TM 5-6115-244-10

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR'S MANUAL

GENERATOR SET, GASOLINE ENGINE: 10 KW, AC, 120V 1 AND 3 PHASE, 120/240V SINGLE PHASE, 120/208V 3 PHASE, 60 CYCLE; SKID MOUNTED

(PACIFIC MERCURY MODEL PM59-010-1) SERIAL NUMBERS 001 THROUGH 900, FSN 6115-690-8290

HEADQUARTERS, DEPARTMENT OF THE ARMY
NOVEMBER 1961

SAFETY PRECAUTIONS

Before Operation

Do not operate the generator set within an enclosed area unless the exhaust gases are piped to the outside. Exhaust gases contain carbon monoxide, a colorless, odorless, and poisonous gas. Failure to observe this warning may result in death to personnel.

Do not smoke or use an open flame in the vicinity when servicing the batteries. Batteries generate hydrogen, a highly explosive gas. Failure to observe this warning may result in death to personnel.

When filling the fuel tank, do not smoke or use an open flame in the vicinity. Always provide metal-to-metal contact between the container and the fuel tank. This will prevent a spark from being generated as gasoline flows over the metallic surface. Failure to observe this warning may result in death to personnel.

Do not operate the generator set without a suitable ground connection. Electrical defects in the unit can cause death by electrocution when contact is made with an ungrounded system.

During Operation

Do not attempt to make or break connections or perform maintenance on the generator set while it is in operation. Always make sure it is not connected to an energized line before performing maintenance. Failure to observe this warning may result in death by electrocution.

Do not fill the fuel tank while the engine is in operation. Fuel spilled on a hot engine may explode and cause serious injury or death to personnel.

After Operation

Do not smoke or use an open flame in the vicinity when servicing the batteries. Batteries generate hydrogen, a highly explosive gas. Failure to observe this warning may result in death to personnel.

When filling the fuel tank, do not smoke or use an open flame in the vicinity. Always provide metal-to-metal contact between the container and the fuel tank. This will prevent a spark from being generated as fuel flows over the metallic surface. Failure to observe this warning may result in death to personnel.

TECHNICAL MANUAL

No. 5–6115–244–10

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., *29 November 1961*

Operator's Manual

GENERATOR SET, GASOLINE ENGINE: 10 KW, AC, 120V 1 and 3 PHASE, 120/240V SINGLE PHASE, 120/208V 3 PHASE, 60 CYCLE; SKID MOUNTED (PACIFIC MERCURY MODEL PM59 –010–1) SERIAL NUMBERS 001 THROUGH 900, FSN 6115–690–8290

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1. Scope

a. This manual is published for the use of the personnel to whom the Pacific Mercury Generator Set, Model PM59–010–1, is issued. It provides information on the operation, lubrication, and preventive maintenance services of the equipment, accessories, components, and attachments.

b. Appendix I contains a list of publications applicable to this manual. Appendix II contains the basic issue items authorized for use by the operator. The Maintenance Allocation Chart is contained in TM 5–6115–244–20.

c. Numbers placed in parentheses on illustrations indicate quantity. Numbers preceding nomenclature callouts on illustrations indicate the preferred maintenance sequence.

d. Report all deficiencies in this manual on DA Form 2028. Submit recommendations for changes, additions, or deletions to the Commanding General, Military Construction Supply Agency/U. S. Army Engineer Maintenance Center, ATTN: MCSDM, Corps of Engineers, P. O. Box 119, Columbus 16, Ohio; Direct communication is authorized.

e. Report unsatisfactory equipment performance and suggestions for equipment improvement to the organizational unit for initiating necessary corrective action.

2. Record and Report Forms

For record and report forms applicable to the operator, refer to TM 5–505.

Note. Applicable forms, excluding Standard Form 46, which is carried by the operator, shall be kept in a canvas bag mounted on the equipment.

Section II. DESCRIPTION AND DATA

3. Description

The Pacific Mercury Electronics Inc. Model PM59–010–1 Generator Set (figs. 1 and 2) is a self-contained, weather-resistant, fully winterized, skid-mounted unit, complete with controls, switches, and instruments necessary for normal operation. A four-cylinder gasoline engine is directly coupled to the alternating current generator. All parts of the unit are readily accessible for operation, service, and maintenance in the field through hinged top, side, and rear-access doors of the housing.

4. Identification and Tabulated Data

a. Identification. The generator set has four identification plates, located at the top left rear of the housing.

(1) *Corps of Engineers plate A.*

Manufacturer	Pacific Mercury Electronics Inc.
Model	PM59–010–1

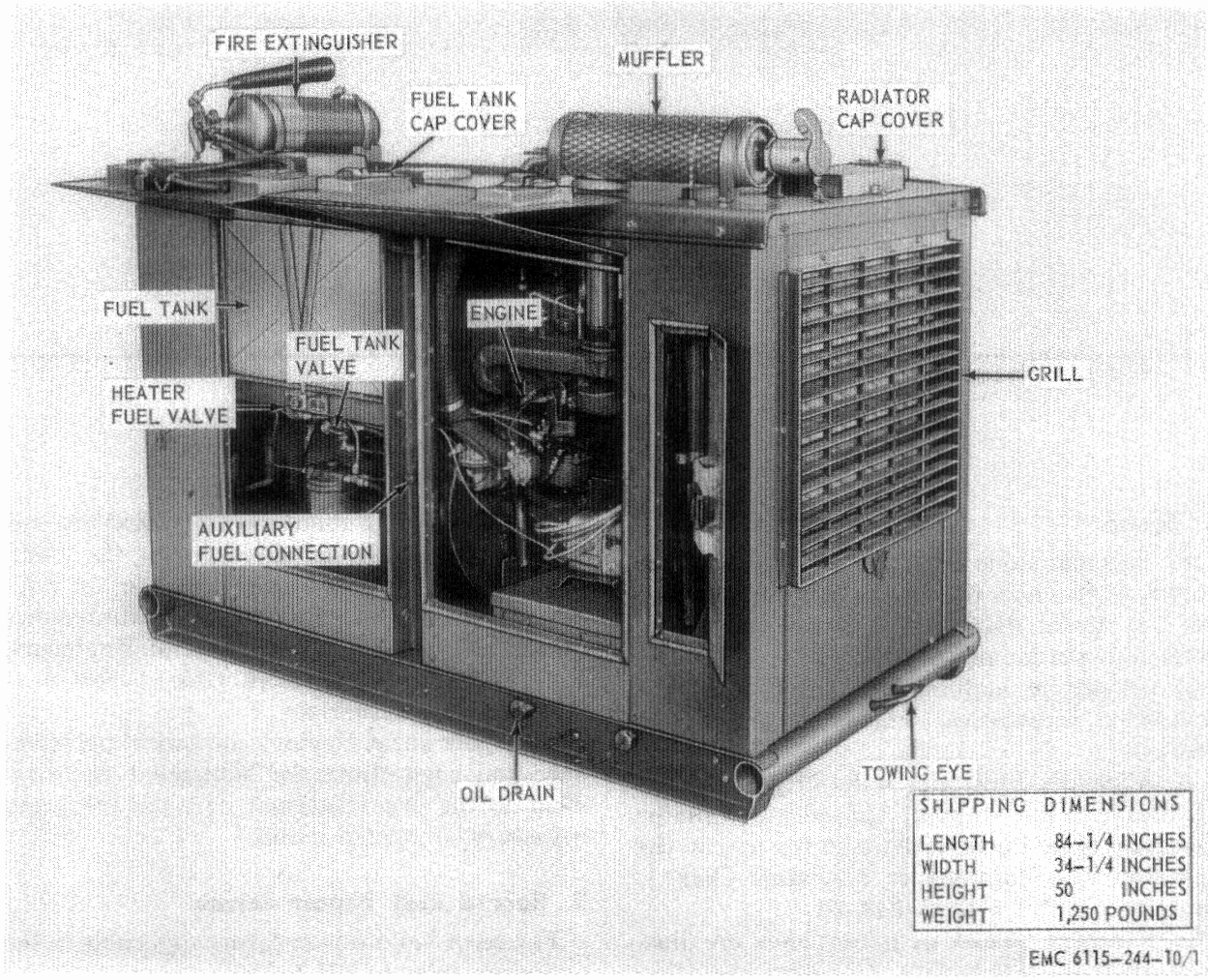


Figure 1. Generator set, right front, three-quarter view, with shipping dimensions.

Stock No. 6115–690–8290
Engine make ..... Continental

(2) *Corps of Engineers plate C.*

Manufacturer ..... Kurz & Root
Model E1645E1646M837–D
Volts 120/208/240
Kw 10
Kva 12.5
P.F. % 80
Cycles 60
Rpm 1,800
MFD 10.60
Ph ..... 1 and 3

(3) *Ac generator plate.*

Kw 10
Pf 8
Volts 120/208–120, 120/240–120
Amps 34.7–60, 52–104
Phase 3/1
Cycles 60
Model E1645M837D
Rpm 1,800
Dc Exciter:
Watts 500
Volts 36
Amps 14
Duty ..... Cont.

(4) *Engine plate.*

Model FS162
Manufacturer ..... Continental Motors Corporation
Full load speed ..... 2,200 rpm

b. Tabulated Data.

(1) *Heater.*

Manufacturer ..... South Wind Division, Stewart-Warner Corporation
Model 939–B24
Type ..... Gasoline
Operating voltage ..... 28 max (maximum) 18 min (minimum)

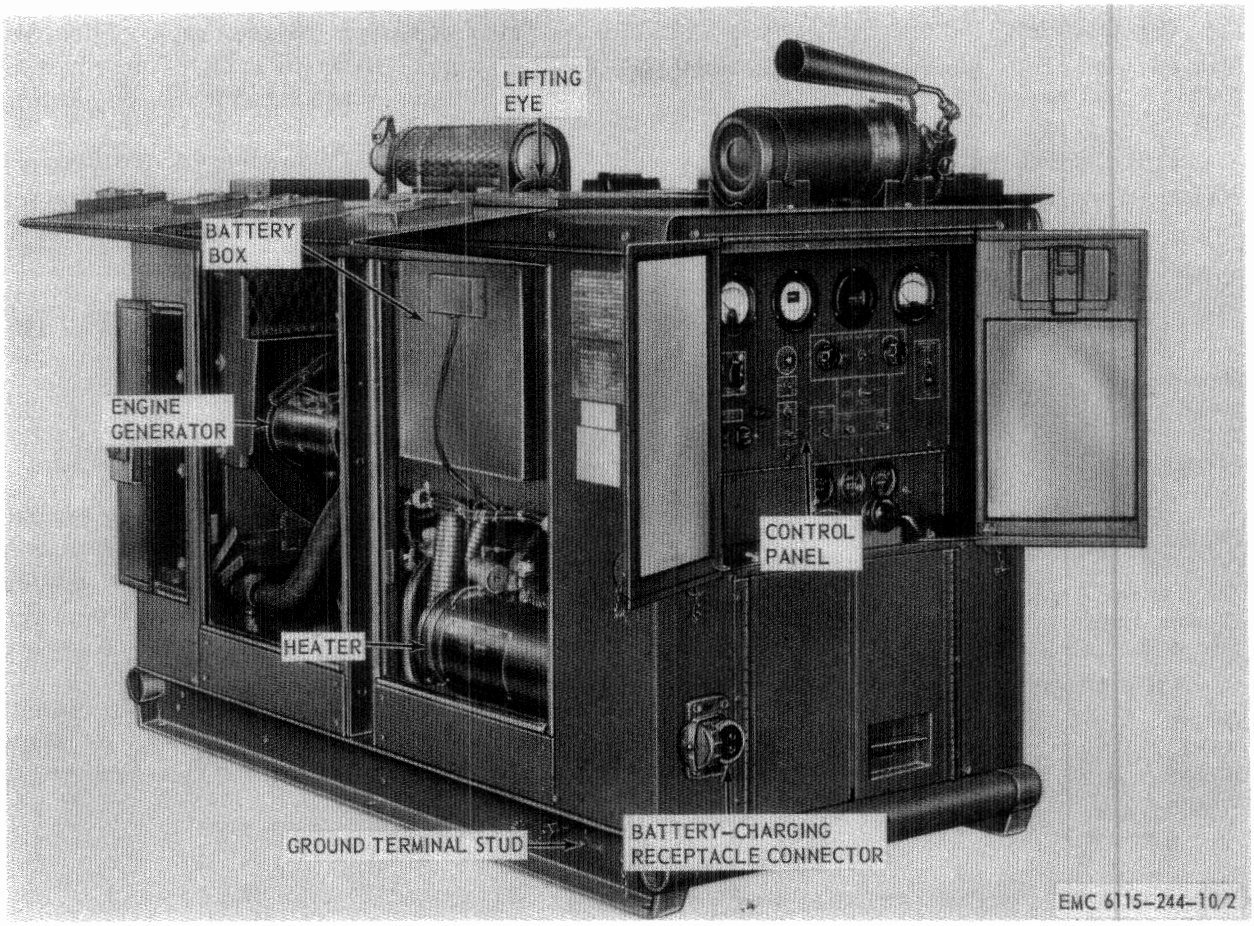


Figure 2. Generator set, left rear, three-quarter view.

Current consumption:
Starting ..... 11 amp (amperes)
Running ..... 1 amp
Heat Output:
Coolant ..... 15,000 Btu/hr (British thermal units per hour)
Total ..... 23,000 Btu
Voltage ..... 24 v (volts)
Average fuel consumption ..... 0.37 gph (gallons per hour)

(2) *Engine generator.*

Manufacturer ..... Electric Auto-Lite Company
Model GPH-6002-AT-1
Type ..... 24-v, dc (direct current)
Output ..... 18 amp
Brushes 2
Polarity ..... Negative ground
Rotation ..... Clockwise

(3) *Starter.*

Manufacturer ..... Electric Auto-Lite Company
Model MDZ6001T
Type ..... 24-v, dc
Brushes 4
Rotation ..... Clockwise

(4) *Engine generator regulator.*

Manufacturer ..... Electric Auto-Lite Company
Model VBO-4402-AT-1
Voltage ..... 24-v, dc
Polarity ..... Negative ground

(5) *Magneto.*

Manufacturer ..... Fairbanks-Morse and Company
Model FM-XE4B16W
Type ..... Shielded

(6) *Fuel filter.*

Manufacturer ..... AC Spark Plug Division of General Motors Corporation
Model T2
Type ..... Removable element

(7) *Fuel pump.*

Manufacturer ..... AC Spark Plug Division of General Motors Corporation
Type ..... Mechanical diaphragm

(8) *Spark plug.*

Manufacturer ..... Electric Auto-Lite Company
Model 14MMBR8S
Gap ..... 0.025 in. (inch)

(9) *Oil filter.*

Manufacturer ..... Fram Corporation
Model F3
Type ..... Removable element

(10) *Carburetor.*

Manufacturer ..... Marvel-Schebler Products Division of Borg-Warner Corporation
Model ..... TSX 826
Type ..... Updraft

(11) *Air cleaner.*

Manufacturer ..... Vortex Company
Model S60
Type ..... Oil Bath
Series 859

(12) *Capacities.*

Engine crankcase ..... 4 qt (quart)
Oil filter ..... 1 qt
Air cleaner ..... ¼ qt
Cooling system ..... 3¾ gal (gallon)
Fuel tank ..... 11.2 gal

(13) *Dimensions and weight (See fig. 1).*

Length ..... 84¼ in.
Width ..... 34¼ in.
Height ..... 50 in.
Weight ..... 1,250 lb (pounds)

(14) *Ammeter phase selector switch readings.* Refer to Table I for proper ammeter phase selector switch readings.

Table I. Ammeter Phase Selector Switch Readings

Voltage connection	Phase selector switch	Maximum ammeter reading	Maximum voltage reading
120/208 v, 4-wire, 3-phase	L1, L2, L3	34.7	120
120 v, 3-wire, 3-phase	L1, L2, L3	52	120
120/240 v, 3-wire, 1-phase	L2, L3	60	120
120 v, 2-wire, 1-phase	L2, L3	104	120

(15) *Maintenance and operating supplies.* Refer to Table II for a complete list of Maintenance and Operating Supplies required for initial operation.

5. Difference in Models

This manual covers only the Pacific Mercury Model PM59–010–1 Generator Set. No known unit differences exist for the model covered by this manual.

Table II. Maintenance and Operating Supplies

Item	Component application	Source of supply	Federal stock No.	Description	Quantity required for initial operation	Quantity required for 8 hours operation	Notes
1	0100 ENGINE ASSEMBLY (1)			OIL, LUBRICATING: 5-gal drum			(1) Includes quantity of oil to fill engine oil system as follows: 4 qt—crankcase 1 qt—oil filter (2) See SM 10–1–C4–1 for additional data and requesitioning procedures. (3) See current LO for grade application and replenishment intervals (4) Use Oil as prescribed in item 1 (5) Tank capacity (6) Average fuel consumption is 3.22 gals per hr of continuous operation (7) Cooling system capacity (8) Average heater fuel consumption is 0.37 gph (gallons per hour)
		10	9150–265–9435 (2)	OE 30	5 qt	As required (3)	
		10	9150–265–9428 (2)	OE 10			
		10	9150–242–7603 (2)	OES			
2	0304 AIR CLEANER (4)			OIL, LUBRICATING (4)	¼ qt	As required (3)	
3	0306 TANK, FUEL			GASOLINE, AUTOMOTIVE COMBAT BULK	11.2 gal (5)	25.76 gal (6)	
		10	9130–160–1818 (2)	91A			
4	0501 RADIATOR			WATER:	3¾ gal (7)	As required	
		9	6850–243–1992	ANTIFREEZE: ethlene glycol; 1-gal can			
		9	6850–174–1806	ANTIFREEZE: arctic; 55-gal drum			
5	2027 WINTERIZATION EQUIPMENT	10	9130–160–1818 (2)	GASOLINE AUTOMOTIVE combat bulk 91A	Draw from engine supply	2.08 (8) high heat 0.88 (8) low heat	

CHAPTER 2
INSTALLATION AND OPERATING INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

6. Inspecting and Servicing Equipment

Note. Make sure equipment is completely deprocessed before servicing. Make sure preservatives have been removed from the crankcase, fuel tank, filter, and the like.

a. Perform the before-operation services listed in paragraph 29.

b. Inspect to see that the required tools, publications, accessories, and components are with the generator set.

c. Inspect the generator set for loose or missing parts or damage which may have occurred during loading, removal, or shipment.

d. Report all damage and deficiencies to organizational maintenance.

e. Fill the cooling system with clean, fresh water. When freezing temperatures are expected, be sure that the cooling system contains the proper antifreeze mixture. If the cooling system contains antifreeze and the level is low, report the condition to organizational maintenance.

f. Refer to Table I and fill the fuel tank with the proper grade of fuel.

Warning: **When filling the fuel tank, do not smoke or use an open flame in the vicinity. Always provide metal-to-metal contact between the container and the fuel tank. This will prevent a spark from being generated as gasoline flows over the metallic surface.**

g. Be sure that electrolyte level in the batteries is three-eighths inch above the plates. If the level is low, add distilled water. If the batteries are received dry, report the condition to organizational maintenance.

Warning: **Do not smoke or use an open flame in the vicinity when servicing the batteries. Batteries generate hydrogen, a highly explosive gas.**

h. Clean all dirt and grease from the unit with an approved cleaning solvent.

7. Installation or Setting-up Instructions

a. Outdoor Location. Whenever possible, locate the generator set in an area free of dust and moisture. Avoid soft or muddy ground. If it is necessary to locate the unit on soft or muddy ground, arrange a foundation of planks or logs to prevent the unit from settling or skinking. The generator set should be operated from a position as level as possible at all times. In no case should the generator set be operated at an angle of more than 15° from level.

b. Indoor Installation. If the generator set is to be installed in an enclosure, make sure that the floor of the structure is of sufficient strength to support the weight of the unit. Provide at least 4 feet of space on all sides of the unit to allow accessibility to the unit. Make sure that the enclosure is well ventilated with a maximum supply of fresh air available to the unit. Install gastight exhaust pipe extensions to carry the exhaust fumes to the outside. Use as few bends as possible in the exhaust extensions and install metal shields for the extensions where they pass through flammable walls. Wrap the exhaust lines with asbestos if there is any danger of anyone touching them.

Warning: **When the unit is operated in an enclosed area, exhaust gases must be piped to**

the outside. These gases contain carbon monoxide, a poisonous, odorless, and colorless gas. Continued breathing of exhaust fumes is dangerous and may cause death.

c. Grounding. The generator set must be grounded prior to operation. The ground can be, in order of preference, an underground metallic water piping system, a driven metal rod, or a buried metal plate. A ground rod must have a minimum diameter of $\frac{5}{8}$ inch if solid or $\frac{3}{4}$ inch if pipe, and must be driven to a minimum depth of 8 feet. A ground plate must have a minimum area of 9 square feet and be buried at a minimum depth of 4 feet. The ground lead must be No. 6 American Wire Gage copper wire and be bolted or clamped to the rod, plate, or piping system. Connect the other end of the ground lead to the generator set ground terminal stud (fig. 2)

***Warning:* Do not operate the generator set without a suitable ground connection. Electrical faults in the unit can cause death by electrocution when contact is made with an ungrounded system.**

b. Batteries. Refer to paragraph 50 for instructions on the installation, servicing, and removal of the batteries.

e. Load Terminals. Refer to figure 3 for the location of the load terminals.

***Warning:* Do not attempt to make or break load connections or perform maintenance on the generator set while it is in operation. Always make sure it is not connected to an energized line before performing maintenance. Failure to observe this warning may result in death by electrocution.**

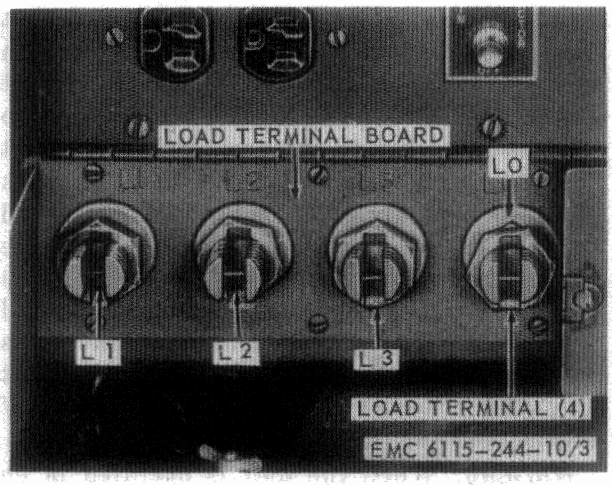


Figure 3. Load terminals.

Note. The 4 load terminals will accommodate 2-wire, 3-wire, and 4-wire connection arrangements for single-phase and 3-phase loads. One or more single-phase loads can be served alone or in combination with 3-phase loads, but the load on any one phase must not exceed the ampere rating of the generator.

f. Auxiliary Fuel Line. If an auxiliary fuel source is to be used, connect the auxiliary fuel line to the auxiliary fuel connection (fig. 1).

8. Equipment Conversion

Refer to figure 4 for phase and voltage conversion.

***Warning:* Before making any connection, make sure all switches are in the OFF position, and that the generator set is not operating or connected to another set that is operating. The voltage produced by this generator set can cause death by electrocution.**

9. Movement to A New Worksite

a. Preparation For Movement.

(1) Disconnect the load cables (par. 8).

(2) Disconnect the ground lead from the ground terminal stud.

(3) Remove the auxiliary fuel hose if used (par. 7).

(4) Remove the exhaust pipe extension if used.

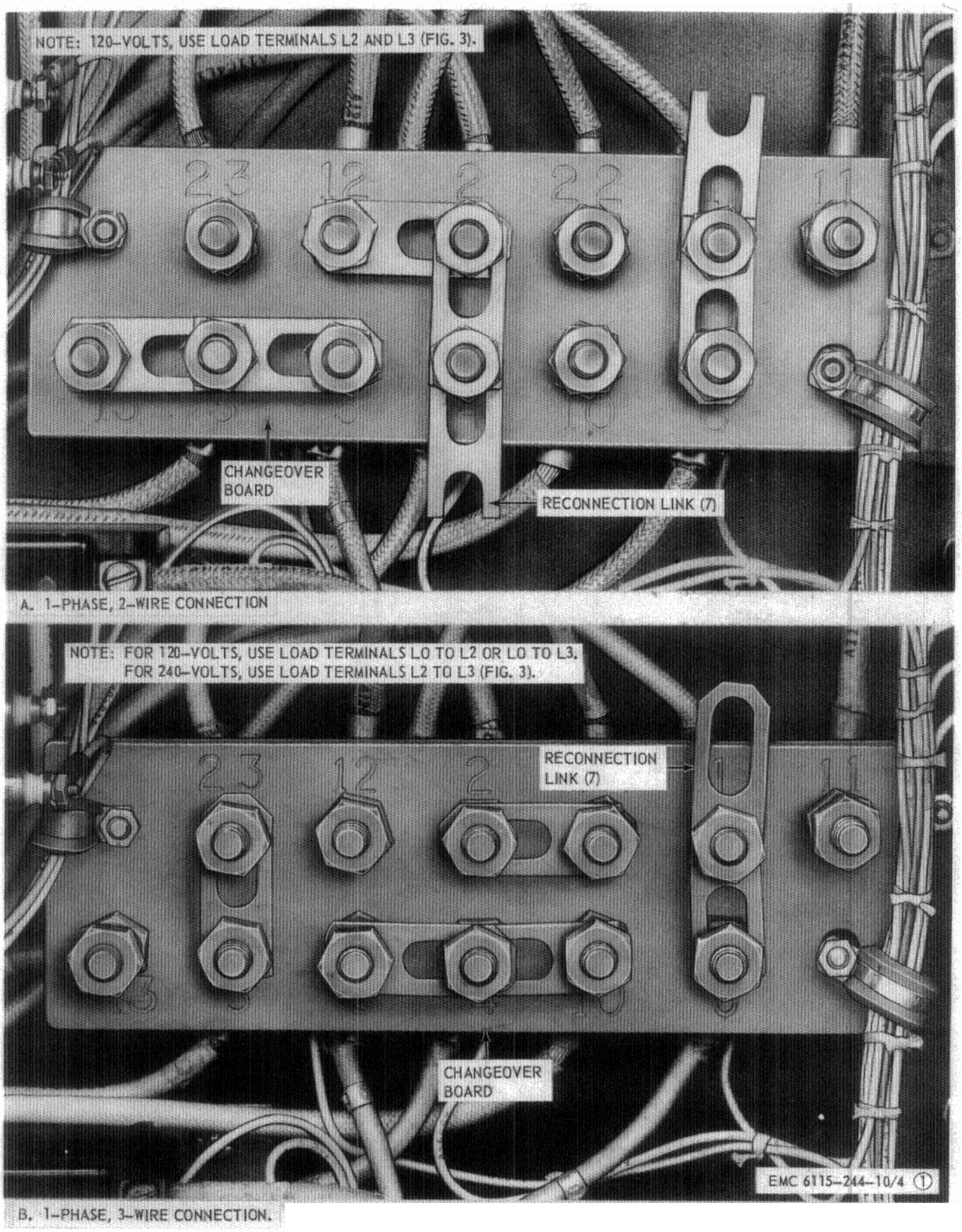
(5) Remove the remote control cable if used (par. 7).

(6) Drain the fuel from the fuel tank into a suitable container.

(7) Close and secure all side and access doors.

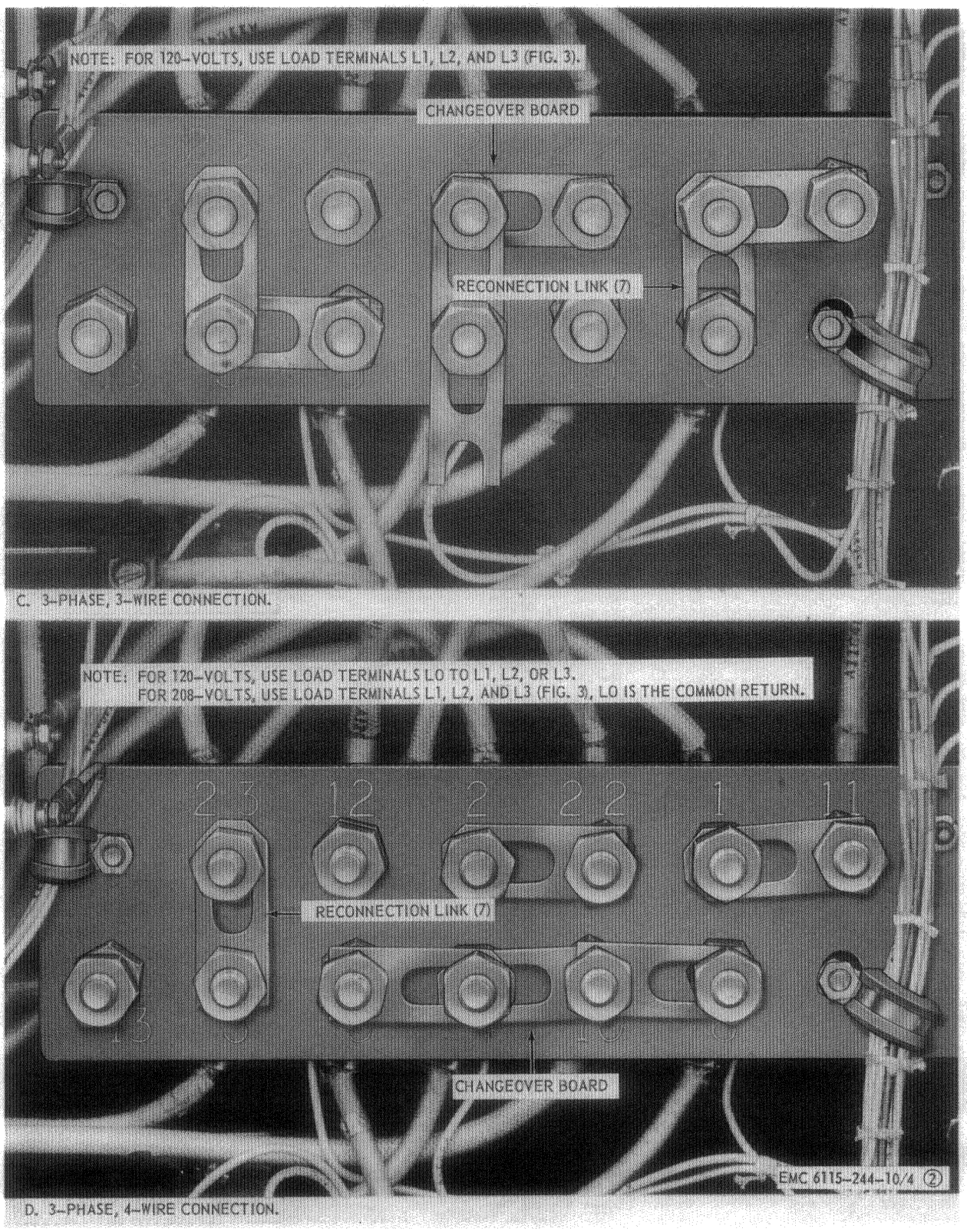
(8) Refer to The Basic Issue Items List and be sure that all items listed are on or with the equipment.

b. Movement. The generator set may be towed over short distances. For long-distance movement, the generator set must be loaded on a carrier and properly secured.



1-phase, 2-wire and 1-phase, 3-wire connection

Figure 4. Phase and voltage conversion.



3-phase, 3-wire and 3-phase, 4-wire connection

Figure 4—Continued.

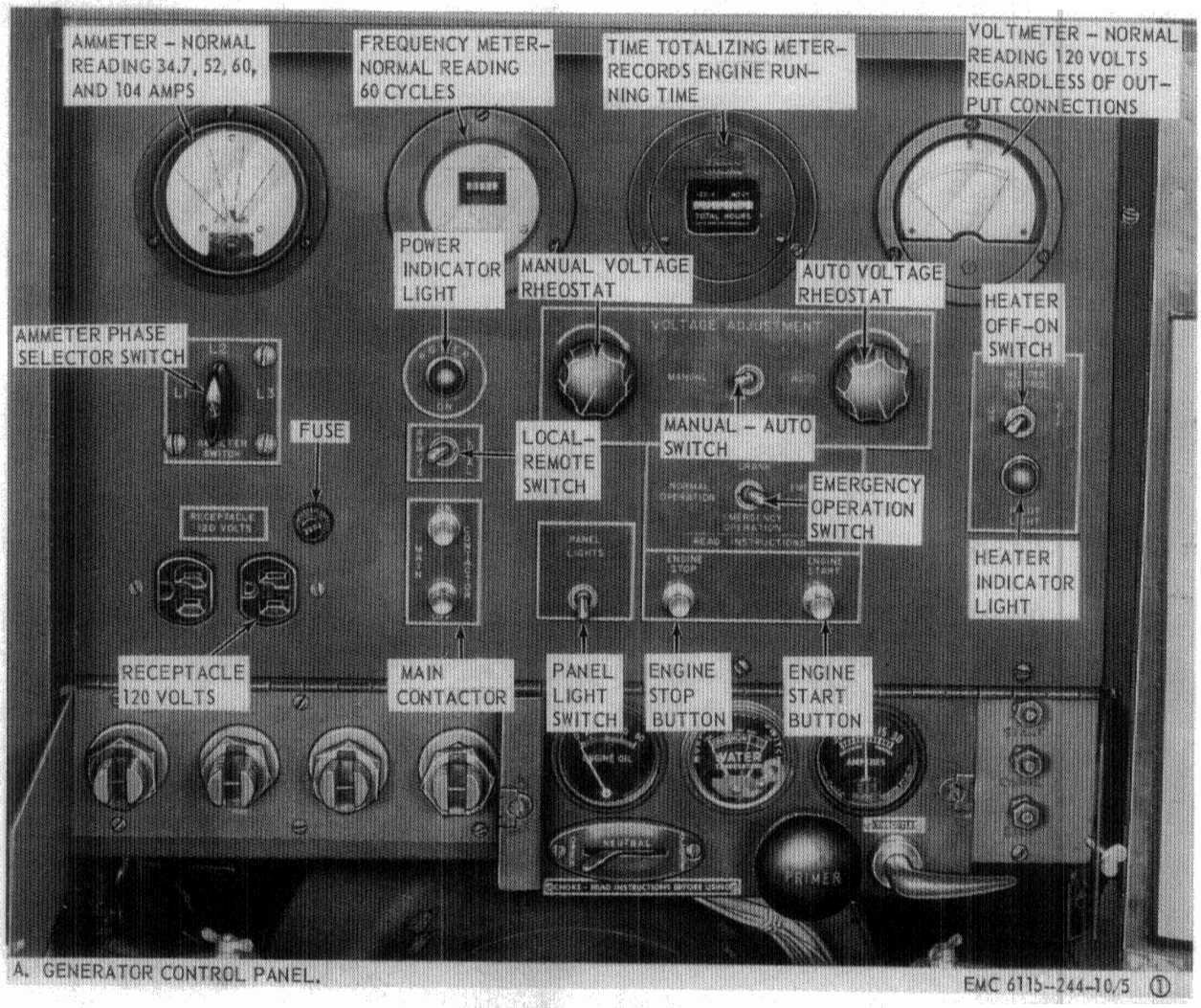
Section II. CONTROLS AND INSTRUMENTS

10. General

This section describes, locates, illustrates, and furnishes the operator sufficient information about the various controls and instruments for proper operation of the generator set.

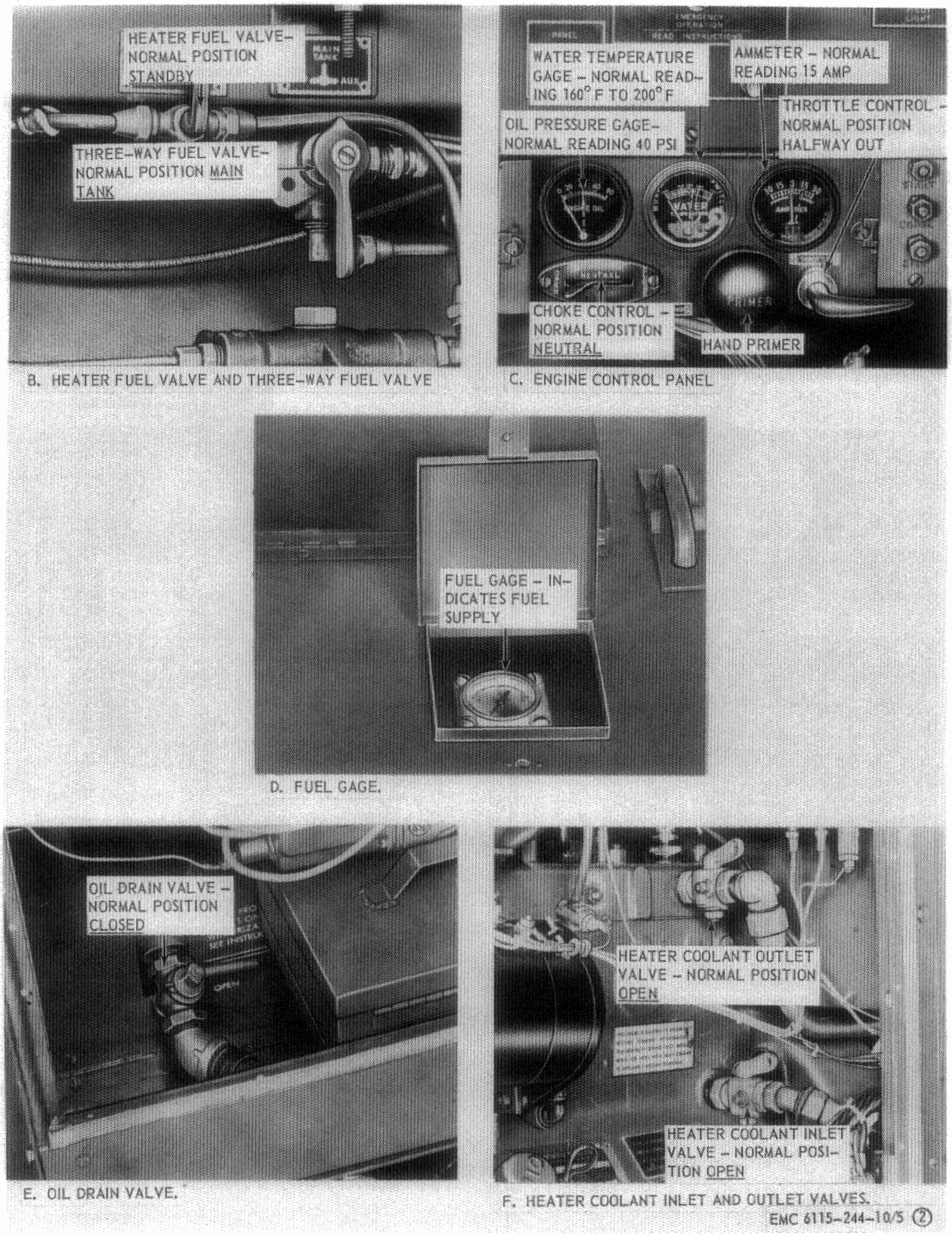
11. Controls and Instruments

Refer to figure 5 for the purpose and normal readings of all controls and instruments.



Generator control panel.

Figure 5. Controls and instruments.



B. HEATER FUEL VALVE AND THREE–WAY FUEL VALVE

C. ENGINE CONTROL PANEL

D. FUEL GAGE.

E. OIL DRAIN VALVE.

F. HEATER COOLANT INLET AND OUTLET VALVES.

EMC 6115–244–10/5 ②

Engine control panel, shutoff valves, fuel gage, oil drain valve heater coolant valves.

Figure 5—Continued.

Section III. OPERATION OF EQUIPMENT

12. General

a. The instructions in this section are published for the information and guidance of the personnel responsible for the operation of the generator set.

b. The operator must know how to perform every operation of which the generator set is capable. This section gives instructions on starting and stopping the generator set and the normal operation of the generator set. Since nearly every job presents a different problem, the operator may have to vary given procedures to fit the individual job.

***Warning:* Do not attempt to make or break connections or perform maintenance on the generator set while it is in operation. Always make sure it is not connected to an energized line before performing maintenance. Failure to observe this warning may result in death to personnel.**

13. Engine Starting Instructions

a. Preparation for Starting.

(1) Perform the before-operation services (par. 30).

(2) Place the three-way fuel valve in the MAIN TANK or AUXILIARY position, depending on the source of fuel.

b. Priming. If the unit has not been used for some time, or if the filter has been changed, air must be removed from the fuel system by opening the three-way fuel valve (*c* below). Refer to figure 6 and prime the engine.

c. Normal Starting.

(1) If necessary, prime the fuel system as shown by figure 6.

(2) To manually choke engine, move choke lever (fig. 7) to CLOSED position until engine is started then adjust choke for best operation. After engine is started move choke lever to OPEN position. Automatic chock is in NEUTRAL position.

(3) Refer to figure 7 and start the engine.

d. Manual Starting.

(1) Perform steps 1 through 4 (fig. 7).

(2) Place emergency operation switch in HAND CRANK position.

(3) Place choke in NEUTRAL. Pull throttle control half-way out.

(4) Crank engine manually until engine starts.

(5) Perform steps 8 through 10 (fig. 7).

e. Cold Weather Starting.

(1) Start the winterization heater (par. 22).

Note. Allow the engine sufficient time to warm up before starting.

(2) Refer to figure 7 and start the engine.

14. Engine Stopping Instructions

a. Normal Stopping. Under normal conditions, refer to figure 8 and stop the engine.

b. Emergency Stopping. In case of emer-

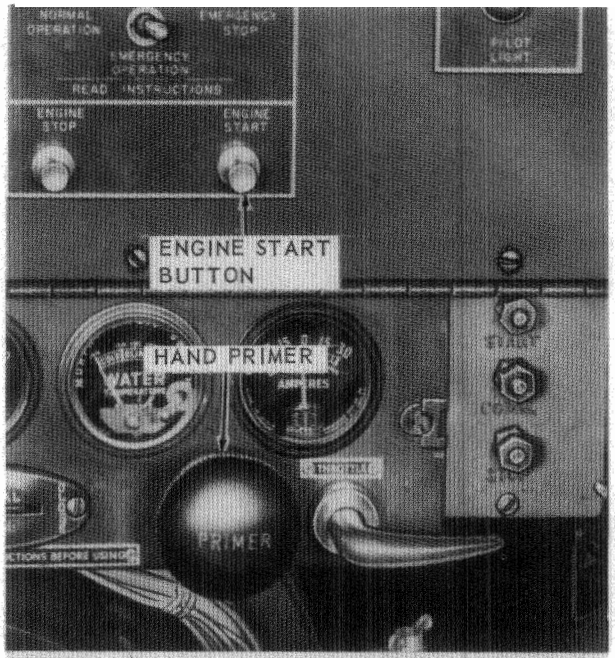


Figure 6. Fuel system priming instructions.

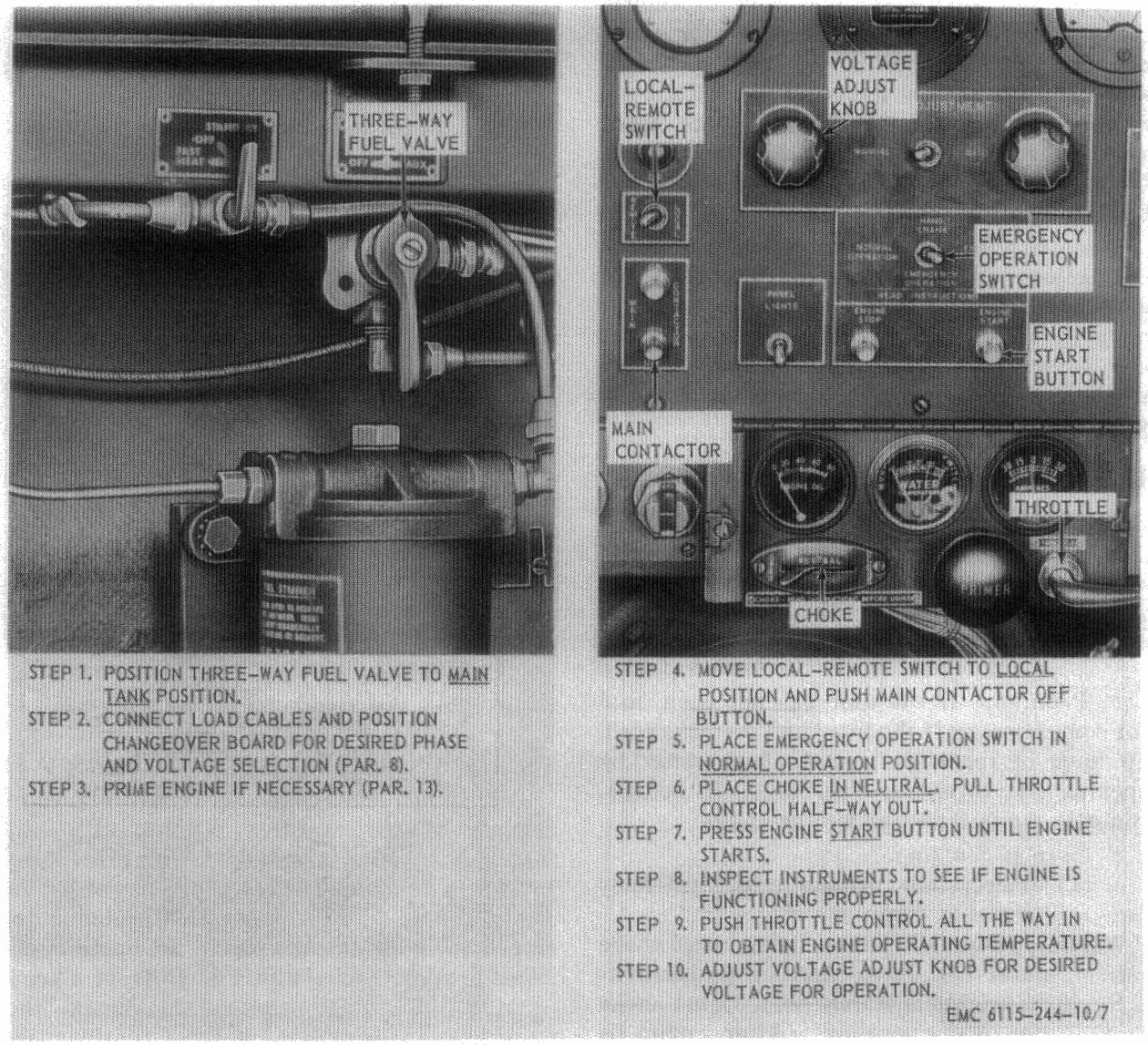


Figure 7. Engine starting instructions.

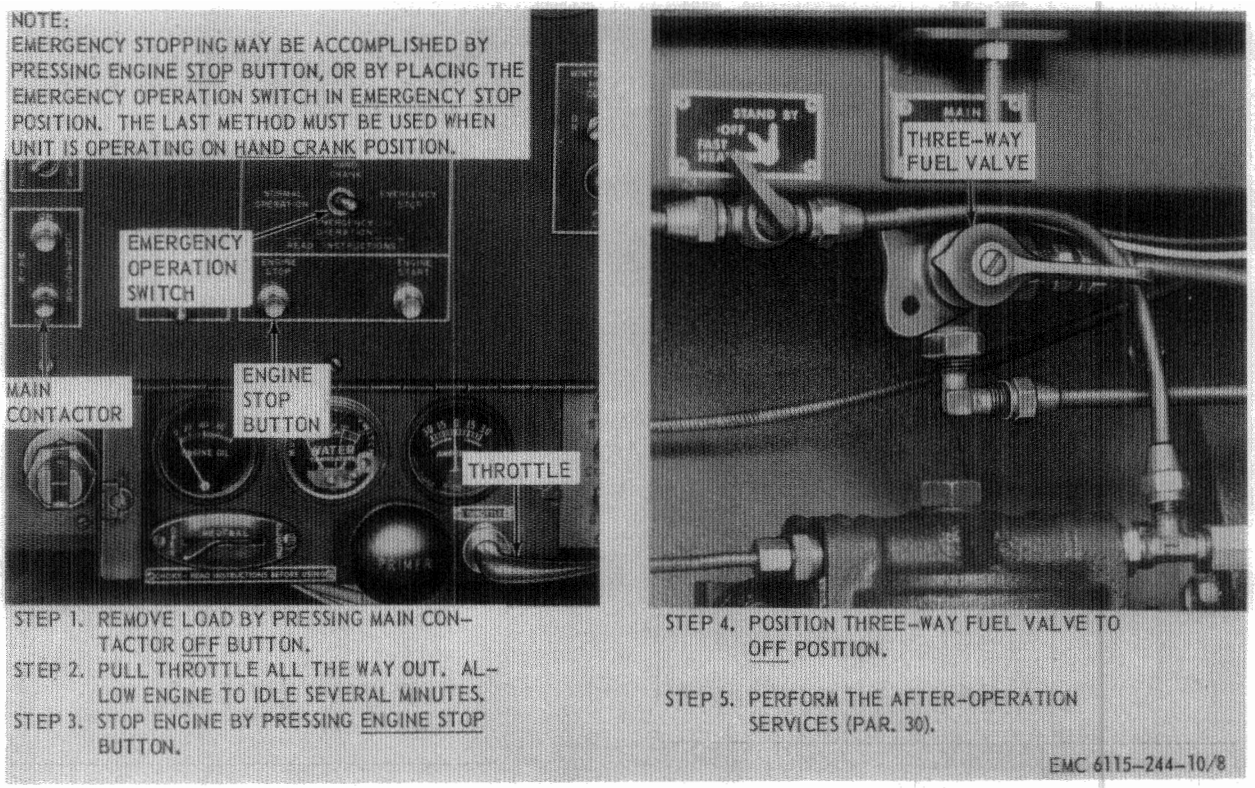


Figure 8. Normal and emergency stopping instructions.

gency, refer to figure 8 and stop the generator set.

15. Operation Under Usual Conditions

a. This generator set can be operated with either local or remote control. A remote control cable is provided for operation from a remote control station. Refer to figure 9 for operating details of the generator set.

Warning: **Do not operate the generator set without a suitable ground connection. Electrical defects in the unit can cause death from electrocution when contact is made with an ungrounded system.**

b. Refer to figure 10 for remote control starting, stopping, and operating details.

Caution: **Before starting the generator set for remote operation, make sure the load cables are connected at the generator set and at the load site and be sure the remote voltage control circuit is complete. Failure to observe these precautions may result in serious damage to the generator set.**

16. Operation in Extreme Cold (Below 0°F)

a. General. This generator set is designed to operate at temperatures as low as —65° Fahrenheit. Starting and operating procedures for the winterization heater are contained in paragraph 21. The winterization heater is designed to bring the generator set up to operating temperature within 1 hour from a temperature of —60° Fahrenheit. Should the winterization heater be operated continuously to maintain the generator set in a standby condition, the engine should be started every 8 hours to charge the batteries. Normally a period of 30 minutes will be sufficient to charge the batteries.

b. Lubrication. Lubricate the generator set for cold weather conditions in accordance with the current lubrication order.

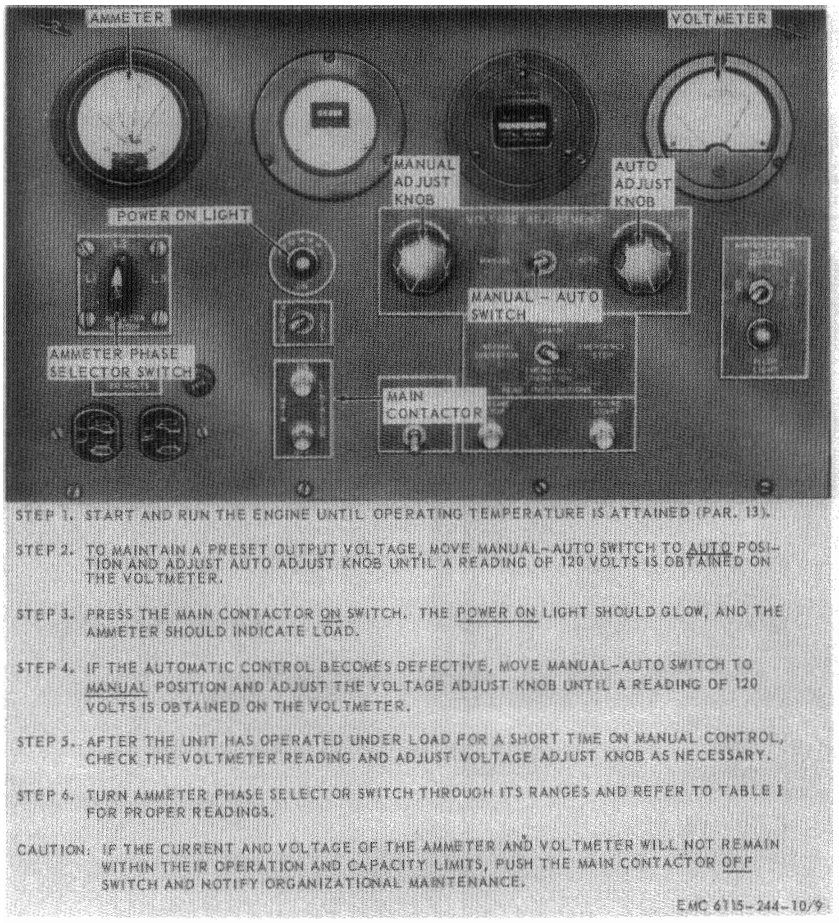


Figure 9. Operating instructions.

c. Cooling System.

(1) See that the antifreeze solution has been checked for the lowest possible temperature expected.

(2) Inspect for and report any leak in the cooling system to organizational maintenance.

d. Fuel System.

(1) Keep the fuel tank full as possible to prevent condensation from forming within the fuel tank.

(2) Remove ice and snow from the fuel tank cap and dispensing equipment before filling the fuel tank.

(3) Drain the fuel filter more frequently during cold weather to remove water and prevent freezing.

e. Electrical System.

(1) Inspect all wiring for cracks, breaks, frays, and loose connections. Tighten all loose connections and report unserviceable wiring to organizational maintenance.

Caution: **Insulation on wires becomes brittle in extreme cold, and will break if twisted or bent. Disturb wiring as little as possible while inspecting or removing moisture or snow.**

(2) Keep the batteries fully charged and free of dirt, moisture, and snow.

Warning: **Do not smoke or use an open flame in the vicinity when servicing the batteries. Batteries generate hydrogen, a highly explosive gas.**

(3) Check the electrolyte for proper level and see that the batteries are fully charged. The danger of electrolyte freezing depends on the specific gravity of the electrolyte.

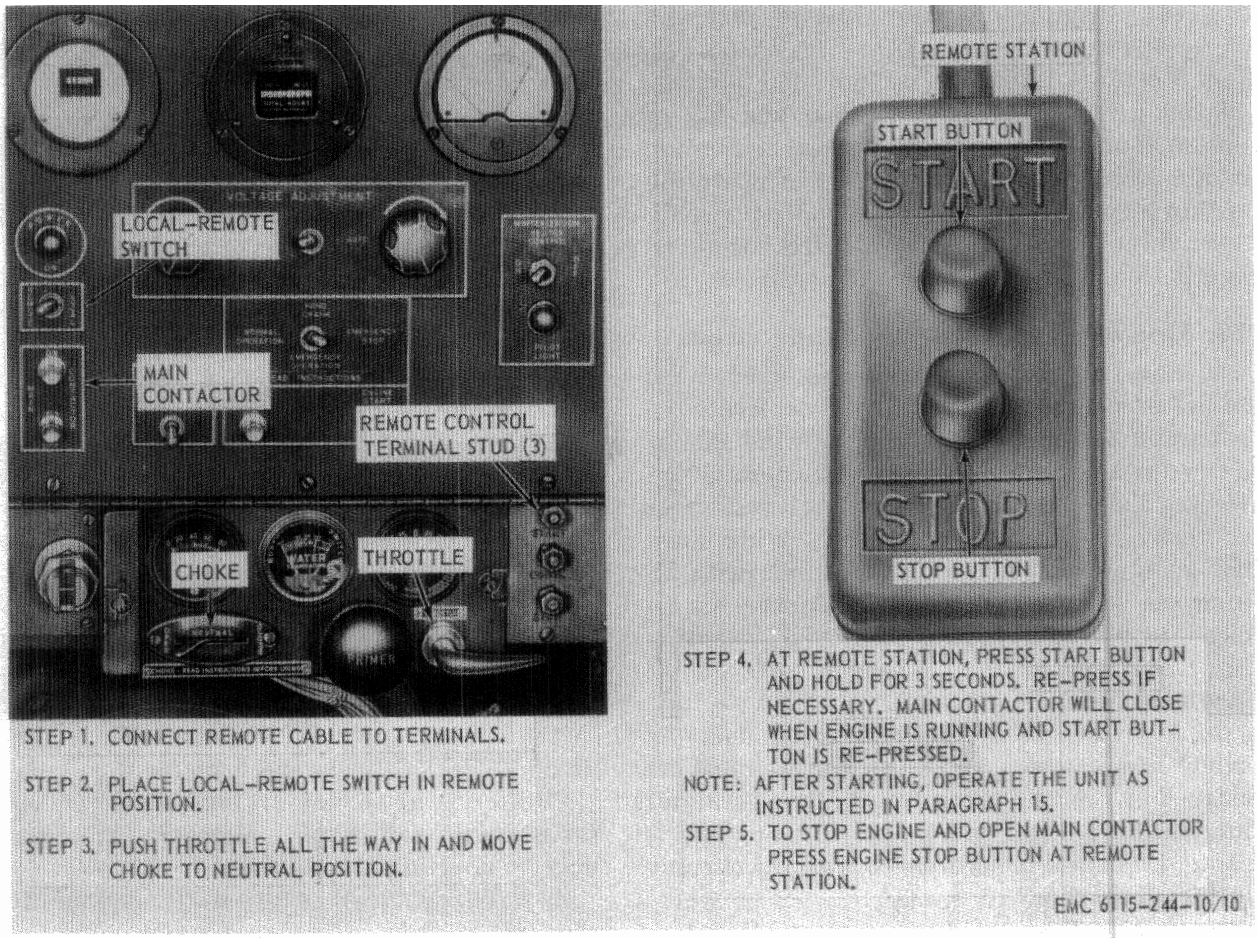


Figure 10. Remote control starting, stopping, and operating instructions.

Caution: **Water added to a battery may freeze unless it is immediately mixed with electrolyte by charging. Do not add water unless the engine is immediately operated for at least 1 hour.**

(4) Make sure that the battery cap vent holes are not clogged.

(5) See that the battery terminal clamps are tight, clean, and lightly coated with a general purpose grease to retard corrosion.

(6) Inspect the battery cables for cracks, breaks, and frayed insulation. Report all deficiencies to organizational maintenance.

f. Stabilization Period. When operating in extreme cold, the generator set must be operated for at least 15 minutes before applying the load.

17. Operation in Extreme Heat

a. Lubrication. Lubricate the generator set in accordance with the current lubrication order.

b. Cooling System.

(1) Inspect the coolant frequently for proper level. If necessary, use an approved rust inhibitor to prevent the formation of rust and scale in the cooling system. Clean and flush the cooling system at regular intervals.

(2) Inspect the hose connections for tight fit and inspect the fan belt for proper adjustment (par. 51).

(3) Open all doors and make sure the radiator shutter is open. Should the thermostat fail to open the shutters, open by actuating the manual shutter control and report the condition to organizational maintenance.

(4) Keep the radiator free of dirt and obstructions.

c. Ventilation. Make certain that all ventilating grills and screens are clean and free of obstructions. Allow for maximum circulation of air through the generator set. If operating within an enclosed area, allow sufficient space around the generator set for air circulation and ventilation. Use exhaust fans if available.

18. Operation in Dusty or Sandy Areas

a. General. Dust and sand will shorten the life of mechanical parts. If possible, locate the generator set on the prevailing upwind side of dusty installations, roadways, and construction work. Make use of all natural barriers or erect protective shields when possible. Wipe down the generator set at regular intervals with an approved cleaning solvent. Keep the set as clean as possible, paying particular attention to screens and grills. Use compressed air, if available, to aid in cleaning.

b. Lubrication. When operating in dusty or sandy areas, filters and air cleaners must be cleaned or replaced more frequently. Clean all lubrication points before applying any lubricant. Lubricate in accordance with the current lubrication order.

c. Cooling System. Inspect the cooling system frequently for leaks and other defects. Be sure the radiator cap is on tight and that the fan belt is adjusted properly. Clean and flush the cooling system as frequently as necessary.

d. Fuel System. Take all precautions necessary to keep dust and sand out of the fuel system. Clean the area around the fuel tank filler neck and the spouts of dispensing equipment before adding fuel. Inspect the fuel filters frequently.

e. Main Generator. Clean the main generator frequently with an approved cleaning solvent. Clean ventilating screens and vents. Use compressed air, if available, to clean the terminal connectors.

19. Operation Under Rainy or Humid Conditions

a. Protect the generator set from direct exposure to rain. If a permanent shelter is not available, protect the generator set with a waterproof canvas when not in use. When temperature permits, keep the side doors and access doors closed. Remove covers and open doors during dry periods to let the generator set dry out.

b. Inspect painted surfaces for cracked or peeling paint. Coat exposed areas with an approved rustproofing material and report the condition to organizational maintenance.

c. Keep the fuel tank full to avoid condensation. Service the fuel filters frequently to avoid accumulation of water in the fuel system.

20. Operation in Salt Water Areas

a. General. Salt water causes corrosive action on metal. Care must be taken to avoid contact of the generator set with salt water. If contact is made, wash the unit with clean, fresh water.

b. Lubrication. Lubricate the generator set in accordance with the current lubrication order.

c. Cooling System. Use fresh, clean water in the cooling system. Water containing salt or alkali will damage the equipment.

***Caution:* The cooling system is not intended for use with salt water. However, salt water may be used in an emergency.**

d. Painting. Inspect all painted surfaces for cracked, peeled, or blistered paint. Coat all exposed areas of polished steel or other ferrous material with a light coat of grease. Paint all exposed nonpolished areas or report the condition to organizational maintenance.

21. Operation at High Altitude

The generator set is rated at 10 kilowatt up to 5,000 feet altitude and 8.0 kilowatt at 8,000 feet altitude. To calculate specific generator set output above 8,000 feet, use the following formula:

FORMULA

$$6\% \times \frac{\text{actual altitude}—5{,}000}{1{,}000} \times 5{,}000 \text{ ft rating} = \text{derating factor}$$

EXAMPLE SOLUTION FOR 10,000 FT:

$$0.06 \times \frac{10{,}000 - 5{,}000}{1{,}000} \times 10 \text{ kw} = 3 \text{ kw derating factor}$$

10 kw — 3 kw
= 7 kw specific output at 10,000 ft altitude

Section IV. OPERATION OF AUXILIARY MATERIEL USED IN CONJUNCTION WITH THE GENERATOR SET

22. Winterization Heater

a. General. The generator set is equipped with a winterization heater to provide a means of preheating the engine. The winterization heater may also be used for 24-hour standby heating. Upon activation the heater generates heat until the coolant temperature reaches approximately 245° Fahrenheit. At this point the fuel supply is shut off by the internal thermostatic switch, but the heater blower continues to operate. If the temperature of the coolant falls, the heater automatically cycles back on when the thermostat contacts close (below 220° Fahrenheit). However, if the coolant remains hot, the fuel supply remains off but the flame detector switch cools and energizes the igniter and preheat resistor again, causing these parts to remain energized until the heater switch is off or until the fuel flows again for ignition. It is recommended that the heater be switched off as soon as the generator set is preheated to avoid excessive cycling and deterioration of the preheat resistor and igniter.

Note. The heater may be left on if operational conditions warrant, when the generator set is in continuous standby operation in extreme cold where temperature drops may occur rapidly by placing the fuel flow valve in the STANDBY position.

b. Operation. Refer to figure 11 and operate the winterization heater.

Caution: **The use of the winterization heater causes a high current drain on the batteries. When the heater is being used frequently, start and run the generator set (par. 13) daily to keep the batteries in a charged condition.**

23. Fire Extinguisher (Carbon Dioxide Type)

a. Description. The carbon dioxide type fire extinguisher is suitable for electrical and flammable liquid fires. The carbon dioxide types are of the 4-pound, 7½-pound, and 10-pound sizes. The 4-pound extinguisher is portable; the other two are the fixed type.

b. Operation. Remove the fire extinguisher from its location, break the seal, operate the control valve, and direct the stream of contents at the base of the flame.

c. Refilling and Maintenance. For detailed instructions on refilling and maintenance, refer to TM 5–687 and TM 9–1799.

24. Fire Extinguisher (Monobromotrifluoromethane Type)

a. Description. The monobromotrifluoromethane type fire extinguisher is generally suitable for all types of fires, except fires involved with liquid oxygen generating equipment. The fire extinguisher is furnished with a disposable type cylinder.

b. Operation. To operate the fire extinguisher, perform the following operations:

(1) Remove the fire extinguisher from its location.
(2) Break the seal by pulling the safety pin from the handle.
(3) Point the horn at the base of the flame.
(4) Depress the trigger for discharge and direct the stream of contents at the base of the fire.
(5) Replace with a new cylinder immediately after using.

c. Replacement of Cylinder. To replace with a new cylinder, perform the following operations:

(1) Press lever to release pressure from old cylinder.
(2) Loosen swivel valve coupling nut and remove the valve assembly from used cylinder.
(3) Remove instruction band from used cylinder.
(4) Place new cylinder through instruction band.
(5) Replace safety pin in valve and seal pin with sealing wire.
(6) Attach valve assembly and tighten swivel coupling nut on the new cylinder and replace fire extinguisher in mounting bracket.
(7) Adjust instruction band on cylinder to show maintenance and operating instructions.

d. Maintenance. Weigh fire extinguisher every 3 months and replace cylinder if gross weight has decreased 4 ounces or more. Lubricate cylinder neck threads with 1 drop of OE 30 oil before reassembly.

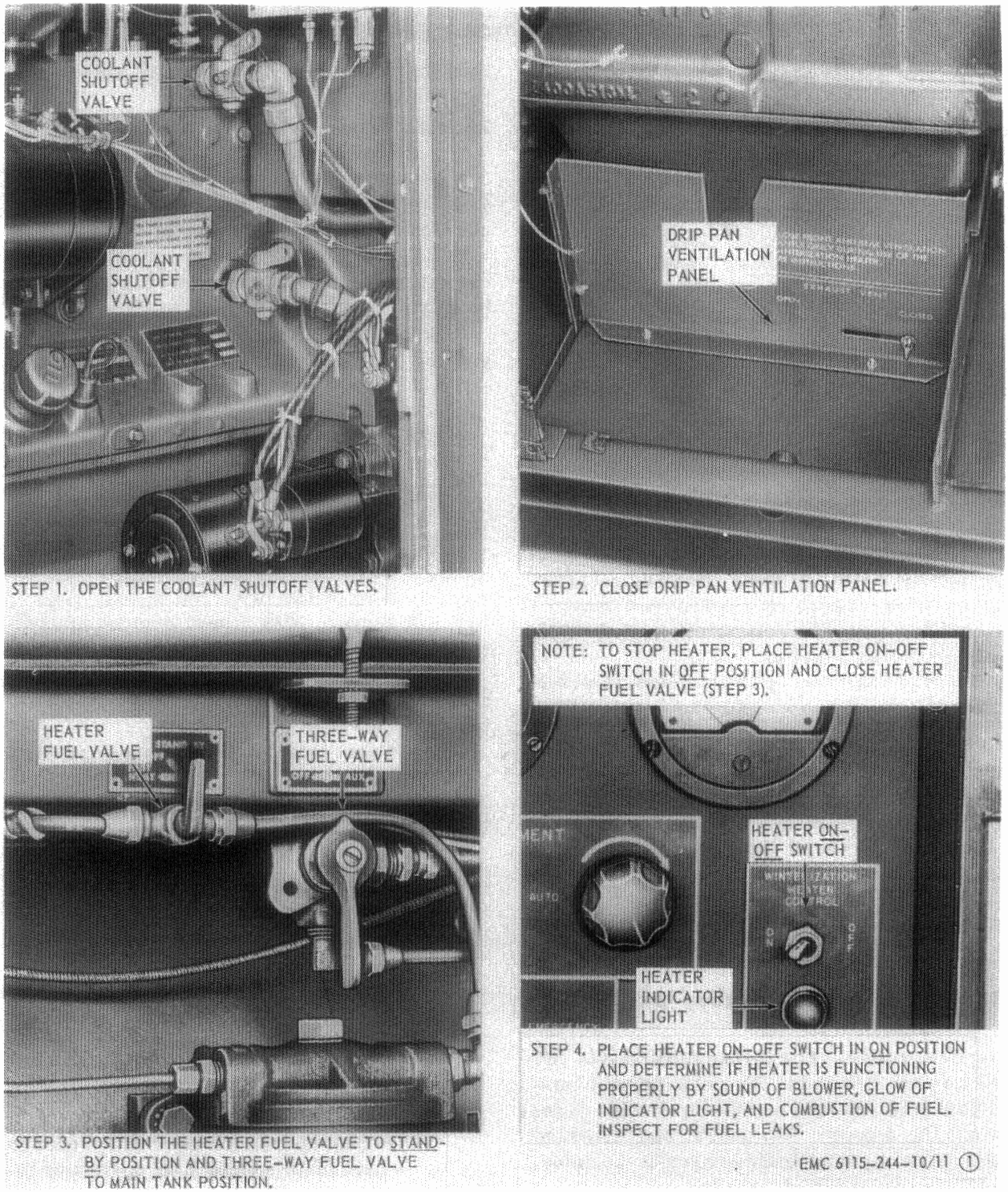
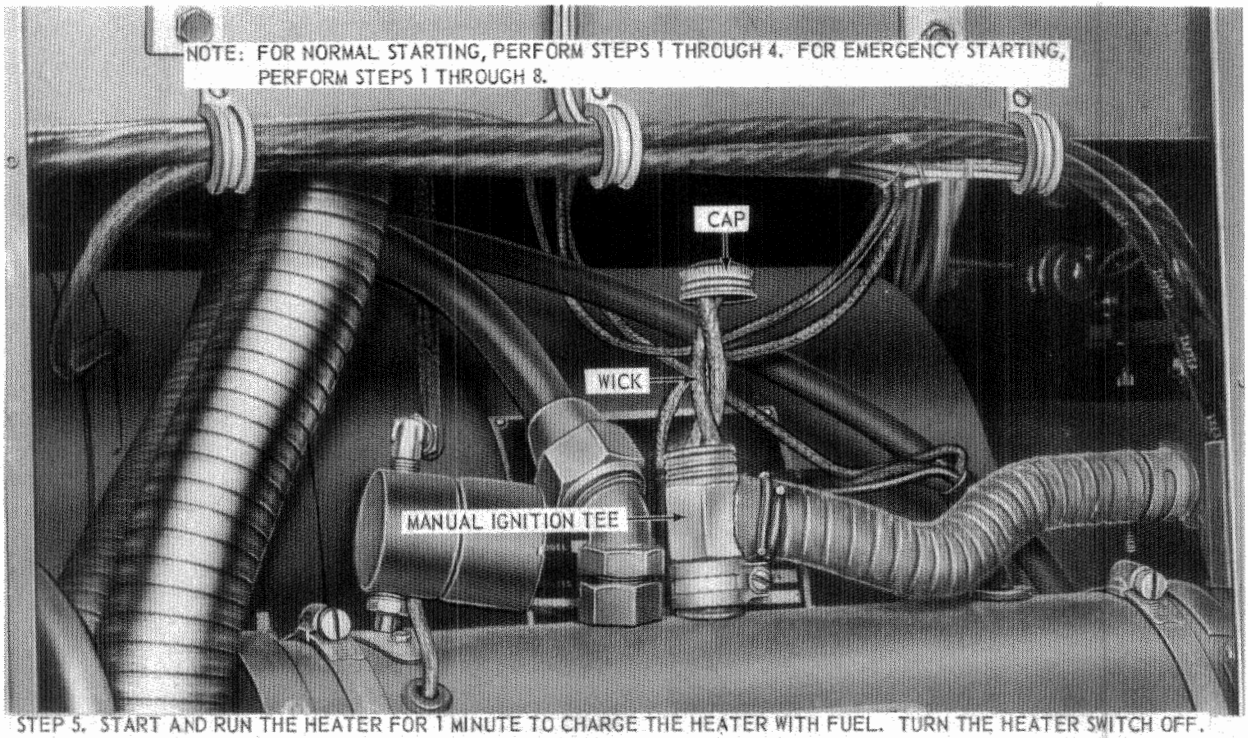


Figure 11. Winterization heater starting, stopping and emergency operating instructions.



STEP 5. START AND RUN THE HEATER FOR 1 MINUTE TO CHARGE THE HEATER WITH FUEL. TURN THE HEATER SWITCH OFF.
STEP 6. REMOVE THE CAP AND WICK FROM THE MANUAL IGNITION TEE, SOAK WITH FUEL, AND REPLACE IT IN THE TEE, EXPOSING 1-1/2 INCH OF THE WICK.
STEP 7. IGNITE THE WICK AND ALLOW TO BURN A FEW SECONDS BEFORE LOWERING IT IN PLACE.
STEP 8. PLACE THE HEATER SWITCH ON WHILE WICK IS BURNING.

EMC 6115-244-10/11 ②

Figure 11—Continued.

CHAPTER 3
MAINTENANCE INSTRUCTIONS

Section I. OPERATOR'S TOOLS AND EQUIPMENT

25. Special Tools and Equipment

No special tools or equipment are required by the operator for the maintenance of this generator set.

26. Basic Issue Tools and Equipment

Tools and repair parts issued with or authorized for the generator set are listed in appendix II.

Section II. LUBRICATION

27. General Lubrication Information

a. This section contains a reproduction of the lubrication order and lubrication instructions which are supplemental to, and not specifically covered in the lubrication order.

b. The lubrication order shown in figure 12 is an exact reproduction of the approved lubrication order for the generator set. For current lubrication order, refer to DA Pam 310–4.

28. Detailed Lubrication Information

a. Care of Lubricants. Keep all lubricants in closed containers. Store containers in a clean, dry place away from extreme heat. Allow no dirt, dust, water, or foreign material to mix with the lubricants at any time.

b. Cleaning. Clean all lubricating equipment periodically. Clean all lubrication points and surrounding surfaces before lubricating. Clean with an approved cleaning solvent and dry thoroughly.

c. Points of Application. Follow detailed lubrication instructions given beneath each illustrated lubrication point. Always apply lubricant specified on the lubrication order.

d. Operation after Lubrication. Operate the unit for 5 minutes after lubrication and check the oil level. Stop the unit, wait 5 minutes, and recheck the oil level. Add oil to bring the oil level up to the FULL mark if necessary.

e. Oil Filter.

(1) *Service.* Refer to figure 13 and service the oil filter.

(2) *Field Expedient Repair.* Remove the oil filter gasket, turn it over, and reinstall it.

f. Air Cleaner.

(1) *Service.* Refer to figure 14 and service the air cleaner.

(2) *Field Expedient Repair.* Remove the air cleaner and operate the unit without it.

LUBRICATION ORDER

LO 5-6115-244-20

4 OCTOBER 1961 (Supersedes L O 5-6115-244-20 dated 29 July 1960)

GENERATOR SET, GASOLINE ENGINE; 10KW, AC, 120V, 1 AND 3 PHASE, 120/ 240V, SINGLE PHASE, 120/208V, 3 PHASE, 60 CYCLE, SKID-MOUNTED: (PACIFIC MERCURY MODEL PM 59-010-1)W/CONTINENTAL ENGINE MODEL FS 162-6055

REFERENCE: SM 10-1-C4-1

Intervals are based on normal operation. Reduce to compensate for abnormal operations and severe conditions. During inactive periods sufficient lubrication must be performed for adequate preservation.

Clean fittings before lubricating.

Relubricate after washing.

Clean parts with SOLVENT, dry-cleaning, or OIL, fuel, Diesel. Dry before lubricating.

Drain crankcase only when hot after operation; replenish and check level when cool.

LUBRICANT • INTERVAL | **INTERVAL • LUBRICANT**

FOLD

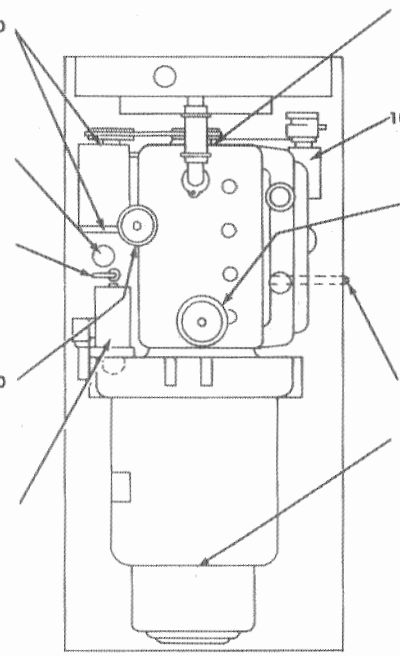
1 — Generator Bearings (Sparingly) — OE 250

2 — Engine Oil Filler Cap (See key) — OE

3 — Engine Oil Level Bayonet Gage (Check level) — 10

4 — Oil Filter (Disassemble, clean housing, renew element and reassemble.) (See note 3) — 100

Starter Bearings (Sealed bearings, no lubrication required)



Water Pump (Sealed bearings, no lubrication required)

1000 OE — Magneto Wick (Sparingly) — 5

10 OE — Air Cleaner (Refill oil reservoir to level mark, every 50 hours, disassemble entire unit, clean, re-oil and reassemble) (See key) — 6

100 — Engine Oil Drain (Drain and refill) — 7

Main Generator (Sealed bearings, no lubrication required)

CONTINUED ON FOLLOWING PAGE

EMC 6115-244-10/12 (1)

Front

Figure 12. Lubrication order.

CONTINUED FROM
PRECEDING PAGE

— KEY —

LUBRICANTS	CAPACITY	EXPECTED TEMPERATURES			INTERVALS
		Above +32°F	+40°F to −10°F	0°F to −65°F	
OE -OIL, Engine, Heavy Duty		OE 30 or 9250	OE 10 or 9110	OES	Intervals given are in hours of normal operation.
Crankcase	5 qt				
Air Cleaner	¼ qt				
Oil Can Points					
OES -OIL, Engine, Subzero					

NOTES:

1. FOR OPERATION OF EQUIPMENT IN PROTRACTED COLD TEMPERATURES BELOW −10°F. Remove lubricants prescribed in the key for temperatures above −10°F. Clean parts with SOLVENT, dry-cleaning. Relubricate with lubricants specified in the key for temperatures below −10° F.

2. OIL CAN POINTS. Every 50 hours, clean and lightly coat the governor, and carburetor, and shutter linkage, with OE.

3. OIL FILTER. After installing new filter element, fill crankcase, operate engine 5 minutes, check housing for leaks, check crankcase oil level and bring to full mark.

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

BY ORDER OF THE
SECRETARY OF THE ARMY:

G. H. DECKER,
General, United States Army,
Chief of Staff.

OFFICIAL:
J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

EMC 6115-244-10/12 ②

Back

Figure 12—Continued.

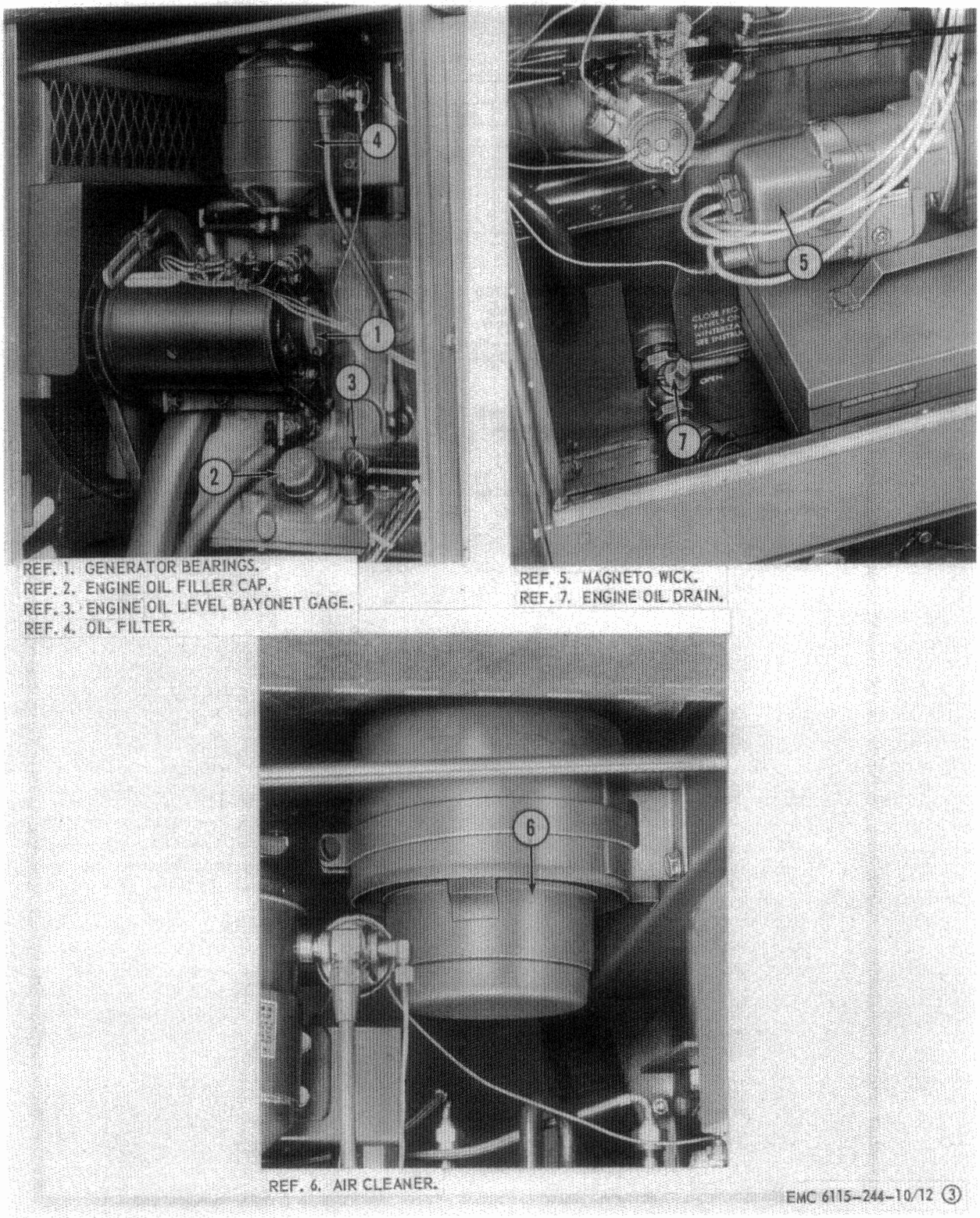


Figure 12—Continued.

Section III. PREVENTIVE MAINTENANCE SERVICES

29. General

To insure that the equipment is ready for operation at all times, it must be inspected systematically before operation, during operation, and after operation, so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance services shall be performed before operation. Defects discovered during operation of the unit shall be noted for future correction, to be made as soon as operation has ceased. Stop operation immediately if a deficiency is noticed during operation which would damage the equipment if operation were continued. After-operation services shall be performed by the operator after every operating period. After-operation services shall be performed at intervals based on the normal operations of the equipment. Reduce interval to compensate for abnormal conditions. Defects or unsatisfactory operating characteristics beyond the scope of the operator to correct must be reported at the earliest opportunity to organizational maintenance. Responsibility for performance of preventive maintenance services rests not only with the operator but also with the entire chain of command from section chief to commanding officer (AR 750–5).

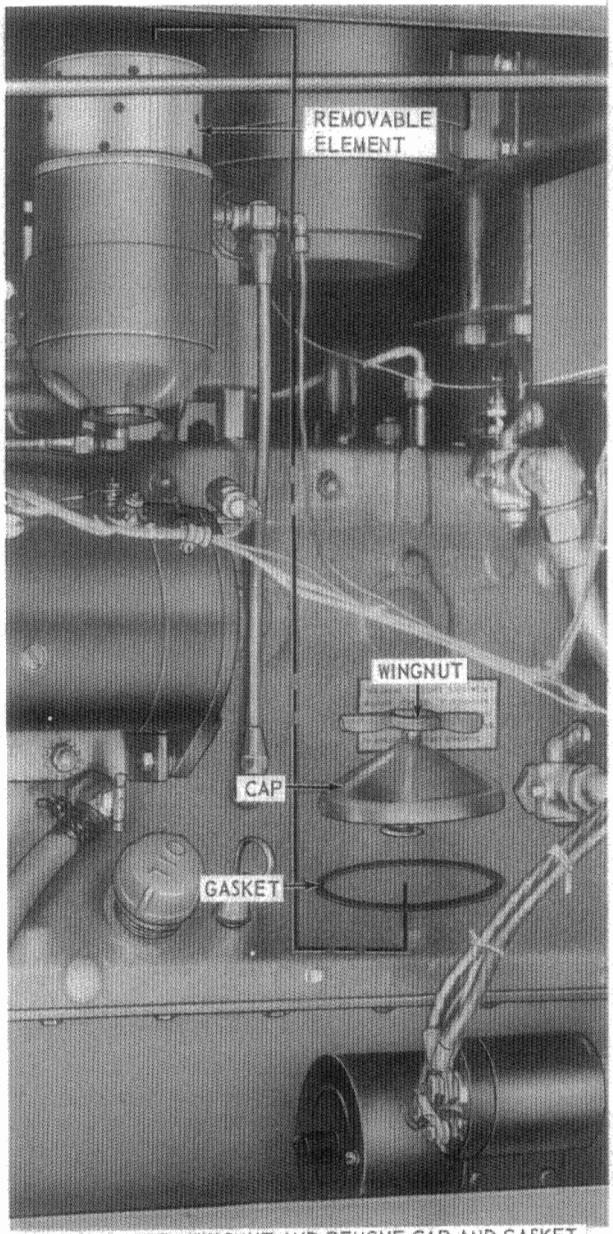
30. Operator's Daily Services

a. General. The intervals at which specific daily services are to be performed by the operator are indicated by a *X* in the appropriate column in figure 15 as follows:

B—Before operation
D—During operation
A—After operation

b. Additional Daily Services (Not Illustrated). An *X* in the appropriate column(s) indicates the interval at which the service is to be performed.

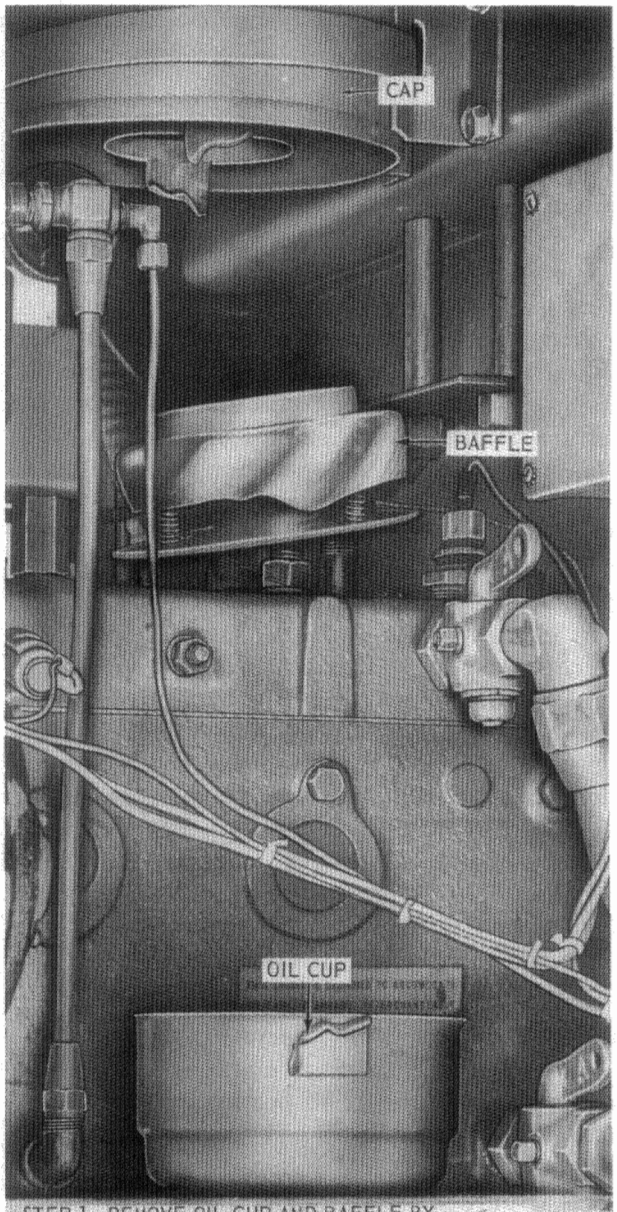
Intervals			Procedure
B	D	A	
X	X	X	*Leaks, general.* Inspect all fuel lines, pipes and hose connections for leaks. Inspect for signs of leaks under the generator set. Correct all discrepancies or report them to organizational maintenance.
X	X	X	*Visual inspection.* Visually inspect the entire generator set for loose and missing mounting hardware, missing parts, and other damage. Correct all discrepancies or report them to organizational maintenance.
X		X	*Lubrication.* Lubricate the generator set in accordance with the current lubrication order.
X			*Publications.* Make sure that a copy of this manual, the current lubrication order, and DA Form 285 are on or with the generator set and in serviceable condition.
X		X	*Tools and equipment.* Make sure that all tools and equipment issued with the generator set are in serviceable condition, clean, and properly stowed.
		X	*Cleaning.* Clean all dirt and grease from the generator set. Pay particular attention to the radiator core.
		X	*Protection.* See that all doors and panels are attached and latched. If outdoors, cover the generator set with a waterproof cover. If low temperatures are expected and antifreeze is not available, drain the cooling system. Idle the engine 30 seconds to pump all water from the engine. Place a tag on the radiator to indicate the radiator has been drained.



STEP 1. LOOSEN WINGNUT AND REMOVE CAP AND GASKET.
STEP 2. REMOVE AND DISCARD REMOVABLE ELEMENT.
STEP 3. REPLACE WITH NEW REMOVABLE ELEMENT.

EMC 6115–244–10/13

Figure 13. Oil filter service.



STEP 1. REMOVE OIL CUP AND BAFFLE BY TURNING COUNTERCLOCKWISE.
STEP 2. DRAIN OIL FROM OIL CUP INTO A SUITABLE CONTAINER.
STEP 3. CLEAN OIL CUP AND BAFFLE IN AN APPROVED CLEANING SOLVENT.
STEP 4. REFILL OIL CUP TO PROPER LEVEL AND WITH PROPER GRADE OF OIL (REFER TO TABLE I).

EMC 6115–244–10/14

Figure 14. Air cleaner service.

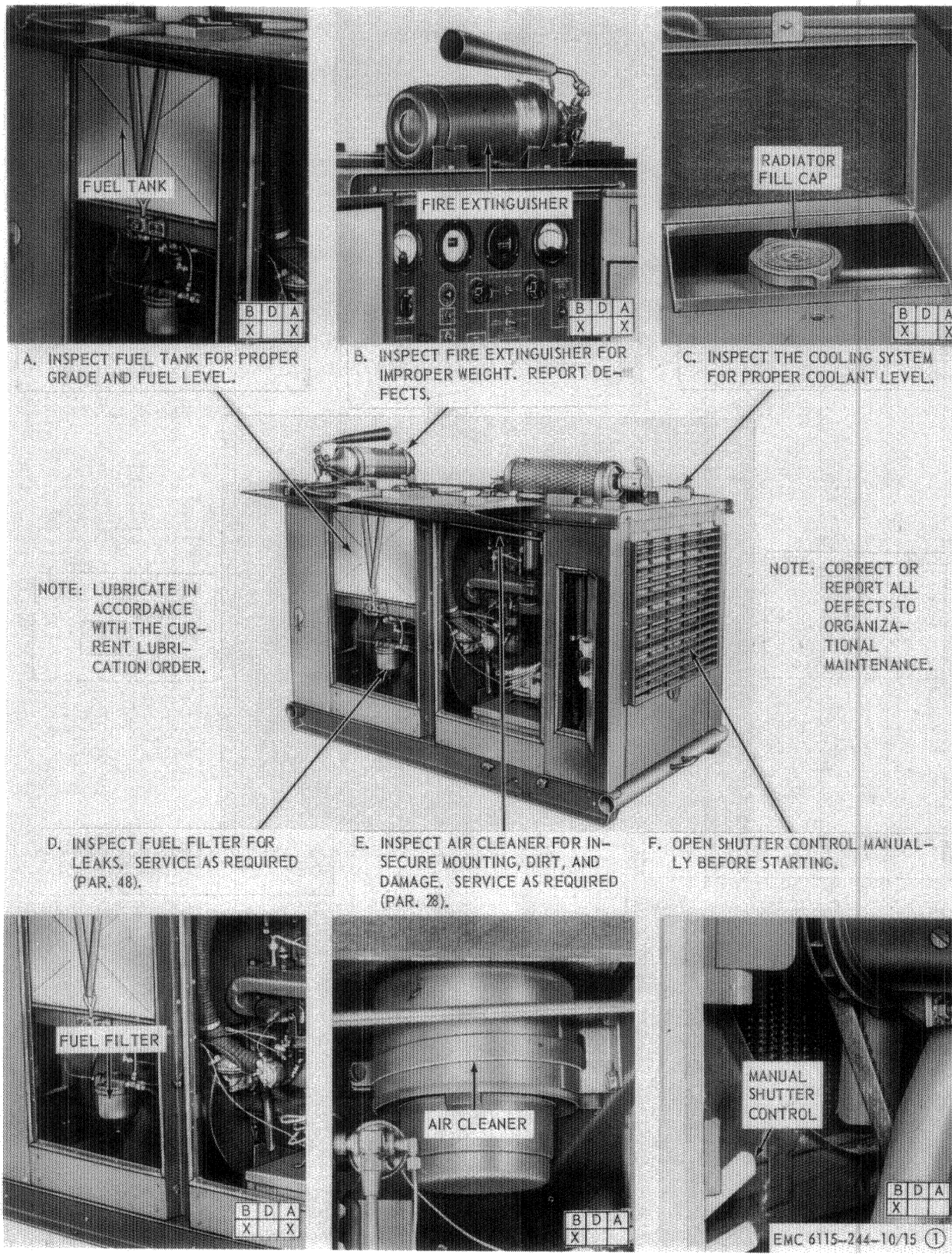


Figure 15. Operator's daily services.

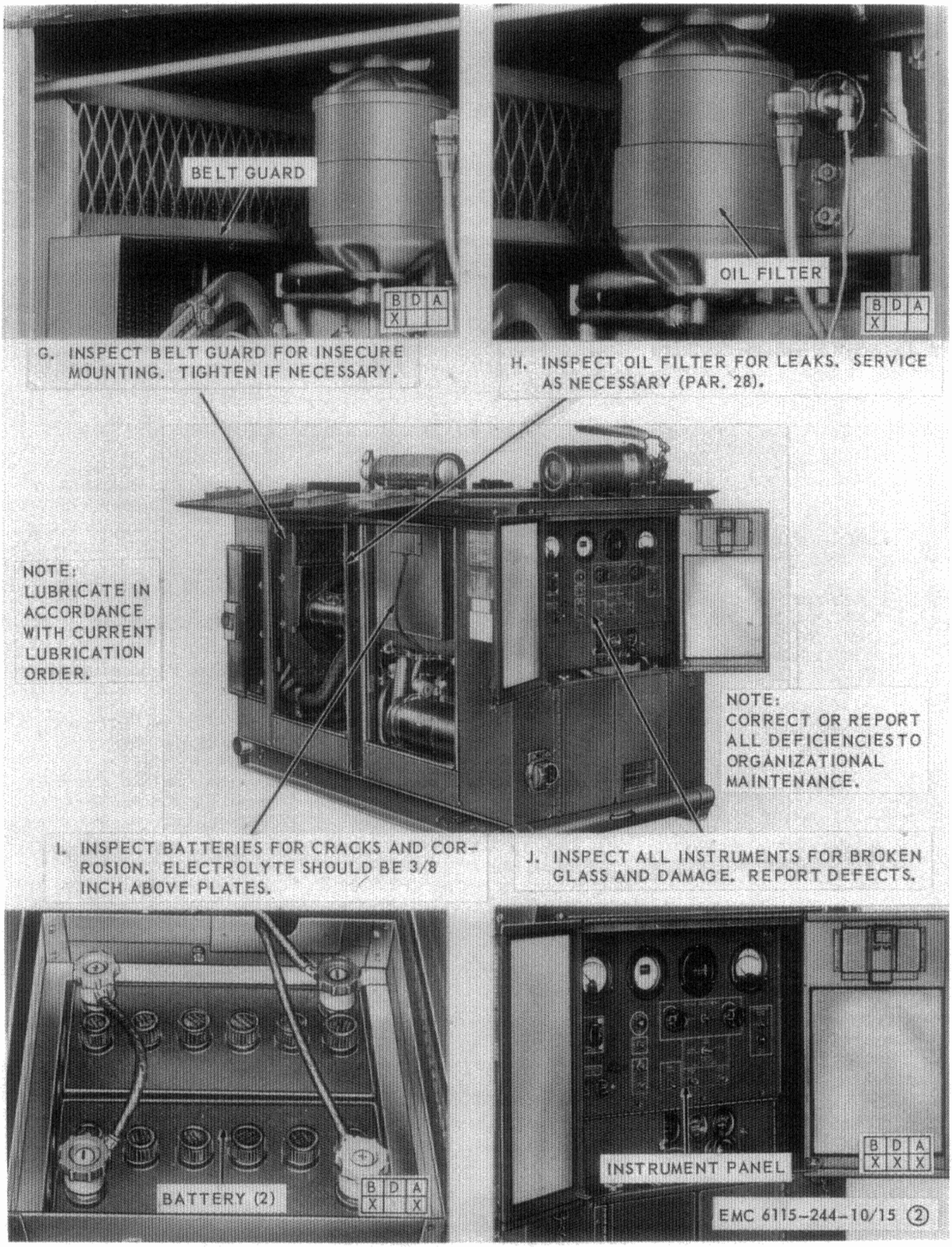


Figure 15—Continued.

Section IV. TROUBLESHOOTING

31. General

This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the generator set and its components. Each trouble symptom stated is followed by a list of probable causes of the trouble. The possible remedy recommended is described opposite the probable cause. Any operational trouble beyond the scope of the operator will be reported to organizational maintenance.

32. Engine Hard to Start or Fails to Start

Probable cause	*Possible remedy*
Fuel tank empty	Fill the fuel tank. Refer to Table I.
Three-way valve closed	Turn the three-way valve to the proper position.
Battery discharged or defective	Replace the battery (par. 50).
Air cleaner clogged	Service the air cleaner (par. 28).
Air in fuel lines	Prime the fuel system (par. 13).
Water or dirt in the fuel	Service the fuel filter (par. 48). Drain the fuel tank and fill with clean fuel (par. 6).

33. Engine Misses, Runs Erratically, or Lacks Power

Probable cause	*Possible remedy*
Air cleaner clogged	Service the air cleaner (par. 28).
Engine coolant temperature too low.	Check the shutter operation. If the thermostat has failed, close shutter with hand lever until operating temperature is attained.
Water or dirt in the fuel	Service the fuel filter (par. 48). Drain the fuel tank and fill with clean fuel (par. 6).

34. Engine Stops Suddenly

Probable cause	*Possible remedy*
Fuel tank empty	Fill the fuel tank. Refer to Table I.
Engine coolant temperature too high.	Add coolant to the cooling system (par. 6).
Water or dirt in the fuel	Service the fuel filter (par. 48). Drain the fuel tank and fill with clean fuel (par. 6).
Air cleaner clogged	Service the air cleaner (par. 28).
Engine crankcase oil level low.	Add oil to the engine crankcase. Refer to the current lubrication order.

35. Engine Overheats

Probable cause	*Possible remedy*
Coolant level low	Fill cooling system to correct level (par. 6).
Ventilation insufficient	Provide sufficient ventilation.
Fan belt loose or slipping	Adjust the fan belt (par. 51).
Engine crankcase oil level low.	Add oil to engine crankcase. Refer to the current lubrication order.
Radiator and cylinder block water passages clogged.	Report the condition to organizational maintenance.

36. Engine Noisy

Probable cause	*Possible remedy*
Engine crankcase oil level low.	Add oil to the engine crankcase. Refer to the current lubrication order.
Low octane fuel	Drain fuel from tank. Refer to Table I and fill with proper grade of fuel.

Caution: **If the engine knocks or is noisy when the crankcase is filled with oil to the proper level, stop the engine immediately and report the condition to organizational maintenance. Continued operation of the unit can cause serious damage to the engine.**

37. Engine Has Low or No Oil Pressure

Probable cause	*Possible remedy*
Engine crankcase oil level low.	Add oil to engine crankcase. Refer to the current lubrication order.
Oil filter clogged	Service the oil filter (par. 28).

38. Engine Exhaust Smoky

Probable cause	*Possible remedy*
Engine crankcase oil level too high.	Drain oil until proper level is reached.
Carburetor choked excessively.	Push in the choke control.
Air cleaner clogged	Service the air cleaner (par. 28).

39. Starter Fails to Crank Engine

Probable cause	*Possible remedy*
Electrical leads damaged or broken.	Inspect for damaged electrical leads and report the condition to organizational maintenance.
Battery discharged or defective.	Replace the battery (par. 50).

40. Main Generator Overheats

Probable cause	*Possible remedy*
Generator overloaded	Reduce generator load.
Air passages obstructed	Clean the air passages.
Ventilation inadequate	Provide proper ventilation.

41. Main Contactor Continues to Trip

Probable cause	*Possible remedy*
External fault in load lines	Check load lines for proper connection (par. 8).
Generator overloaded	Reduce generator load.

42. Winterization Heater Fails to Ignite

Probable cause	*Possible remedy*
Heater three-way valve closed.	Open heater three-way valve.
Fuel three-way valve closed.	Open fuel three-way valve.
Water or dirt in the fuel	Service the fuel filter (par. 48). Drain the fuel tank and fill with clean fuel (par. 6).

43. Winterization Heater Fails to Keep Burning

Probable cause	*Possible remedy*
Water or dirt in the fuel	Service the fuel filter (par. 48). Drain the fuel tank and fill with clean fuel (par. 6).

Section V. FIELD EXPEDIENT REPAIRS

44. General

Operational troubles may occur while the generator set is operating in the field where supplies and repair parts are not available and normal corrective action cannot be performed. When this condition exists, the following expedient remedies may be used during emergencies, upon the decision of the unit commander. Equipment so repaired must be removed from operation as soon as possible, and properly repaired before being placed in operation again.

45. Engine Stops Suddenly

Trouble	*Expedient remedy*
Air cleaner clogged	Remove the air cleaner and operate the unit without it (par. 28).

Caution: **Operation of the generator set in dusty or sandy areas without the air cleaner can cause damage to the engine.**

46. Engine Overheats

Trouble	*Expedient remedy*
Oil pump defective	Overfill the crankcase to create a splash system of lubrication.

47. Engine Has Low or No Oil Pressure

Trouble	*Expedient remedy*
Oil filter gasket leaks	Remove gasket, turn it over, and reinstall (par. 28).

48. Fuel Filter

Refer to figure 16 and service the fuel filter.

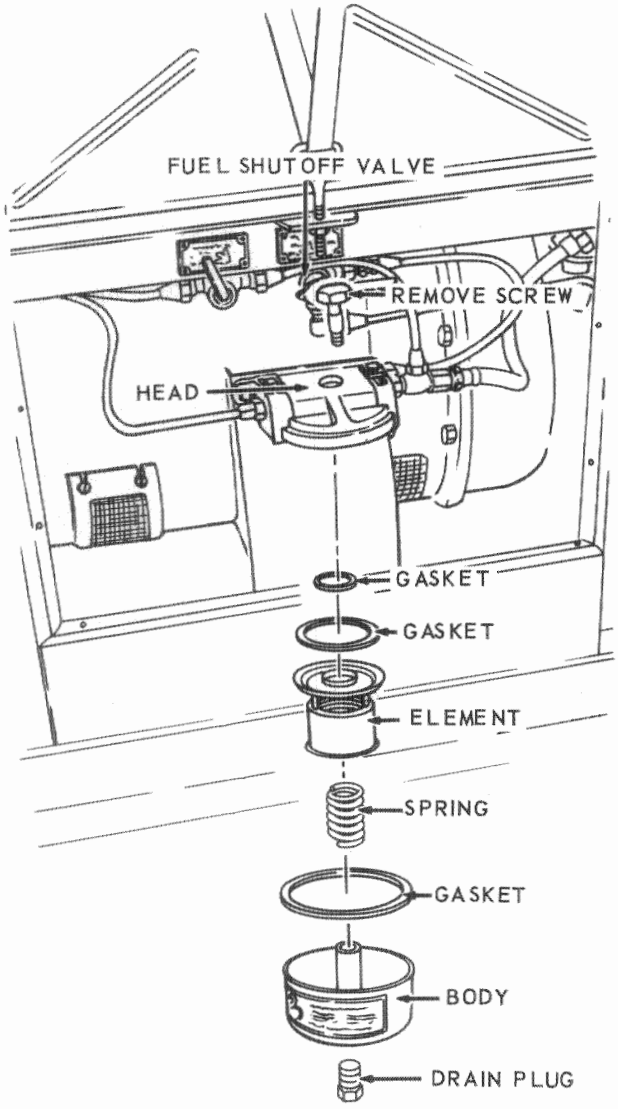


Figure 16. Fuel filter service.

49. Fuel Tank Strainer and Vent Valve

Refer to figure 17 and service the fuel tank strainer and vent valve.

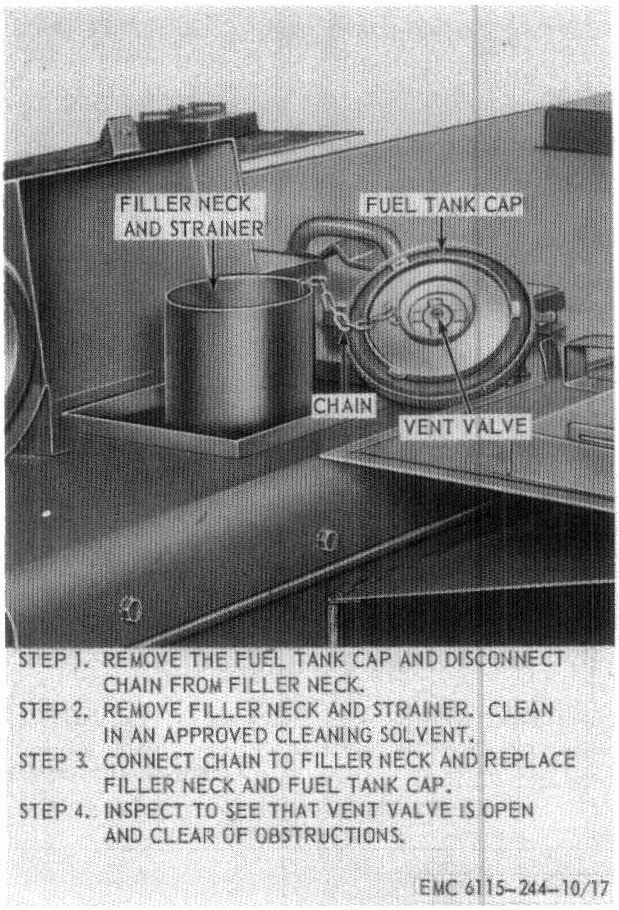


Figure 17. Fuel tank strainer and vent valve, service.

50. Batteries

a. This generator set is equipped with two 12-volt batteries connected in series. The batteries are grounded by the negative cable.

b. Refer to figure 18 and remove and install the batteries.

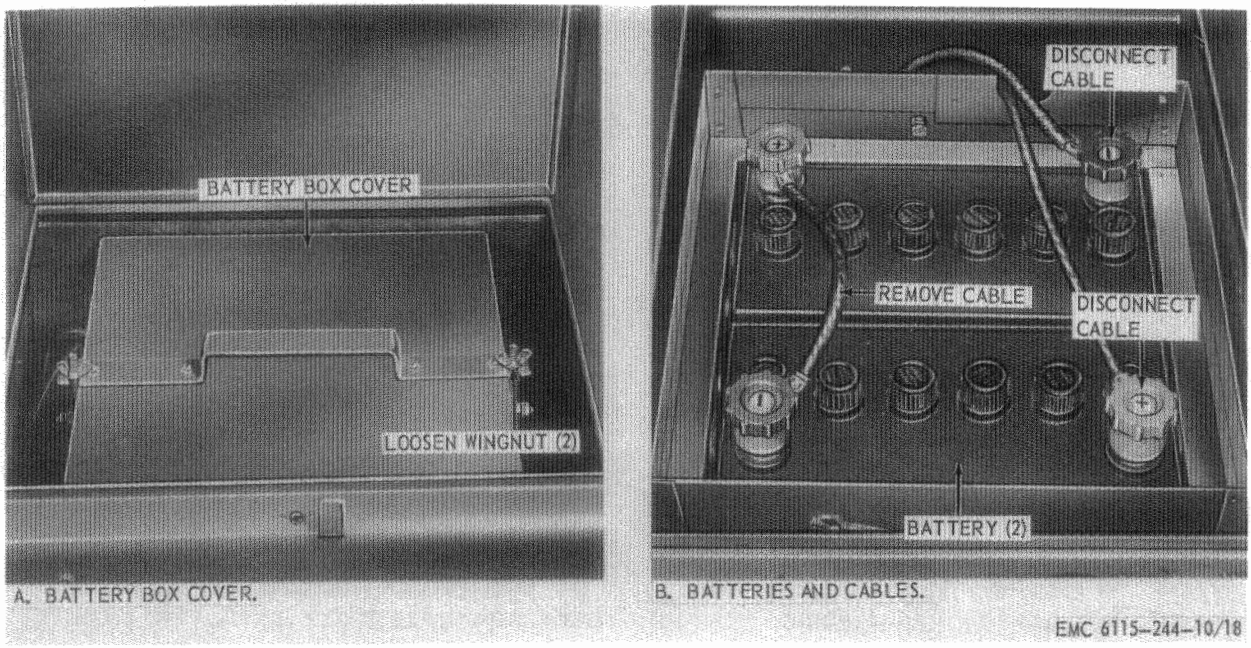


Figure 18. Batteries, removal and installation.

c. Clean and inspect.

51. Fan Belt Adjustment

Refer to figure 19 and adjust the fan belt.

52. Fuel Pump

Refer to figure 20 and service the fuel pump.

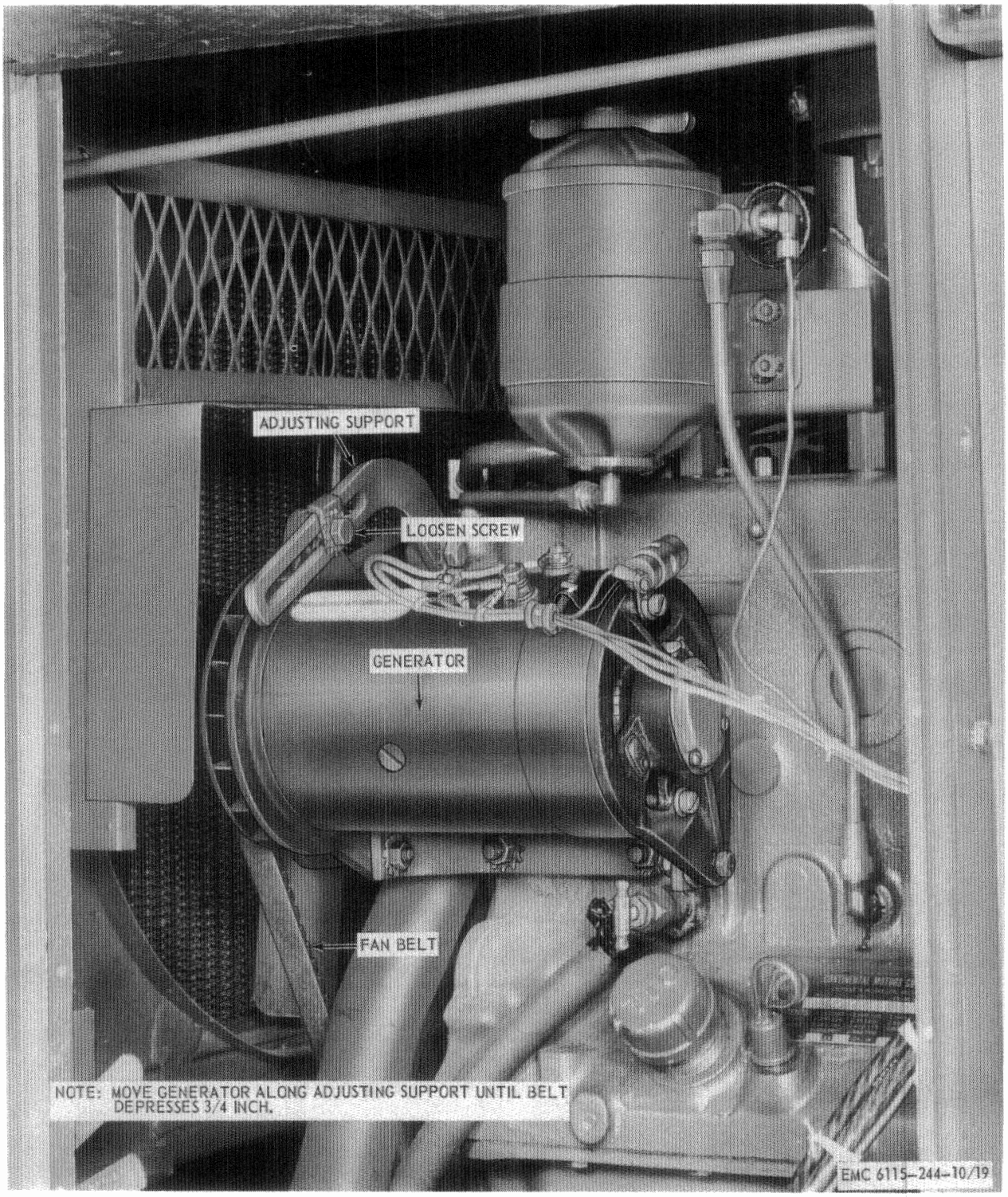
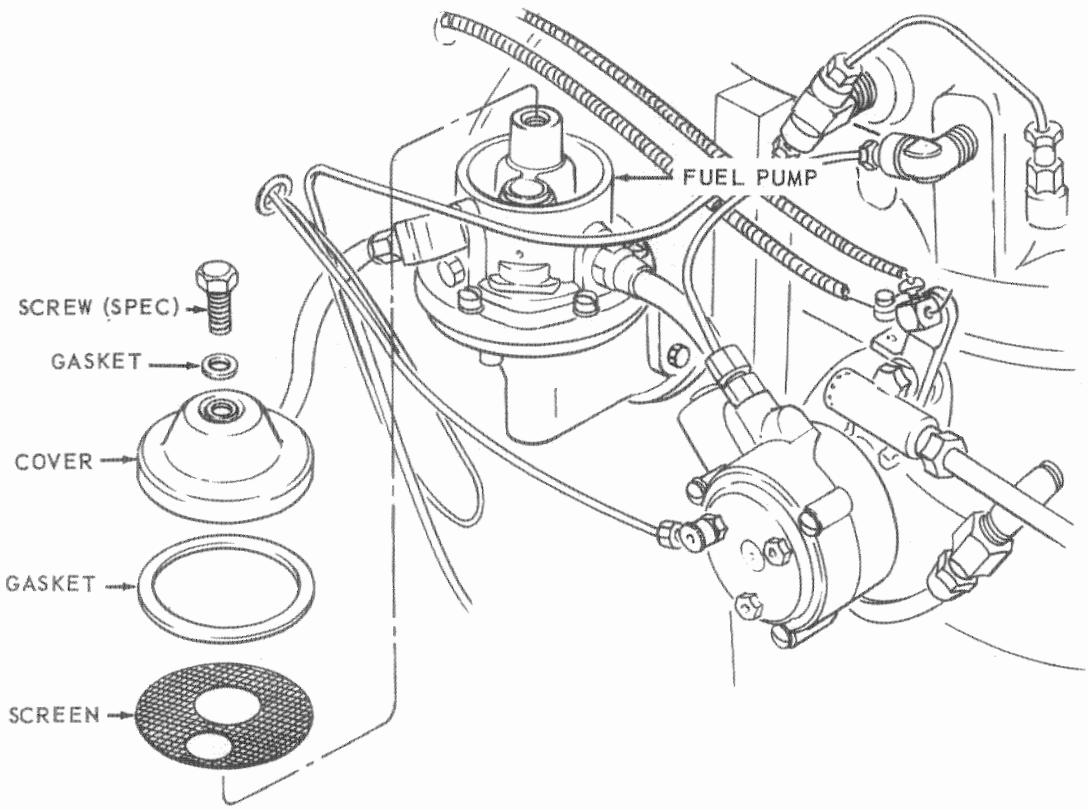


Figure 19. Fan belt, adjustment.



STEP 1. CLOSE THE FUEL SHUTOFF VALVE.
STEP 2. REMOVE THE SCREW (SPEC) AND COVER.
STEP 3. REMOVE THE SCREEN, CLEAN IN AN APPROVED CLEANING SOLVENT, AND DRY WITH COMPRESSED AIR.
STEP 4. REPLACE SCREEN, COVER, AND SCREW (SPEC).

EMC 6115-244-10/20

Figure 20. Fuel pump, service.

53. Fuse

Refer to figure 21 and remove and install the fuse.

54. Lamps

Refer to figure 22 and remove and install the power and heater lamps.

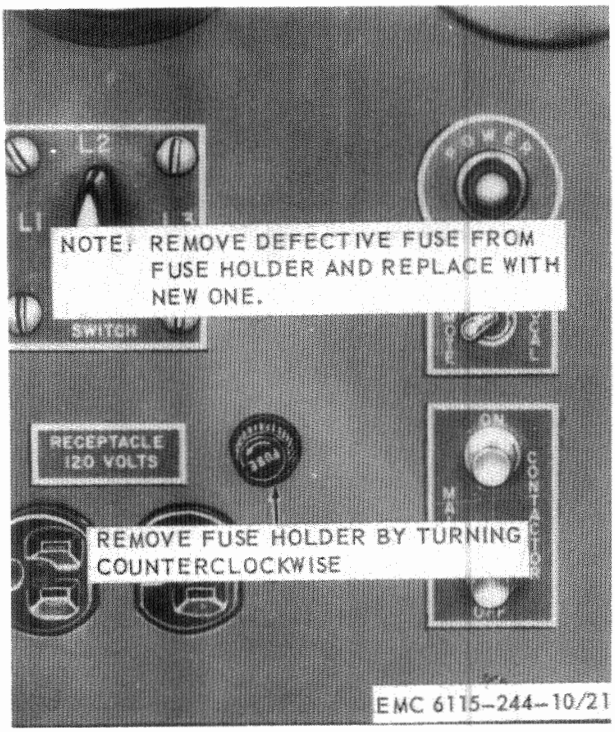


Figure 21. Fuse, removal and installation.

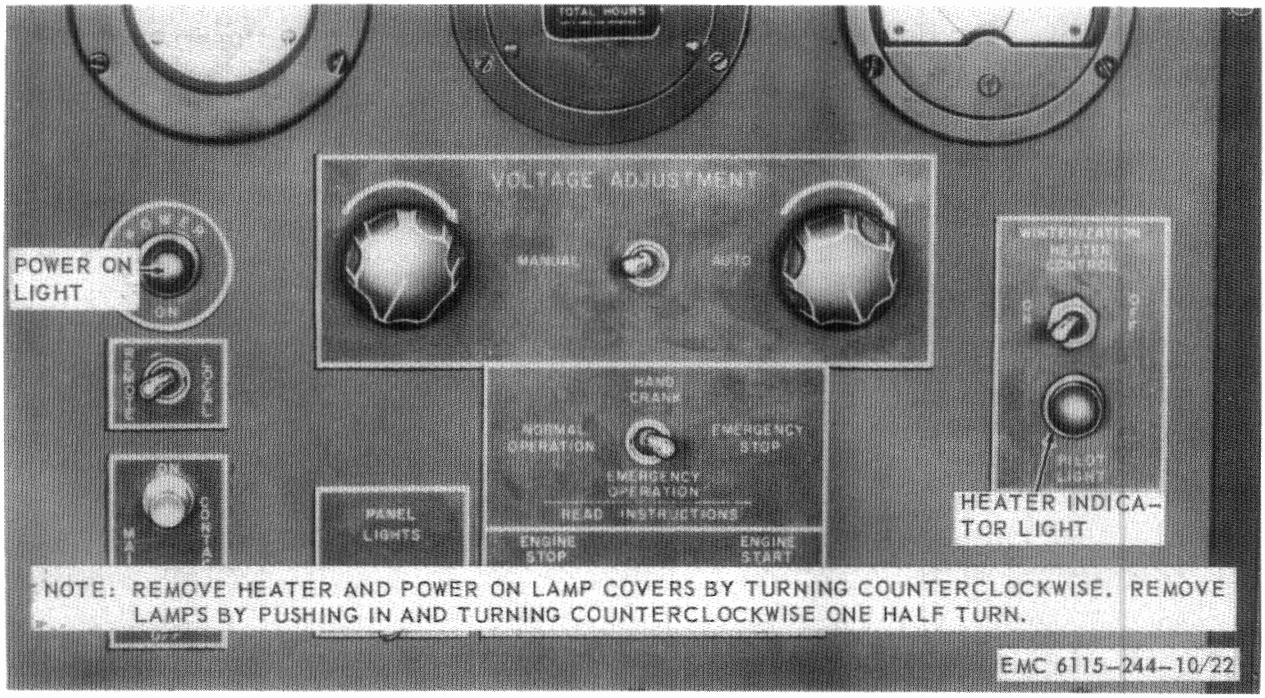


Figure 22. Power and heater lamps, removal and installation.

CHAPTER 4
DEMOLITION TO PREVENT ENEMY USE

55. General

When capture or abandonment of the generator set to an enemy is imminent, the responsible unit commander must make the decision either to destroy the equipment or to render it inoperative. Based on this decision, orders are issued which cover the desired extent of destruction. Whatever method of demolition is employed, it is essential to destroy the same vital parts of all generator sets and all corresponding repair parts.

56. Demolition To Render The Generator Set Inoperative

a. Demolition by Mechanical Means. Use a sledge hammer, ax, pick, crowbar, or any other heavy tool which may be available to destroy the following:

(1) Engine block and manifold.
(2) Carburetor, magneto, governor, and water pump.
(3) Radiator, starter, and generator.
(4) Main generator and control panel.

Note. The above steps are minimum requirements for this method.

b. Demolition by Misuse. Perform the following steps to make the generator set inoperative:

(1) Drain the radiator and the engine crankcase. Place sand, gravel, nuts, bolts, screws, or broken glass in the radiator opening, oil filler opening on the engine, and air receiver opening.
(2) Cut the fan belt from the fan and run the engine at full throttle until failure occurs.

57. Demolition by Explosives or Weapons' Fire

a. Explosives. Place as many of the following charges (fig. 23) as the situation permits and detonate them simultaneously with detonating cord and a suitable detonator.

(1) One ½-pound charge between battery-charging generator and engine block.
(2) One ½-pound charge between the starter and engine block.
(3) One ½-pound charge below main generator.
(4) One ½-pound charge below manifolds.
(5) One ½-pound charge inside of control box.

b. Weapons' Fire. Fire on the generator set with the heaviest practical weapons available. Direct fire at the engine and generator.

58. Other Demolition Methods

a. Scattering and Concealment. Remove all easily accessible parts such as the generator, starter, magneto, and governor and scatter them through dense foliage, bury them in dirt or sand, or throw them in a lake, stream, or other body of water.

b. Burning. Pack rags, clothing, or canvas under and around the generator set. Saturate this packing with gasoline, oil, or diesel fuel and ignite.

c. Submersion. Totally submerge the generator set in a body of water to provide water damage and concealment. A body of salt water will damage metal parts more than fresh water.

59. Training

All operators should receive thorough training in the destruction of the generator set.

Refer to FM 5–25. Simulated destruction, using all of the methods listed above, should be included in the operator training program. It must be emphasized in training that demolition operations usually are necessitated by critical situations when time available for carrying out destruction is limited. For this reason, it is necessary that operators be thoroughly familiar with all methods of destruction of equipment, and be able to carry out demolition instructions without reference to this or any other manual.

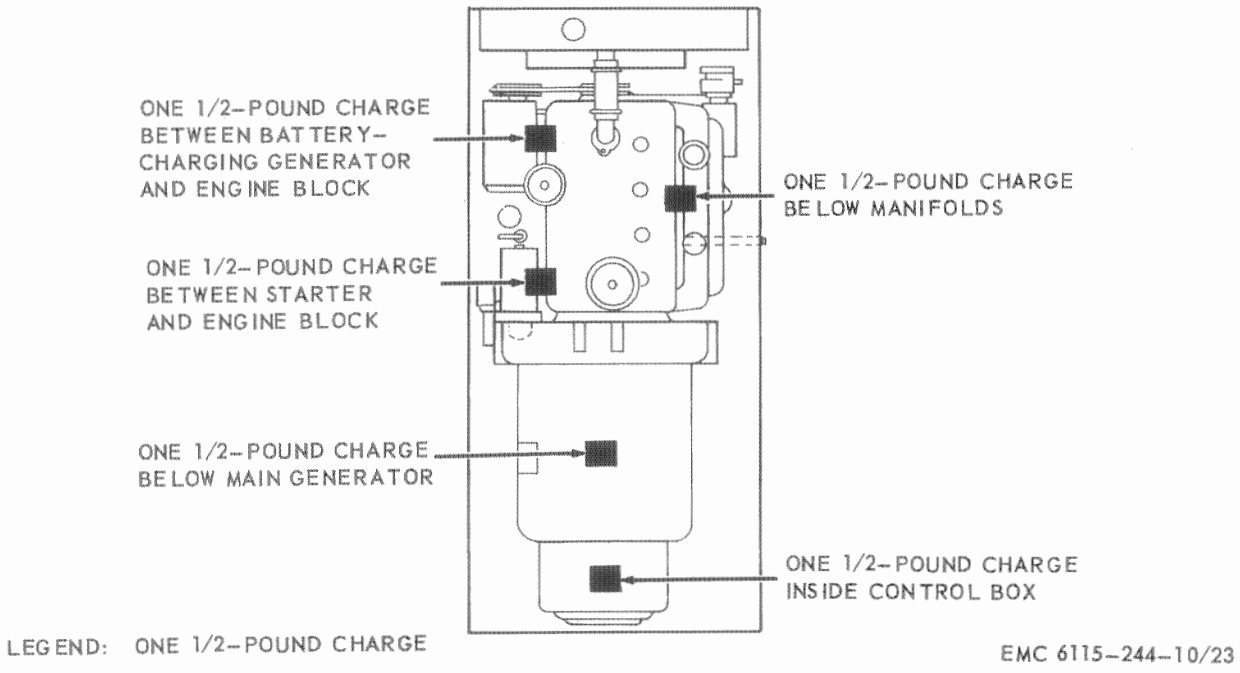


Figure 23. Placement of charges.

APPENDIX I
REFERENCES

1. Dictionaries of Terms and Abbreviations

AR 320–5	Dictionary of United States Army Terms
AR 320–50	Authorized Abbreviations and Brevity Codes

2. Fire Protection

TM 5–687	Repairs and Utilities: Fire Protection Equipment and Appliances; Inspections, Operations, and Preventive Maintenance
TM 9–1799	Ordnance Maintenance: Fire Extinguishers

3. Lubrication

LO 5–6115–244–20	Generator Set, Gasoline Engine: 10 Kw, Ac, 120V, 1 and 3 Phase, 120/240V, Single Phase 120/208V, 3 Phase, 60 Cycle; Skid Mounted (Pacific Mercury Model PM59–010–1) W/Continental Engine Model FS 162–6055

4. Painting

TB ENG 60	Preservation and Painting of Serviceable Corps of Engineers Equipment

5. Preventive Maintenance

AR 700–38	Unsatisfactory Equipment Report
AR 750–5	Maintenance Responsibilities and Shop Operation
TB ENG 347	Winterization Techniques for Engineer Equipment
TM 5–505	Maintenance of Engineer Equipment

6. Publication Indexes

DA Pam 310–2	Index of Blank Forms
DA Pam 310–4	Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders

7. Supply Publications

SM 10–1–C4–1	Petroleum, Petroleum-Base Products, and Related Material

8. Training Aids

FM 5–25	Explosives and Demolition
FM 21–5	Military Training
FM 21–6	Techniques of Military Instruction
FM 21–30	Military Symbols

APPENDIX II
BASIC ISSUE ITEMS

Section I. INTRODUCTION

1. General

This appendix lists the accessories, tools, and publications required in 1st echelon maintenance and operation, initially issued with, or authorized for the generator set.

2. Explanation of Columns

a. Source Codes.

(1) *Technical Services.* The basic number of the Technical Service assigned supply responsibility for the item is shown. Those spaces with no number shown are Corps of Engineers supply responsibility. Other Technical Service basic numbers are:

9—Ordnance Corps
10—Quartermaster Corps
11—Signal Corps
12—Adjutant General's Corps

(2) *Source.* The selection status and method of supply are indicated by the following code symbols:

(*a*) P—applied to repair parts which are high mortality parts; procured by technical services, stocked in and supplied from the technical service depot system; and authorized for use at indicated maintenance echelons.

(*b*) P1—applied to repair parts which are low mortality parts; procured by technical services, stocked only in and supplied from technical service key depots, and authorized for installation at indicated maintenance echelons.

(*c*) M—applied to repair parts which are not procured or stocked but are to be manufactured by using units at indicated maintenance echelons.

(*d*) X2—applied to repair parts which are not stocked. The indicated maintenance echelon requiring such repair parts will attempt to obtain from salvage; if not obtainable from salvage, such repair parts will be requisitioned with supporting justification through normal supply channels.

(3) *Maintenance.* The lowest maintenance echelon authorized to use, stock, install, or manufacture the part is indicated by the following code symbol:

O—Organizational Maintenance (1st and 2d Echelons)

b. Federal Stock Numbers. When a Federal stock number is available for a part, it will be shown in this column, and used for requisitioning purposes.

c. Description.

(1) The item name and a brief description of the part are shown.

(2) A five-digit Federal supply code for manufacturers and/or other technical services is shown in parentheses followed by the manufacturer's part number. This number will be used for requisitioning purposes when no Federal stock number is indicated in the

Federal stock number column. Example: (08645) 86453.

(3) The letters GE, shown in parentheses immediately following the description, indicate General Engineer supply responsibility for the part.

d. Unit of Issue. Where no abbreviation is shown in this column, the unit of issue is "each."

e. Expendability. Those items classified as nonexpendable are indicated by letters NX. Items not indicated by NX are expendable.

f. Quantity Authorized. This column lists the quantities of repair parts, accessories, tools, or publications authorized for issue to the equipment operator or crew as required.

g. Quantity Issued with Equipment. This column lists the quantities or repair parts, accessories, tools, or publications that are initially issued with each item of equipment. Those indicated by an asterisk are to be requisitioned through normal supply channels as required.

h. Illustrations.

(1) *Figure number.* Provides the identifying number of the illustration.

(2) *Item number.* Provides the referenced number for the part shown in the illustration.

3. Index of Federal Supply Code For Manufacturers

01675	Benmar Co.
07428	Pacific Mercury Electronics Inc.
14351	Continental Motors Corp.
19728	Electric Auto-Lite Co.
81336	Corps of Engineers

4. Comments and Suggestions

Report all deficiencies in this manual on DA Form 2028. Submit recommendations for changes, additions, or deletions to the Commanding General, Military Construction Supply Agency/U. S. Army Engineer Maintenance Center, ATTN: MCSDM, Corps of Engineers, P. O. Box 119, Columbus 16, Ohio. Direct communication is authorized.

Section II. BASIC ISSUE ITEMS LIST

Source Codes				Federal stock No.	Description	Unit of issue	Expendability	Quantity authorized	Quantity issued with equipment	Illustration	
Technical Service	Source	Maintenance	Recoverability							Fig	Item
					GROUP 01 ENGINE						
					0111.1 HAND CRANKING DEVICES						
	X2	0			CRANK, HAND (14351) PF162311			1	1		
					GROUP 03 FUEL SYSTEM						
					0306 TANKS, LINES, FITTINGS						
	X2	0			ADAPTER, AUXILIARY, FUEL HOSE (01675) D11560–1			1	1		
	P1	0		2910–706–0091	HOSE, W/FITTINGS, AUXILIARY FUEL (01675) D11560–4–S			1	1		
					GROUP 04 EXHAUST SYSTEM						
					0401 MUFFLER AND PIPES						
	X2	0			TUBE, EXHAUST (01675) D11560–3–1			1	1		
					GROUP 06 ELECTRICAL SYSTEM (ENGINE AND VEHICULAR)						
					0608 MISCELLANEOUS ITEMS						
	X2	0			RECEPTACLE, BATTERY CHARGING (07428) 772882			1	1		
					0612 BATTERIES						
11	P	0		6140–057–2554	BATTERY STORAGE: 6 cell, 12v (19728) HNR–US		NX	2	2		
9	P	0		6810–249–9354	SULPHURIC ACID ELECTROLYTE	GAL		2	2		
					GROUP 26 ACCESSORIES, PUBLICATIONS, TEST EQUIPMENT AND TOLLS						

Section II. BASIC ISSUE ITEMS LIST—continued

Source Codes				Federal stock No.	Description	Unit of issue	Expendability	Quantity authorized	Quantity issued with equipment	Illustration	
Technical Service	Source	Maintenance	Recoverability							Fig	Item
					2602.1 ACCESSORIES						
10	P	0		7520–559–9618	CASE, MAINTENANCE AND OPERATIONAL MANUALS: cotton duck, water repellent, mildew resistant			1	1		
	P1	0		5975–642–8937	ROD, GROUND; 9 ft lg ⅝ in. dia, cone point 3 sections (GE).			1	(*)		
	P1	0		5975–243–5861	CLAMP, ELECTRICAL: ground rod, ½ to 1 in. id (GE).			1	(*)		
	M	0		6145–189–6695	WIRE, ELECTRICAL: Manufacture from:			1	(*)		
					WIRE, ELECTRICAL: No. 6 AWG (10 ft required (GE).	FT			(*)		
					2602.2 COMMON TOOLS						
10	P	0		5120–278–1283	SCREWDRIVER, FLAT TIP: plastic handle, flared tip, 3/16 in. w, 6 in. lg blade			1	(*)		
10	P	0		5120–264–3796	WRENCH, OPEN END ADJUSTABLE: single head, 0 to 1 5/16 in. jaw opening 12 in. lg			1	(*)		
10	P	0		5120–223–7396	PLIERS, SLIP-JOINT: straight nose, w/ cutter, 6 in. lg			1	(*)		
					2602.4 PUBLICATIONS						
12					DEPARTMENT OF THE ARMY OPERATOR'S MANUAL TM 5–6115–244–10			2	2		
12					DEPARTMENT OF THE ARMY LUBRICATION ORDER LO 5–6115–244–20			1	1		
12					DEPARTMENT OF THE ARMY ORGANIZATIONAL MAINTENANCE MANUAL TM 5–6115–244–20			2	2		
12					DEPARTMENT OF THE ARMY MAINTENANCE REPAIR PARTS AND SPECIAL TOOL LISTS TM 5–6115–244–20P			2	2		
					GROUP 42 ELECTRICAL EQUIPMENT, TRANSMISSION AND DISTRIBUTION.						
					4214 MISCELLANEOUS WIRING; FITTINGS.						
	X2	0			CABLE ASSEMBLY: remote start and stop station (81336) D11560–4–6.			1	1		
					GROUP 76 FIRE FIGHTING EQUIPMENT.						
					7605 FIRE EXTINGUISHERS						
	P1	0		4210–288–8269	EXTINGUISHER, FIRE, VAPORIZING LIQUID: ¼ gal capacity w/wall bracket (GE).		(SEE NOTE)				
	P	P1		4210–555–8837	EXTINGUISHER, FIRE, MONOBROMOTRIFLUOROMETHANE: charged, hand shatterable cylinder, penetrating seal valve, stored pressure, w/bracket 2.75 lb (Halon–1301 MIL SPEC E52031 (GE).			1			
					Note. Requisition CTC/CO_2 extinguishers until depot stocks are exhausted.						

INDEX

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The Adjutant General.

G. H. DECKER,
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USAAVNBD (2)
ARADCOM (2)
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OS Maj Comd (5) except
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  USARJ (10)
MDW (1)
Armies (2)
Corps (2)
Div (2)
Engr Bde (1)
Svc Colleges (2)
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USMA (2)
GENDEP (2) except
  Schenectady GENDEP (4)
  Atlanta GENDEP (4)
  Utah GENDEP (4)
  Memphis GENDEP (4)
  Sharpe GENDEP (4)
Engr Sec, GENDEP (10)
Engr Dep (10) except
  Granite City Engr Dep (14)
USA Trans Tml Comd (2)
Army Tml (1)
OSA (2)
Engr Dist (2) except
  Buffalo Engr Dist (1)
Chicago Engr Dist (1)
Detroit Engr Dist (1)
  Alaska Engr Dist (1)
  Los Angeles Engr Dist (1)
  New Orleans Engr Dist (1)
  New York Engr Dist (1)
  Louisville Engr Dist (1)
  Pittsburgh Engr Dist (1)
  San Francisco Engr Dist (1)
  Omaha Engr Dist (1)
  Seattle Engr Dist (1)
  Kansas City Engr Dist (1)
  Baltimore Engr Dist (1)
  Ft Worth Engr Dist (1)
  Eastern Ocean Engr Dist (1)
  Philadelphia Engr Dist (1)
  Rock Island Engr Dist (1)
  St Louis Engr Dist (1)
  St Paul Engr Dist (1)
Div Engr (2) except
  Lower Miss Valley Div Engr (none)
  North Central Div Engr (none)
Engr Fld Maint Shops (2)
Engr Dept Maint Shops (2)
USAERDL (3)
Engr Cen (5)
AMS (3)
USA Engr Proc Ofc (10)
EMC (26)
ESCO (10)
Fld Comd, DASA (8)
AFSSC (1)
USACOMZEUR (2)
USAREUR Engr Sup Con Agcy (10)
USAREUR Engr Proc Cen (2)
USA Corps (1)
MAAG (1)
JBUSMC (1)
AOMC (15)
Units org under fol TOE:
  (2 copies each UNOIDC)
  3–47
  5–5
  5–6
  5–15
  5–16
  5–35
  5–36
  5–45
  5–46
  5–48
  5–52
  5–67
  5–112
  5–115

5–116
5–117
5–118
5–214
5–237 (5)
5–262 (5)
5–267 (1)
5–278 (5)
5–279
5–420
5–422
5–500 (EC,EF,EG,EH,GF,GG)
5–600
5–605
5–606
5–607
5–615
5–616
5–625
5–626
6–100
6–101
6–200
6–201
6–300
6–301
6–565
6–575
6–576
6–630
6–985
7
8–581
8–590
9–47
9–87
9–227
9–500 (DD,EA)
9–510 (FA,FE)
10–201
10–417
10–500 (EC,HB,HC,HD,HE,HF,HG,HH)
12–17
17
19–256
19–316
29–52
29–56
29–57
29–61
29–445
29–446
30–500 (AF,AG)
32–1
32–2
32–3
32–4
33–56
37
39–51
39–61
39–71
44–16
44–36
44–116
52–2
54–202
55–38
55–139
55–158
55–445
55–449
57

NG: State AG (3); Units—same as Active Army except allowance is one copy for each unit.

USAR: Units—same as Active Army except allowance is one copy for each unit.

For explanation of abbreviations used, see AR 320–50.