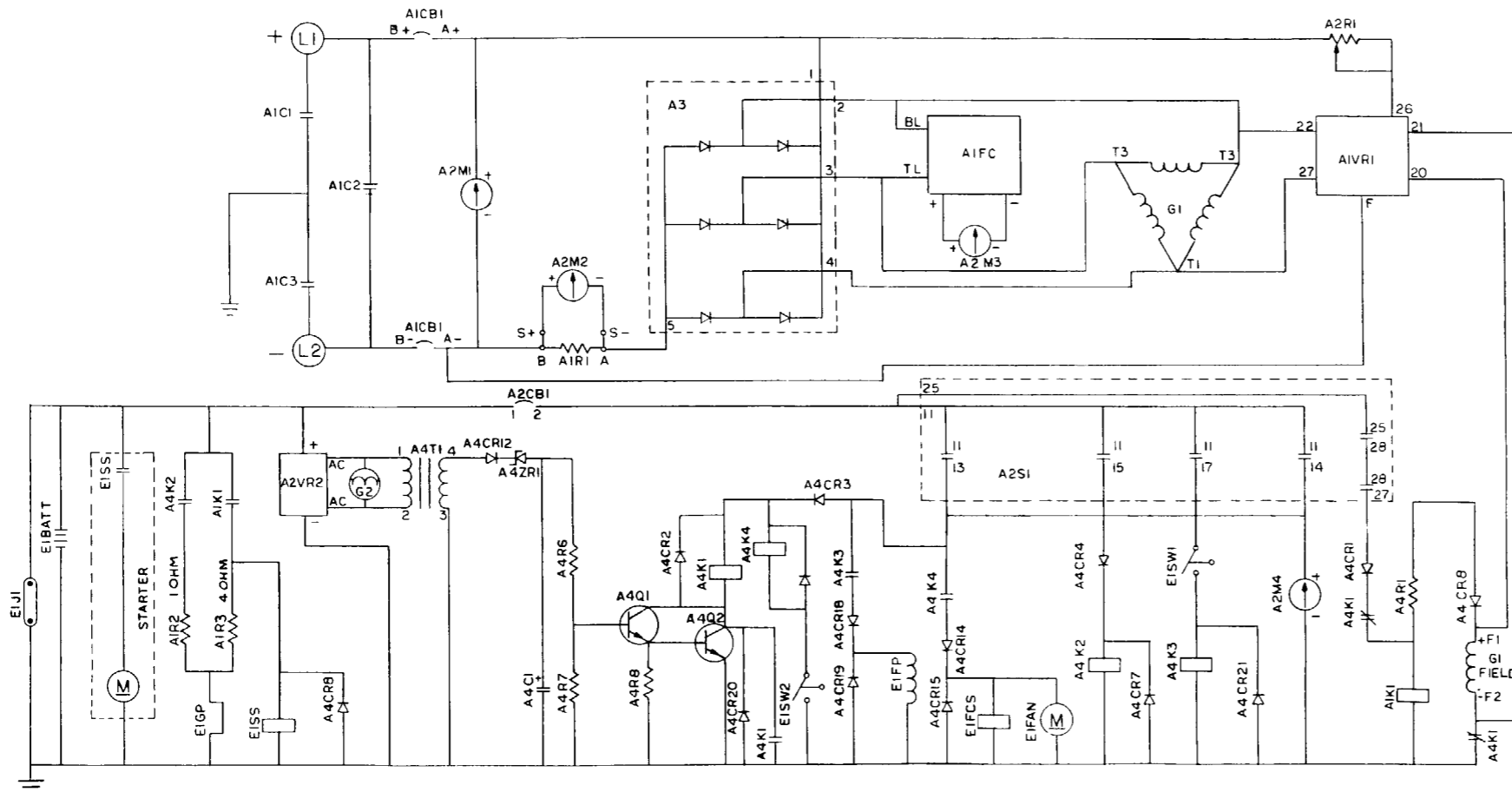
A2S2	CURRENT SELECTOR SWITCH
POSITION	CONTACTS CLOSED
I-1	11 AND 12
I-2	11 AND 13
I-3	11 AND 14

A1S1	VOLTAGE RECONNECTION SWITCH
POSITION	CONTACTS CLOSED
120/208 3Ø	1 AND 2, 5 AND 6, 7 AND 8, 9 AND 10, 17 AND 18
120 3Ø	1 AND 2, 3 AND 4, 11 AND 12, 13 AND 14, 19 AND 20
240 1Ø	3 AND 4, 9 AND 10, 21 AND 22
120 1Ø	3 AND 4, 11 AND 12, 13 AND 14, 15 AND 16, 23 AND 24

A2S1	MASTER SWITCH
POSITION	CONTACTS CLOSED
PRE-HEAT	11 AND 15
OFF	NONE
RUN/AUX. FUEL	11 AND 13 AND 14 AND 17
RUN	11 AND 13 AND 14
START	11 AND 13 AND 14 AND 15, 25 AND 27 AND 28

- NOTES:
- FOR 3KW, 60 Hz ASSEMBLY. SEE 84-016.
 - FOR 3KW, 400 Hz ASSEMBLY. SEE 84-021.
 - THE 400 Hz MODEL DOES NOT CONTAIN THE AC RECEPTACLE A2J1 OR THE FUSES A2F1 OR A2F2.
 - FRONT PANEL SWITCH A2S3 HAS JUMPERS INSTALLED:
 - BETWEEN A2S3-12 AND A2S3-15 AND A2S3-27
 - BETWEEN A2S3-16 AND A2S3-17 AND A2S3-24
 - BETWEEN A2S3-22 AND A2S3-23 AND A2S3-24
 - BETWEEN A2S3-25 AND A2S3-26 AND A2S3-13
 - FRONT PANEL SWITCH A2S1 HAS JUMPER INSTALLED BETWEEN A2S1-13 AND A2S1-14.
 - FOR 3KW, 60 Hz AND 400 Hz CONTROL WIRING DIAGRAM SEE 84-13194. FOR 3KW, 60 AND 400 Hz ENGINE WIRING DIAGRAM. SEE 84-13307.
 - FOR INTERPRETATION OF DRAWING. SEE 84-13110. NOTE 1.

Figure FO-1. Electrical Schematic, Models MEP-016B and MEP-021B.



ZONE	LTR	DESCRIPTION	DATE	APPROVED
-	A	FIRST ARTICLE CONFIGURATION AUDIT	9/12/86	
-	B	REVISED PER ONAN ER NO 28768	86/9/24	
-	C	REVISED PER ONAN ER NO 29,475	87/1/29	
-	D	REVISED PER ONAN ER NO 29,519	87/2/9	
-	E	SERVICE SIGN-OFF	3/12/87	

A2S1	MASTER SWITCH
POSITION	CONTACTS CLOSED
PRE-HEAT	11 AND 15
OFF	NONE
RUN/AUX FUEL	11 AND 13 AND 14 AND 15 AND 17
RUN	11 AND 13 AND 14
START	11 AND 13 AND 14 AND 15, 25 AND 27 AND 28

NOTES:

- FRONT PANEL SWITCH A2S1 HAS A JUMPER INSTALLED BETWEEN A2S1-13 AND A2S1-14.
- FOR 3KW, 28 VDC ASSEMBLY, SEE DRAWING 84-026.
- FOR 3KW, 28 VDC CONTROL WIRING DIAGRAM, SEE DRAWING 94-13193.
- FOR 3KW, 28 VDC ENGINE/GENERATOR WIRING DIAGRAM SEE DRAWING 84-13305.
- FOR INTERPRETATION OF DRAWING SEE 84-13110, NOTE 1.

A1 CONTROL BOX COMPONENTS
 A1, C1, C2, C3 EMI CAPACITOR
 K1 AUXILIARY START RELAY
 L1, L2 OUTPUT TERMINALS
 FC FREQUENCY CONVERTER
 VR1 GENERATOR SET VOLTAGE REGULATOR
 CB1 LOAD CIRCUIT BREAKER
 R1 LOAD CURRENT SHUNT
 R2 PRE-HEAT RESISTOR
 R3 AFTER GLOW RESISTOR

A2-SUB-ASSEMBLY-FRONT PANEL
 CB1 DC CIRCUIT BREAKER
 M1 DC VOLTMETER
 M2 DC LOAD CURRENT METER
 M3 RPM METER
 R1 VOLTAGE ADJUST POT
 S1 MASTER SWITCH
 VR2 BATTERY CHARGING VOLTAGE REG.
 TB3 TERMINAL BOARD
 M4 RUNNING TIME METER

A3-SUB-ASSEMBLY-RECTIFIER STACK

E1 ENGINE COMPONENTS
 BATT - BATTERY
 GP - GLOW PLUG
 SS - STARTER SOLENOID
 FCS - FUEL CUTOFF SOLENOID
 FAN - NOISE KIT FAN
 FP - AUXILIARY FUEL PUMP
 SW1 - LOW FUEL LEVEL SWITCH
 SW2 - LOW FUEL SHUTDOWN SWITCH
 J1 - AUXILIARY BATTERY JACK
 SW3 - HIGH FUEL LEVEL SWITCH

GENERATOR ASSEMBLIES
 G1-T1, T2, T3 GENERATOR OUTPUT LEADS
 G1-F1, F2 GENERATOR FIELD LEADS
 G2-BATTERY CHARGING ALTERNATOR

A4-SUB-ASSEMBLY-CIRCUIT BOARD

K2 PRE-HEAT RELAY
 T1 START DISCONNECT TRANSFORMER
 R6, R7, R8 START DISCONNECT RESISTORS
 ZR1 START DISCONNECT ZENER
 C1 START DISCONNECT CAPACITOR

Q1, Q2 START DISCONNECT TRANSISTORS
 K1 START DISCONNECT RELAY
 K4 LOW FUEL SHUTDOWN RELAY
 K3 FUEL LEVEL RELAY
 CR1-23 DIODES
 R1 FIELD FLASHING RESISTOR

Figure FO-2. Electrical Schematic,
 Model MKP-026B.

PIN : 062759 - 000