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DEPARTMENT OF THE ARMY TECHNICAL MANUAL

DEPARTMENT OF THE AIR FORCE TECHNICAL ORDER

TM 5-6115-217-10

TO 35C2-3-124-11

*24*

*resc/cir 310-16 July 79*

**OPERATOR'S MANUAL**

**GENERATOR SET, DIESEL ENGINE, 15, KW  
AC, 120/208-240/416 V, 3 PHASE, 60  
CYCLE, CONVERTIBLE TO 12.5 KW, 50  
CYCLE, SKID MOUNTED, (U.S. MOTORS  
MODEL 15-US-10327B-A W/CONTINENTAL  
ENGINE MODEL HD 260)**

(FSN 6115-606-9693)

**PUBLICATIONS DIVISION**

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*R-22*



**DEPARTMENTS OF THE ARMY AND THE AIR FORCE**

**18 FEBRUARY 1959**



## SAFETY PRECAUTIONS

The voltage produced by this generator set is dangerous to persons coming in contact with any part of the electrical system during operation. Severe, possibly fatal, shock may result. See that the generator set is grounded before operation. Be extremely careful when the unit or surrounding area is damp or wet.

In case of an accident from electrical shock, SHUT DOWN the set at once. If the set cannot be shut down, free the victim from contact with a live conductor. Avoid direct contact with the victim or live conductor. Use a dry board, dry rope, or any nonconducting implement to free the victim. If the victim is unconscious, apply artificial respiration and get medical help.

When servicing any part of the electrical system or making any connections, be sure all switches are in the OFF position. Clean or service the generator only when the engine is shut down.

When connecting an incoming unit to the electrical system for parallel operation, be certain all voltage is removed from both the circuit and the incoming unit before making line connections.

When removing one of two generator sets operating in parallel, do not have a load on the service lines that is greater than the rating of the remaining unit. If the load is greater than the capacity of the remaining unit, overloading will result.

When operating in an inclosed area, pipe exhaust fumes to the outside by extending the exhaust pipe. Continued breathing of exhaust fumes is dangerous.

When servicing batteries, do not smoke or use an open flame in the vicinity. Batteries generate explosive gas during charging.

When filling fuel tanks, do not smoke or use an open flame in the vicinity.

A poisonous gas is generated by the contact of carbon tetrachloride with heated surfaces. Be extremely careful when using a carbon tetrachloride fire extinguisher in an inclosed room. Provide adequate ventilation before entering a closed space where carbon tetrachloride has been used.



TECHNICAL MANUAL }  
 No. 5-6115-217-10 }  
 TECHNICAL ORDER }  
 No. 35C 2-3-124-11 }

DEPARTMENTS OF THE ARMY  
 AND THE AIR FORCE

WASHINGTON 25, D. C., 18 February 1959

GENERATOR SET, DIESEL ENGINE, 15 KW, AC, 120/208-240/416 V, 3 PHASE, 60 CYCLE, CONVERTIBLE TO 12.5 KW, 50 CYCLE, SKID MOUNTED, (U.S. MOTORS MODEL 15-US-10327B-A, W/CONTINENTAL ENGINE MODEL HD 260) (FSN 6115-606-9693)

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# CHAPTER 1

## INTRODUCTION

### Section I. GENERAL

#### 1. Scope

*a.* This manual covers the United States Motors, 15 kw generator set model 15-US-10327B-A. It provides information on the operation, lubrication, and daily preventive maintenance services of the equipment and accessories, and components.

*b.* Appendix I contains a list of all publications referred to in this manual. The maintenance allocation chart is contained in TM 5-6115-217-20. Appendix II lists the basic issue items authorized for use of the operation of the equipment.

*c.* Any recommendations for changes, additions, deletions, and other corrections for the improvement of this manual should be forwarded by letter on DA Form 2028 to The Commanding General, U. S. Army Engineer Maintenance Cen-

ter, Corps of Engineers, P. O. Box 119, Columbus 16, Ohio, ATTN: EMCJM.

#### 2. Record and Report Forms

The record and report forms listed in *a* through *d* below, are to be used by the operator for recording and reporting maintenance operations.

*a.* DD Form 285 (Accident (Report of Individual Accident)).

*b.* DA Form 2028 (Recommended Changes to DA Technical Manual Parts List or Supply Manual 7, 8, or 9).

*c.* DD Form 110 (Vehicle and Equipment Operational Record).

*d.* DD Form 518 (Accident-Identification Card).

### Section II. DESCRIPTION AND DATA

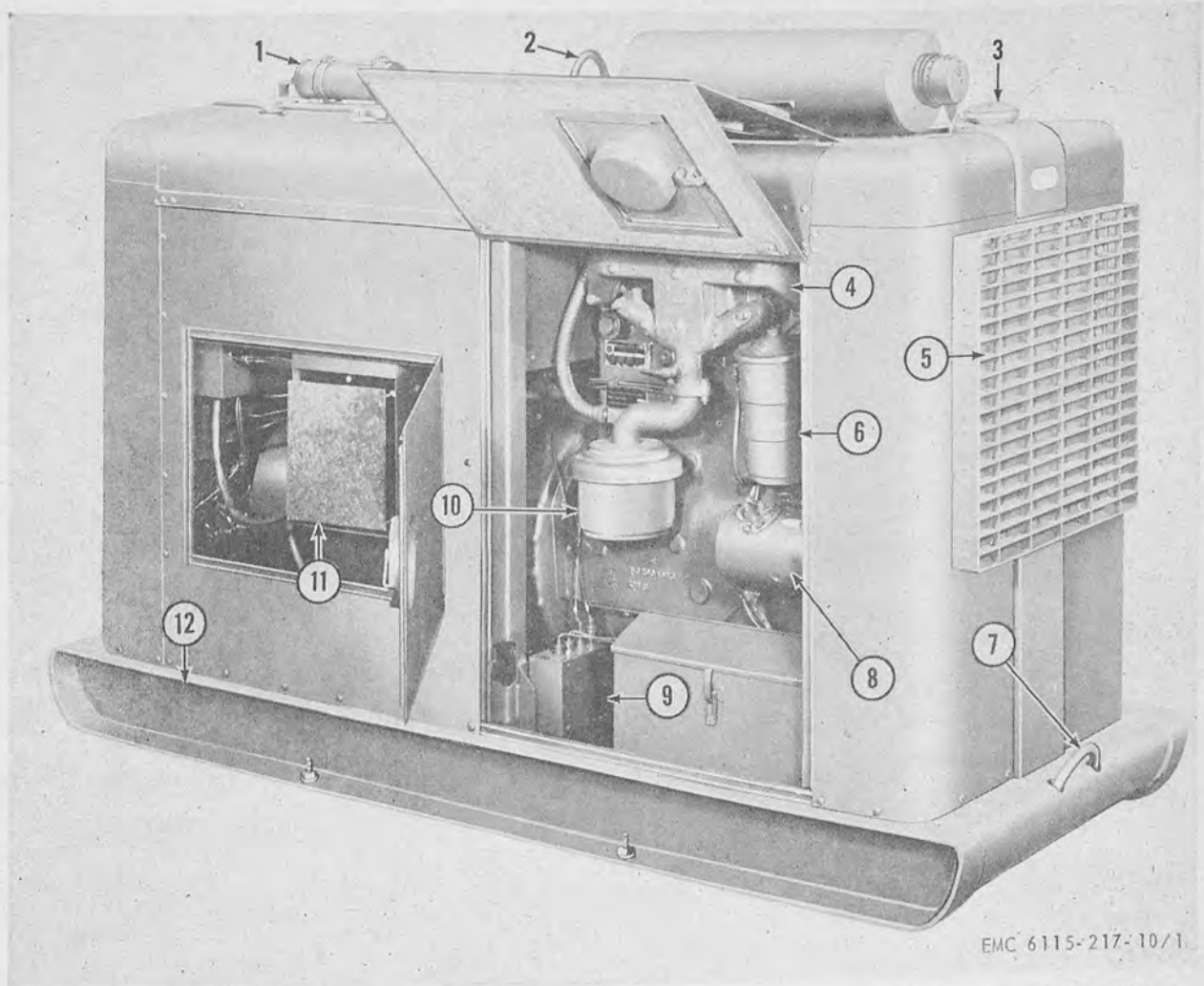
#### 3. Description

*a. General Information.* The United States Motors generator set, model 15-US-10327B-A (figs. 1 and 2), serial range 322050-1 through 322050-400, is a self-contained, weather-resistant, canopy-covered, skid-mounted unit. The generator set has all controls, switches, and instruments necessary for normal operation. The main generator (8, fig. 2) is driven by a four-cylinder, full diesel engine (16). The exciter generator is coupled directly to the main generator shaft. For handling purposes, the unit is equipped with draw bolts (7, fig. 1) and a lifting eye (2). All accessories and controls are readily accessible through the hinged access doors and panels. Each engine access door has a small ventilating door.

*b. Engine.* The generator set is powered by a Continental, model HD260, full diesel engine (16,

fig. 2). This engine is a 4 cylinder, 4 cycle, overhead valve, liquid cooled type. It is rated at 30 bhp (brake horsepower) continuous at a maximum governed speed of 1,200 rpm (revolutions per minute). Correct engine speed is maintained by a mechanical, centrifugal-type governor. Safety devices are provided to shut down the engine in the event of high temperature, low oil pressure, or overspeed.

*c. Main Generator.* The main generator (8, fig. 2) is a Y-connected, three-phase, revolving field, alternator, excited by a stationary field dc (direct current) generator mounted on the alternator shaft. It will produce 15 kw (kilowatt), 60-cycle, 120/208-V (volt), or 240/416-V when operated at 1,200 rpm (revolutions per minute), or may be converted to produce 12.5 kw, 50-cycle, 240/416-V when operated at 1,000 rpm. The



- |                               |                              |                              |
|-------------------------------|------------------------------|------------------------------|
| 1 Fire extinguisher           | 5 Radiator grill             | 9 Engine generator regulator |
| 2 Lifting eye                 | 6 Oil filter assembly        | 10 Air cleaner               |
| 3 Radiator cap                | 7 Draw bolt (2 rqr)          | 11 Power distribution panel  |
| 4 Intake and exhaust manifold | 8 Battery-charging generator | 12 Skid base                 |

Figure 1. Generator set, three-quarter right front view, with access doors open.

generator is self-ventilated, drip-proof construction, and is fully fungus proofed.

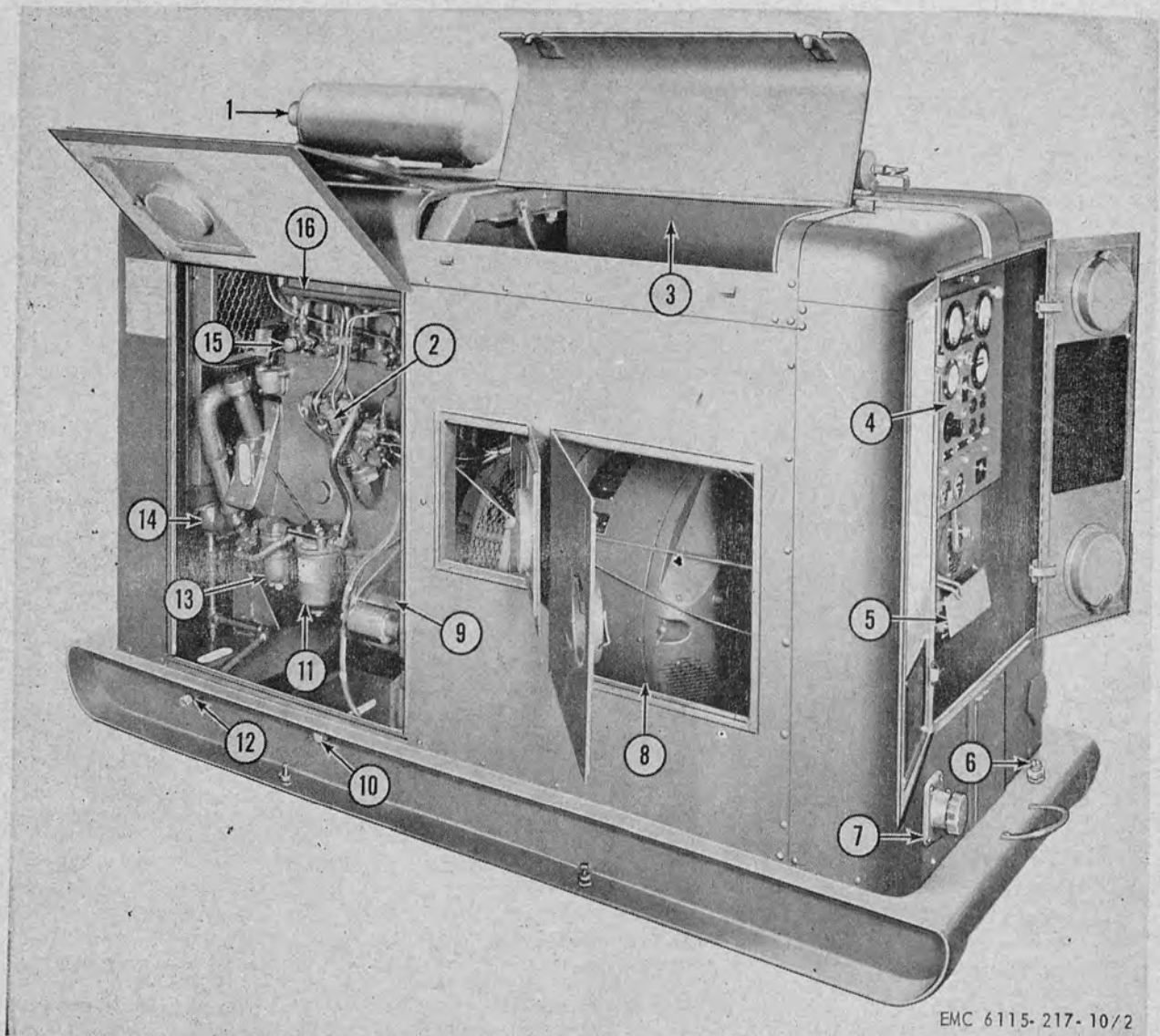
*d. Exciter.* The exciter generator is located in the main generator and bell housing and is used to energize the main generator field. The exciter generator is a direct connected type, rated at 1.2 kw, 125-V.

*e. Control Panel.* The control panel (4, fig. 2) is located in the rear of the generator housing behind the main generator (8) and exciter. The control serves as mounting for most of the instruments and controls necessary for the operation of the generator set. The main load terminal board (5) is also located on the control panel.

#### 4. Identification

The generator set has five identification plates. Two Corps of Engineers identification plates (A and B, fig. 3) located on the left side of the engine housing, specify the official nomenclature, model number, and serial number of the equipment. The engine identification plate (C), located on the right side of cylinder block, specifies the manufacturer, model number, and serial number of the engine. The generator assembly identification plate (E), located on the left side of generator housing, specifies the manufacturer, rating, model number, and serial number of the generator assembly. The fuel injection pump





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- |                            |                                   |                                     |
|----------------------------|-----------------------------------|-------------------------------------|
| 1 Muffler                  | 7 Electrical receptacle connector | 13 First stage fuel filter assembly |
| 2 Fuel injection pump      | 8 Main generator                  | 14 Radiator                         |
| 3 Battery compartment      | 9 Starter assembly                | 15 Nozzle holder assembly           |
| 4 Control panel            | 10 Crankcase drain cap            | 16 Engine                           |
| 5 Main load terminal board | 11 Secondary fuel filter assembly |                                     |
| 6 Ground terminal lug      | 12 Radiator drain cap             |                                     |

Figure 2. Generator set, three-quarter left rear view, with access doors open.

identification plate (D), located on the fuel pump, specifies the model number, rpm, serial number and manufacturer.

### 5. Differences in Models

The instructions in this manual pertain only to the United States Motors, 15 kw generator set, model 15-US-10327B-A, serial number range 322050-1 through 322050-400.

### 6. Tabulated Data

#### a. General.

Manufacturer..... United States Motor Corp.  
Model..... 15-US-10327B-A

#### b. Engine.

Manufacturer..... Continental Motors Corp.  
Model..... HD-260  
Cylinders..... 4  
Cooling..... Liquid cooled

CORPS OF ENGINEERS, U.S. ARMY A	
NOM.	GENERATOR SET; ELECTRIC, PORTABLE, DED, SKID MTD, 15KW
T.M.	
STOCK NO.	6115-606-9693
MAKE	U.S. MOTORS
MOD.	15-US-10327B-A SER. 322050-8
DATE MFD.	-57 ENG. 7 & 8
CONTRACT NO.	DA-11-184-ENG-15773
ENG. MAKE	CONTINENTAL
MOD.	14 FB HD260 SER. 50015
U.S.A. REGISTRATION	


A

CORPS OF ENGINEERS, U.S. ARMY C	
NOM.	GENERATOR SET, ELECTRIC, PORTABLE, DED, SKJD MTD, 15KW
MAKE	U.S. MOTORS
MOD.	15-US-10327B-A SER. 322050-8
PH.	3 NO. OF WIRES 4
VOLTS	120/208, 240/416-240/416 AMPS 52.26-21.6
KW	15-12.45 KVA 18.75-15.6 P.F. % 0.8
CYCLES	60-50 R.P.M. 1200-1000
DATE MFD.	5/28/58 T.M.

B

REG. U.S. PAT. OFFICE		MADE IN U.S.A.	
		<b>CONTINENTAL MOTORS CORP'N</b>	
		DETROIT & MUSKEGON MICH.	
MODEL	SPEC.	ENGINE NO.	
HD260	2202	50015	
PATENTS:			
1,605,040	1,724,599	1,743,276	
1,817,390	1,909,965	1,975,989	
1,985,294	1,985,943	2,003,984	
2,013,157	2,034,397	2,011,784	
2,137,802		2,080,662	
T. P. CL. IN.	EX	OIL-W	S

C

					
A. C. GENERATOR					
A-14					
K.W.	15	K.V.A.	18.75		
VOLTS	120/208 240/416	AMPS. PER TERM	52 / 26		
R.P.M.	1000/1200	CYCLES	50/60		
PHASE	3	WIRE	10	TEMP. RISE	40°C
ALT. FIELD AMPS.	6.25				
MODEL	52MSSS				
TYPE	2475-B	PF	80 %		
D. C. EXCITER					
WATTS	1000	AMPS.	8		
VOLTS	125	FIELD AMPS.	0.29		
FIELD WINDING	SHUNT				
MODEL	26XUGS				
TYPE	2476				
SERIAL	35647-				
KATO ENGINEERING CO. MANKATO, MINN. U.S.A.					
C.S.A. APP. NO. 9868					

E

<b>ROOSA MASTER</b>	
D/GV-C L-435-6U	1200
MODEL NO.	R.P.M.
PAT. NO. 2,353,188	PAT. PEND.
34853	HD400F-288
SERIAL NO.	MFG. NO.
HARTFORD MACHINE SCREW CO., HARTFORD, CONN. U.S.A.	
DIVISION OF STANDARD SCREW CO.	

D

EMC 6115-217-10/3

Figure 3. Identification plates.

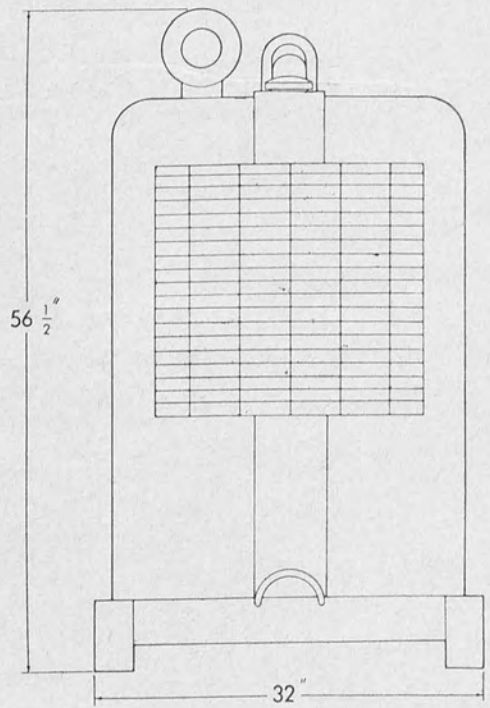
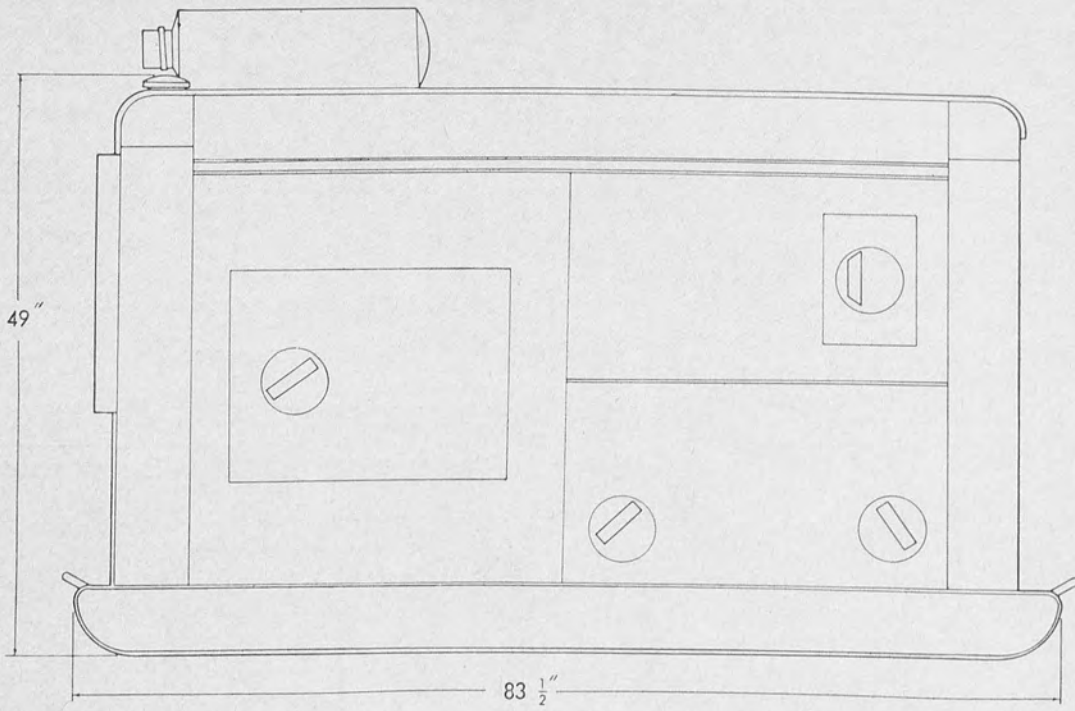


Figure 4. Shipping dimensions.

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*c. Main Generator.*

Manufacturer-----Kato Engineering Co.  
 Type-----2475-B  
 Model-----52 M SSS  
 Rating:  
 Volts, 60 cycle-----120/208-240/416  
 Volts, 50 cycle-----240/416  
 Amperes, 60 cycle-----52/26  
 Amperes, 50 cycles-----21.6  
 Kilowatts, 60 cycles-----15  
 Kilowatts, 50 cycles-----12.5  
 Rpm, 60 cycles-----1,200  
 Rpm, 50 cycles-----1,000  
 Phase-----3

*d. Capacities.*

Intake air cleaner-----½ pt (pint)  
 Cooling system-----5½ gal (gallon)  
 Fuel tank-----14 gal  
 Engine crankcase-----6 qt (quart)  
 Lubricating oil filter-----1 qt

*e. Performance.*

Fuel rate consumption-----1.85 gal per hour  
 (average):

*f. Dimensions and Weight.*

Length-----83½ in. (inch)  
 Width-----31½ in.  
 Height-----56½ in.  
 Operating weight-----2896 lb (pound)

Table I. 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
1	0101—CRANKCASE <sup>1</sup>	10	2 9150-231-6653	OIL, LUBRICATING: 5 gal drums, as follows:		
		10	2 9150-231-9037	Grade OE-30	9¼ qt <sup>1</sup>	(3)
		10	2 9150-242-7603	Grade OE-10	9¼ qt <sup>1</sup>	(3)
		10	(4)	Grade OES	9¼ qt <sup>1</sup>	(3)
2	0304—AIR CLEANER <sup>4</sup>	10		OIL, LUBRICATING	1¼ qt	(3)
3	0306—FUEL TANK	10	2 9130-160-1818	GASOLINE: bulk as follows:	33 gal <sup>5</sup>	56 gal <sup>6</sup>
				91A—Type 1		
4	0501—RADIATOR	9	2 6850-224-8730	WATER:	8.5 gal	As Required
				ANTIFREEZE: ethylene glycol—OE 771 A type 1, 5 gal drum	(7)	(7)
5	0504—WATER PUMP	10	2 9150-248-3476	GAA—GREASE: automotive & artillery 1 lb can	(3)	(3)
6	2207—WINTERIZATION EQUIPMENT	10	2 9130-160-1818	GASOLINE: bulk, as follows:		.6 gal <sup>8</sup>
				91A—type 1		

<sup>1</sup> Includes quantity required to fill engine oil system, filter, and air cleaner.

<sup>2</sup> See SB 38-5-3 for additional data or requisitioning procedure.

<sup>3</sup> See LO 5-6115-207-20 for grade application and replenishment intervals.

<sup>4</sup> Use oil described in item 1 above.

<sup>5</sup> Tank capacity 33 gallons.

<sup>6</sup> Average fuel consumption is 7 gallons per hour of continuous operation.

<sup>7</sup> Refer to table shown in TM 5-6115-207-20 for quantities, ambient temperatures, specific gravity, and replenishment data.

<sup>8</sup> Average fuel consumption for winterization heater is .6 gallon for 8 hours operation.

## CHAPTER 2

### OPERATING INSTRUCTIONS

---

#### Section I. SERVICE UPON RECEIPT OF EQUIPMENT

#### 7. Inspection of New Equipment

a. Make a thorough inspection of the generator set for possible damage incurred in shipment or uncrating.

- (1) Check the fuel and oil tube assemblies for bends, cracks, or loose connections. Tighten all loose connections or report a damaged tube to organizational maintenance.
- (2) Examine the coolant hoses, and line assemblies for cracks, deterioration, or loose connections. Tighten any loose connections. Report any condition that can not be corrected to organizational maintenance.
- (3) Inspect the complete generator set for loose or missing nuts, bolts or screws, lockwashers, and flatwashers. Tighten all loose nuts, bolts, or screws and replace any missing screws, nuts, bolts, lockwashers, and flatwashers.
- (4) Inspect all visible wiring and wiring shielding for deterioration, cracks, frayed insulation, and loose connections. Tighten all loose connections and report all damaged parts to organizational maintenance.
- (5) Check all gages and instruments for cracked or broken glass and damaged dials. Report any condition that cannot be corrected to organizational maintenance.
- (6) Examine the housing, access doors, generator, engine, and all accessories, for bent, cracked, or missing parts. Report all damaged parts to organizational maintenance.

b. Refer to paragraph 63 for before operation services as a guide to inspecting the generator set. Report to organizational maintenance any condition that cannot be corrected.

#### 8. Servicing New Equipment

a. *General.* Upon the receipt of new equipment the operator will perform the before operation services listed in paragraph 63.

b. *Lubrication.* Completely lubricate the generator set in accordance with the current lubrication order. Before filling the engine crankcase be sure the crankcase drain cap (10, fig. 2) is tight.

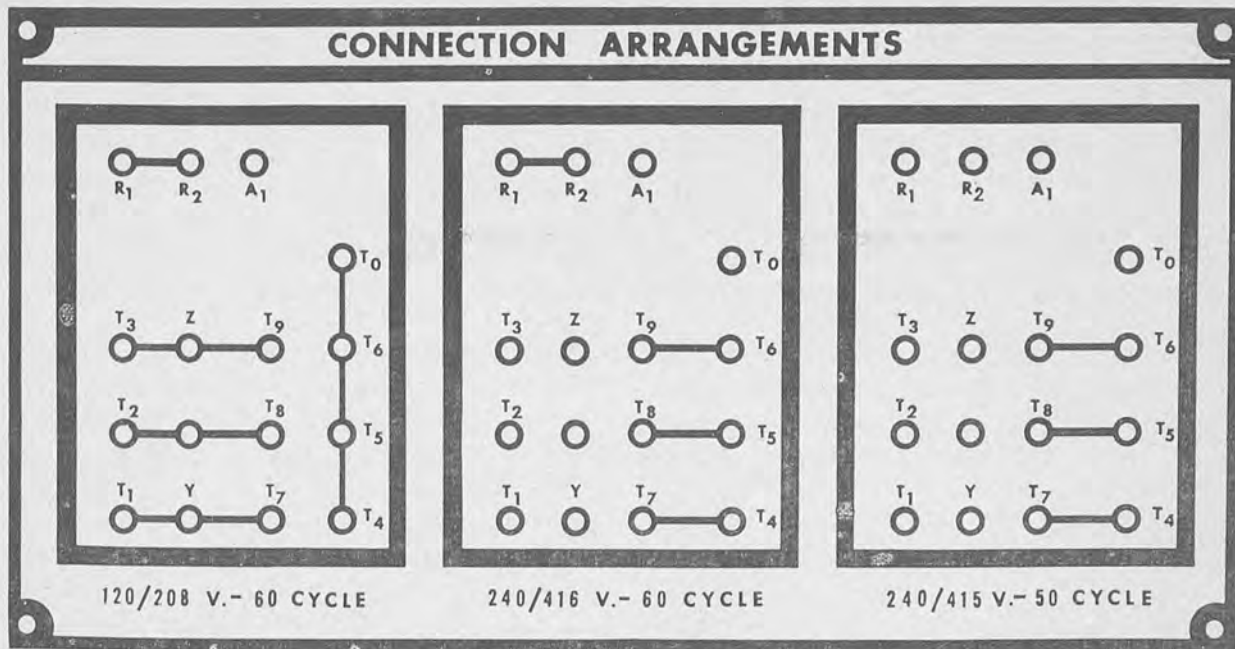
c. *Fuel Tank.*

- (1) Open the fuel tank air vent cock, located on the top right side of the tank, remove the fuel tank cap and fill the tank with diesel fuel. Install the diesel fuel tank cap.

**Warning:** When filling fuel tank, do not smoke or use open flame in vicinity.

- (2) If an external fuel source is to be used, the extra fuel hose assemblies provided must be connected to the fuel selector valve (par. 40) located on the right side of the main generator, directly below the fuel tank. Remove the two caps from the fuel selector valve and remove the four caps from the fuel hoses. Connect the two hose assemblies to the fuel selector valve. Connect the other end of the two hose assemblies to the external fuel source.

d. *Batteries.* Be sure the electrolyte level is three-eighths inch above the separators in the batteries. Install the batteries (par. 89).



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Figure 5. Generator voltage change-over tap box panel connections.

**Warning:** When servicing batteries do not smoke or use an open flame in the vicinity. Batteries generate an explosive gas during charging.

*e. Cooling System.* See that the drain caps on the radiator are secure. Remove the radiator cap (3, fig. 1). See that the cooling system is filled with the proper coolant solution for the anticipated ambient temperature.

## 9. Equipment Conversion

*a. General.* The generator set is shipped from the factory connected for a 60-cycle, 120/208-volt operation. The terminals of the power distribution panel (11, fig. 1) in the terminal box are marked as shown in figure 5 and the copper terminal connecting bars which connect the terminals are held in place by wingnuts. The tap box panel assembly is located inside the rear access housing door.

### *b. Conversion.*

- (1) Open the door of the power distribution panel. Open the masonite shield to expose the terminals.
- (2) To connect the unit for 60-cycle, 120/208-volt or 60-cycle, 240/416-volt operation at 1,200 rpm, arrange the bars as

indicated in figure 5 for the range required.

**Warning:** When connecting an incoming unit to the electrical system for parallel operation, be certain that all voltage is removed from both the circuit and incoming unit before making connections.

- (3) To connect the unit for 50-cycle, 240/416-volt operation at 1,000 rpm, arrange the bars as for 60-cycle, 240/416-volt operation as indicated in figure 5 and remove the terminal connecting bar between R1 and R2.
- (4) Secure the terminal connecting bars with the wingnuts. Make certain the wingnuts are tight. Close the change-over board masonite shield and the access panel door.

## 10. Installation or Setting Up Instructions

*a. Location.* The operator will assist in the installation of the generator set. Avoid muddy, sandy, or dusty locations if possible, as dirt and moisture will shorten the life of moving parts. If it is necessary to place the unit on soft ground, see that a foundation of planks, logs, or concrete,



with sufficient area to allow the operator access to all parts of the generator set is provided before starting operation of the unit.

*b. Indoor Installation.* If the unit is to be operated within a building or vehicle, make certain that the exhaust system has been extended to conduct the engine exhaust to the outside and that plenty of fresh air is available. See that two foot clearance has been provided on all sides of the unit for operating and servicing.

**Warning:** When operating in inclosed areas, pipe exhaust fumes to the outside by extending exhaust pipe. Continued breathing of exhaust fumes is dangerous.

*c. Grounding.* Clamp and solder a wire of adequate size to a ground rod or buried plate. Insert the remaining end through the ground terminal lug (6, fig. 2) and secure it by tightening the connection nut.

## Section II. CONTROLS AND INSTRUMENTS

### 13. General

This section describes, locates, illustrates, and furnishes to the operator or crew sufficient information pertaining to the various controls and instruments provided for the proper operation of the generator set.

### 14. AC Ammeter

The ac ammeter (1, fig. 6) is located on the top left corner of the instrument panel. It is a circular needle-indicating meter, calibrated in an upper scale of 0-80 amperes and a lower scale of 0-40 amperes. The upper scale indicates the amperage for 120/208-volt operation. The lower scale indicates the amperage for 240/416-volt operation. The red line through upper and lower scales indicates full load current at .8 power factor for 60 cycles. The green line through lower scale indicates full load current at .8 power factor for 50 cycles. The ac ammeter indicates the ampere output of the main generator at the load terminals.

### 15. Main Push Switch

The main push switch (2, fig. 6) is a two-push-button type switch, with a black ON button and a red OFF button. It is located to the right of

**Warning:** When operating the generator set, be sure the set is grounded.

### 11. Inspection of Used Equipment

Used generator sets which have been stored and shipped in conformance with Army specifications must be inspected before use in the same manner as new equipment (par. 7). Any equipment that has been subject to use and wear should be cleaned, and a careful inspection should be made to see that all connections are tight and insulation is not frayed. Check all terminals and connections for proper polarity (par. 89). Report or correct any unusual conditions immediately.

### 12. Servicing Used Equipment

Perform the service functions listed for new equipment in paragraph 8. Check for fuel and oil leaks, paying particular attention to the engine base, filler cap gasket, and drain plug.

the ammeter, near the top of the instrument panel. The main switch is the means by which the load is connected, or disconnected, between the load terminals and the main generator.

### 16. Wattmeter

The wattmeter (3, fig. 6) is located at the top center of the instrument panel. It is a circular, needle-indicating meter calibrated in a 0 to 20 scale. The green line indicates full load at .8 power factor for 50-cycle operation. The red line indicates full load at .8 power factor for 60-cycle operation. This meter indicates the amount of power being consumed by the electrical load.

### 17. Panel Light Toggle Switch

The panel light toggle switch (19, fig. 6) is located on the bottom left side of the upper control panel, to the left of the starter button. It is a toggle-type switch which controls the upper and lower panel lamps (4).

### 18. Synchronizing Lights

The two synchronizing lights (5, fig. 6) are located between the kilowattmeter and the voltmeter. They are incandescent bulb lamps covered by clear glass lenses. The synchronizing lights

indicate when the two generator sets are synchronized and can be operated in parallel.

#### 19. Voltmeter

The voltmeter (6, fig. 6) is located on the top right corner of the hinged panel. It is a circular, needle-indicating meter calibrated in a 0 to 600 scale for 240/416-volt operation and a 0 to 300 scale for 120/208-volt operation. A red line indicates the correct phase-to-phase voltage. A green line indicates the correct phase-to-neutral voltage.

#### 20. Frequency Meter

The frequency meter (7, fig. 6) is located directly below the voltmeter. It is a dual-scale vibrating reed type meter calibrated from 48 to 52 and 58 to 62-cycles with 50 and 60-cycles located in the center of the scales. It indicates the frequency of the generator output in cycles per second.

#### 21. Synchronizing Light Switch

The synchronizing light switch (8, fig. 6) is located directly below the synchronizing lights. It is a toggle-type switch, used to control the synchronizing lights.

#### 22. Exciter Field Variable Resistor

This variable resistor (rheostat) (9, fig. 6) is located directly below the engine hour-meter. It is a manually operated knob which controls the voltage of the generator when operating on MANUAL.

#### 23. Crosscurrent Compensation Toggle Switch

This switch (10, fig. 6) is located on the bottom right corner of the upper panel, to the right of the temperature gage. It is a toggle-type, ON-OFF switch. The ON position is for parallel operation of two or more generators. The OFF position is for single unit operation.

#### 24. Engine Coolant Temperature Indicating Thermometer

The thermometer (11, fig. 6) is located between the battery charging ammeter and the crosscurrent compensation toggle switch. It is a circular needle-indicating gage calibrated in a 100° to 250° F. scale. The red segment of the

scale indicates above normal engine coolant temperature. The normal operating temperature range is 165° to 185°.

#### 25. Battery-Charging Ammeter

The battery-charging ammeter (12, fig. 6) is located between the engine coolant thermometer and the engine oil pressure gage. It is a circular, needle-indicating gage calibrated in a -30 to +30 ampere scale. The ammeter indicates the charge or discharge rate of the batteries. The normal reading, dependent upon the state of charge in the batteries, will be from 0 to +30 amperes.

#### 26. Pressure-Thermostatic Switch

The pressure-thermostatic switch (13, fig. 6) is located on the upper right corner of the lower panel. The switch is controlled by a manually-operated three-position knurled knob. It provides for automatic shut down of the generator set under conditions of high engine coolant temperature and/or low oil pressure.

#### 27. Governor Reset Collar and Plunger

The reset plunger (14, fig. 6) is located on the center of the overspeed governor housing which extends through a circular hole in the bottom of the control panel. The button-type switch is pressed to reset the overspeed relay after it has functioned to shut off the engine.

#### 28. Lubricating Oil Pressure Gage

The lubricating oil pressure gage (15, fig. 6) is located on the bottom of the upper panel, to the left of the battery-charging ammeter. It is a circular, needle-indicating meter calibrated in a 0 to 80 PSI (pounds per square inch) scale. The red segment of the scale indicates abnormally low oil pressure. The normal oil pressure reading should be 40 to 60 PSI.

#### 29. Cold Start Pressure Primer Assembly

The cold start pressure primer assembly (16, fig. 6) is located on the lower control panel, to the right of the engine speed adjustment wheel. The primer is a capsule receptacle, manually-operated, lever-plunger device. It is used to inject a suitable priming agent into the fuel system, to assist in starting the engine in extreme cold.

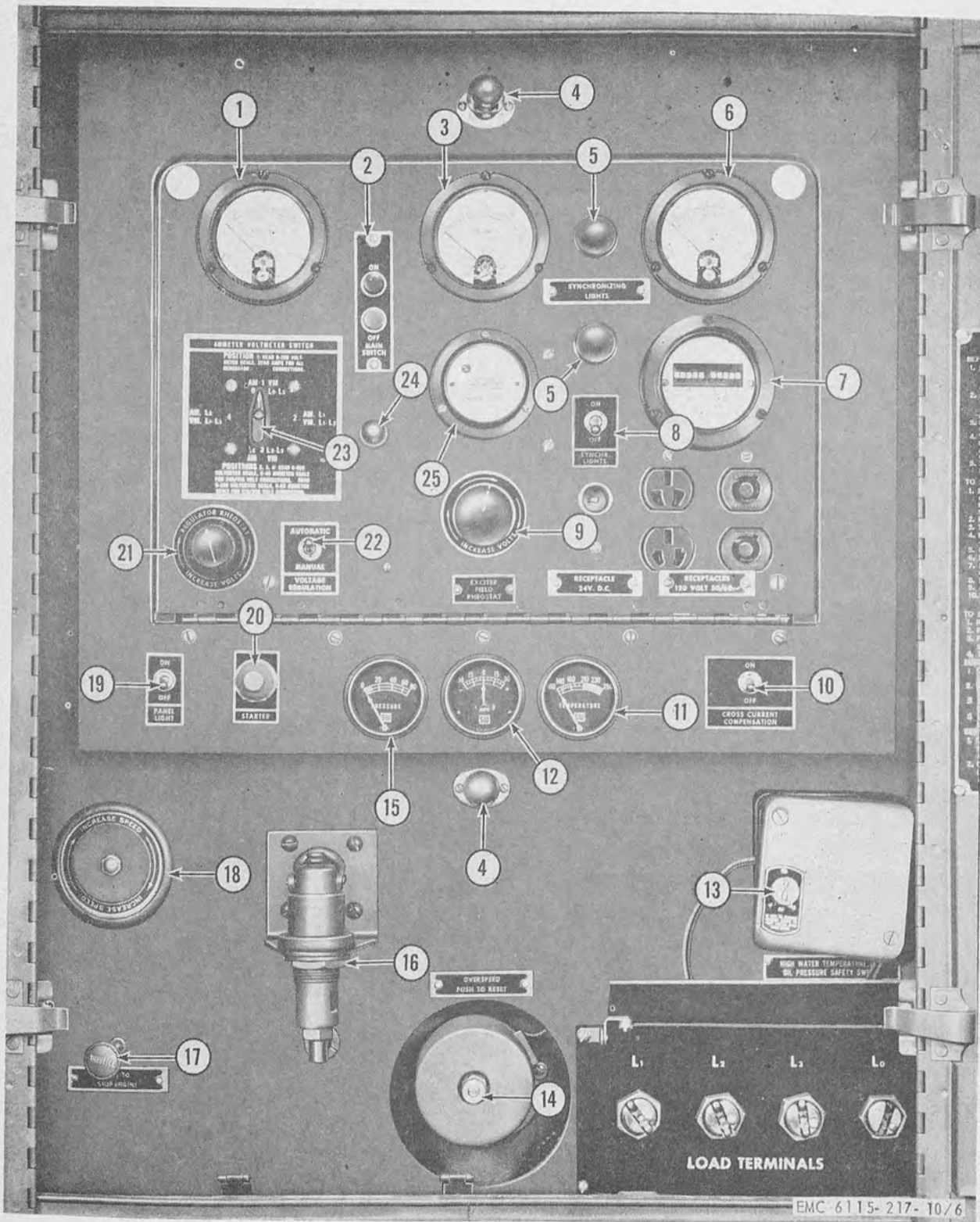


Figure 6. Control panel.



- |  |  |
|--|--|
| 1 Ac ammeter   | 14 Governor reset collar and plunger   |
| 2 Main push switch                                   | 15 Lubricating oil pressure gage       |
| 3 Wattmeter  | 16 Cold start pressure primer assembly |
| 4 Panel lamp   | 17 Throttle control                    |
| 5 Synchronizing light                                | 18 Engine speed adjustment handwheel   |
| 6 Voltmeter  | 19 Panel light toggle switch           |
| 7 Frequency meter                                    | 20 Starter push switch                 |
| 8 Synchronizing light switch                         | 21 Voltage regulator variable resistor |
| 9 Exciter field variable resistor                    | 22 Voltage regulator toggle switch     |
| 10 Crosscurrent compensation toggle switch           | 23 Ammeter-voltmeter rotary switch     |
| 11 Engine coolant temperature indicating thermometer | 24 Indicator light                     |
| 12 Battery-charging ammeter                          | 25 Time totalizing meter               |
| 13 Pressure-thermostat switch                        |  |

Figure 6—Continued.

### 30. Throttle Control

The throttle control (17, fig. 6) is located in the bottom left corner of the lower control panel. It is a spring loaded, cable type, control. It is pulled to stop the engine.

### 31. Engine Speed Adjustment Handwheel

The engine speed adjustment handwheel (18, fig. 6) is located directly above the throttle control. It is a hand-rotated, throttle-adjustment device which increases engine speed when turned clockwise.

### 32. Starter Push Switch

The starter push switch (20, fig. 6) is located to the right of the panel light switch. It is a spring-loaded, button-type switch covered with a rubber grommet. It is pressed to start the engine.

### 33. Voltage Regulator Variable Resistor

This variable resistor (21, fig. 6) is located on the lower left corner of the hinged panel. It is a manually-rotated control which controls the voltage of the generator when operating on AUTOMATIC.

### 34. Voltage Regulator Toggle Switch

The voltage regulator switch (22, fig. 6) is located to the right of the voltage regulator. It is a two-position toggle-type switch marked AUTOMATIC-MANUAL, providing changes from automatic to manual voltage control.

### 35. Ammeter-Voltmeter Rotary Switch

The ammeter voltmeter rotary switch (23, fig.

6) is located directly below the ac ammeter. It is a four-position rotary switch. On the position "1", the ammeter is off and the voltmeter shows the voltage between L0 and L3. On the position "2", the ammeter shows the current in L1, and the voltmeter shows the current between L1 and L2. On the position 3, the ammeter shows the current in L2, and the voltmeter shows the voltage between L2, and L3. On position 4, the ammeter shows the current in L3, and the voltmeter shows the voltage between L1 and L3.

### 36. Indicator Light

The indicator light (24, fig. 6) is located directly beneath the main switch. It is a neon light with a red, glass lens. It glows when the main contactor is closed.

### 37. Time Totalizing Meter

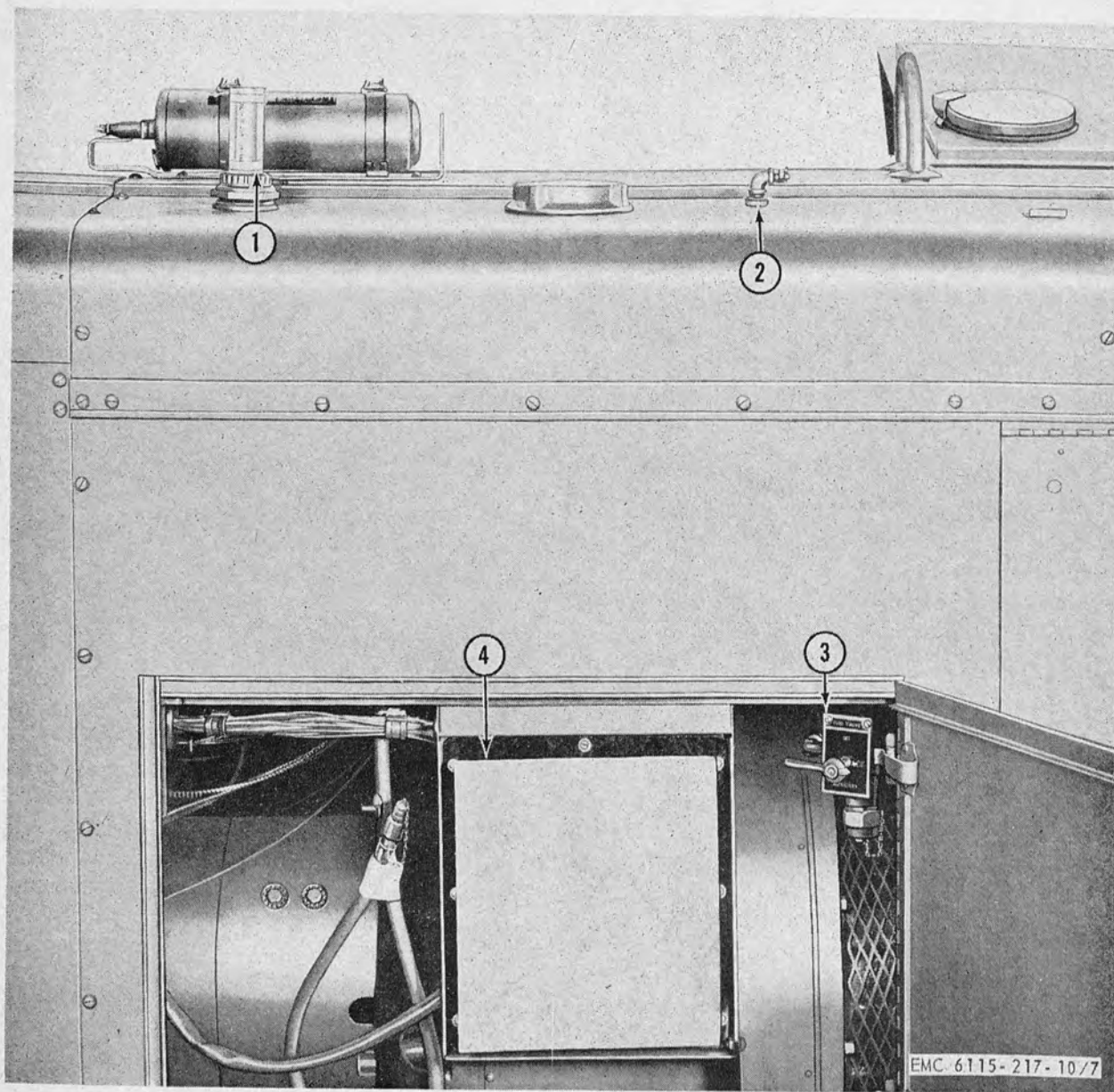
The time totalizing meter (25, fig. 6) is located in the center of the hinged panel. It is a circular dial with four black and one red numeral tumblers. It indicates hours and tenths to 9,999.9. The hourmeter registers the generator set operating time.

### 38. Fuel Gage

The fuel gage (1, fig. 7) is located on the top of the generator set housing beside the fuel tank cap. The gage is a transparent plastic tube, sealed with two markings, E,  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ , F on one side and  $\frac{1}{8}$ ,  $\frac{3}{8}$ ,  $\frac{5}{8}$ ,  $\frac{7}{8}$  on the other. A red plastic cylinder slides through the tube to indicate the fuel level in the fuel tank.

### 39. Fuel Tank Air Vent Cock

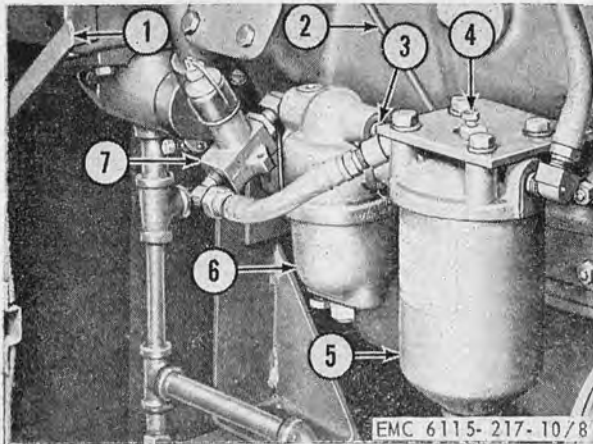
The fuel tank air vent cock (2, fig. 7) is located



- 1 Fuel gage
- 2 Fuel tank air vent cock

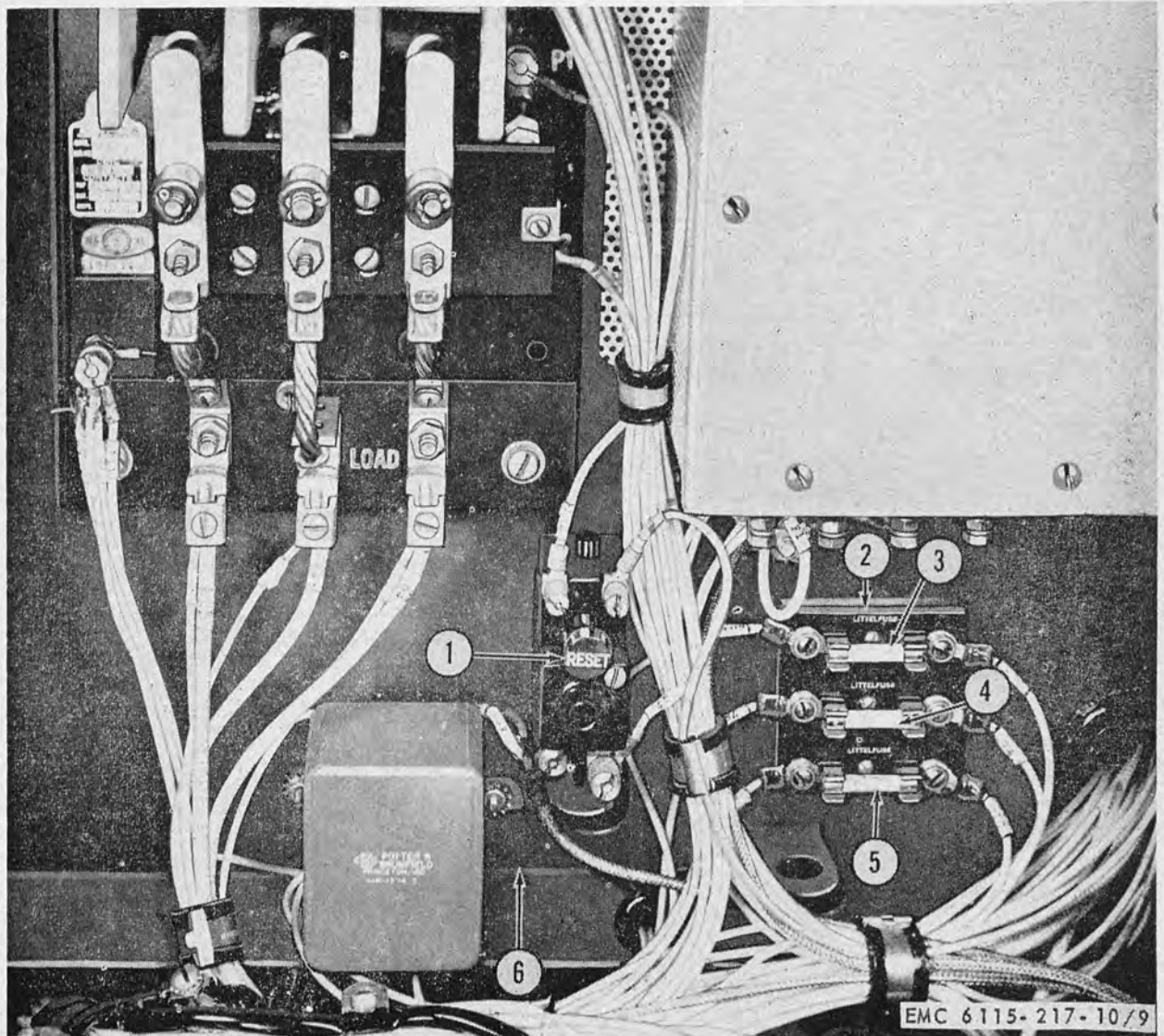
- 3 Fuel selector valve
- 4 Power distribution panel

Figure 7. Fuel gage, selector valve, and vent cock, installed.



- 1 Manual shutter control lever
- 2 Oil gage rod assembly
- 3 Plug, pipe, ¼ in. 18 thd size
- 4 Vent plug (special)
- 5 Secondary fuel filter assembly
- 6 First stage fuel filter assembly
- 7 Fuel primer pump

EMC 6115-217-10/8  
 Figure 8. Shutter control lever and primer, installed.



- 1 Overload thermal relay
- 2 Fuse holder

- 3 Fuse, 1 amp, 250 V
- 4 Fuse, 5 amp, 250 V

- 5 Fuse, 30 amp, 125 V
- 6 Control panel box

EMC 6115-217-10/9  
 Figure 9. Overload switch relay, installed.



on the top of the generator set directly in front of the fuel tank cap. It is a plug-type valve cock which, when opened, provides a means of venting the fuel tank during operation of the unit.

#### 40. Fuel Selector Valve

The fuel selector valve (3, fig. 7) is located at the bottom and in front of the fuel tank. It is a plug-type, three-way valve which controls the flow of fuel from the tank to the engine and from the engine relief valve assembly back to the tank. It also provides a means of connecting an outside fuel source to the engine.

#### 41. Manual Shutter Control Lever

The manual shutter control lever (1, fig. 8) is located at the bottom of the radiator on the left side of the generator set. It controls the shutters manually in the event of faulty automatic operation of the thermostatic control.

#### 42. Fuel Primer Pump

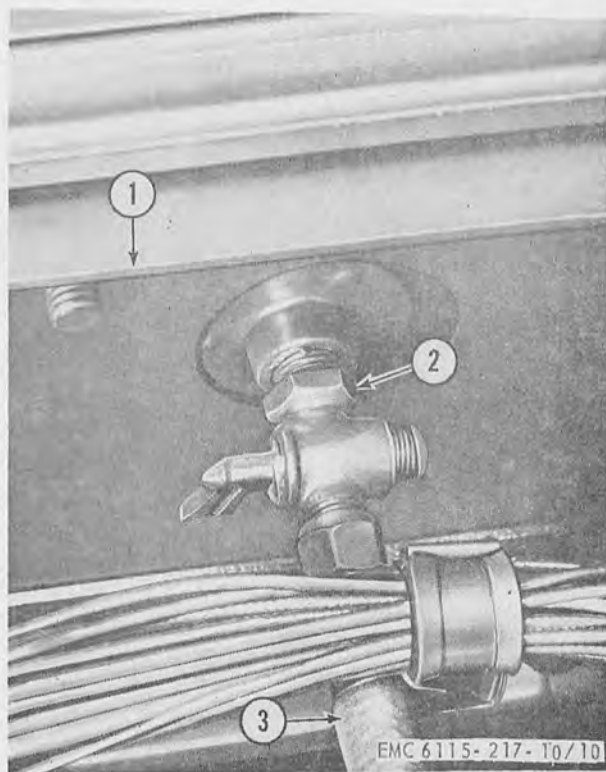
The fuel primer pump (7, fig. 8) is a hand-operated, plunger-type pump. It is located in front of and connected to the first stage fuel filter (6). It is used to prime the low pressure part of the fuel system.

#### 43. Overload Thermal Relay

The overload thermal relay (1, fig. 9) is a push-type switch, located on the inside of the control panel box (6) directly behind the exciter field variable resistor (9, fig. 6). The overload switch relay opens the main contactor in case of generator overload.

#### 44. Fuel Tank Draincock

The fuel tank draincock (2, fig. 10) is a globe-type valve with a straight lever handle. The draincock is located to the left of the top panel box assembly and at the bottom of the fuel tank (1). The draincock is used to drain the fuel from the fuel tank.



1 Fuel tank    2 Fuel tank drain cock  
3 Drain hose

Figure 10. Fuel tank draincock, installed.

### Section III. OPERATION UNDER USUAL CONDITIONS

#### 45. General

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

b. It is essential that the operator know how to perform every operation of which the generator set is capable. This section gives instructions on starting and stopping the generator set under normal conditions, instructions on setting the output voltage, and instructions on how best to utilize the capabilities of the generator set to perform the specific tasks for which it was designed. Since nearly every job presents a differ-

ent problem, the operator may have to vary the given procedure to fit the individual job.

#### 46. Starting

##### a. Preparation for Starting.

- (1) Perform the before-operation services (par. 63).
- (2) Place the fuel selector valve (3, fig. 7) in the proper position. If the fuel is to be supplied from the generator set fuel tank, position the valve on SET. If the fuel is to be supplied from an outside source, position the valve on AUXILIARY.

- (3) Open the fuel tank air vent cock (2) on the top of the unit.
- (4) Push the governor reset collar and plunger (14, fig. 6).
- (5) Open the engine speed adjustment handwheel, (18) half way by turning it clockwise.
- (6) Turn the exciter field variable resistor (9) and the voltage regulator variable resistor (21) counterclockwise as far as possible.
- (7) Place the voltage regulator toggle switch (22) in the AUTOMATIC position.

*b. Priming Fuel System.* When starting a new engine, or one that has been idle for some time, or one that has run out of fuel, priming is necessary to remove the trapped air in the fuel system. Proceed as follows:

- (1) Remove the pipe plug (3, fig. 8) in the first stage fuel filter (6).
- (2) Turn the fuel selector valve (3, fig. 7) to the SET position. When the fuel flows through the pipe plug opening, replace the plug.
- (3) Remove the bleeder vent pipe plug (4, fig. 8) in the secondary fuel filter (5).
- (4) Unlock the hand plunger of the fuel primer pump (7) and operate the pump until a solid stream of fuel flows from the vent. Install the bleeder vent pipe plug.
- (5) Loosen the injection line at the nozzle holder assembly.
- (6) Crank the engine with the starter until fuel squirts from the injection lines. Tighten the injection line assembly.

*c. Starting Engine.*

- (1) Turn the knob of the pressure thermostat switch (13, fig. 6) to the START position.
- (2) Adjust the engine speed adjusting handwheel (18) to approximately one-fourth full throttle.
- (3) Depress the starter push switch (20) until the engine starts.

**Caution:** Do not operate the engine starter more than 30 seconds without allowing a 3 minute cooling period.

- (4) As soon as the engine is started, release the starter push switch, and adjust the

engine speed adjusting handwheel back to a fast idle engine speed. The knob of the pressure thermostat switch should automatically move to the RUN position. Failure to do so indicates a lubricating oil pressure below 20 psi and the engine must be stopped immediately.

- (5) Operate the engine at a fast idle and observe the lubricating oil pressure gage (15). It should read 40 to 60 psi. When the coolant temperature thermometer (11) reads 165° to 195°, full throttle may be applied to the engine. With full throttle applied, note the battery charging ammeter (12), it should read from 0 to +30 amperes dependent upon the state of charge of the batteries.
- (6) To start generator operation, refer to operating details (par. 48).

*d. Starting Engine in Extreme Cold.*

- (1) Perform the step for preparation for starting (a above) and priming the fuel system (b above).
- (2) Remove the top of the cold start pressure primer assembly (16, fig. 6) and insert an ether capsule. Replace the top of the primer.
- (3) Press the lever handle of the primer down and perform the starting engine operation in c above.

## 47. Stopping Engine

*a. Normal Stopping.*

- (1) Open the main contactor relay by depressing the red OFF main push switch (2, fig. 6).
- (2) Turn the engine speed adjustment handwheel (18) counterclockwise until the engine is idling. Run the engine at idle speed for 5 minutes to allow even cooling.
- (3) Pull out the engine throttle control (17) and hold it out until the engine stops.
- (4) Close the air vent cock (2, fig. 7) on the fuel tank and turn off the diesel fuel valve (3).
- (5) Turn the pressure thermostat switch (13, fig. 6) to the OFF position.

- (6) Perform the after-operation or at-halt services listed in paragraph 63, whichever applies.

*b. Emergency Stopping.* In the event an emergency stop must be made, as in the case of engine control or safety device failure, push the main switch (2, fig. 6) OFF button and close the fuel selector valve (3, fig. 7).

*c. Stopping by Safety Devices.* Safety devices stop the engine in the event of overspeed, high coolant temperature, or lubricating oil pressure failure. If the engine is stopped by a safety device, refer to paragraph 67.

### 43. Operating Details

*a. General.* This generator set may be operated as a single unit or in parallel with another set of similar type. If necessary, more than two generator sets may be operated in parallel; however, care must be taken to prevent excessive crosscurrents between the sets and to prevent one of the generator sets from being driven by any other generator set.

*b. Connecting Load Lines.*

**Warning:** Before making any connections, be sure the main switch is OFF, all voltage is removed from the load cables, and the engine is not operating.

- (1) Open the rear access control panel door. Feed the four load cables through the opening in the housing directly below the load connections.
- (2) For three-phase operation, make the connections to the slotted terminal studs on the main load terminal board (5, fig. 2). Connect the phase leads to the terminals marked L1, L2, and L3. Connect the neutral lead to the terminal marked TO.
- (3) For single-phase operation, connect one load cable to any one of the terminals marked L1, L2, or L3. Connect the neutral lead to the terminal marked LO.

*Note.* One or more single-phase loads can be connected alone or in combination with three-phase loads, but the load on any one phase must not exceed the ampere rating of the generator. To check for equal load division, see paragraph *c* below.

*c. Single Unit Operation.*

- (1) See that the generator is set up for the voltage and frequency required. Make

necessary conversion as instructed in paragraph 9.

- (2) Start the engine as outlined in paragraph 46.
- (3) Set the voltage regulator toggle switch (22, fig. 6) on AUTOMATIC position, and the crosscurrent compensation toggle switch (10) at the OFF position.
- (4) Turn the voltage regulator variable resistor (21) clockwise until the voltmeter (6) indicates the desired operating voltage.
- (5) Adjust the engine speed adjusting handwheel (18) until the frequency meter (7) indicates the desired operating frequency.
- (6) Connect the load by pushing the main push switch (2) (black).
- (7) Check and readjust the voltage and frequency as often as necessary.

*Note.* If the automatic voltage regulator fails, place the voltage regulator toggle switch (22) on MANUAL position, and adjust the exciter field variable resistor (9) for the desired voltage. Report failure of the automatic voltage regulator to Organizational Maintenance.

- (8) Rotate the ammeter-voltmeter rotary switch (23) to obtain the desired readings. Refer to paragraph 35 for meter reading position of the switch.

*Note.* Due to fluctuations in service line loads, the operator must maintain a constant check on the voltmeter and ammeter readings during operation.

*d. Parallel Operation.*

- (1) *General.* Parallel operation of two or more generator sets will produce the same output voltage but will increase the available power. Generator sets to be operated in parallel must have the same voltage and frequency rating, and must be connected for correct phase rotation. The ac generators should have similar voltage regulation characteristics, and similar engine speed regulation characteristics. The procedure below outlines directions for operating two units in parallel. Additional units of the model described in this manual may be added to the line in the same manner.

**Warning:** Before making any con-



nections on an incoming unit to an electrical system for parallel operation, be certain all voltage is removed from both the circuit and the incoming unit.

(2) *Synchronization.*

- (a) Connect L1, L2, L3, and L0 load terminal studs of one generator set to the corresponding load terminal studs of the other set.
- (b) Connect the service line load cables to the load studs of one generator as outlined in *b* above. This set is the operating set; the other set will be the incoming set.
- (c) Start the operating set (par. 46).
- (d) Set the voltage regulator toggle switch (22, fig. 6) at AUTOMATIC position.
- (e) Adjust the voltage regulator variable resistor (21) to obtain the correct operating voltage.
- (f) Adjust the engine speed adjusting handwheel (18) to obtain the correct frequency.
- (g) Set the crosscurrent compensation switch (10) at the ON position.
- (h) Depress the main PUSH switch (2) to connect the load.
- (i) Start the incoming generator set (par. 46).
- (j) Set the voltage regulator toggle switch at AUTOMATIC position.
- (k) Adjust the voltage regulator variable resistor until the indicated voltage is the same as that of the operating set.
- (l) Adjust the engine speed adjusting handwheel to obtain the correct frequency.
- (m) Set the crosscurrent compensation switch at the ON position.
- (n) Set the synchronizing light switch (8) of the incoming generator set in the ON position. The synchronizing lights should blink dark and bright in unison. If they blink, one bright, and one dark alternately, shut down the sets, and interchange any two of the incoming load lines, L1, L2, or L3. This will correct the phase rotation. Start the generator sets and continue the synchronization.

**Caution:** Do not interchange load line L0.

- (o) Adjust the engine speed adjusting handwheel of the incoming unit until the synchronizing lights blink at 2-second intervals.
- (p) When the synchronizing lights go dark, depress the main ON switch of the incoming set.

**Caution:** Connecting the incoming set while the synchronizing lights are lighted can result in damage to both sets.

- (q) Set the synchronizing light switch at the OFF position.

(3) *Load Division.*

- (a) To provide for service line load fluctuation, generator sets operated in parallel should be adjusted so that the load on each set is proportionate to its rated capacity in kilowatts.
- (b) To divide the kilowatt load between two sets of equal capacity, take a wattmeter reading of both sets. Retard the engine speed adjusting handwheel of the set having the higher wattmeter reading and advance the engine speed adjusting handwheel of the other set until both wattmeter readings are the same.
- (c) Check the frequency meter (7) reading of each set. If the frequency has changed, adjust the engine speed adjusting handwheel of each set uniformly to obtain the desired frequency.
- (d) To divide the kilowatt load properly across two sets of unequal capacity, determine the ratio of their respective capacities. If one unit has twice the rating of the other, make the adjustments as in *b* above, except that the wattmeter reading of the large set should be twice that of the smaller set.
- (e) To divide the ampere load between two sets, rotate the ammeter-voltmeter rotary switch (23) of each set to a corresponding phase. Read the ac ammeter (1) on each set. If the readings are not in proportion to the

kilowatt ratings of the sets, adjust the voltage regulator variable resistor (21) of the incoming set.

- (f) Recheck the operating voltage. If adjustment is required after performing (e) above, both generator sets must be adjusted uniformly. To raise or lower the voltage, turn the voltage regulator variable resistors (21) of both sets uniformly in the same direction.

**Caution:** Both sets must be connected to a common ground. This is accomplished by connecting a number 2 or larger wire from the ground terminal on the housing of one set to the grounding terminal on the other set. This wire should be protected from mechanical damage. It need not be insulated.

#### 49. Movement To a New Location

##### a. Preparation for Short Distance Movement.

- (1) Remove any extension cords that are plugged into the connectors on the control panel.

**Warning:** Do not touch the load studs before making sure all voltage has been removed from the service line, and the generator set is not operating.

- (2) Remove all load lines from the load terminals and panels.
- (3) Disconnect the auxiliary fuel hose assemblies from the connections and stow them in the unit.
- (4) Disconnect the exhaust pipe extension, if used.
- (5) Check the condition and availability of the basic issue tools and publications (app. I and II). Pack the tools in the tool box.
- (6) Close the radiator shutter with the manual shutter control lever (1, fig. 8).
- (7) Close and secure all doors.

*Note.* The unit must be moved by a carrier in long distance movement, but can be skidded on its skid frame (12, fig. 1) in short distance movement.

##### b. Preparation for Long Distance Movement.

- (1) Perform the operations in a above.
- (2) Open the fuel tank drain valve and drain the fuel into a suitable container. Replace and tighten the plug.
- (3) Disconnect the battery leads at the battery terminals and tape the loose ends securely to a frame member.
- (4) If cold weather is expected, and the cooling system is not protected by anti-freeze, drain the system by removing the radiator cap, and removing the radiator drain cap.

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

#### 50. Description of Fire Extinguisher

The fire extinguisher (1, fig. 1) is the only item of materiel used in conjunction with the generator set. The fire extinguisher should be kept with the generator set at all times. A carbon tetrachloride, one-quart, hand-operated type fire extinguisher is used with this generator set.

#### 51. Operation of Fire Extinguisher

Remove the fire extinguisher from its bracket, turn the handle, and work the handle like a pump. Direct the stream at the base of the flames.

**Warning:** A poisonous gas is generated by the contact of carbon tetrachloride with heated surfaces. Be extremely careful when using a carbon tetrachloride fire extinguisher in a closed room. Provide adequate ventilation before entering a closed space where carbon tetrachloride has been used.

#### 52. Refilling and Maintenance of Fire Extinguisher

For refilling and maintenance instructions, refer to TM 5-687 and TM 9-1799.

53. Operation In Extreme Cold (Below 0° F.)

a. *General.* This equipment is designed to operate in temperatures as low as -25° F. Comply strictly with the following instructions:

b. *Engine.*

- (1) *Lubrication.* Be sure the engine is lubricated for cold weather conditions in accordance with the current lubrication order.
- (2) *Cooling system.* Have the coolant mixture checked by organizational maintenance to make sure it is adequate for expected temperatures. Before the initial antifreeze mixture is added by organizational maintenance, clean and flush the entire cooling system. Never flush a cold system in cold weather. Warm the engine first to prevent flushing agent from freezing upon contact with cold metal. Report any leaks in the cooling system to organizational maintenance. To prevent damage to coolant hoses, do not disturb them when they are cold. Be sure all thermostats and shutters are in working order.
- (3) *Fuel system.* If possible, keep fuel tank full at all times. This will lower the risk of water forming in the tank. Any water in the fuel tank will be carried to the fuel filters. Therefore, it is important to drain the filters more frequently than under normal conditions. Keep the fuel tank vent cock and filler cap free from moisture.
- (4) *Electrical system.* Before starting the engine, wipe the engine electrical system free from ice and moisture. Disturb wiring as little as possible as it becomes brittle in extreme cold and must be warmed before twisting, bending, or rewiring is attempted.
- (5) *Batteries.* A fully charged battery can withstand low temperatures. A partially charged battery may freeze and crack the cells. For peak efficiency, see that the batteries are fully charged.

**Caution:** Run engine for 1 hour after adding water to the batteries.

This permits added water to mix with the electrolyte and prevents freezing.

**Warning:** When operating in sub-zero weather, do not touch metal with bare hands.

c. *Main Generator.*

- (1) *General.* The main generator is designed to operate in a wide range of temperatures. Sufficient field control is available by use of the exciter field variable resistor to operate the generator from -65° to +125° F. without the addition of external resistors in series with the exciter field.
- (2) *Stabilization period.* When operating in extreme cold, allow at least a 15-minute stabilization period before applying the load to the generator.
- (3) *Lubrication.* The main generator has life-seal bearings and requires no special lubrication. Clean any oil or foreign matter from the generator.

54. Operation In Extreme Heat

a. *General.* The generator set can operate satisfactory in extreme heat conditions. The cooling system, lubrication, batteries, and ventilating must be checked frequently during the operating period. If possible, erect a semipermanent protective covering over the generator set, if installed in the open.

b. *Engine.*

- (1) *Cooling system.* Keep the cooling system free of scale and rust. If necessary, add rust-inhibitor. Clean and flush the cooling system at frequent intervals (par. 81). Avoid using water that contains substances likely to cause excessive scale and rust. Have the engine thermostat checked to be certain it is in working order and check fan V-belt to be sure it has proper tension (par. 82).
- (2) *Lubrication.* Lubricate the engine in accordance with the current lubrication order. Keep engine clean at all times.
- (3) *Batteries.* Check electrolyte level in



batteries daily. It should be about one-half inch above the plates. Add water if necessary.

*c. Generator.*

- (1) *Field resistance.* Sufficient field control to compensate for resistance changes is available by use of the exciter variable resistor or the voltage adjusting variable resistor.
- (2) *Ventilation.* Be sure all ventilating screens and shields are clean and free from obstructions. Allow maximum air circulation through the generator set. If surrounding air is not dusty or sandy, housing access doors may be left open or removed. Where sand or dust exists in the air, housing access doors must remain closed. When operating indoors, make provisions for waste heat and exhaust gases to be carried outdoors. Ventilate as well as possible.
- (3) *Lubrication.* The main generator requires no special lubrication. Clean any oil or foreign matter from the generator.

## 55. Operation In Dusty Or Sandy Areas

*a. General.* If the installation is permanent, erect a protective cover for the generator set. If not permanent, utilize natural barriers as much as possible. Where water is plentiful, keep the immediate area wetted down. Do not open or remove the housing or housing doors unless necessary. Keep the generator set as clean as possible, paying special attention to screens and grilles.

*b. Engine.*

- (1) *Lubrication.* In sandy or dusty areas, filters and strainers must be cleaned or replaced more often than in normal areas. Clean all lubrication points be-

fore applying lubricant. Clean the area thoroughly around the oil filler cap and oil level bayonet gage before checking or adding engine oil.

- (2) *Cooling system.* Inspect the cooling system frequently for leaks and improper operation. Keep the radiator filler cap on tight and see that the fan V-belt has proper tension (par. 82). Clean and flush the cooling system as often as necessary (par. 81).
- (3) *Fuel system.* Take all precautions to keep grit and dirt out of fuel tanks and fuel systems. Clean filter bowl and strainer element in the fuel filler neck frequently. Check fuel filters (pars. 83 and 84) more often than normally required.

*c. Main Generator.* Keep the generator free of grease and oil. Blow terminals and connections clean with compressed air. Be sure the bell screens and shields are clean.

## 56. Operation In Salt Water and High Humidity Areas

If the unit is outside and not operating, put canvas or other waterproof covering over the unit during storms. Remove the cover during dry periods and open the housing access doors to allow the unit to dry out. Dry the unit before operating. Keep fuel tanks full to avoid condensation. Drain all accumulated moisture from the fuel filters at more frequent intervals. Protect the unit from salt spray and wipe it down with fresh water regularly.

## 57. Operation At High Altitudes

The generator set is designed to operate without special attention or adjustments at altitudes up to 5,000 feet above sea level.

## CHAPTER 3

### MAINTENANCE INSTRUCTIONS

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#### Section I. OPERATOR'S TOOLS AND EQUIPMENT

##### 58. Special Tools and Equipment

No special tools or equipment needed by the operator for maintaining the generator set.

##### 59. Basic Issue Tools and Equipment

The basic issue tools and equipment that are supplied with the generator set are listed under the basic issue items list in appendix II.

#### Section II. LUBRICATION

##### 60. General Lubrication Information

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

*b.* The lubrication order shown in figure 11 is an exact reproduction of the approved lubrication order for the generator set. For current lubrication order, always refer to DA Pam 310-4.

##### 61. Detailed Lubrication Information

*a. Care of Lubricants.* Keep all lubricants (grease and oil) in closed containers and store in a clean, dry place away from the heat. Allow no dirt, dust, water, or foreign material to mix with the lubricant at any time. Keep all lubrication equipment clean and ready for use.

*b. Points of Lubrication.* The points of application are identified in the lubrication order shown in figure 11 and are illustrated in the succeeding views of figure 11. The following subdivisions contain information that supplements that which is given on the lubrication order. Apply the lubricants indicated on the lubrication order key.

*c. Cleaning.* Keep all external parts not requiring lubrication, clean from lubricants. After every lubrication operation, remove any excess lubricant from the point of application and wipe away any spilled lubricant. Old or hardened lubri-

cants may be easily removed by using a cleaning solvent.

*d. Operation After Lubrication.* Operate the engine immediately after lubrication. Check the oil filter, oil lines, and connections for leaks. Observe the oil pressure gage; normal reading is between 40 and 60 psi. If the oil pressure is below normal, shut down the engine and determine the cause. Report any deficiency that cannot be corrected to organizational maintenance.

##### *e. Oil Filter Assembly.*

- (1) *General.* The oil filter assembly (6, fig. 1) removes the grit, sludge, and foreign particles from the circulated oil by the means of a replaceable filter element. The assembly is clamped to the oil filter bracket and connected to the lubricating system by external lines.
- (2) *Service.* Service intervals and operations are prescribed by the current lubrication order. To service the oil filter assembly, proceed as follows:
  - (a) Loosen the shoulder bolt (1, fig. 12) and remove the assembled cover (3) from the body assembly (6).
  - (b) Remove the filter element (5) from the body assembly. Discard the element.
  - (c) Use a suitable suction type oil gun

**LUBRICATION**

**ORDER**

# LO 5-6115-217-20

**GENERATOR SET, DIESEL ENGINE: 15 KW, AC, 120/208-240/416 V,  
3 PHASE, 60 CYCLE, CONVERTIBLE TO 12.5 KW, 50 CYCLE,  
SKID MOUNTED, (U.S. MOTORS MODEL 15-US-10327B-A)  
W/CONTINENTAL ENGINE MODEL HD 260.**

REFERENCE: TM 5-6115-217-10 and -20; SB 38-5-3

Intervals are based on normal operations. Reduce to compensate for abnormal operation and severe conditions. During inactive periods intervals may be extended commensurate with adequate preservation.

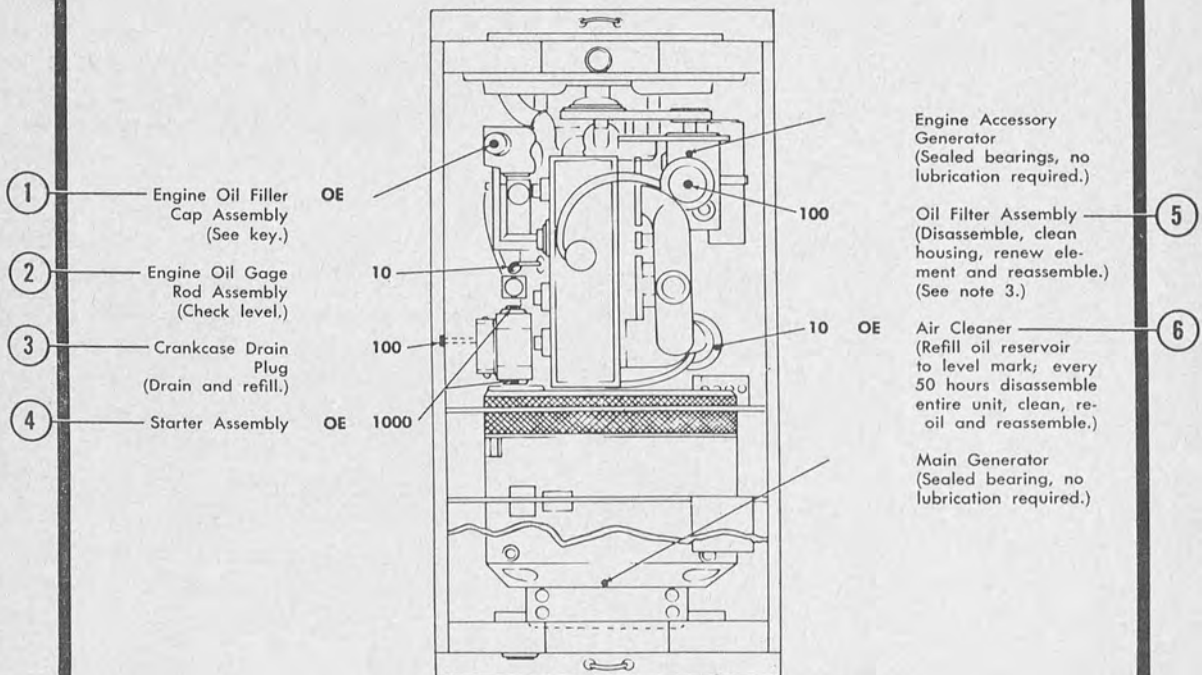
Relubricate after washing and fording.

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

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

LUBRICANT • INTERVAL

INTERVAL • LUBRICANT



CONTINUED ON FOLLOWING PAGE

EMC 6115-217-10/11 ①

Figure 11. 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					Intervals given are in hours of normal operation.
Crankcase	7 qt.	OE 30 or 9250	OE 10 or 9110	OES	
Air Cleaner	½ 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 part with SOLVENT, dry-cleaning. Relubricate with lubricants specified in the key for temperatures below -10°F.

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

BY ORDER OF WILBER M. BRUCKER  
SECRETARY OF THE ARMY;

2. OIL CAN POINTS. Every 50 hours clean and coat throttle controls, shutter controls and hinges with OE.

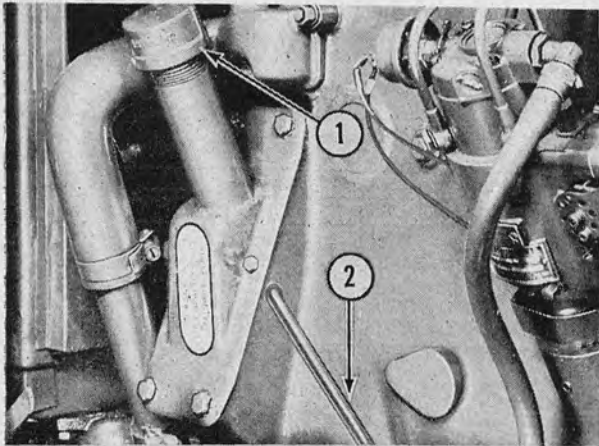
MAXWELL D. TAYLOR  
General, United States Army  
Chief of Staff

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

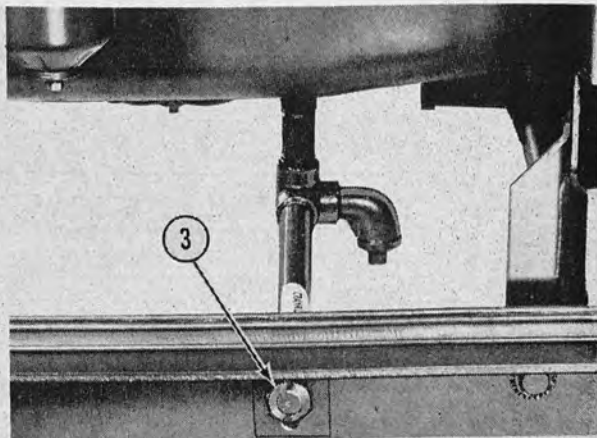
OFFICIAL:  
R. V. LEE,  
Major General, United States Army,  
The Adjutant General.

EMC 6115-217-10/11 ©

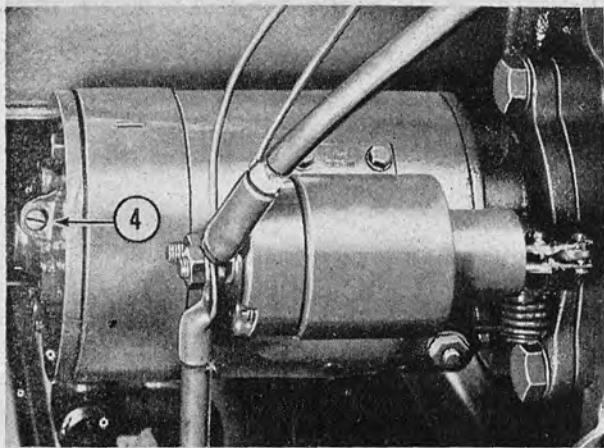
Figure 11—Continued.



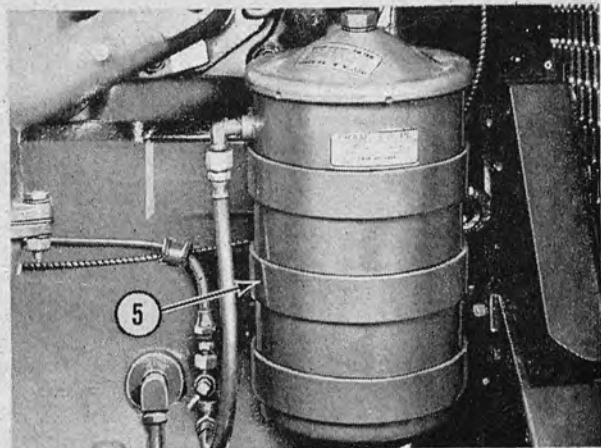
REF. 1 — ENGINE OIL FILLER CAP ASSEMBLY  
REF. 2 — ENGINE OIL GAGE ROD ASSEMBLY



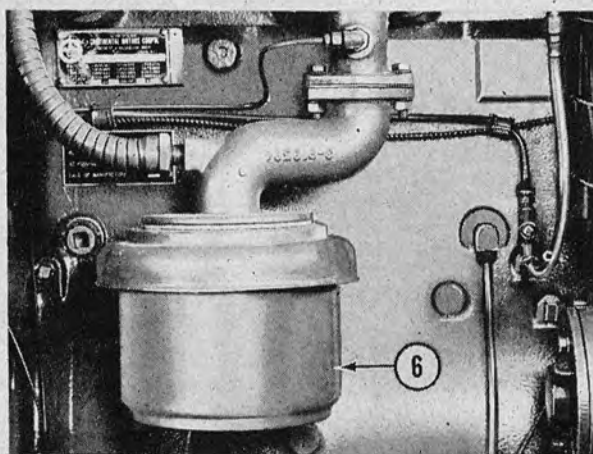
REF. 3 — CRANKCASE DRAIN PLUG



REF. 4 — STARTER ASSEMBLY



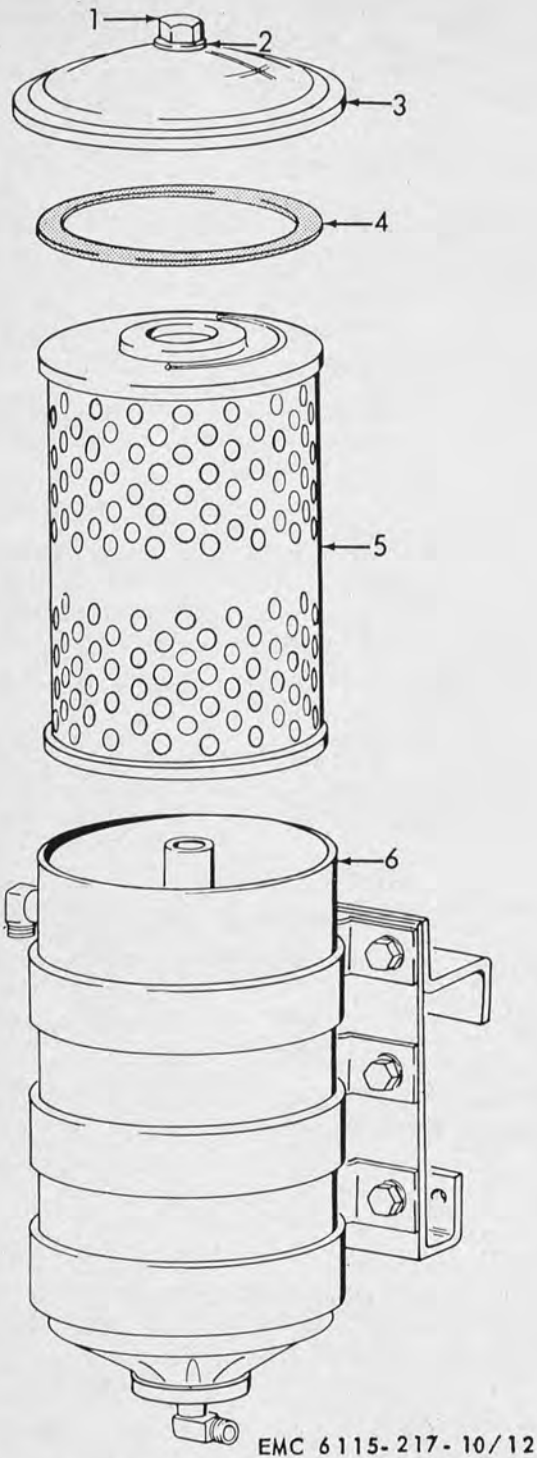
REF. 5 — OIL FILTER ASSEMBLY



REF. 6 — AIR CLEANER

EMC 6115-217-10/11 ③

Figure 11—Continued.



- 1 Bolt, shoulder,  $\frac{1}{8}$ -20 x 1.687 in.
- 2 Washer, flat, copper, 0.537 in. ID x  $\frac{3}{4}$  in. OD x  $\frac{1}{16}$  in. thk
- 3 Cover
- 4 Washer, nonmetallic
- 5 Element, filter
- 6 Body assembly

Figure 12. Oil filter assembly, partially exploded view.

and remove the oil from the body assembly. Wipe all remaining oil, and sludge from the inner surface of the body assembly with a cloth dampened in an approved cleaning solvent. Dry thoroughly with a clean cloth.

- (d) Remove cover washer (4), spring, shoulder bolt (1) from the cover (3). Remove the shoulder bolt washer (2) from the shoulder bolt. Discard the cover washer. Do not discard the shoulder bolt washer unless defective.
- (e) Wash all parts of the cover in an approved cleaning solvent. Dry thoroughly.
- (f) Install a new shoulder bolt washer on the shoulder bolt, and position the assembled shoulder bolt through the cover, and install the spring.
- (g) Install a new cover washer in the cover.
- (h) Position a new filter element in the body assembly, and install the assembled cover on the body assembly. Tighten the shoulder bolt sufficiently to seat the gaskets firmly.
- (i) Start the engine and allow the oil to fill the filter assembly. Check the shoulder bolt and cover gaskets for leaks, tighten the shoulder bolt if necessary. Stop the engine and allow the oil to drain into the oil pan before checking. Check the engine oil level with the oil gage rod assembly. Add sufficient oil, as specified in the current lubrication order, to bring the level up to the FULL mark on the gage.

#### f. Air Cleaner.

- (1) *General.* The air cleaner (10, fig. 1) is attached to the air cleaner elbow on the right side of the engine behind the battery-charging generator. The air cleaner removes the dirt from the intake air.

#### (2) *Service.*

- (a) Loosen the wingbolt (5, fig. 13) securing the bowl (4) and air cleaner



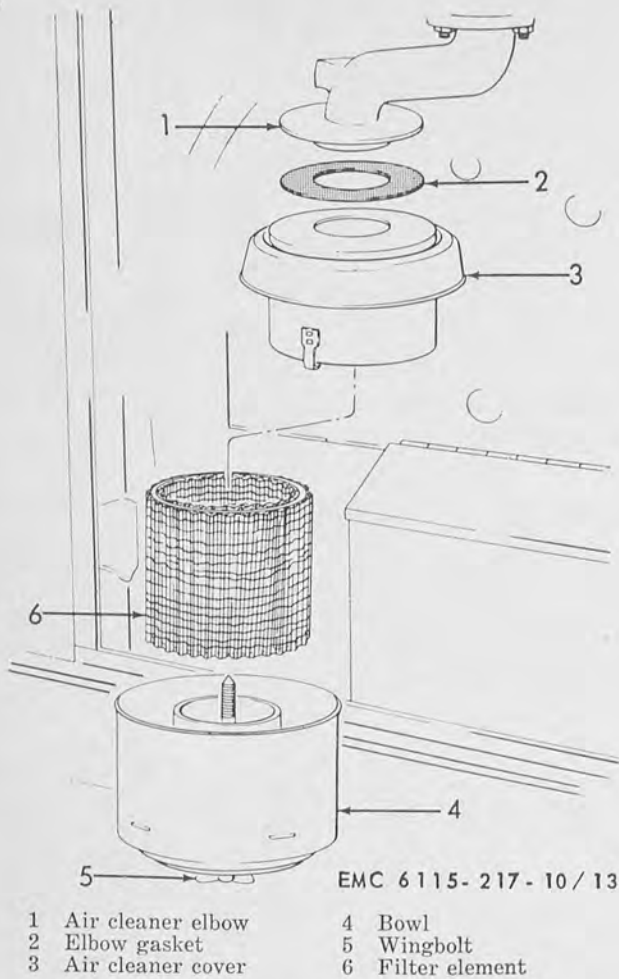


Figure 13. Air cleaner, partially exploded view.

- |                     |                  |
|---------------------|------------------|
| 1 Air cleaner elbow | 4 Bowl           |
| 2 Elbow gasket      | 5 Wingbolt       |
| 3 Air cleaner cover | 6 Filter element |

### Section III. PREVENTIVE MAINTENANCE SERVICES

#### 62. General

To insure that the equipment is ready for operation at all times, it must be inspected systematically before operation, during operation, at halt, and after operation, so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance services will be performed before operation. Defects discovered during the operation of the unit will 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

cover (3) to the air cleaner elbow (1). Remove the bowl, cover, and elbow gasket (2) from the elbow.

- (b) Remove and discard the oil. Separate the filter element (6) from the air cleaner cover.
- (c) Clean the cover, bowl, and filter element with an approved cleaning solvent.
- (d) Dip the filter element in light engine oil and install it in the air cleaner cover.
- (e) Fill the bottom of the bowl to the oil level marks, with oil, as specified in the current lubrication order.
- (f) Place the cover and element in the bowl. Position the elbow gasket on the assembled cover and bowl.
- (g) Position the assembled air cleaner on the air cleaner elbow and secure with the wingbolt.

#### g. Starter Assembly.

- (1) Remove the oil plug screw from the commutator end of the starter assembly.
- (2) Lubricate the commutator end bearing of the starter assembly as directed in the current lubrication order.
- (3) Install the oil plug screw.

the equipment if operation were continued. After operation services will be performed by the operator after every operating period. When the unit operates for periods longer than 10 hours, the unit will be stopped and after-operation service will be performed at 10-hour intervals. 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 with the entire chain of command, from section chief to commanding officer (AR 750-5).

### 63. Operator's Daily Services

Before operation	Intervals			Procedure																											
	During operation	At-halt	After operation																												
X	-----	-----	-----	<p><i>Installation.</i> See that the generator set is protected from moisture, dust, dirt, and corrosive fumes as much as possible in the location provided.</p> <p><b>Warning:</b> If the unit is operated in an inclosed area, be sure the area is adequately ventilated. Make sure the exhaust piping is properly connected.</p>																											
X	-----	X	X	<p><i>Fuel.</i> Inspect the engine fuel supply and see that the tanks are full. Inspect the auxiliary fuel supply and replenish, if necessary.</p>																											
X	-----	X	X	<p><i>Coolant.</i> Inspect the coolant in radiator. Add coolant, if necessary.</p> <p><b>Caution:</b> If the engine overheats, allow it to cool before filling the radiator.</p>																											
X	-----	X	X	<p><i>Oil.</i> Inspect the oil level in the crankcase. Add oil if necessary. Refer to current lubrication order.</p>																											
X	X	X	X	<p><i>Leaks, general.</i> Inspect for leaks, paying particular attention to the engine cooling system, oil and fuel lines and connections. Correct all deficiencies noticed or report them to organizational maintenance.</p>																											
X	-----	X	X	<p><i>Batteries.</i> Inspect the electrolyte for proper level (par. 8). Clean and service the batteries.</p>																											
X	-----	-----	-----	<p><i>Instruments.</i> Inspect all controls, instruments, and gages for broken glass, damaged or bent indicators, and secure mountings.</p>																											
	X	-----	-----	<p>When running at normal operating speed, and with a full load on the generator, the instruments and gages should give satisfactory readings as follows:</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;"><i>60 Cycle</i></th> <th style="text-align: center;"><i>50 Cycle</i></th> </tr> </thead> <tbody> <tr> <td>Voltmeter</td> <td style="text-align: center;">120/240—240/416</td> <td style="text-align: center;">240/416</td> </tr> <tr> <td>Ammeter</td> <td style="text-align: center;">0—52/0—26</td> <td style="text-align: center;">0—21.8</td> </tr> <tr> <td>Wattmeter</td> <td style="text-align: center;">0—15</td> <td style="text-align: center;">0—12.5</td> </tr> <tr> <td>Frequency meter</td> <td style="text-align: center;">60</td> <td style="text-align: center;">50</td> </tr> <tr> <td>Battery charging ammeter.</td> <td style="text-align: center;">0—30+</td> <td style="text-align: center;">0—30+</td> </tr> <tr> <td>Engine coolant temperature thermometer.</td> <td style="text-align: center;">165°—185°</td> <td style="text-align: center;">165°—185°</td> </tr> <tr> <td>Lubricating oil pressure gage.</td> <td style="text-align: center;">40—60 PSI</td> <td style="text-align: center;">40—60 PSI</td> </tr> <tr> <td>Time totalizing meter</td> <td style="text-align: center;">Hours and 10th's of hours, rotating</td> <td style="text-align: center;">Hours and 10th's of hours, rotating</td> </tr> </tbody> </table>		<i>60 Cycle</i>	<i>50 Cycle</i>	Voltmeter	120/240—240/416	240/416	Ammeter	0—52/0—26	0—21.8	Wattmeter	0—15	0—12.5	Frequency meter	60	50	Battery charging ammeter.	0—30+	0—30+	Engine coolant temperature thermometer.	165°—185°	165°—185°	Lubricating oil pressure gage.	40—60 PSI	40—60 PSI	Time totalizing meter	Hours and 10th's of hours, rotating	Hours and 10th's of hours, rotating
	<i>60 Cycle</i>	<i>50 Cycle</i>																													
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Time totalizing meter	Hours and 10th's of hours, rotating	Hours and 10th's of hours, rotating																													
X	X	X	X	<p>See that all instruments and gages function properly.</p> <p><i>Visual inspection.</i> Make a visual inspection of the complete unit for loose or missing bolts, nuts, lockwashers, and pins and for bent, cracked, or broken parts. Inspect all wires and terminals for damage or loose connections. Check the tension of the cooling fan and engine generator V-belt. See that the belt can be depressed <math>\frac{3}{4}</math> to 1 inch at a point midway between the pulleys without undue pressure. Inspect the air cleaner and strainer and service as indicated in the current lubrication order. Correct all deficiencies or report them to organizational maintenance.</p>																											
X	-----	-----	X	<p><i>Starting precautions.</i> Be sure the generator set is clear of equipment, tools, and personnel. Make sure the set is grounded properly before operating (par. 10). See that the top panel box assembly is positioned properly for the desired voltage and that the load cables are mounted tightly (par. 48). Always allow the engine to warm up before applying the load (par. 46).</p>																											

Intervals				Procedure
Before operation	During operation	At-halt	After operation	
X	X	X	X	<p><i>Unusual noises.</i> Inspect for unusual noises or operation, such as; too much vibration, overheating (par. 68), lack of power (par. 72), excessive smoking (par. 73), engine failing to respond to controls, or if there is excessive sparking at main generator brushes. Shut down the unit under such conditions. Report deficiencies to Organizational Maintenance.</p> <p><i>Exhaust connections.</i> Inspect all exhaust connections for leaks. Report any deficiencies noticed to Organizational Maintenance.</p> <p><i>Clean equipment.</i> Clean all dirt, excess oil, and grease from the exterior of the generator set. See that the radiator core and fan guard are clean.</p> <p><i>Fuel filters and strainer.</i> Open pet-cocks and drain any water and sediment from the fuel filters. Clean the strainer with an approved cleaning solvent.</p> <p><i>Tools, Equipment and Publications.</i> See that all tools, equipment, and publications assigned to the generator set are in serviceable condition, clean, and properly stowed or mounted. See that the toolbox top will close and fasten properly. Report any deficiencies noticed to Organizational Maintenance.</p> <p><i>Lubrication.</i> Lubricate the generator set as required by the current lubrication order.</p> <p><i>Fire extinguisher.</i> Inspect the condition of the fire extinguisher and inspect for sufficient charge, proper working order, and secure mounting. The amount of charge in the carbon tetrachloride type can be determined by shaking. Do not discharge any of its contents.</p> <p><i>Protection.</i> See that all doors are closed and fastened. If the generator is not under a shelter, cover it with a suitable cover. Inspect the coolant for proper level.</p>

## Section IV. TROUBLESHOOTING

### 64. General

This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the generator set or any of 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 noted that is beyond the scope of the operator or the crew must be reported to Organizational Maintenance.

### 65. Engine Is Hard To Start Or Fails To Start

<i>Probable cause</i>	<i>Possible remedy</i>
a. Improper starting procedure	Check starting procedure (par. 46).
b. Insufficient fuel	Refill fuel tank (par. 8).
c. Water or dirt in fuel	Drain fuel lines and tank and refill with clean fuel.
d. Improper fuel grade	Drain tank and refill with the proper grade of fuel.

### 66. Engine Misses Or Runs Erratically

<i>Probable cause</i>	<i>Possible remedy</i>
a. Dirt in fuel tank	Drain the fuel tank and refill with clean fuel.
b. Fuel filters clogged	Clean or replace filter elements (pars. 83 and 84).
c. Air cleaner clogged	Remove and clean air cleaner element (par. 61).
d. Air in fuel system	Tighten all fuel line connections on the suction side of fuel pump. Replace the first stage fuel filter gaskets (par. 83).



## 67. Engine Stops Suddenly

<i>Probable cause</i>	<i>Possible remedy</i>
a. Insufficient fuel	Refill fuel tank (par. 8).
b. Water or dirt in fuel	Service fuel filter elements (pars. 83 and 84). Drain fuel tank and refill with clean fuel.
c. Air cleaner clogged	Service air cleaner (par. 61).
d. Fuel line broken or collapsed	Check fuel line. Report deficiency to organizational maintenance.
e. Engine overheats (safety device functions)	Check coolant level. Check shutter, radiator, and fan guard for obstructions. Check V-belt adjustment (par. 82). Correct deficiencies or report to Organizational Maintenance.
f. Oil pressure low (safety device functions)	Check crankcase oil level. Add oil, as required.
g. Overspeed switch operates	Reset the collar and plunger (par. 27).

## 68. Engine Overheats

<i>Probable cause</i>	<i>Possible remedy</i>
a. Coolant level low	Refill coolant system with the proper coolant (par. 8).
b. Cooling system dirty or clogged	Service radiator (par. 81).
c. Air shutter not functioning properly	Open air shutter with hand control lever (1, fig. 8).

## 69. Engine Runs Too Cold

<i>Probable cause</i>	<i>Possible remedy</i>
Air shutter not functioning properly	Close air shutter with the hand control lever (1, fig. 8). Report deficiency to Organizational Maintenance.

## 70. Engine Has Low Or No Oil Pressure

<i>Probable cause</i>	<i>Possible remedy</i>
a. Lubricating oil level low	Refill the crankcase in accordance with the current lubrication order (par. 60).
b. Lubrication oil diluted with fuel oil	Drain and refill the crankcase in accordance with the current lubrication order (par. 60).

## 71. Engine Will Not Idle Smoothly

<i>Probable cause</i>	<i>Possible remedy</i>
a. Injectors or high pressure fuel lines leaking	Correct deficiencies or report to Organizational Maintenance.
b. Air in the fuel system	Tighten all fuel line connections on the suction side of the fuel pump. Replace filter gaskets (pars. 83 and 84).

## 72. Engine Lacks Power

<i>Probable cause</i>	<i>Possible remedy</i>
a. Improper fuel	Drain and refill the fuel tank with proper grade of fuel (par. 8).
b. Fuel filters clogged	Remove and clean element of the first stage fuel filter (par. 83). Replace element from secondary filter (par. 84).
c. Air cleaner clogged	Service air cleaner (par. 61).
d. Air in fuel system	Tighten all fuel line connections on suction side of fuel pump. Replace filter gaskets (pars. 83 and 84).
e. Fuel tank air vent plugged	Clean air vent (par. 39).

## 73. Engine Exhaust Smoky

<i>Probable cause</i>	<i>Possible remedy</i>
a. Poor grade of fuel	Drain and refill the fuel tank with the proper grade of fuel (par. 8).
b. Air cleaner clogged	Clean air cleaner (par. 61).
c. Too much or too heavy oil in air cleaner	Drain or fill with proper weight and amount of oil (par. 61).
d. Engine temperature too low	Blue smoke may continue until engine warms up to at least 140° F. No action required.

## 74. Starter Fails To Crank Engine

<i>Probable cause</i>	<i>Possible remedy</i>
a. Poor electrical connections	Clean and tighten all engine electrical connections.
b. Battery discharged	Charge or replace a defective battery (par. 89).

## 75. Engine Fails To Build Up AC Voltage

<i>Probable cause</i>	<i>Possible remedy</i>
a. Open circuits or loose connections in the electrical wiring.	Check all wiring and tighten all connections.
b. Controls improperly adjusted	Adjust controls (par. 48).
c. Voltage regulator faulty	Place voltage regulator switch on MAN position and operate the unit manually (par. 48). Report deficiency to Organizational Maintenance.

## 76. Generator Voltage Too High

<i>Probable cause</i>	<i>Possible remedy</i>
a. Controls improperly adjusted	Adjust controls (par. 48).
b. Voltage regulator faulty	Place voltage regulator switch on MAN position and operate the unit manually (par. 48). Report deficiency to Organizational Maintenance.

## 77. Generator Voltage Erratic

<i>Probable cause</i>	<i>Possible remedy</i>
a. Control panel wiring loose	Clean and tighten all control panel wiring connections.
b. Voltage regulator faulty	Place voltage regulator switch on MAN position and operate the unit manually (par. 48). Report deficiency to Organizational Maintenance.

## 78. Generator Overheats

<i>Probable cause</i>	<i>Possible remedy</i>
a. Generator overloaded	Reduce load or parallel another generator (par. 48).
b. Air passages obstructed in generator and engine	Clean air passages (par. 63).
c. Voltage too high	Refer to paragraph 76.

## 79. Load Contactor Continues To Trip

<i>Probable cause</i>	<i>Possible remedy</i>
a. Parallel operation incorrect	Adjust speed and voltage controls (par. 48).
b. Generator overloaded	Reduce load, if possible, or report overload condition to Organizational Maintenance.

## 80. Generator Voltage Drops Upon Increased Generator Load

<i>Probable cause</i>	<i>Possible remedy</i>
Voltage regulator switch in MAN position	Throw voltage regulator switch to AUTO position. Adjust variable resistor (par. 48).

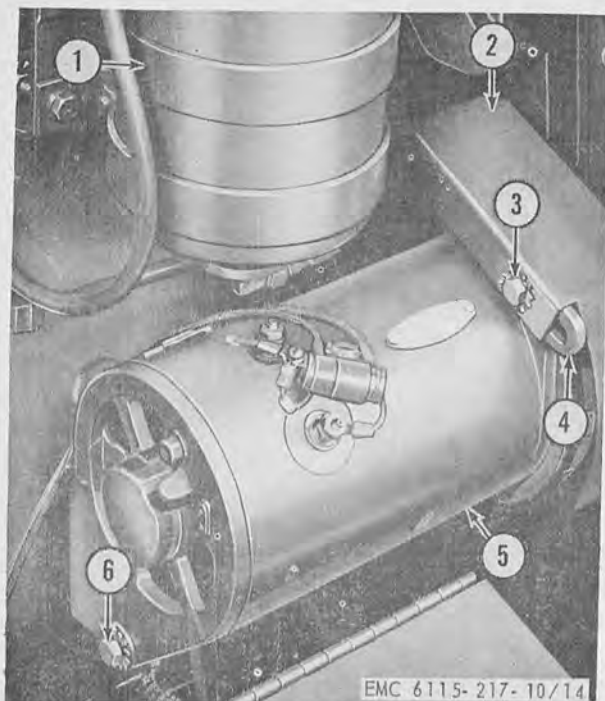
## Section V. ENGINE AND ACCESSORIES

### 81. Servicing Radiator

a. *General.* The radiator should be cleaned externally at weekly intervals by directing compressed air at the front of the radiator to remove dirt and foreign matter from the external surfaces of the radiator core. The cooling system should be drained and flushed at least twice a year, or before adding and after draining anti-freeze mixtures.

### b. *Flushing Radiator.*

- (1) Warm up the engine to operating temperature. Stop the engine, remove the drain cap on the bottom left side of the radiator, and drain the cooling system.
- (2) Allow the engine to cool. Install the drain cap and refill the cooling system with clean water and one can of approved cooling system cleaning solvent.



- 1 Oil filter assembly
- 2 V-belt
- 3 Screw, cap, hexagon head,  $\frac{1}{8}$ -18 x  $\frac{3}{4}$  in.
- 4 Generator adjusting strap
- 5 Battery-charging generator
- 6 Bolt, machine,  $\frac{1}{8}$ -18 x  $1\frac{1}{4}$  in. (2 rqr)

Figure 14. V-belt adjustment points.

- (3) Run the engine at least 30 minutes at slightly faster than idling speed after the engine has reached operating temperature. Stop the engine and drain the system.

*Note.* Always neutralize the cooling system with an approved neutralizing compound after a cleaning solvent has been used.

- (4) Allow the engine to cool and fill the system with clean water and an approved neutralizing compound. Run the engine until it reaches operating temperature; stop the engine and drain the system. Repeat the flushing procedure with clean water until the water runs clear.
- (5) Install the drain cap and fill the cooling system as instructed in paragraph 8.

*c. Radiator Cap.* The radiator cap (3, fig. 1) is located on top of the generator set housing at the front of the unit. It includes a pressure safety relief valve to release excess pressure in the cooling system. When removing the cap while the engine coolant is still warm, during or after operation, turn the cap slowly and allow any

pressure to escape before loosening the cap completely. Check the cap gasket for wear. If the cap is damaged or missing, replace it.

## 82. V-Belt Adjustment

The V-belt (2, fig. 14), located directly behind the radiator drives the fan blades, the battery-charging generator and the water pump. When the V-belt is adjusted properly, it must deflect  $\frac{3}{4}$  to 1 inch when depressed at a point midway between the generator and the fan hub. To adjust the belt tension, proceed as follows:

*a.* Loosen the two nuts and cap screws on the bottom of the battery-charging generator (5) which secure it to the mounting bracket. Loosen the cap screw (3) on the top of the generator which secures the generator adjusting strap (4).

*b.* Pull outward on the battery-charging generator until the V-belt (2) is snug. Tighten the cap screw (3) holding the adjusting strap (4).

*c.* Check for proper deflection of  $\frac{3}{4}$  to 1 inch without undue pressure at a point midway between the generator and the fan hub. If deflection is correct, tighten the two lower mounting bolts (6) securing the generator.

**Caution:** Never adjust belt tension with a bar or lever.

## 83. First Stage Fuel Filter Assembly

*a.* The first stage fuel filter assembly (2, fig. 15) is located on the left side of the engine below the fuel injection pump assembly. It receives the fuel from the tank and discharges it through a line to the secondary fuel filter assembly (3). The first stage fuel filter assembly is equipped with a reusable element.

*b. Cleaning Filter Element.*

- (1) Place the diesel fuel selector valve (3, fig. 7) in the OFF position.
- (2) Place a container under the first stage fuel filter and remove the pipe plug (13, fig. 15) and drain the filter.
- (3) Unscrew the nut (11) and bowl nut gasket (12) from the filter stud to free the filter bowl (14) and filter bowl washer (16) from the head.
- (4) Remove the nut (15) and remove the element (17).
- (5) Wash the element, nut, and filter bowl in an approved cleaning solvent or



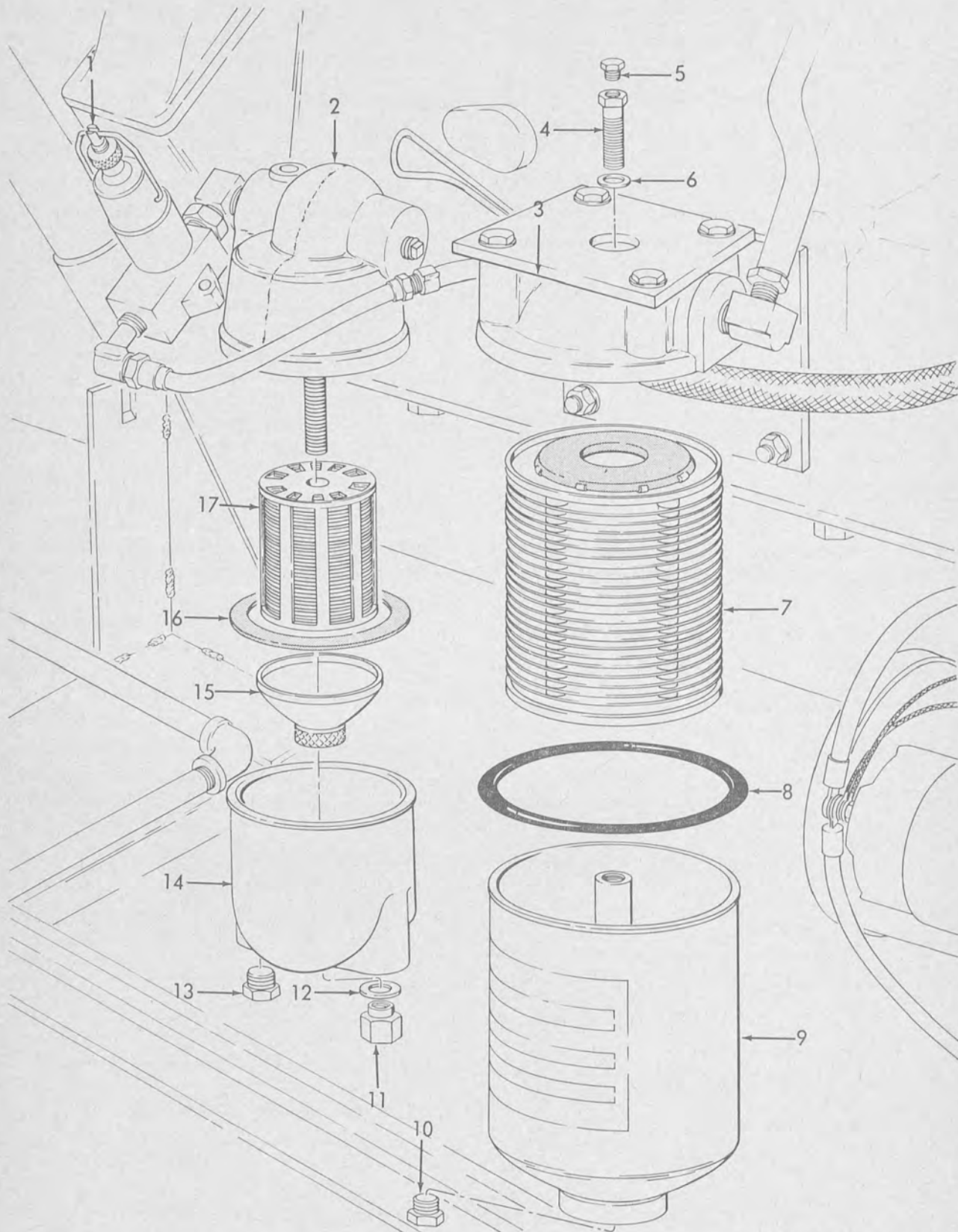


Figure 15. First stage and secondary fuel filters, partially exploded view. EMC 6115-217-10/15

- |                                    |                                  |
|------------------------------------|----------------------------------|
| 1 Pressure primer pump             | 10 Drain plug, 1/8 pipe          |
| 2 First stage fuel filter assembly | 11 First stage sediment bowl nut |
| 3 Secondary fuel filter assembly   | 12 Bowl nut gasket               |
| 4 Machine bolt (spec.)             | 13 Pipe plug, 1/4-18             |
| 5 Vent plug, 1/8 pipe              | 14 First stage filter bowl       |
| 6 Copper flat washer               | 15 First stage filter nut        |
| 7 Secondary filter element         | 16 Filter bowl washer            |
| 8 Cover gasket                     | 17 First stage filter element    |
| 9 Secondary filter body            |                                  |

Figure 15—Continued.

diesel fuel. Do not use hard or sharp tools to clean the element as damage will result. Replace the element if it is damaged.

- (6) Wash the filter head, install the element on the stud, and secure it with the nut.
- (7) Using a new filter hood washer (16) assemble the bowl and head and secure to the stud with the nut (15) and gasket (12).
- (8) Install the drain plug (13) in the base of the filter bowl and open the diesel fuel selector valve.
- (9) Prime the fuel system (par. 46) and check for and correct leaks.

#### 84. Secondary Fuel Filter Assembly

*a. General.* The secondary fuel filter assembly (3, fig. 15) is located on the left side of the engine to the right of the first stage fuel filter assembly (2). It receives the fuel from the first stage fuel filter assembly and discharges it to the fuel injection pump assembly. The element in the secondary fuel filter should be replaced when the filter is serviced.

##### *b. Replacing Filter Element.*

- (1) Place the diesel fuel selector valve (3, fig. 7) in the OFF position.
- (2) Place a container under the secondary fuel filter, remove the drain plug (10, fig. 15) and drain the filter.
- (3) Remove the machine bolt (4), bleeder vent plug (5), and washer (6). This frees the filter body (9) from the filter cover. Remove the cover gasket (8) installed between the filter body and cover.
- (4) Remove the filter element (7) from the body (9).
- (5) Discard the filter element and wash the

filter body in an approved cleaning solvent or diesel fuel.

- (6) Place a new filter element (7) in the body (9). Install the cover gasket (8) on the body. Position the assembled body, and element, gasket under the cover and secure with the machine bolt (4) and washer (6).
- (7) Install the drain plug (10) and vent plug (5).
- (8) Open the diesel fuel selector valve.
- (9) Prime the fuel system (par. 46). Inspect for and correct leaks.

#### 85. Diesel Fuel Strainer

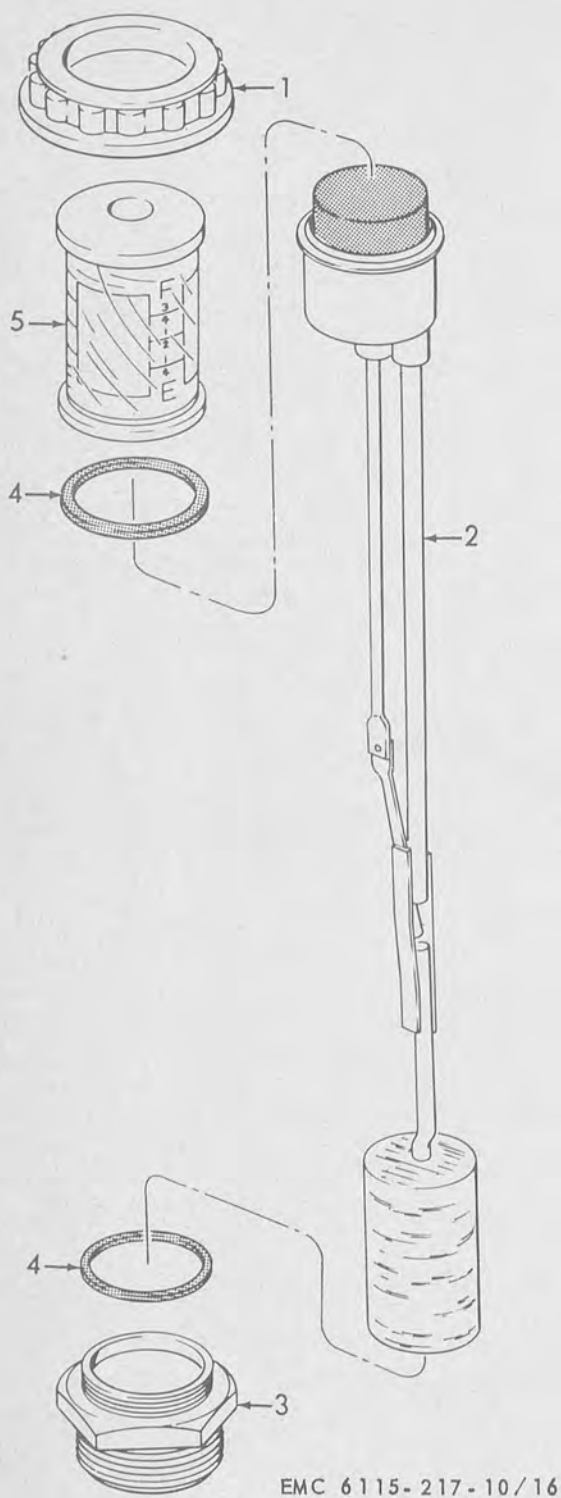
The diesel fuel tank sediment strainer is located in the tank filler pipe. It is removed by removing the tank filler cap and lifting the strainer element out of the tank filler pipe. The strainer element prevents foreign matter from entering the tank during fueling. Check the strainer element for holes and clean it with an approved cleaning solvent. Replace the strainer element if damaged or missing.

#### 86. Engine Crankcase Drain and Filler Caps

The engine crankcase drain cap (10, fig. 2) is located on the left side of the generator mounting skid assembly below the engine. It is a pipe cap which threads onto the crankcase drain pipe nipple. Be sure the cap is tight at all times to avoid loss of oil. Replace the cap if defective or missing. The filler cap is located on the gear cover and filler neck assembly. It is a pipe cap with an oil wiper installed. Be sure the cap is tight. Replace a defective cap.

#### 87. Oil Gage Rod Assembly

The oil gage rod assembly (2, fig. 8) is a bayonet type gage located on the left side of the



- 1 Adapter nut
- 2 Cork and level indicator assembly
- 3 Adapter
- 4 Rubber gasket (2 rqr)
- 5 Gage

Figure 16. Fuel gage, exploded view.

engine block above the fuel filters (5 and 6). It should be straight and slip easily into the engine block. If bent slightly it can be straightened to its proper shape. Replace a defective or missing gage.

## 88. Fuel Gage

*a. General.* The fuel gage (1, fig. 7) is a float-operated type, located on the top of the fuel tank directly behind the fuel tank cap.

*b. Removal and Disassembly.*

- (1) Remove the plastic adapter nut (1, fig. 16) securing the fuel gage (5) to the adapter. Remove the plastic fuel gage and rubber gasket (4).
- (2) Remove the cork and level indicator assembly (2) and gasket (4) from the tank and adapter (3).
- (3) Remove the adapter (3) from the tank.

*c. Cleaning and Inspection.*

- (1) Clean all parts with an approved cleaning solvent.
- (2) Inspect the plastic gage, nut, and level indicator assembly for damage. If defects are found, replace the gage assembly.
- (3) Examine the cork and gaskets for deterioration. If defects are found, replace the gage assembly.
- (4) Check the adapter for cracks or stripped threads. Replace a damaged adapter.

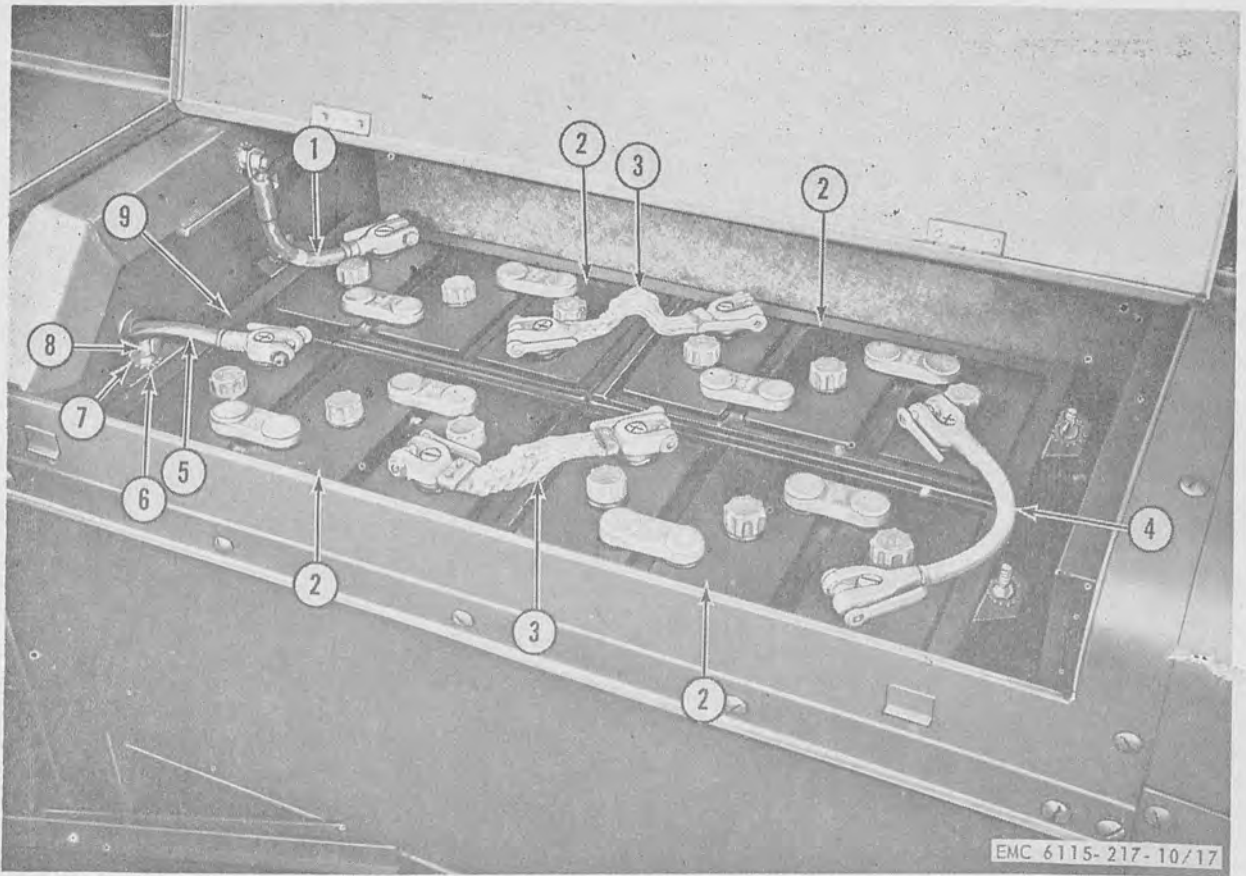
*d. Reassembly and Installation.*

- (1) Install the adapter (3) in the fuel tank.
- (2) Position the rubber gasket (4) on the adapter and install the cork and level indicator assembly (2).
- (3) Position the other rubber gasket (4) on the indicator assembly and place the gage (5) over the red plastic indicator. Secure the assembled gage and cork and level indicator assembly with the adapter nut (1).

## 89. Batteries

*a. General.* The generator set uses four 6-volt, heavy-duty, 110-ampere-hour batteries connected in series. The batteries (2, fig. 17) are located in the battery compartment (3, fig. 2) and supply the power for the 24-volt electrical system.





- |   |                                     |   |   |
|---|-------------------------------------|---|---|
| 1 | Battery-to-ground electrical lead   | 6 | Lockwasher, IET, $\frac{1}{8}$ in. (4 rqr)                |
| 2 | Battery, storage, 6-volt (4 rqr)    | 7 | Nut, plain, wing brass, $\frac{1}{8}$ -18 in. (4 rqr)     |
| 3 | Jumper electrical lead (2 rqr)      | 8 | Battery holddown stud, $\frac{1}{8}$ -18 x 10 in. (4 rqr) |
| 4 | Jumper electrical lead              | 9 | Battery holddown frame                                    |
| 5 | Battery-to-solenoid electrical lead |   |   |

Figure 17. Batteries, removal points.

*b. Removal.*

- (1) Loosen the clamps securing the battery-to-ground electrical lead (1, fig. 17), the two jumper electrical leads (3), the jumper electrical lead (4) and the battery-to-solenoid electrical lead (5). Remove the leads from the batteries.
- (2) Remove the four wingnuts (7) and lockwashers (6) securing the battery holddown frame (9) to the battery holddown studs (8). Remove the frame. Note the polarity of the battery terminals and remove the four batteries (2).

*c. Cleaning and Inspection.*

- (1) Clean all parts in an approved cleaning solvent.
- (2) Examine the batteries for breaks,

cracks, or missing caps. Replace a damaged battery or a missing cap.

- (3) Check the electrical leads for broken strands, corrosion, deteriorated insulation, or defective clamps. Replace a damaged cable.
- (4) Inspect the nuts and studs for damaged threads. Replace a missing or damaged nut, stud, or washer.

*d. Installation.*

- (1) Install one battery (2) in the battery compartment (3, fig. 2) with the negative post of the battery next to the battery-to-ground electrical lead (1, fig. 17). Install the remaining three batteries with the terminal posts in position for a series connection.
- (2) Position the battery holddown frame

- (9) on the battery holddown studs (8) and secure with the lockwashers (6) and the four wingnuts (7).
- (3) Install the battery-to-ground electrical lead (1) on the negative terminal of the battery (2) and clamp in position. In-

stall the battery-to-solenoid electrical lead (5) on the positive terminal of the battery. Connect the jumper electrical leads (3 and 4) as illustrated in figure 17. Check the electrical lead installation for proper series connection.

## Section VI. CONTROL PANEL

### 90. Panel Lights

*a. General.* The two panel lamps (4, fig. 6) are located at the top center of the upper control panel and at the top center of the lower control panel. They are 24-volt shielded-lamp units used to illuminate the control panel.

*b. Lamp Replacement.* To replace the lamps in the panel lights remove the cover shields from the sockets by pulling them out. Remove defective lamps and replace with 24-volt lamps. Reinstall the cover shields.

### 91. Synchronizing Lights

*a. General.* Two synchronizing lamp holders and lamps are the synchronizing lights (5, fig. 6) which are located on the upper control panel between the wattmeter and the ac voltmeter. The 10-watt, 230-volt lamps are used to indicate proper synchronization of two generator sets operating in parallel.

*b. Lamp Replacement.* Remove lens by pulling it out. Apply slight finger pressure to the lamp and turn counterclockwise. Install new 10-watt, 230-volt lamp. Reinstall the lens.

### 92. Indicator Light

*a. General.* The generator load indicator light

(24, fig. 6) is a red lens-covered, neon light located on the hinged panel directly below the main switch. It glows when the main generator relay is closed.

*b. Lamp Replacement.* Unscrew the red lens from the panel and remove the lamp from the socket. Replace a defective lamp and reinstall the red lens.

### 93. Fuses

*a. General.* There are three fuses, mounted in a fuse holder (2, fig. 9) located directly under the main voltage regulator in the control panel box (6). These fuses are identified by singularly different voltage and amperage. At the top is a 250-volt, 1 ampere fuse (3); in the center is a 250-volt, 5 ampere fuse (4); and at the bottom is a 125-volt, 30 ampere fuse (5). Another single 250-volt, 2 ampere fuse functions in the engine 24-volt circuit, and is located on the starter solenoid relay mounting bracket, facing the fuel injection pump.

*b. Fuse Replacement.* Remove each of the three fuses from the fuse holder (2) and replace with a new fuse. Separate the fuse holder and the cap of the fuse in the 24-volt electrical system, remove the fuse, and replace with a new fuse.

## CHAPTER 4

### DEMOLITION OF GENERATOR SET TO PREVENT ENEMY USE

---

#### 94. 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 the generator set and all corresponding repair parts.

#### 95. Demolition To Render Equipment Inoperative

*a. Demolition by Mechanical Means.* Use sledge hammers, crowbars, picks, axes, or any other heavy tools which may be available, together with the tools normally included with the generator set, to destroy the following:

- (1) Generator end bell and rotor bearing support.
- (2) Governor and control unit.
- (3) Fuel injection pump and fuel injectors.
- (4) Fan V-belts.

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

- (5) Radiator.
- (6) Control cabinet and engine control panel including all wiring.
- (7) Exciter and alternator frame.
- (8) Batteries and engine starter.

*b. Demolition by Misuse.*

- (1) Drain the radiator and crankcase.
- (2) Drop small tools, nuts, bolts, and metal scraps into the main generator.
- (3) Set the engine speed adjusting wheel so the engine will run at full speed.
- (4) Start the engine (par. 46).

#### 96. Demolition by Explosives or Weapons Fire

*a. Demolition by Explosives.* Place as many of the following charges (fig. 18) as the situation permits, and detonate them simultaneously with detonating cord and a suitable detonator.

- (1) Two 1/2-pound charges between the fuel injection pump and the engine block.
- (2) Two 1/2-pound charges between the engine generator and cylinder block.
- (3) Eight 1/2-pound charges on the engine generator coupling.
- (4) Two 1/2-pound charges inside the control cabinet.
- (5) Two 1/2-pound charges between engine block and the intake and exhaust manifold.
- (6) Two 1/2-pound charges between the radiator and engine.
- (7) Four 1/2-pound charges between the engine and skid frame.
- (8) One 1/2-pound charge in the tap box panel assembly.
- (9) Two 1/2-pound charges between the exciter brushes and windings.
- (10) Two 1/2-pound charges between the main generator brushes and windings.

*b. Demolition by Weapons Fire.* Fire on the generator set with the heaviest suitable weapons possible.

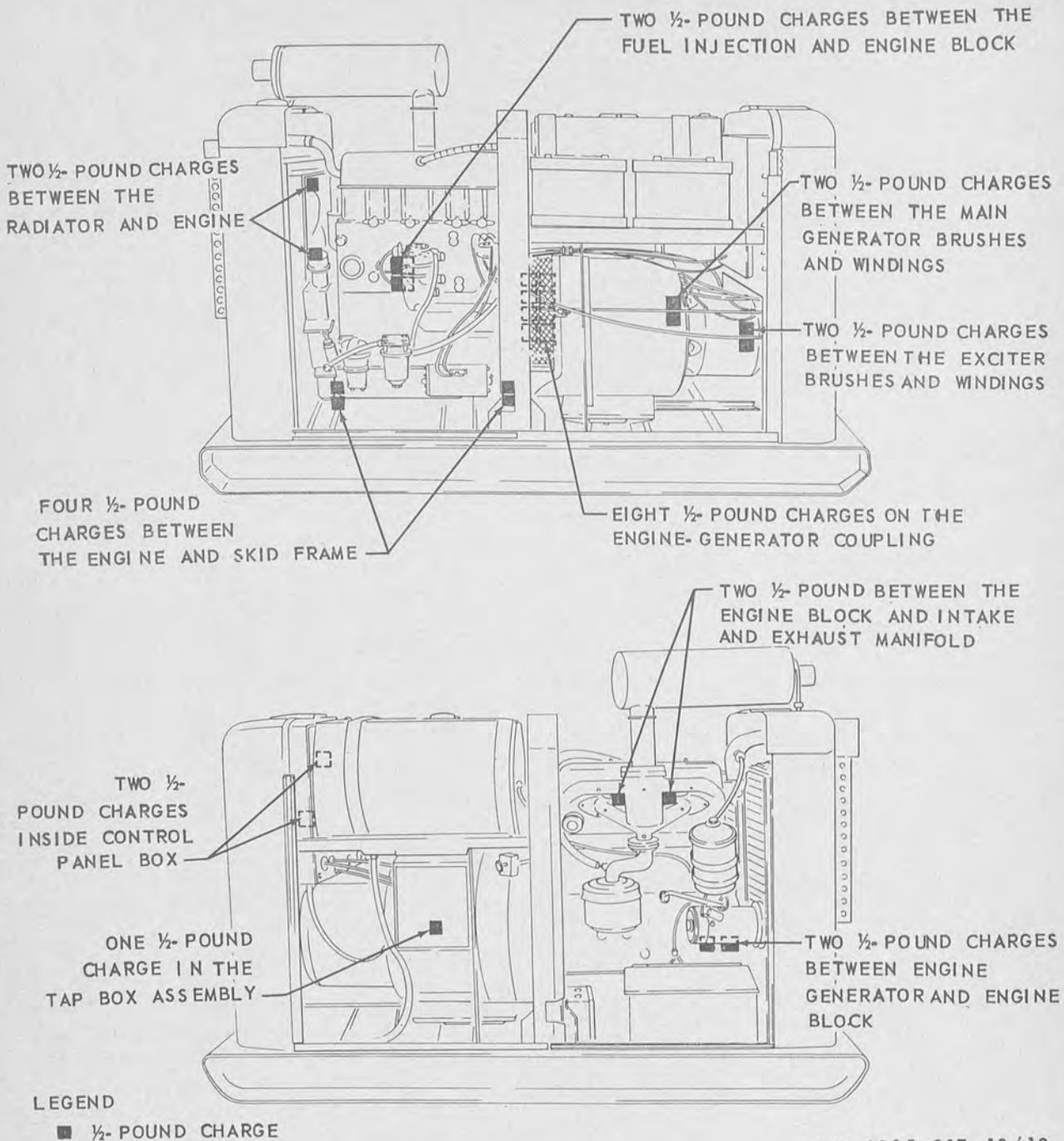
#### 97. Demolition by Other Methods

*a. Demolition by Scattering and Concealment.* Remove all easily accessible vital parts, such as fuel injection pump, engine starter, generator brushes, and scatter them through dense foliage, bury them in dirt or sand, or throw them in a lake, river, stream, or other body of water.

*b. Demolition by Burning.* Pack rags, clothing, or other combustible material around or under the generator set, saturate with gasoline, oil, or diesel fuel, and ignite.

*c. Demolition by Submersion.* Totally submerge the generator set in a body of water to provide some water damage and concealment. Salt water will do more damage to metal parts than fresh water.





EMC 6115- 217- 10/18

Figure 18. Placement of charges.

### 98. Training

All operators should receive thorough training in the destruction of the generator set. Refer to FM 5-25. Simulated destruction, using all the methods listed above, should be included in the operator training program. It must be emphasized in training, that demolition operations are

usually necessitated by critical situations when time available for destruction is limited. For this reason, it is necessary that operators be thoroughly familiar with all methods of destruction and be able to carry out demolition instructions without reference to this or any other manual.

## APPENDIX I

### REFERENCES

---

#### 1. Dictionary Of Terms and Abbreviations

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

#### 2. Fire Protection

TM 5-687 Inspection and Preventive Maintenance Services for Fire Protection Equipment and Appliances.  
TM 9-1799 Ordnance Maintenance Fire Extinguishers.

#### 3. Lubrication

LO 5-6115-217-20 Generator Set, Diesel Engine: 15 kw, ac, 120/208-240/416 v, 3 Phase, 60 Cycle, Convertible to 12.5 kw, 50 Cycle, Skid Mounted, (U. S. Motors Model 15-US-10327B-A, W/Continental Engine Model HD 260), FSN 6115-606-9693.

#### 4. Organizational Maintenance

TM 5-6115-217-20 Generator Set, Diesel Engine: 15 kw, ac, 120/208-240/416 v, 3 Phase, 60 Cycle, Convertible to 12.5 kw, 50 Cycle, Skid Mounted, (U. S. Motors Model 15-US-10327B-A, W/Continental Engine Model HD 260), FSN 6115-606-9693.

#### 5. Preventive Maintenance

TM 5-505 Maintenance of Engineer Equipment.  
AR 750-5 Maintenance Responsibilities and Shop Operation.

#### 6. Publication Indexes

DA Pam 310-4 Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders.

#### 7. Training Aids

FM 5-25 Explosives and Demolitions.  
FM 21-5 Military Training.  
FM 21-6 Techniques of Military Instructions.  
FM 21-30 Military Symbols.

APPENDIX II  
BASIC ISSUE ITEMS LIST

*Superseded*  
*See Chy # 1*

Section I. INTRODUCTION

1. General

This appendix lists all accessories, tools, and publications issued with the Generator Set, U. S. Motors, Model 15-US-10327B-A, Serial Nos. 322050-1 through 322050-400, that are required for 1st echelon operation and maintenance of the equipment.

2. Explanation of Columns

a. *Source Codes.* Source coding provides data as to the source or method of supply, availability, lowest maintenance echelon authorized to install or capable of manufacturing and, where applicable, recoverability, of a repair part. The codes consist of number and letter symbols, and appear in the various subcolumns as follows:

(1) *Technical service.* Numbers appearing in this column indicate the supplying technical service basic number. The number 5 in this column indicates Corps of Engineers repair parts. These code numbers are indicated as follows:

5—Corps of Engineers

9—Ordnance Corps

12—The Adjutant General

(2) *Source.* The following code indicates select status or source of supply:

“PI” — 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.

(3) *Maintenance.* The following code is used to indicate authority for application of/or retention of parts, accessories, or publications initially issued with the items of equipment.

“O”—Organizational Maintenance (1st echelon)

(4) *Recoverability.* “S”—applied to repair

parts which may be placed in ready for issue condition by cleaning, replating, anodizing, adjusting, welding, and similar operations.

b. *Federal Stock Number.* This column lists the 11-digit Federal stock number used for requisitioning and stockage purposes. When Federal stock numbers are not available, the manufacturer's part number preceded by the 5-digit Federal supply code for manufacturers is listed in the description column to be used for requisitioning purposes.

c. *Description.* The nomenclature for each part is given in this column. When Federal stock numbers are not available, the 5-digit Federal supply code for manufacturers will be listed in parentheses preceding the manufacturer's part number. *Example:* (80072) S 10028.

d. *Unit of Issue.* The unit of measure used for issue of the parts or supplies:

EA \_\_\_\_\_ Each.

e. *Expendability.* Those items classified as nonexpendable are indicated by the letters NX. The column is left blank if the item is expendable.

f. *Quantity Authorized.* This column contains the quantities of accessories, tools, and publications that are authorized for the item of equipment.

g. *Quantity Issued with Equipment.* Entries in this column list the actual quantity of accessories, tools, and publications shipped with the item of equipment to the using units. The column is left blank when the quantities authorized must be requisitioned through normal supply channels.

3. Abbreviations

Abbreviations appearing in this manual.

in. \_\_\_\_\_ inch (ea)  
lg \_\_\_\_\_ length (long)  
min \_\_\_\_\_ minimum  
gal \_\_\_\_\_ gallon (s)  
W/ \_\_\_\_\_ With  
V \_\_\_\_\_ volt (s)



#### 4. Numerical Grouping

- Group 03 —FUEL SYSTEM  
 0306 —TANKS, LINES, FITTINGS  
 Group 06 —ELECTRICAL SYSTEM (ENGINE AND VEHICULAR)  
 0608 —MISCELLANEOUS ITEMS  
 0612 —BATTERIES  
 Group 26 —ACCESSORIES, PUBLICATION, TEST EQUIPMENT AND TOOLS  
 2602.2—COMMON TOOLS  
 2602.4—PUBLICATIONS  
 Group 76 —FIRE FIGHTING EQUIPMENT  
 7603 —FIRE EXTINGUISHERS

#### 5. Index To Federal Supply Code For Manufacturers

80072-----United States Motors Corp.

#### 6. Hours of Operation Per Year

Allowances are based on 1,500 hours operation under combat conditions in an average climate and terrain.

#### 7. Errors, Comments, Suggestions

Any recommendations for changes, additions, deletions, and other corrections for the improvement of this manual should be forwarded by letter on DA Form 2028 to The Commanding General, The U. S. Army Engineer Maintenance Center, Corps of Engineers, P. O. Box 119, Columbus 16, Ohio, ATTN: EMCJM. Direct communication is authorized.

### Section II. FUNCTIONAL PARTS LIST

Source codes				Federal stock No.	Description	Unit of issue	Expendability	Quantity authorized	Quantity issued with equipment
Technical service	Source	Maintenance	Recoverability						
5	P1	0			GROUP 03 FUEL SYSTEM 0306 TANKS, LINES, FITTINGS Hose, Auxiliary Fuel Supply (80072) S19085.	<del>EA</del>		1	1
5	P1	0			Hose, Auxiliary Fuel Supply (80072) S10028.	<del>EA</del>		1	1
5	P1	0		5935-694-0803	GROUP 06 ELECTRICAL SYSTEM (ENGINE AND VEHICULAR) 0608 MISCELLANEOUS ITEMS Connector Assembly, Electrical	<del>EA</del>		1	
9	P1	0		6140-191-8517	0612 BATTERIES Battery, Storage 6V	<del>EA</del>		4	
9	P1	0		6810-264-9063	Sulfuric Acid, Electrolyte	GAL		4	
9	P1	0		5120-449-8083	GROUP 26 ACCESSORIES, PUBLICATION, TEST, EQUIPMENT AND TOOLS 2602.2 COMMON TOOLS Wrench, Open End, Adjustable: Single Head; 10 in. Overall lg; 0 to 1.135 Min. Jaw Opening Capacity.	<del>EA</del>	NX	1	1
9	P1	0		5120-277-9491	Screwdriver, Flat Tip: Wood Handle; flared Tip; 4 in. lg blade; ¼ in. Wide Tip.	<del>EA</del>	NX	1	1
12					2602.4 PUBLICATIONS Department of the Army Operator's Manual 5-6115-217-10.	<del>EA</del>		3	3
12					Department of the Army Lubrication Order 5-6115-217-20.	<del>EA</del>		1	1
5	P1	0	S	4210-288-8269	GROUP 76 FIRE FIGHTING EQUIPMENT 7603 FIRE EXTINGUISHERS Extinguisher Fire, Vaporizing Liquid; ¼ gal Capacity W/Wall Bracket.	<del>EA</del>		1	1

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US ARADCOM (2)  
US ARADCOM Rgn (2)  
OS Maj Comd (5) except  
USASETAF (2)  
Mil Dist (1)  
USA Corps (Res) (1)  
Sector, USA Corps (Res) (1)  
Armies (2)  
Corps (2)  
Div (2)  
Engr Brig (1)  
Svc Colleges (2)  
Br Svc Sch (2) except  
USAES (100)  
USMA (2)  
GENDEP (2)  
Engr Sec, GENDEP (10)  
Engr Dep (10)  
Trans Terminal Comd (2)  
Army Terminals (1)  
OS Sup Agcy (2)  
Div Engr (2)  
Engr Fld Maint Shops  
Buffalo, Chicago, Detroit, Alaska, Los Angeles,  
New Orleans, New York, Louisville,

Pittsburgh, San Francisco, Omaha, Seattle,  
Kansas City, Baltimore, Ft Worth, Eastern  
Ocean, Philadelphia, Rock Island, St Paul,  
St Louis Dist Engr (1)  
Engr Cen (5)  
AMS (3)  
Chicago Proc Ofc (10)  
Engr Maint Cen (36)  
Engr Sup Con Ofc (10)  
Fld Comd, AFSWP (8)  
JBUSMC (1)  
Japan Engr Sup Cen (20)  
USAREUR ComZ (2)  
USAREUR Engr Proc Cen (2)  
MAAG (5)  
Units org under fol TOE:  
5-48 (2)  
5-157 (5)  
5-167 (2)  
5-262 (5)  
5-267 (1)  
5-278 (5)  
5-279 (2)  
5-328 (2)  
5-329 (2)  
5-416 (2)  
5-464 (2)  
5-600 (2)  
5-601 (2)  
5-605 (2)  
5-607 (2)  
6-630 (2)  
8-565 (2)  
8-566 (2)  
8-567 (2)  
8-650 (2)  
9-77 (2)  
10-500 GB (2)  
11-54 (2)

11-500 (2)  
12-510 (2)  
12-512 (2)  
19-252 (2)  
19-256 (2)  
20-300 (2)  
29-500 FA (2)  
32-51 (2)

39-901 (2)  
44-70 (2)  
51-15 (2)  
55-87 (2)  
55-117 (2)  
55-235 (2)  
55-237 (2)

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

*USAR*: Same as Active Army except allowance is one copy to each unit.

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





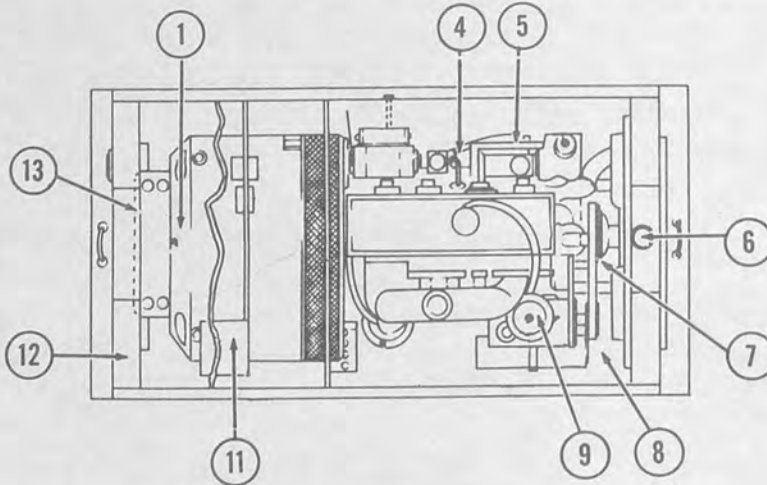
# PREVENTIVE MAINTENANCE SERVICES

## DAILY

TM5- 6115-217-10

GENERATOR SET

U.S. MOTORS MODEL 15-US-10327B-A



ITEM	LUBRICATE IN ACCORDANCE WITH CURRENT LUBRICATION ORDER	PAR REF
1	<u>FIRE EXTINGUISHER.</u> Inspect for insecure mounting.	
4	<u>DIPSTICK.</u> Check engine oil level. Add oil as indicated on the dipstick. Reference current L.O.	
5	<u>FUEL FILTERS.</u> Inspect for leaks and drain condensate. (Weekly)	
6	<u>RADIATOR.</u> Inspect for leaks, insecure mounting, and obstructions in the air passages. Check coolant level. Proper coolant level is 2 inches below filler neck.	
7	<u>BELT.</u> Inspect the fan belt for improper tension. Fan belt deflection is 3/4 to 1 inch midway between the generator and the fan hub. (Weekly)	82
8	<u>BATTERIES.</u> Inspect cable by hand for tightness. Inspect for cracks, insecure mounting, leaks, and corrosion. Fill to 3/8 inch above the plates. In freezing weather, run the engine a minimum of 1 hour after adding water. Clean vent hole in filler caps before installing. (Weekly)	

ME 6115-217-10/13.1 ① C4

Figure 13.1. Daily preventive maintenance services (sheet 1 of 2).

ITEM		PAR REF
9	<u>OIL FILTER ASSEMBLY.</u> Inspect for leaks.	
11	<u>FUEL TANK, LINES, AND VALVE.</u> Inspect for leaks.	
12	<u>GROUNDING TERMINAL.</u> Inspect for improper ground connections. A proper ground will consist of a 3/4 inch dia. hollow or a 5/8 inch dia. solid rod, 9 feet long. The cable will be No. 6 AWG copper wire bolted or clamped to the rod and attached to the ground terminal of the generator set.	
13	<u>CONTROLS AND INSTRUMENTS.</u> Inspect for improper operation.	14 Thru 44
	<u>NOTE 1. OPERATION.</u> During operation observe for any unusual noise or vibration.	

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Figure 13.1. Daily preventive maintenance services (sheet 2 of 2).

Page 29. Paragraph 63 is rescinded.

Page 36. Paragraph 89 is rescinded.

Page 37. Figure 17 is rescinded.

Page 41. Appendix 1 is superseded as follows:

## APPENDIX A REFERENCES

### A-1. Fire Protection

TB 5-4200-200-10

Hand Portable Fire Extinguishers Approved for Army Users

### A-2. Lubrication

LO 5-6115-217-20

Generator Set, Diesel Engine U.S. Motors Model 15-US-10327B-A

### A-3. Operation

TB 5-6100-200-15

TB 5-6100-223-15/1

TM 5-766

Basic Component Operation and Parallel Power Generating Equipment

Ground Power Generating Equipment

Electric Power Generators in the field

### A-4. Maintenance

TM 38-750

The Army Maintenance Management System (TAMMS)

Page 42. Appendix II is superseded as follows:

## APPENDIX B BASIC ISSUE ITEMS LIST AND ITEMS TROOP INSTALLED OR AUTHORIZED

### Section I. INTRODUCTION

#### B-1. Scope

This appendix lists items required by the operator for operation of the generator set.

#### B-2. General

This list is divided into the following sections:

a. *Basic Issue Items List—Section II.* Not applicable.

b. *Items Troop Installed or Authorized List—Section III.* A list of items in alphabetical sequence, which at the discretion of the unit commander may accompany the generator set. These items are NOT SUBJECT TO TURN-IN with the generator set when evacuated.

#### B-3. Explanation of Columns

The following provides an explanation of columns in the tabular list of Basic Issue Items

List, section II when applicable, and Items Troop Installed or Authorized, section III.

a. *Source, Maintenance, and Recoverability Code(s) (SMR):*

(1) *Source code*—indicates the source for the listed item. Source codes are—

Code	Explanation
P	Repair parts, special tools and test equipment supplied from GSA/DSA or Army supply system and authorized for use at indicated maintenance levels.
P2	Repair parts, special tools and test equipment which are procured and stocked for insurance purposes because the combat or military essentiality of the end item dictates that a minimum quantity be available in the supply system.

(2) *Maintenance code*—indicates the lowest level of maintenance authorized to install the listed item. The maintenance level code is—



Code

C Crew/Operator

Explanation

(3) *Recoverability code*—indicates whether unserviceable items should be returned for recovery or salvage. Items not coded are non-recoverable. Recoverability codes are—

Code

R Applied to repair parts (assemblies and components), special tools and test equipment which are considered economically repairable at direct and general support maintenance levels.

Explanation

S Repair parts, special tools, test equipment and assemblies which are economically repairable at DSU and GSU activities and which normally are furnished by supply on an exchange basis.

b. *Federal Stock Number*. This column indicates the Federal stock number assigned to the

item and will be used for requisitioning purposes.

c. *Description*. This column indicates the Federal item name and any additional description of the item required.

d. *Unit of Measure (U/M)*. A 2-character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based, e.g., ft, ea, pr, etc.

e. *Quantity Furnished with Equipment (BIIL)*. Not applicable.

f. *Quantity Authorized (Items Troop Installed or Authorized)*. This column indicates the quantity of the item authorized to be used with the equipment.

## Section II. BASIC ISSUE ITEMS LIST

(Not applicable)

## Section III. ITEMS TROOP INSTALLED OR AUTHORIZED LIST

(1) SMR Code	(2) Federal stock Number	(3) Description	Usable on code	(4) Unit of meas	(5) Qty auth
PC	2910-066-1235	ADAPTER, Fuel Drum		EA	1
PC	7520-559-9618	CASE, Maintenance and Operations Manuals		EA	1
PC	7510-889-3494	BINDER, Looseleaf		EA	1
PC	5935-258-9156	CONNECTOR PLUG		EA	1
PC	4210-555-8837	EXTINGUISHER, Fire		EA	1
PC	4720-204-3388	HOSE, Auxiliary, Fuel		EA	1
PC	5975-878-3791	ROD ASSY, Ground		EA	1

By Order of the Secretary of the Army:

Official:

VERNE L. BOWERS  
Major General, United States Army  
The Adjutant General

CREIGHTON W. ABRAMS  
General, United States Army  
Chief of Staff

Distribution:

To be distributed in accordance with DA Form 12-25D (qty rqr block no. 1037), Operator requirements for Generator Sets, Engine Driven, 15 KW, 60 HZ, Precise Power.



By Order of the Secretary of the Army:

CREIGHTON W. ABRAMS  
*General, United States Army*  
*Chief of Staff*

Official:

VERNE L. BOWERS  
*Major General, United States Army*  
*The Adjutant General*

Distribution:

To be distributed in accordance with DA Form 12-25D, (qty rqr block No. 1037) Operator maintenance requirements for Generator, Sets, 15 KW, 60 HZ Precise Power.