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TM 5-6115-267-15

DEPARTMENT OF THE ARMY TECHNICAL

H6-02

OPERATOR, ORGANIZATIONAL
FIELD AND DEPOT MAINTENANCE MANUAL
GENERATOR SET, GASOLINE ENGINE:
1.5KW, DC, 28V; SKID MOUNTED
1.5 KW, DC, 28V; SKID MOUNTED
(WINPOWER MODEL G-1528T-2A016)
FSN 6115-849-2323 (LESS ENGINE)

HEADQUARTERS, DEPARTMENT OF THE ARMY

NOVEMBER 1962

SAFETY PRECAUTIONS

Before Operation

When handling gasoline, always provide a metal-to-metal contact between the container and the fuel tank. This will prevent a spark from being generated as gasoline flows over the metallic surfaces.

During Operation

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

Do not operate the generator set in an enclosed area unless the exhaust gases are piped outside. Exhaust gases contain carbon monoxide, a poisonous, odorless, and colorless gas.

Shut down the engine before removing or installing electrical components. The voltage of this generator set can cause serious burns to personnel.

After Operation

When handling gasoline, always provide a metal-to-metal contact between the container and the fuel tank. This will prevent a spark from being generated as gasoline flows over the metallic surfaces.

TECHNICAL MANUAL }
 No. 5-6115-267-15 }

HEADQUARTERS,
 DEPARTMENT OF THE ARMY
 WASHINGTON 25, D.C., 14 November 1962

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 GENERATOR SET, GASOLINE ENGINE: 1.5 KW, DC, 28V; SKID MOUNTED
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CHAPTER I

INTRODUCTION

Section I. GENERAL

1. Scope

a. This manual is published for the use of the personnel to whom the Winpower Model G-1528T-2A016 Generator Set is issued. Chapters 1 through 5 provide information on the operation, daily preventive maintenance services, and organizational maintenance of the equipment, accessories, components, and attachments. Chapter 6 provides information for field and depot maintenance (3d, 4th, and 5th echelons). This manual also provides descriptions of the main units and their functions in relationship to other components.

b. Appendix I contains a list of publications applicable to this manual. Appendix II contains the Maintenance Allocation Chart. Appendix III contains the list of Basic Issue Items authorized the operator of this equipment and a list of Maintenance and Operating Supplies required for initial operation. The Organizational, Field and Depot Maintenance Repair Parts and Special Tool Lists are listed in TM 5-6115-267-25P.

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

d. Report all deficiencies in this manual on DA Form 2028. Submit recommendations for changes, additions, or deletions to the Commanding Office, U.S. Army Mobility Support Center, ATTN: SMOMC-MC, P. O. Box 119, Columbus 16, Ohio. Direct Communication is authorized.

e. Report unsatisfactory performance and suggestions for equipment improvement as specified in AR 700-38.

2. Record and Report Forms

a. DA Form 2258 (Depreservation Guide of Engineer Equipment).

b. For other record and report forms applicable to the operator, crew, and organizational maintenance, refer to TM 38-750.

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

Section II. DESCRIPTION AND DATA

3. Description

a. *General.* The Winpower Generator Set (figs. 1 and 2), Model G-1528T-2A016, is a self-contained, frame mounted, portable unit. It is powered by a 2-cylinder military standard engine that is directly coupled to a 1.5 kilowatt director current generator (fig. 2).

b. *Engine.* Refer to TM 5-2805-206-14 for a description of the engine.

c. *Generator.* The Winpower Model G-1528T Generator (fig. 2) is a direct current revolving armature generator, coupled directly to the engine. It delivers 28-volt current, and is rated at 1.5 kilowatts at 8,000 feet altitude.

d. *Control Panel.* The control panel (fig. 2) contains the instruments, electrical components, and electrical controls necessary for the operation of the generator set.

4. Identification and Tabulated Data

a. *Identification.* The generator set has four identification plates.

- (1) *Corps of Engineers plate A.* The Corps of Engineers plate A, located on the fuel tank at the rear of the generator set, specifies the manufacturer, model, serial number, stock number, engine manufacturer and model, dimensions, and weight.

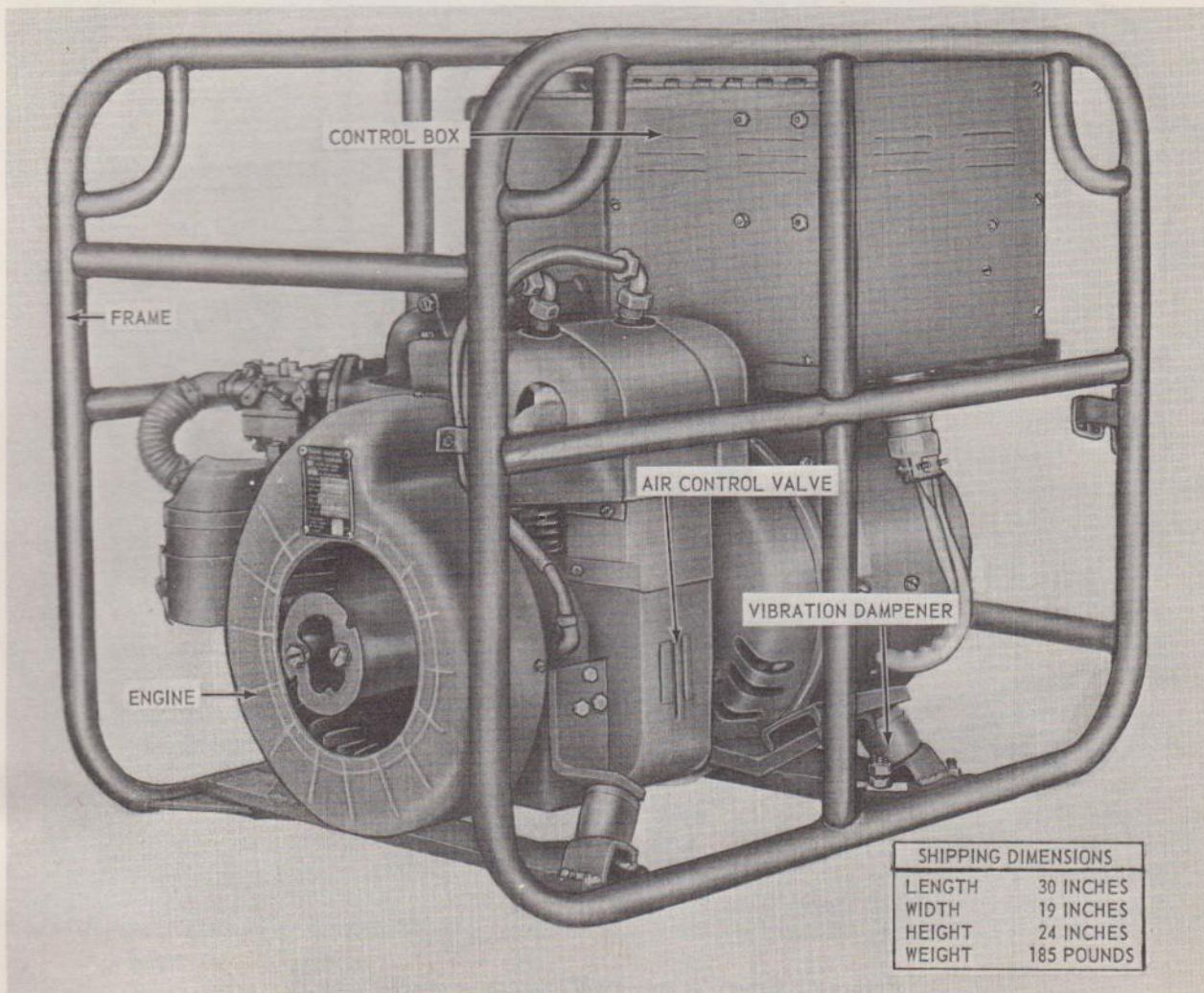


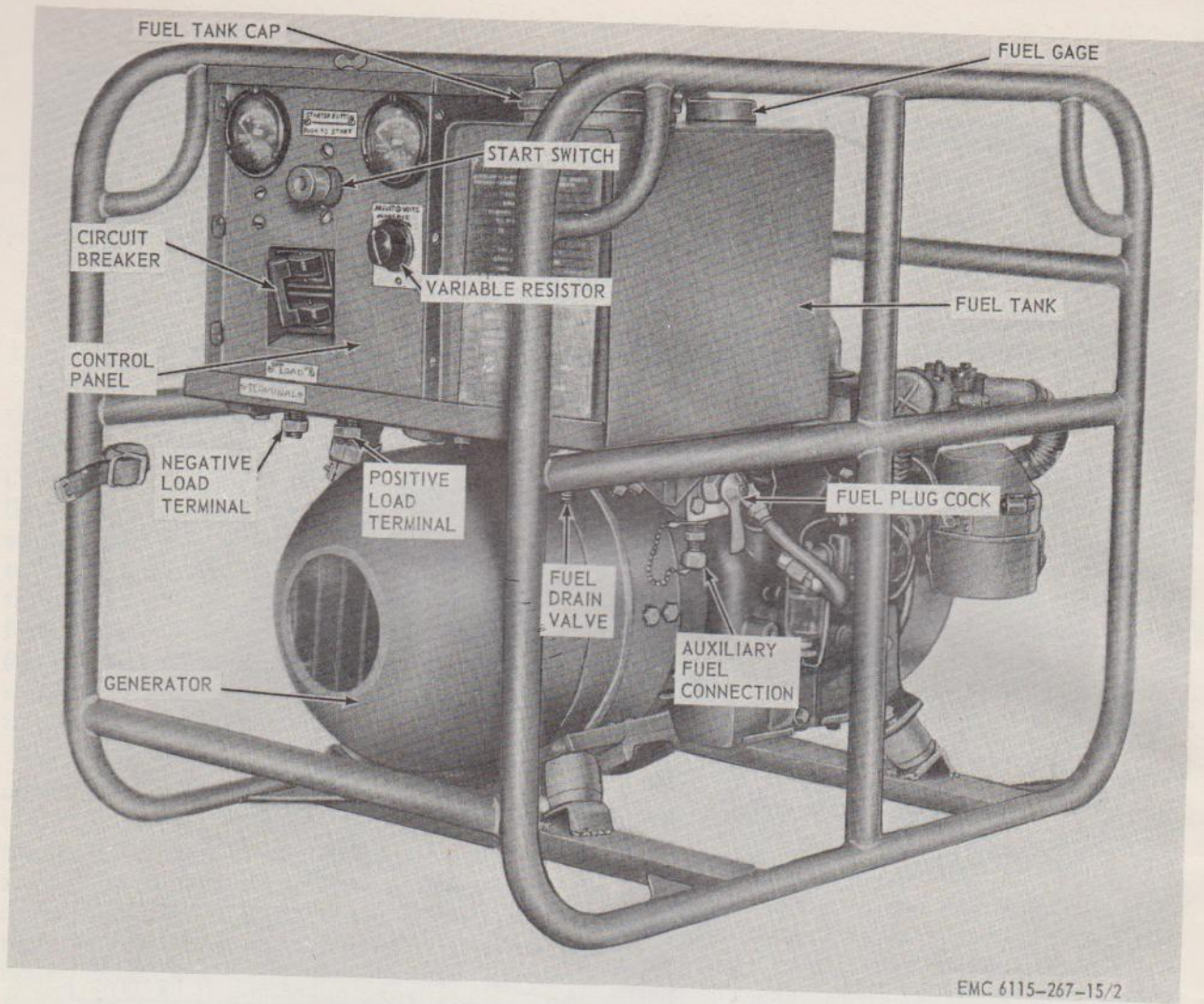
Figure 1. Generator set, left front, three-quarter view, with shipping dimensions.

- (2) *Corps of Engineers plate C.* The Corps of Engineers plate C, located at the end of the fuel tank below the Corps of Engineers plate A, lists the manufacturer, model, serial number, and electrical data.
- (3) *Generator manufacturer's plate.* The manufacturer's generator plate is located on the left side of the generator below the control box.
- (4) *Engine data plate.* The engine data plate is located on the flywheel fan cover at the front of the engine. Refer to TM 5-2805-206-14.

b. *Tabulated Data.*

(1) *Corps of Engineers plate A.*
 GENERATOR SET—GED. 1.5 K.W.—D.C.—
 AIR COOLED—PORTABLE—TUBULAR
 FRAME—SHOCK MOUNTED

STOCK NO. ----- 6115-849-2323
 SER. NO. -----
 REG. NO. -----
 MFR. ----- WINPOWER
 MODEL ----- G1528-T2A016
 CONT. NO. -----
 DATE MFD. -----
 LENGTH ----- 30
 WIDTH ----- 19
 HEIGHT ----- 24
 CAP. OR PAYLOAD -----
 G.V.W. -----



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Figure 2. Generator set—right rear, three-quarter view.

SHIP. WT. ----- 185 LBS
 CUBE ----- 7.9 FT.
 ENG. MFR. ----- CONTINENTAL MOTORS
 CORP.
 MODEL ----- 2A016-2
 ENG SER. NO.
 INSP. STAMP
 DATE INSP.

(2) Corps of Engineers plate C.

NOM. ----- 28 VOLT D.C. 4 POLE 2 WIRE
 MAKE ----- WINPOWER MFG. CO.
 MOD. ----- G-1528-T
 SER.
 NO. OF WIRES ----- 2
 VOLTS ----- 28
 AMPS. ----- 53.57
 K.W. ----- 1.5
 KVA
 P.F. %
 CYCLES

R.P.M. ----- 3600
 MFD.
 PH.
 TM-5

(3) Generator manufacturer's plate.

MANUFACTURER -- WINPOWER MFG. CO.
 TYPE ----- D.C. GENERATOR
 MODEL NO. ----- G-1528-T
 SERIAL NO.
 K.W. ----- 1.5
 AMPS ----- 53.57
 VOLT ----- 28
 R.P.M. ----- 3600

(4) Engine. For tabulated data on the military standard engine, refer to TM 5-2805-206-14.

(5) Capacities.

Fuel tank ----- 2 gal (gallons)

(6) *Dimensions and weight.* See figure 1.

Length 30 in. (inches)
Width 19 in.
Height 24 in.
Weight 185 lb (pounds)

(7) *Base plan.* See figure 3.

(8) *Wiring diagram.* See figure 4.

(9) *Generator brush adjustment data.*

Brush spring tension... 14-21 oz (ounces)

5. Difference in Models

This manual covers only the Winpower Generator Set Model G-1528T-2A016. No known unit differences exist for the model covered herein.

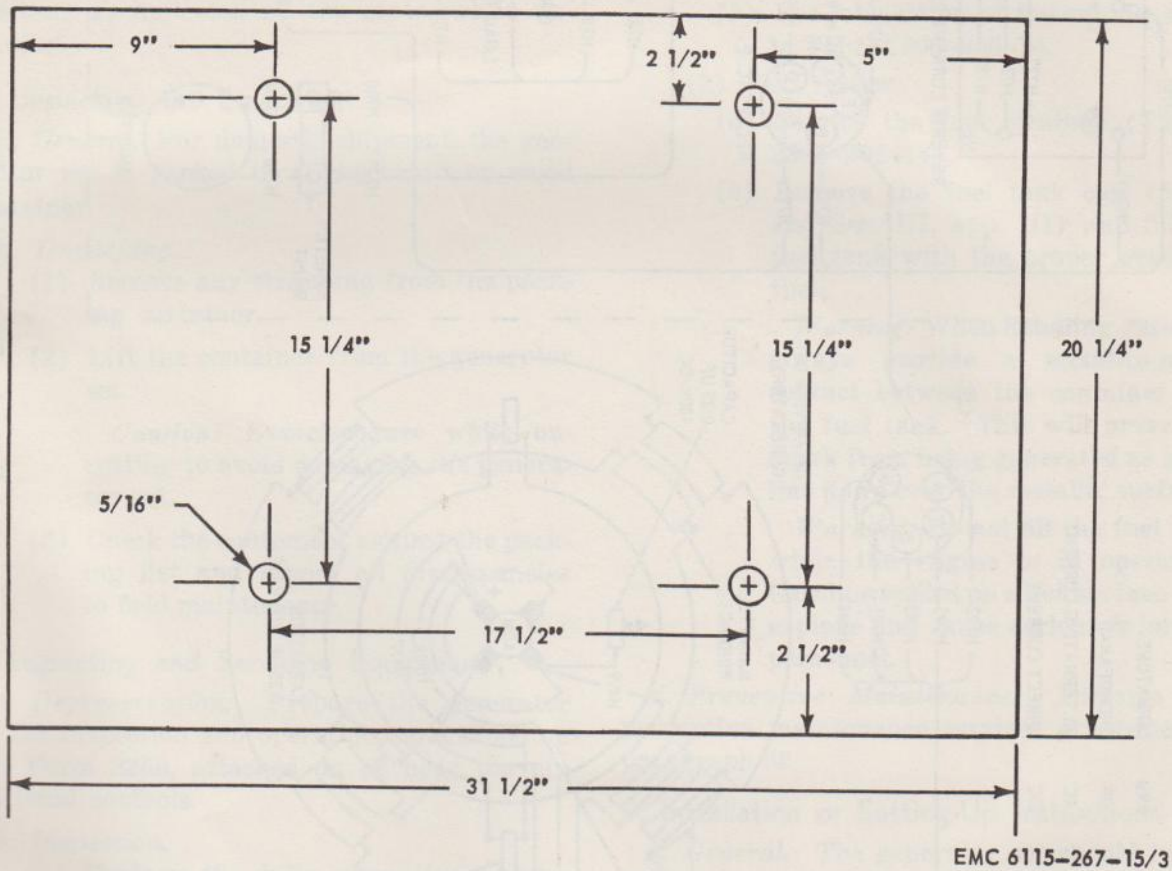


Figure 3. Base plan.

SYMBOL LEGEND

- + POSITIVE
- NEGATIVE
- ⊥ GROUND
- V VOLT
- Ω OHM
- ARM ARMATURE
- UF MICROFARAD
- AC ALTERNATING CURRENT
- DC DIRECT CURRENT

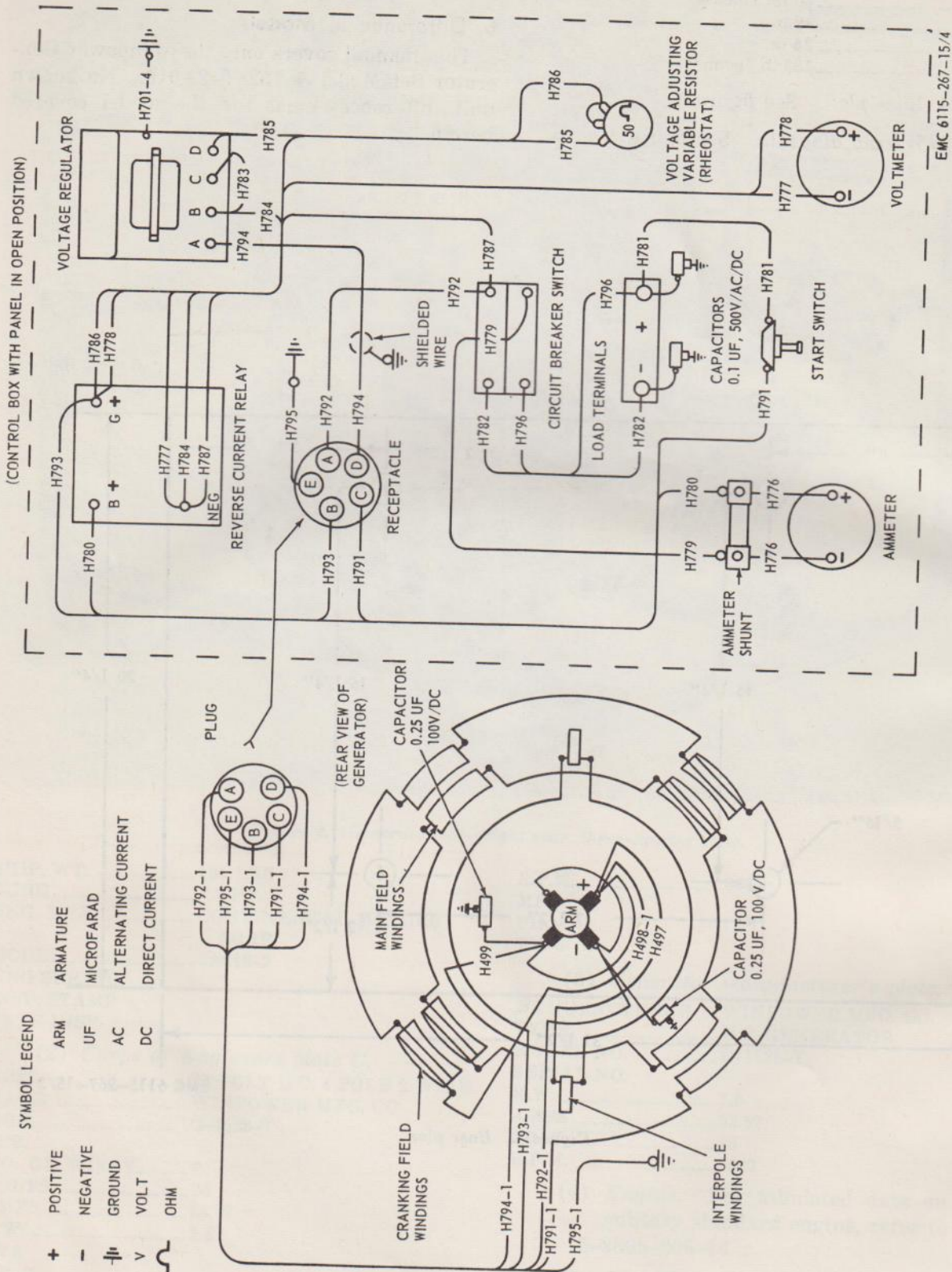


Figure 4. Practical wiring diagram.

CHAPTER 2

INSTALLATION AND OPERATION INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

6. Unloading the Equipment

The total weight of the crated generator set is approximately 207 pounds. The generator set can be unloaded by manpower, handtruck, or forklift. The crate must be kept in the UP position, as indicated on the crate, while unloading.

7. Unpacking the Equipment

a. General. For domestic shipment, the generator set is packed in a fiberboard or wood container.

b. Unpacking.

- (1) Remove any strapping from the packing container.
- (2) Lift the container from the generator set.

Caution: Exercise care while uncrating to avoid damaging the generator set.

- (3) Check the equipment against the packing list and report all discrepancies to field maintenance.

8. Inspecting and Servicing Equipment

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

b. Inspection.

- (1) Perform the daily preventive maintenance services (par. 30).
- (2) Inspect the generator set for damage, missing parts, and accessories. Report any discrepancy found to organizational maintenance.
- (3) For inspection of engine, refer to TM 5-2805-206-14.

c. Servicing.

(1) *Lubrication.*

- (a) The generator set is equipped with a sealed bearing and does not require lubrication.
- (b) For lubrication of the engine, refer to TM 5-2805-206-14.

(2) *Fuel system.*

- (a) Service the fuel strainer (TM 5-2805-206-14).
- (b) Remove the fuel tank cap (fig. 2 and Sec. III, app. III) and fill the fuel tank with the proper grade of fuel.

Warning: When handling gasoline, always provide a metal-to-metal contact between the container and the fuel tank. This will prevent a spark from being generated as gasoline flows over the metallic surfaces.

Warning: Do not fill the fuel tank while the engine is in operation. Gasoline spilled on a hot surface may explode and cause serious injury to personnel.

d. Preventive Maintenance. Perform the preventive maintenance services prescribed in paragraph 32.

9. Installation or Setting-Up Instructions

a. General. The generator set should be installed on a level site, clear of obstacles, and with ample ventilation.

b. Installation. The generator set is shipped fully assembled for operation. When preparing for a permanent installation, be sure the base is solid and strong enough to support the weight of the unit. Refer to figure 3 for dimensions of the base.

c. Indoor Installation. Keep the room well ventilated at all times so that the generator set will receive a maximum supply of air. Install a gastight exhaust line, as large as the exhaust outlet, to pipe the exhaust gases outdoors. Provide metal shields for the exhaust line if it passes through flammable walls. Wrap the line with asbestos paper if there is any danger of anyone touching it. If the exhaust line must pitch upward, place a condensation trap at the lowest point in the line. Drain the trap periodically to prevent condensation from flowing back into the exhaust system.

Warning: Do not operate the generator set in an enclosed area unless the exhaust gases are piped outside. Exhaust gases contain carbon monoxide, a poisonous, odorless, and colorless gas.

d. Leveling. Keep the unit as level as possible at all times.

e. Connecting the Load.

- (1) Loosen the nuts on the load terminals (fig. 2).
- (2) Insert the positive load line into the slot of the positive terminal and the negative load line into the slot of the negative terminal. Tighten the terminal nuts securely.

f. External Fuel Source. If an auxiliary fuel source is to be used, connect the auxiliary fuel hose to the auxiliary fuel connection (fig. 2).

g. External Power Source. When an external power source is used to start the engine, connect the external power lines to the load terminals as described in *e* above.

Note. The external power source must supply 28-volt direct current power. Keep the circuit breaker in the OFF position until ready to start the engine.

Section II. MOVEMENT TO A NEW WORKSITE

10. Dismantling for Movement

a. Preparation for Movement.

- (1) Disconnect all load cables, exhaust lines, and external fuel lines.
- (2) Open the fuel drain valve (fig. 2) in the bottom of the fuel tank and drain the fuel into a suitable container.

b. Movement. A handtruck, forklift, or manpower may be used to move the generator set to a new worksite. Keep it in an upright position while moving.

11. Reinstallation After Movement

Reinstall the generator set after movement as described in paragraph 9 for setting-up instructions.

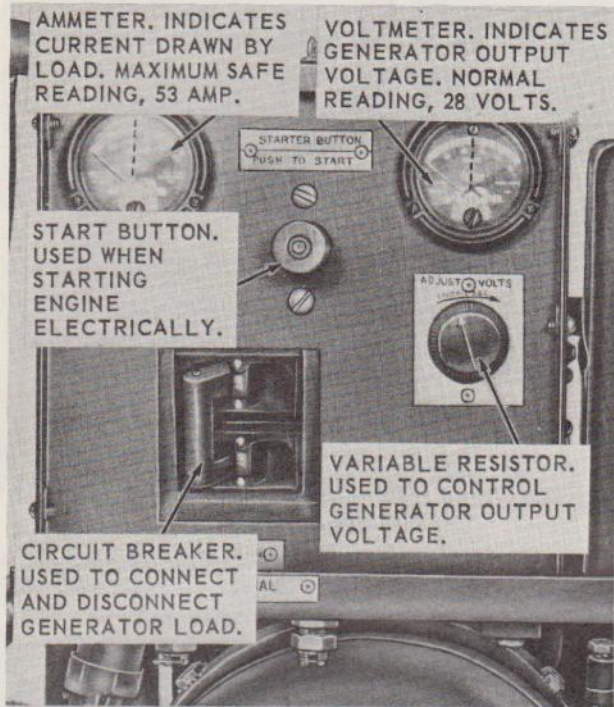
Section III. CONTROLS AND INSTRUMENTS

12. General

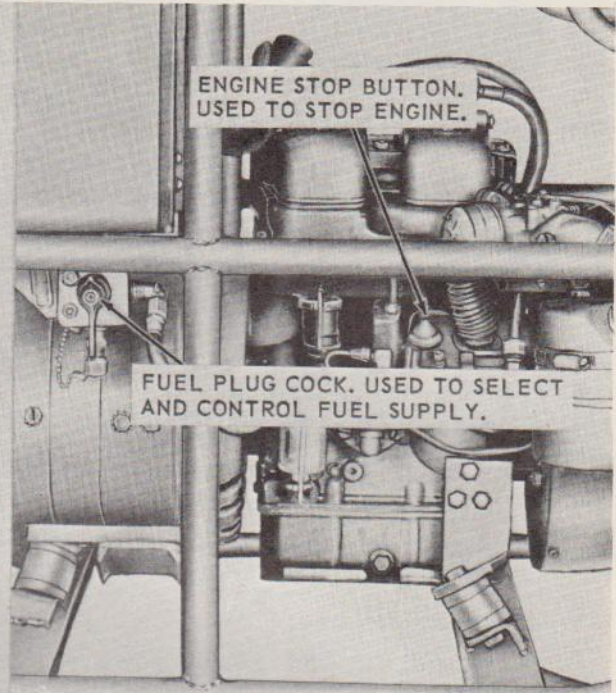
This section describes, locates, illustrates, and furnishes the operator, crew, or organizational maintenance personnel sufficient information about the various controls and instruments for proper operation of the generator set.

13. Controls and Instruments

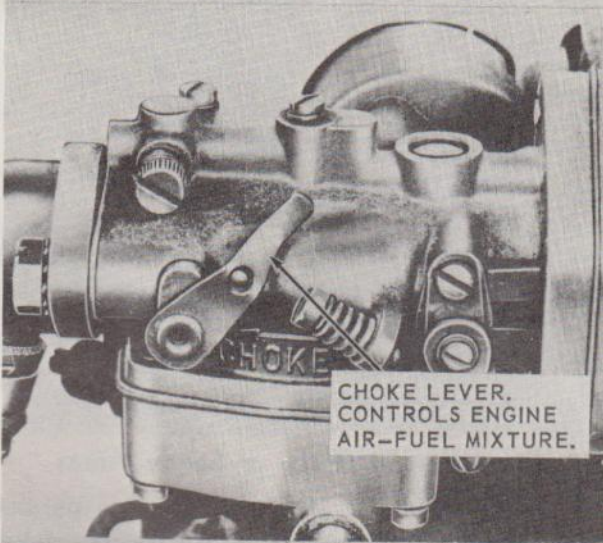
The purpose and normal readings of all controls and instruments are shown in figure 5.



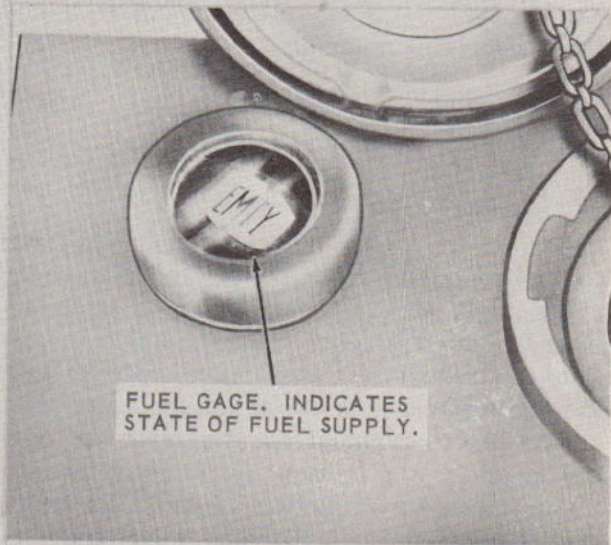
A. CONTROL PANEL.



B. FUEL PLUG COCK AND ENGINE STOP BUTTON.



C. CHOKE LEVER.



D. FUEL GAGE.

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Figure 5. Controls and instruments.

Section IV. OPERATION OF EQUIPMENT

14. General

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

b. The operator must know how to perform every operation of which the generator set is capable. This section gives instructions on starting and stopping the generator set and regulating it to perform the specific tasks for which the equipment is designed.

15. Starting

a. Preparation for Starting.

- (1) Perform the daily preventive maintenance services (par. 30).
- (2) Install the external fuel source as applicable (par. 9).

b. Electrical Starting.

- (1) Install a 24-volt external power source (par. 9).
- (2) Refer to figure 6 and start the engine electrically.

c. *Manual Starting.* Refer to figure 7 and start the engine manually.

16. Stopping

Refer to figure 8 and stop the engine.

17. Generator Set Operation

a. *General.* When the load is connected and the engine is operating, the generator operates at its rated voltage. The generator set is designed to operate continuously at 3,600 revolutions per minute (full load) in accordance with the engine governor setting. The operator must always be observant of the generator set, paying particular attention to unusual sounds which indicate malfunction. In such an event, stop the engine (par. 16) and report the condition to organizational maintenance.

b. *Operation.* Refer to figure 9 for generator operating instructions.

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

a. *General.* The generator set will function satisfactorily at temperatures down to -65° F.

Care should be taken that the engine is in good operating condition, to assure quick starting in very cold weather. The engine is equipped with an air control valve (fig. 1) mounted in the lower air duct assembly on the left side of the engine. The valve permits more efficient cold weather operation of the engine. It should be opened only when the outside temperature is -20° F. or lower.

b. *Fuel System.* Keep the fuel tank as full as possible to prevent condensation. Drain and service the fuel strainer more often than under normal conditions (TM 5-2805-206-14).

c. Electrical System.

- (1) Before starting the engine, remove any accumulated ice or snow from the spark plugs and wiring.

Caution: Do not bend or kink wiring during cold weather. Electrical wiring become brittle with extreme cold.

- (2) Allow at least a 5-minute warmup period after starting the engine before applying the load to the generator.

19. Operation in Extreme Heat

a. Cooling.

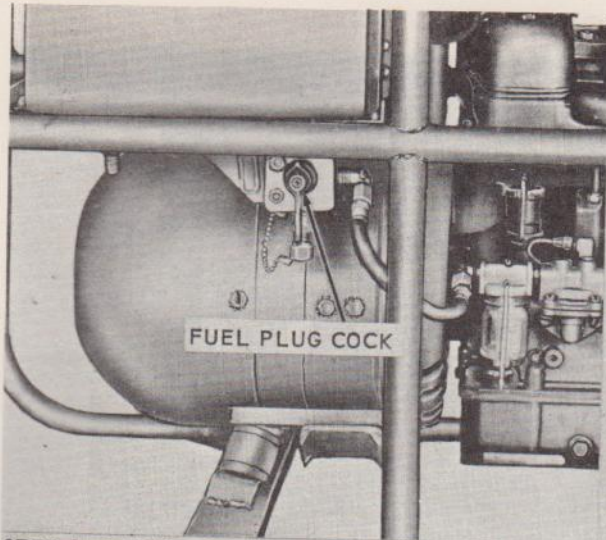
- (1) Keep the generator set clean and free of dust. The ventilation openings in the generator must be kept clean.
- (2) If the generator set is used indoors, refer to paragraph 9.
- (3) Observe the ammeter frequently to be sure the generator is not overloaded.

b. *Lubrication.* Lubricate the engine as prescribed in TM 5-2805-206-14 and the current lubrication order.

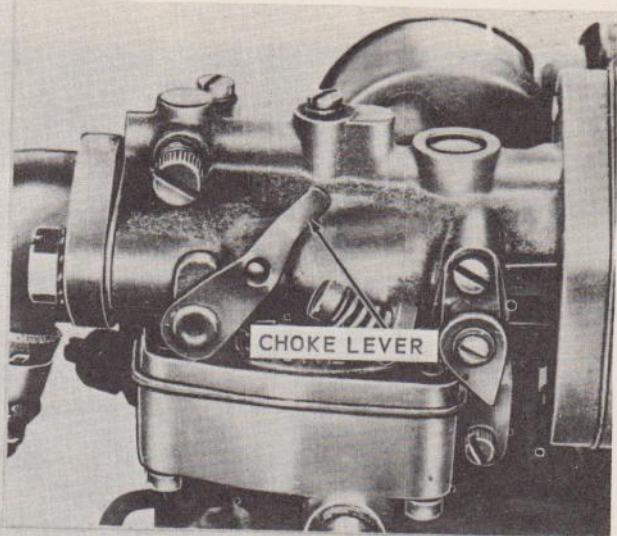
20. Operation in Dusty or Sandy Areas

a. *Protection.* If the installation is permanent, erect a protective shield for the generator set. If the installation is temporary, take advantage of natural barriers which offer protection from blowing dust and sand.

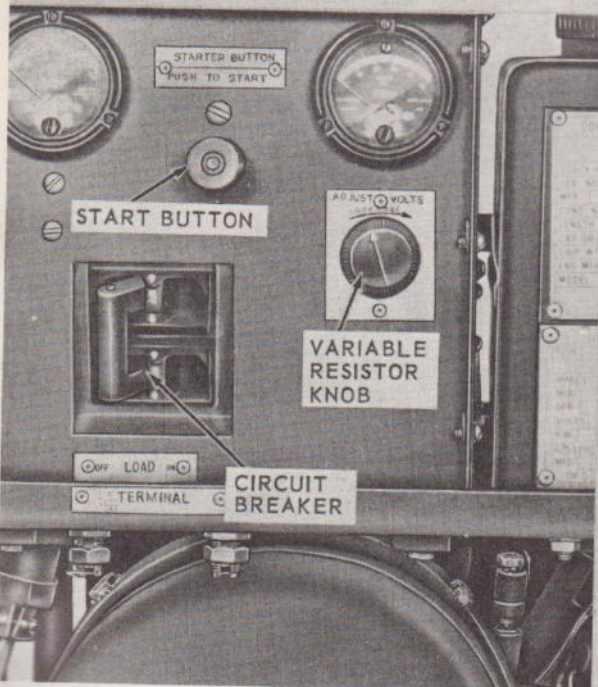
b. *Air Cleaner.* Service the air cleaner daily to prevent sand and dirt from entering the engine. Refer to TM 5-2805-206-14 for service of the air cleaner.



STEP 1. TURN FUEL PLUG COCK TO TANK OR AUXILIARY POSITION.



STEP 2. PUT CHOKE LEVER IN CLOSED POSITION.



STEP 3. TURN VARIABLE RESISTOR KNOB FULLY COUNTERCLOCKWISE.

STEP 4. PLACE CIRCUIT BREAKER IN ON POSITION.

STEP 5. PUSH START BUTTON IN AND HOLD UNTIL ENGINE STARTS.

STEP 6. OPEN CHOKE GRADUALLY AS ENGINE WARMS UP.

STEP 7. POSITION CIRCUIT BREAKER IN OFF POSITION AND DISCONNECT POWER SOURCE.

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Figure 6. Engine electrical starting instructions.

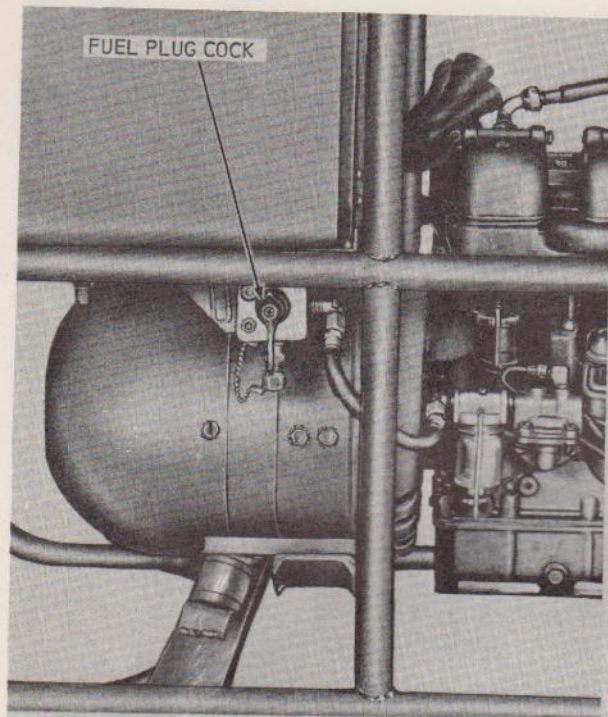
c. Lubrication. Lubricate the engine as prescribed in TM 5-2805-206-14, and the current lubrication order.

21. Operation Under Rainy or Humid Conditions

a. General. If the unit is outside and is not operating, place a canvas or waterproof cover

over the unit during storms. During dry periods, remove the cover and allow the unit to dry. During humid periods, dry the unit before operating.

b. Fuel. Keep the fuel tank as full as possible to prevent condensation. Drain and service the fuel strainer more often than under normal conditions (TM 5-2805-206-14).

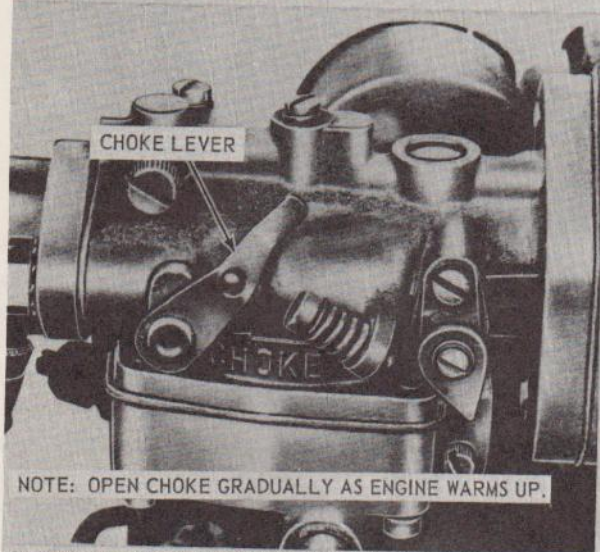


STEP 1. TURN FUEL PLUG COCK TO TANK OR AUXILIARY POSITION.



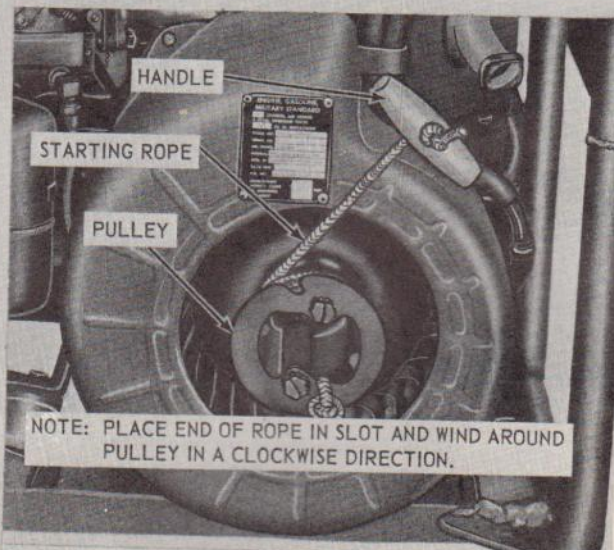
STEP 2. TURN VARIABLE RESISTOR KNOB FULLY COUNTERCLOCKWISE.

STEP 3. PUT CIRCUIT BREAKER HANDLE IN OFF POSITION.



NOTE: OPEN CHOKE GRADUALLY AS ENGINE WARMS UP.

STEP 4. PLACE CHOKE LEVER IN CLOSED POSITION.

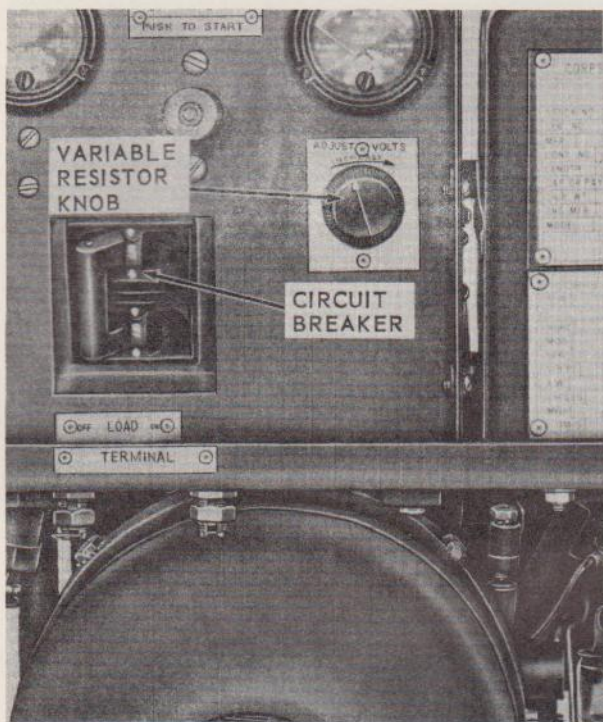


NOTE: PLACE END OF ROPE IN SLOT AND WIND AROUND PULLEY IN A CLOCKWISE DIRECTION.

STEP 5. PULL ON HANDLE WITH A QUICK MOTION. REPEAT AS NECESSARY UNTIL ENGINE STARTS.

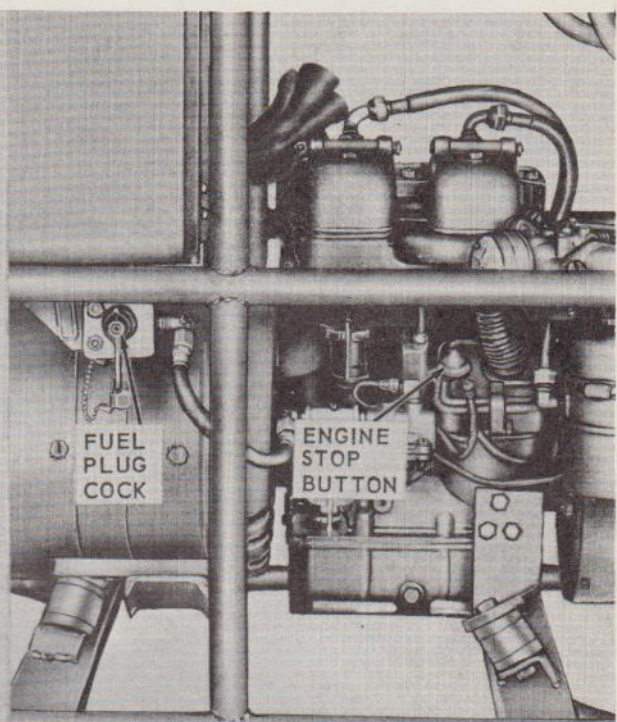
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Figure 7. Engine manual starting instructions.



STEP 1. POSITION CIRCUIT BREAKER IN OFF POSITION.

STEP 2. TURN VARIABLE RESISTOR KNOB FULLY COUNTERCLOCKWISE.



STEP 3. DEPRESS STOP BUTTON AND HOLD DOWN UNTIL ENGINE STOPS.

STEP 4. TURN FUEL PLUG COCK TO OFF POSITION.

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Figure 8. Engine stopping instructions.

c. *Electrical System.* Humid conditions can cause corrosion and deterioration of electrical components. Keep electrical components and wiring clean and dry.

22. Operation in Salt Water Areas

a. *General.* Wipe down the generator set with clean, fresh water at frequent intervals. Take care not to contaminate the fuel supply or damage the electrical system.

b. *Lubrication.* Use care to keep salt water from entering the lubrication system. Lubricate the engine as prescribed in TM 5-2805-206-14 and the current lubrication order.

c. *Preservation.* Paint all exposed nonpolished surfaces. Coat exposed parts of polished surfaces or other ferrous material with standard issue rustproofing material if available, or cover parts with a light coat of grease. Do not paint or grease the muffler.

23. Operation at High Altitudes

a. *General.* The generator set is rated at 1.5 kw (kilowatts) up to 5,000 feet altitude and 1.1 kw at 8,000 feet altitude. This paragraph provides information for calculating derated capacity for operation of the set above 8,000 feet altitude.

b. *Engine.* Operation at high altitudes may require adjustment of the carburetor for proper operation of the unit. Refer to TM 5-2805-206-14 for detailed information on engine tuning.

c. *Derating Formula.* To calculate specific output capability of the generator set above 8,000 feet altitude, use the following formula:

FORMULA

$$7\% \times \frac{\text{actual altitude}-5,000}{1,000} \times 5,000 \text{ ft rating} = \text{derating factor}$$

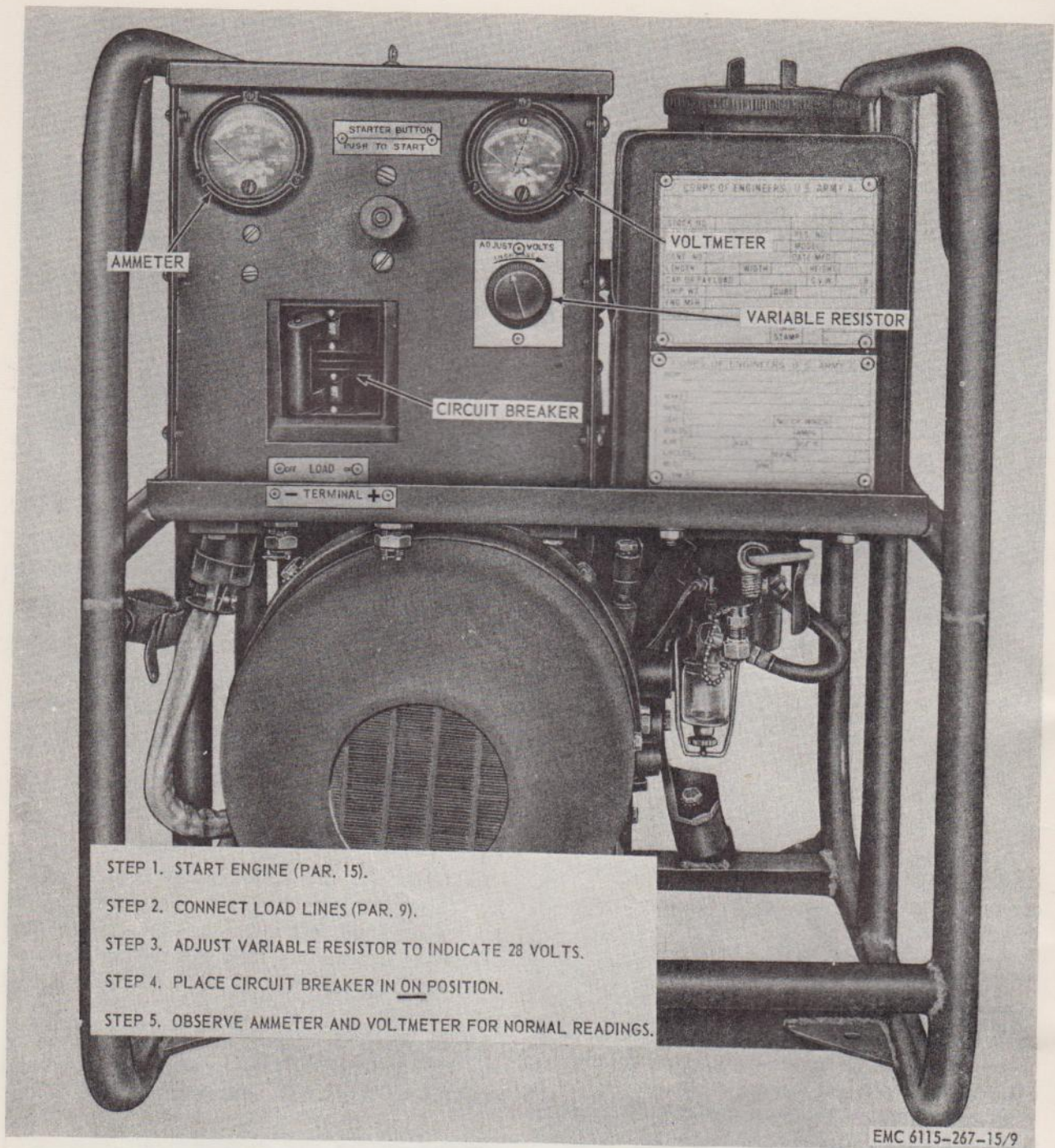


Figure 9. Generator operating instructions.

EXAMPLE SOLUTION FOR 13,000 FT:

$$0.07 \times \frac{13,000 - 5,000}{1,000} \times 1.5 \text{ kw} =$$

0.84 derating factor

1.5 kw - 0.84 kw = 0.66 kw specific output at 10,000 ft altitude.

CHAPTER 3

OPERATOR AND ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. OPERATOR AND ORGANIZATIONAL MAINTENANCE TOOLS AND EQUIPMENT

24. Special Tools and Equipment

a. Special Tools.

(1) *Generator.* No special tools or equipment are required by the operator or organizational maintenance personnel for the maintenance of the generator and components of the generator set.

(2) *Engine.* For special tools required for organizational maintenance of the military standard engine, refer to TM 5-2805-206-14.

b. Specially Designed Tools.

(1) *Generator.* No specially designed tools are required for the organizational maintenance of the generator.

(2) *Engine.* For specially designed tools required to perform repair operations on the military standard engine, refer to TM 5-2805-206-14.

25. Basic Issue Tools and Equipment

Tools and repair parts issued with or authorized for the generator set are listed in the basic issue items list in appendix III.

26. Organizational Maintenance Repair Parts

a. Organizational maintenance repair parts for the generator set are listed and illustrated in TM 5-6115-267-25P.

b. For organizational maintenance repair parts for the military standard engine, refer to TM 5-2805-206-14P.

Section II. LUBRICATION

27. General Lubrication Information

Lubrication is not required for the basic generator set. For general lubrication instructions on the engine, refer to the current lubrication order and TM 5-2805-206-14P.

28. Detailed Lubrication Information

a. Refer to TM 5-2805-206-14 and current lubrication order for detailed lubrication instructions on the engine.

b. The generator is equipped with a sealed bearing and requires no lubrication.

Section III. PREVENTIVE MAINTENANCE SERVICES

29. General

To insure that the equipment is ready for operation at all times, it must be inspected systematically, so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance services to be performed are listed and described in paragraph 30. The item numbers indicate the sequence of mini-

mum inspection requirements. Defects discovered during 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 the equipment if operation were continued. Defects or unsatisfactory operating characteristics beyond the scope of the operator to correct must be re-

ported on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) at the earliest possible opportunity.

30. Daily Preventive Maintenance Services

This paragraph contains an illustrated tabulated listing of preventive maintenance services which must be performed daily by the operator to insure that the generator set is combat serviceable. Daily services retain the same item numbers used in Quarterly Preventive Maintenance Services. Therefore, Daily Preventive Maintenance Services may not be numbered consecutively but should be performed in the numerical sequence as shown to insure complete coverage. Refer to A, figure 10, for the Daily Preventive Maintenance Services.

31. Organizational Maintenance

a. Preventive maintenance is performed by organizational maintenance personnel at quarterly intervals. A quarterly interval is equivalent to 3 calendar months, or 250 hours of operation, whichever occurs first.

b. The Preventive Maintenance Services to be performed at quarterly intervals are listed consecutively and are described in paragraph 32. The item numbers indicate the sequence of maintenance inspection requirements. DA Form 2404 will be prepared when inspection reveals any deficiencies.

c. Lubrication will be in accordance with the current lubrication order (LO 5-2805-206-14) and TM 5-2805-206-14.

32. Quarterly Preventive Maintenance Services

This paragraph contains an illustrated tabulated listing of Preventive Maintenance Services which must be performed quarterly to insure that the generator set is combat serviceable. Quarterly Preventive Maintenance Services should be performed in the numerical sequence as shown to insure complete coverage. Refer to B, figure 10, for the Quarterly Preventive Maintenance Services.

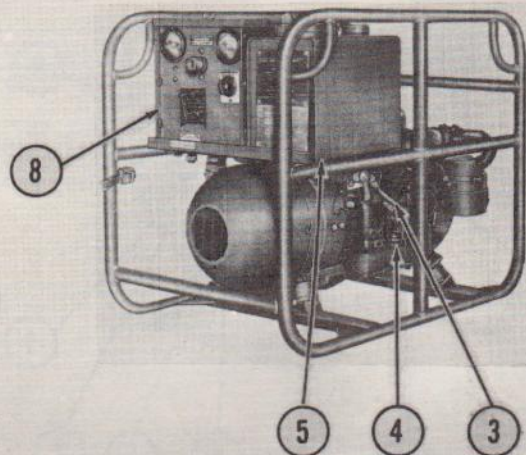
PREVENTIVE MAINTENANCE SERVICES

DAILY

TM 5-6115-267-15

GENERATOR SET

WINPOWER MODEL G-1528T-2A016



LUBRICATE IN ACCORDANCE WITH CURRENT LUBRICATION ORDER

ITEM	PAR	REF
3	<u>CRANKCASE FILL AND LEVEL.</u> Check oil level. Add oil as indicated on level gage. Reference current L.O. 5-2805-206-14.	
4	<u>FUEL STRAINER.</u> Inspect for damage and leaks. Clean strainer bowl and element. (Weekly)	
5	<u>FUEL TANK, STRAINER, AND CAP.</u> Check fuel level. Inspect the tank for leaks. Inspect the tank strainer for damage and dirt. Clean cap vent before reinstalling cap.	
8	<u>CONTROLS AND INSTRUMENTS.</u> Inspect for damage. With the unit operating, inspect for improper operation. Normal readings for instruments are as follows: Ammeter indicates current drawn by load not to exceed 53 amperes. Voltmeter 28 volts.	13
	<u>NOTE 1. OPERATION.</u> During operation observe for any unusual noise and vibration.	

A Daily

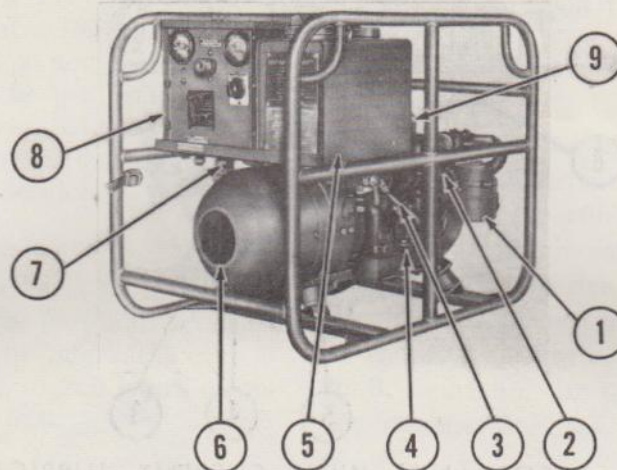
Figure 10. Preventive maintenance services.

PREVENTIVE MAINTENANCE SERVICES QUARTERLY

TM 5-6115-267-15

GENERATOR SET

WINPOWER MODEL G-1528T-2A016



LUBRICATE IN ACCORDANCE WITH CURRENT LUBRICATION ORDER

ITEM		PAR	REF
1	<u>AIR CLEANER, AND HOSE.</u> Inspect for damage and leaks. Inspect for dirty condition and the level of the oil. Add oil to level mark. Reference current L.O. 5-2805-206-14.		
2	<u>CARBURETOR.</u> Inspect for damage, and leaks.		
3	<u>CRANKCASE FILL AND LEVEL.</u> Check oil level. Add oil as indicated on level gage. Reference current L.O. 5-2805-206-14.		
4	<u>FUEL PUMP, STRAINER, AND HOSES.</u> Inspect for damage, and leaks. Clean strainer bowl and element.		
5	<u>FUEL TANK, STRAINER, AND CAP.</u> Check fuel level. Inspect the tank for insecure mounting, leaks, and damage. Inspect the tank strainer for dirt, and damage. Clean cap vent before reinstalling cap.		
6	<u>GENERATOR AND BRUSHES.</u> Inspect for insecure mounting, frayed, and/or damaged wiring. Replace the brushes if they are worn to less than 5/8 inch in length.	57	
7	<u>LOAD TERMINALS.</u> Inspect for insecure mounting, and damage.		

B Quarterly
Figure 10. Preventive maintenance services—Continued.

ITEM		PAR REF
8	<u>CONTROLS AND INSTRUMENTS.</u> Inspect for damage. With the unit operating, inspect for improper operation. Normal readings for instruments are as follows: Ammeter indicates current drawn by load not to exceed 53 amperes. Voltmeter 28 volts.	13
9	<u>SPARK PLUGS.</u> Inspect for dirt or damaged insulator and burned electrodes. Correct gap 0.024 to 0.026 inch. Torque to 25-27 ft. lb.	
	<u>NOTE 1. OPERATIONAL TEST.</u> During operation observe for any unusual noise and vibration.	
	<u>NOTE 2. ADJUSTMENTS.</u> Make all necessary adjustments during operational test.	

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B Quarterly

Figure 10. Preventive maintenance services—Continued.

Section IV. OPERATOR'S MAINTENANCE

33. General

This section describes and illustrates the maintenance operations which may be performed by the operator on the generator set. For operator's maintenance on the military standard engine, refer to TM 5-2805-206-14.

34. Canvas Cover

a. Removal. Remove the canvas cover from the generator set.

b. Cleaning and Inspection.

(1) Scrub the cover with a dry brush.

(2) Inspect the cover for tears in the fabric, ripped seams, burned spots, mildew, and frayed or broken draw rope. Inspect for broken or missing fasteners.

(3) Replace an unserviceable canvas cover.

c. Installation. Install the canvas cover on the generator set.

35. Fuel Tank Cap and Strainer

a. Removal. Refer to figure 11 and remove the fuel tank cap and strainer.

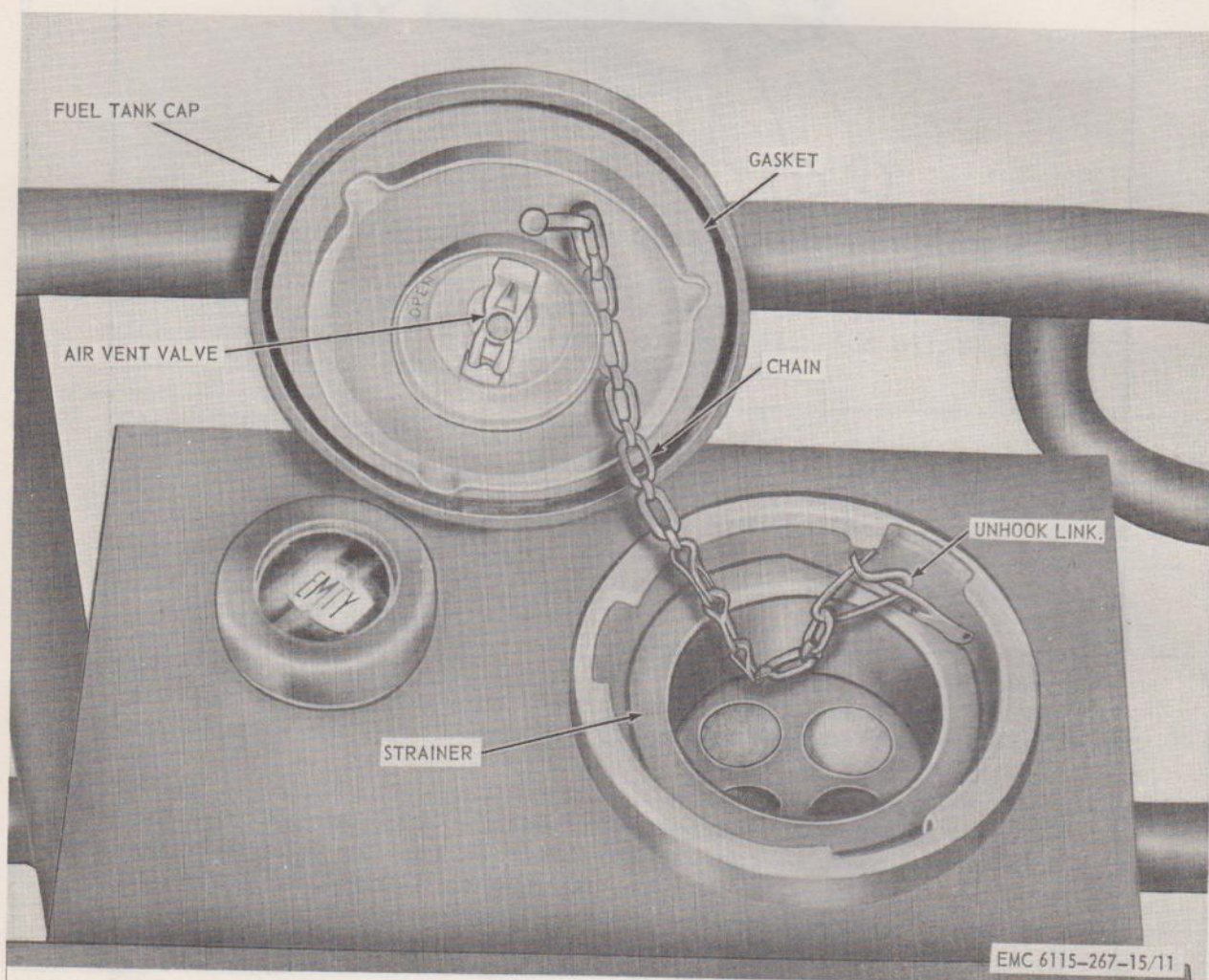


Figure 11. Fuel tank cap and strainer—removal and installation.

b. *Cleaning and Inspection.*

- (1) Clean all parts with an approved cleaning solvent and dry thoroughly.
- (2) Inspect the cap for cracks, dents, bent locking lugs, and damaged air vent valve. Inspect the strainer for torn mesh and distortion. Inspect the chain

for open or crushed links. Inspect the gasket for cuts, tears, and deterioration.

- (3) Replace a defective gasket. Replace an unserviceable cap or strainer.

c. *Installation.* Refer to figure 11 and install the fuel tank cap and strainer.

Section V. TROUBLESHOOTING

36. General

This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the generator set and its components. Each trouble symptom stated is followed by a list of probable causes of the trouble. The possible remedy recommended is described opposite the probable cause. Any trouble beyond the scope of organizational maintenance will be reported to field maintenance (3d echelon).

37. Generator Fails To Build Up Rated Voltage

<i>Probable cause</i>	<i>Possible remedy</i>
Variable resistor defective	Replace resistor (par. 63).
Brush contact poor	Reseat or replace brushes (par. 57).
Commutator dirty or rough.	Clean and smooth commutator (par. 57).
Engine speed too slow	Refer to TM 5-2805-206-14.
Endbell capacitors defective.	Replace capacitors (par. 48).
Residual magnetism dissipated.	Restore residual magnetism by starting electrically (par. 15).

38. Generator Overheats

<i>Probable cause</i>	<i>Possible remedy</i>
Generator overloaded	Reduce load.
Ventilation inadequate	Provide adequate ventilation (par. 9).

39. Generator Fails To Supply Power To Load

<i>Probable cause</i>	<i>Possible remedy</i>
Load terminals defective	Replace terminals (par. 67).

<i>Probable cause</i>	<i>Possible remedy</i>
Loose load connections	Tighten connections (par. 9).
Circuit breaker defective	Replace circuit breaker (par. 62).

40. Generator Output Voltage Drops or Fluctuates

<i>Probable cause</i>	<i>Possible remedy</i>
Generator overloaded	Reduce load.
Electrical connections loose.	Tighten connections.

41. Generator Brushes Spark Excessively

<i>Probable cause</i>	<i>Possible remedy</i>
Generator overloaded	Reduce load.
Brushes dirty or improperly seated.	Clean and reseat brushes (par. 57).
Brush pressure weak	Adjust brush spring tension (par. 57).
Brushes sticking in brush holders.	Clean brush holders and adjust brushes (par. 57).
Brush holders loose	Report to field maintenance.
Commutator dirty or rough.	Clean and smooth commutator (par. 57).

42. Generator Noisy

<i>Probable cause</i>	<i>Possible remedy</i>
Brushes worn or not properly seated.	Replace or reseat brushes (par. 57).
Generator fan loose or damaged.	Tighten or replace fan (par. 56).
Generator bearing, coupling, or windings loose or defective.	Stop generator set and report condition to field maintenance.

Section VI. FIELD EXPEDIENT REPAIRS

43. General

Operator and organizational maintenance troubles may occur while the generator set is operating in the field where supplies and repair

parts are not available and normal corrective action cannot be performed. When this condition exists, the following expedient repairs may be used in emergencies, upon the decision of the

unit commander. Equipment so repaired must be removed from operation as soon as possible and properly repaired before being placed in operation again.

44. Improper or No Load Output

<i>Trouble</i>	<i>Expedient remedy</i>
Electrical wiring defective	Isolate and tape wires (par. 66).
Brushes worn too short or broken.	Sand or file to size a brush from comparable equipment (par. 57).
Ammeter shorted or grounded.	Disconnect ammeter leads from ammeter shunt and tape ends (par. 61).

Caution: When the ammeter is disconnected for field expedient repair, estimate the wattage of the load. It must not exceed 1.5 kilowatts. Observe the generator frequently for overheating. If it overheats, reduce the load.

Voltmeter shorted or grounded.	Disconnect and tape voltmeter leads separately. Connect a multimeter to
--------------------------------	---

Trouble

Expedient remedy

Circuit breaker shorted or grounded.	load terminals and measure output voltage (par. 60). Disconnect leads and bypass circuit breaker (par. 62).
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Warning: When the circuit breaker is bypassed, shut down the set before connecting or disconnecting the load. Restart manually only. The voltage of this generator set can cause serious injury to personnel.

45. Loss of Fuel

<i>Trouble</i>	<i>Expedient remedy</i>
Fuel hose cracked or broken.	Wrap hose with fuelproof tape (par. 51).
Fuel tank leaks	Disconnect fuel filter from fuel tank, attach a line from an outside fuel source to filter, and bypass tank (par. 53).
Fuel plug cock leaks	Disconnect fuel hose and attach to an outside fuel source (par. 51).

Section VII. RADIO INTERFERENCE SUPPRESSION

46. General Methods Used To Attain Proper Suppression

Essentially, suppression is attained by providing a low-resistance path to ground for stray currents. The methods used include shielding the ignition and high-frequency wires, grounding the frame with bonding straps, and using capacitors and resistors. For general information on radio interference suppression, see TM 11-483.

47. Interference Suppression Components

Figure 12 locates and illustrates the radio interference components.

48. Replacement of Suppression Components

a. Removal.

- (1) *Endbell capacitors.*
 - (a) Remove the endbell cover (par. 56).
 - (b) Refer to figure 12 and remove the endbell capacitors.
- (2) *Control box capacitors.*
 - (a) Remove the control panel assembly (par. 59).
 - (b) Refer to figure 12 and remove the control box capacitors.

- (3) *Control box ground lead.* Refer to figure 12 and remove the control box ground lead.

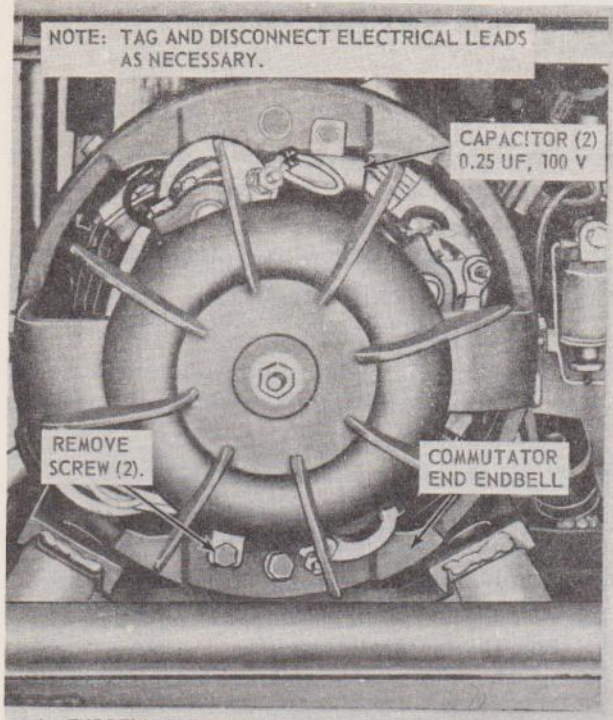
- (4) *Generator ground lead.* Refer to figure 12 and remove the generator ground lead.

b. Installation.

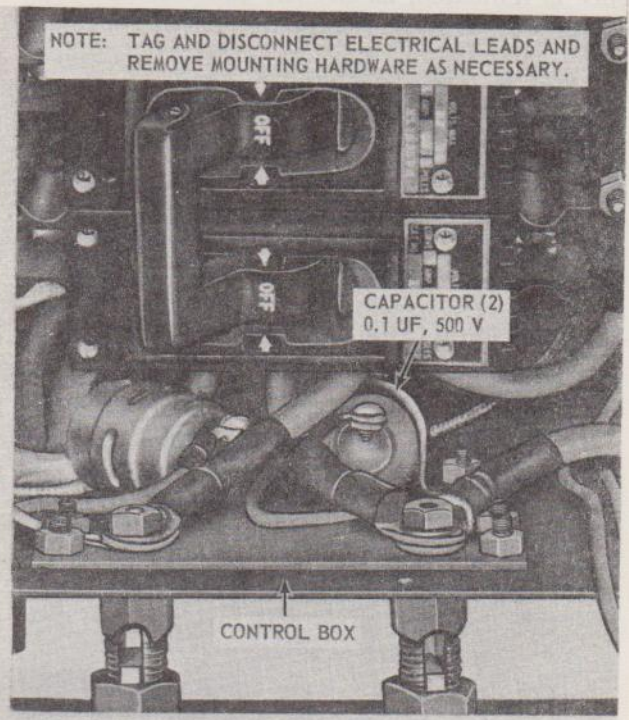
- (1) *Endbell capacitors.*
 - (a) Refer to figure 12 and install the endbell capacitors.
 - (b) Install the endbell cover (par. 56).
- (2) *Control box capacitors.*
 - (a) Refer to figure 12 and install the control box capacitors.
 - (b) Install the control panel assembly (par. 59)
- (3) *Control box ground lead.* Refer to figure 12 and install the control box ground lead.
- (4) *Generator ground lead.* Refer to figure 12 and install the generator ground lead.

49. Testing of Radio Interference Suppression Components

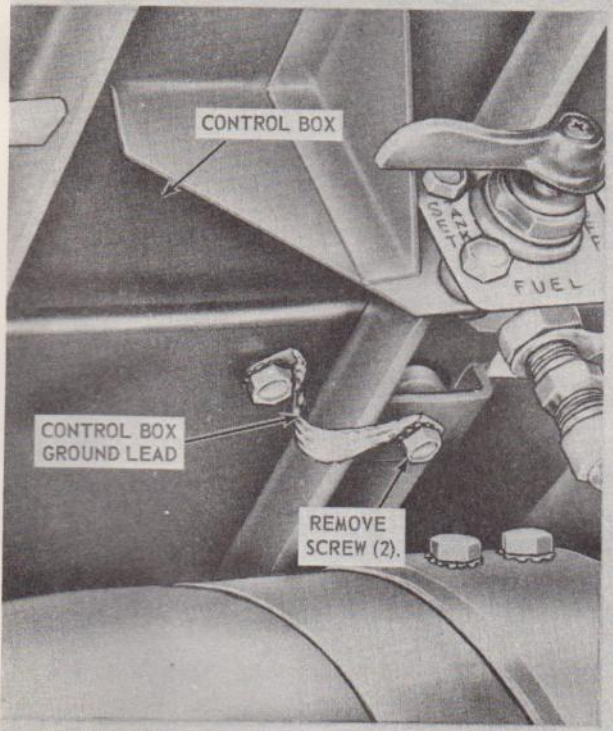
Test the capacitors for leaks and shorts on a capacitor tester; replace defective capacitors. If test equipment is not available and interfer-



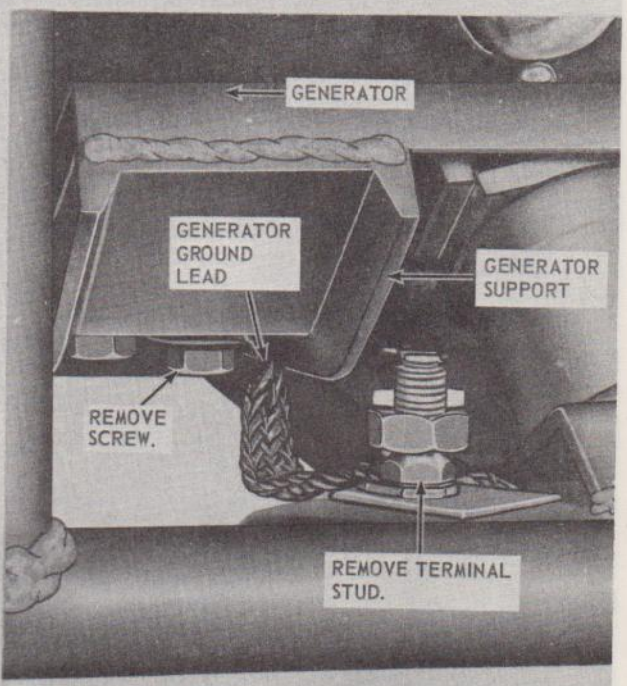
A. ENDBELL CAPACITORS.



B. CONTROL BOX CAPACITORS.



C. CONTROL GROUND LEAD.



NOTE: REMOVE NUT BENEATH FRAME TO FREE STUD.

D. GENERATOR GROUND LEAD.

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Figure 12. Radio interference suppression components—removal and installation.

ence is indicated, isolate the cause of interference by the trial-and-error method of replacing

each capacitor in turn until the cause of interference is located and eliminated.

Section VIII. FUEL SYSTEM

50. General

This section contains maintenance instructions for the fuel tank, fuel gage, fuel plug cock, drain valve, fuel filter, and fuel hose.

51. Fuel Hose, Drain Valve, and Fuel Plug Cock

a. Removal.

- (1) Drain the fuel tank (par. 10).
- (2) Refer to figure 13 and remove the fuel hose, drain valve, and fuel plug cock.

b. Cleaning and Inspection.

- (1) Clean all parts with an approved solvent and dry well.
- (2) Inspect the drain valve and fuel plug cock for cracks, breaks, leaks, and

damaged threads. Inspect the fuel hose for cracks, breaks, wear and swelling.

- (3) Replace a defective drain valve, fuel plug cock, or fuel hose.

c. Installation.

- (1) Refer to figure 13 and install the drain valve, fuel hose, and fuel plug cock.

- (2) Service the fuel tank (par. 10).

d. Field Expedient Repair. If the fuel system components fail in the field, and replacement parts are not available, the following expedient repairs will enable the generator set to continue to operate.

- (1) If the fuel hose leaks, wrap the break with fuelproof tape.

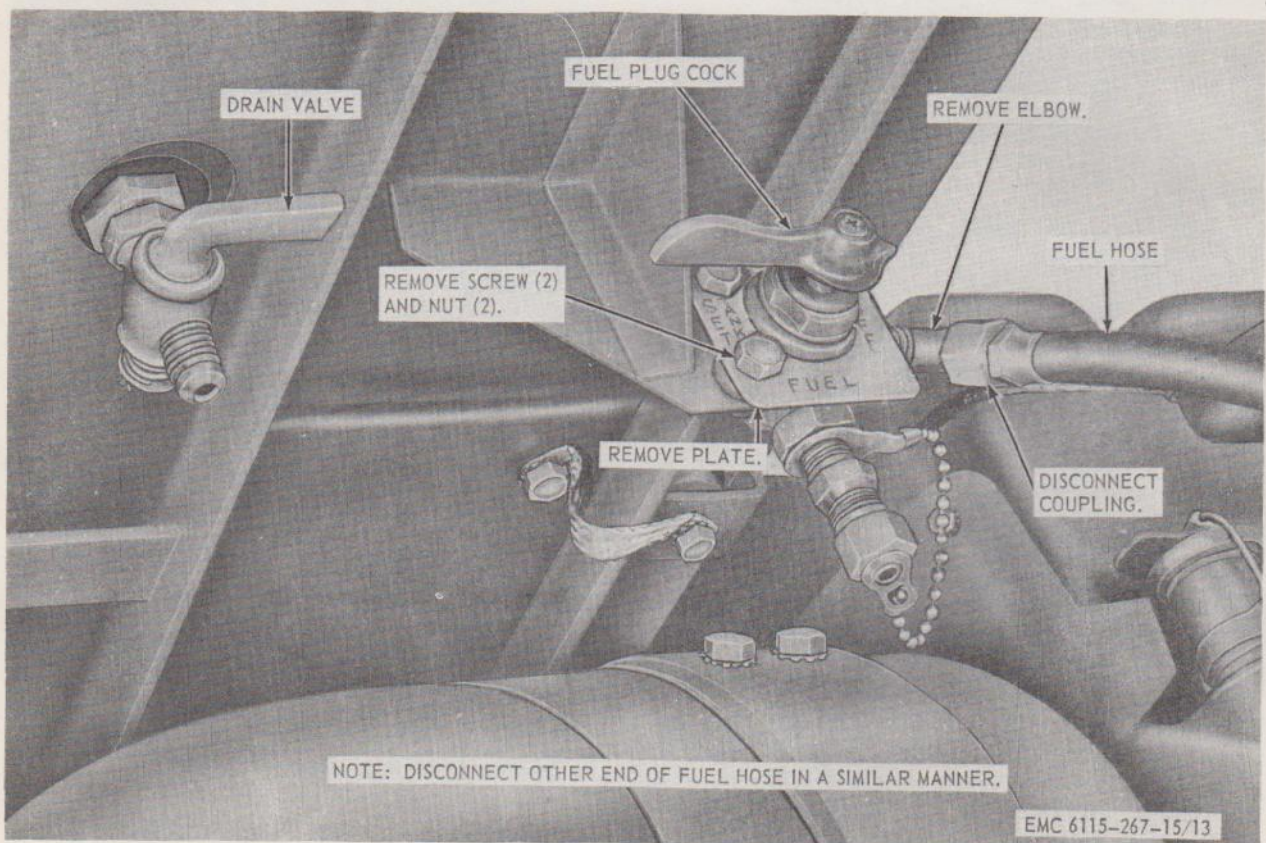


Figure 13. Fuel hose, drain valve, and fuel plug cock—removal and installation.

- (2) If the fuel plug cock leaks, disconnect the fuel hose and attach to an outside fuel source.

52. Fuel Gage

a. *Removal.* Refer to figure 14 and remove the fuel gage.

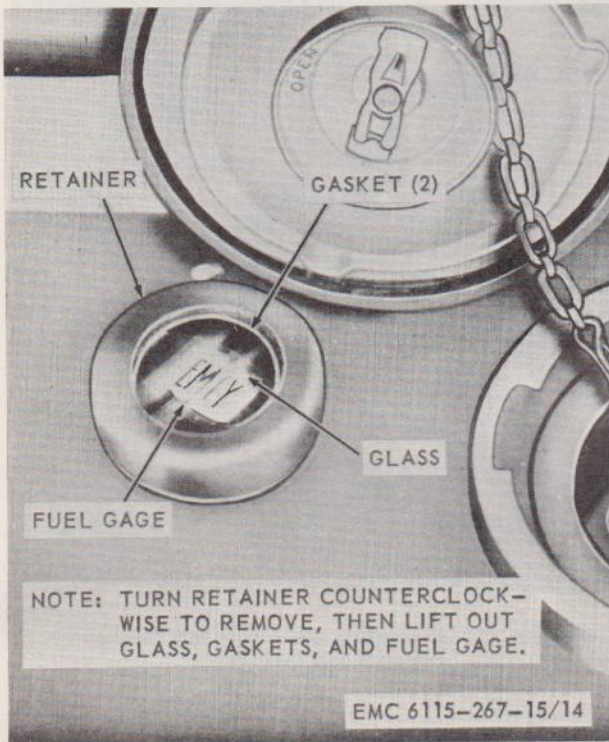


Figure 14. Fuel gage—removal and installation.

b. Cleaning and Inspection.

- (1) Clean all parts in an approved solvent and dry thoroughly.
- (2) Inspect fuel gage for cracks, dents, broken glass, and damaged threads.
- (3) Replace all defective parts.

c. *Installation.* Refer to figure 14 and install the fuel gage.

53. Fuel Tank

a. Removal.

- (1) Remove the fuel tank cap and strainer (par. 35).
- (2) Remove the fuel hose, drain valve, and fuel plug cock (par. 51).
- (3) Remove the fuel gage (par. 52).
- (4) Refer to figure 15 and remove the fuel tank.

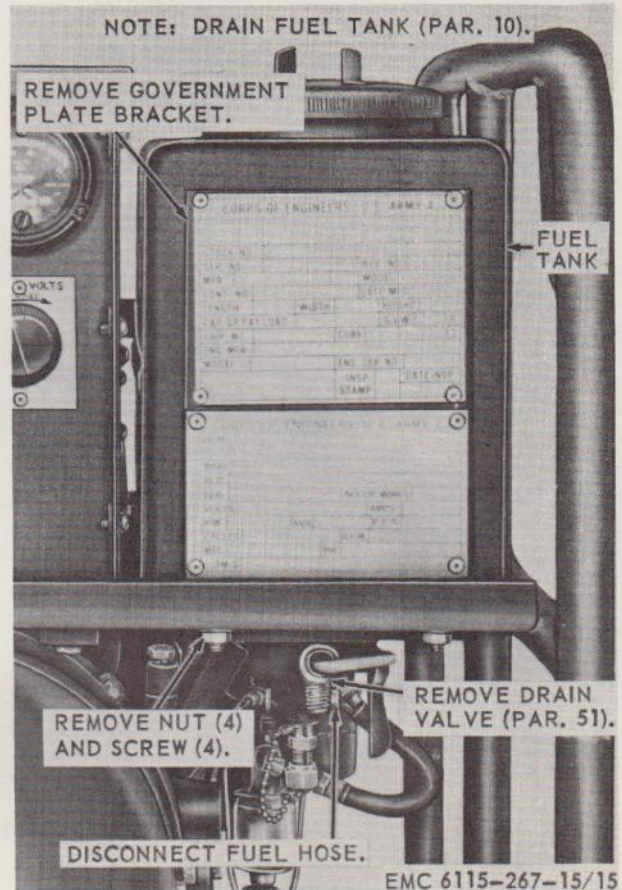


Figure 15. Fuel tank—removal and installation.

b. Cleaning and Inspection.

- (1) Clean all parts with an approved solvent and dry thoroughly.
- (2) Inspect fuel tank for cracks, dents, leaks, and missing hardware.
- (3) Replace a defective fuel tank.

c. Installation.

- (1) Refer to figure 15 and install the fuel tank.
- (2) Install the fuel gage (par. 52).
- (3) Install the fuel hose, drain valve, and fuel plug cock (par. 51).
- (4) Install the fuel tank cap and strainer (par. 35).

d. *Field Expedient Repair.* If the fuel tank becomes unserviceable in the field, and a replacement part is not available, the following expedient will enable the generator set to continue to operate: Disconnect the fuel filter from the fuel tank, attach a line from an outside fuel source to the filter, and bypass the tank.

54. Fuel Filter

a. *Service.* Refer to TM 5-2805-206-14 for maintenance instructions on the fuel filter.

b. *Removal.*

- (1) Close the fuel plug cock.
- (2) Refer to figure 16 and remove the fuel filter.

c. *Installation.*

- (1) Refer to figure 16 and install the fuel filter.
- (2) Open the fuel plug cock.

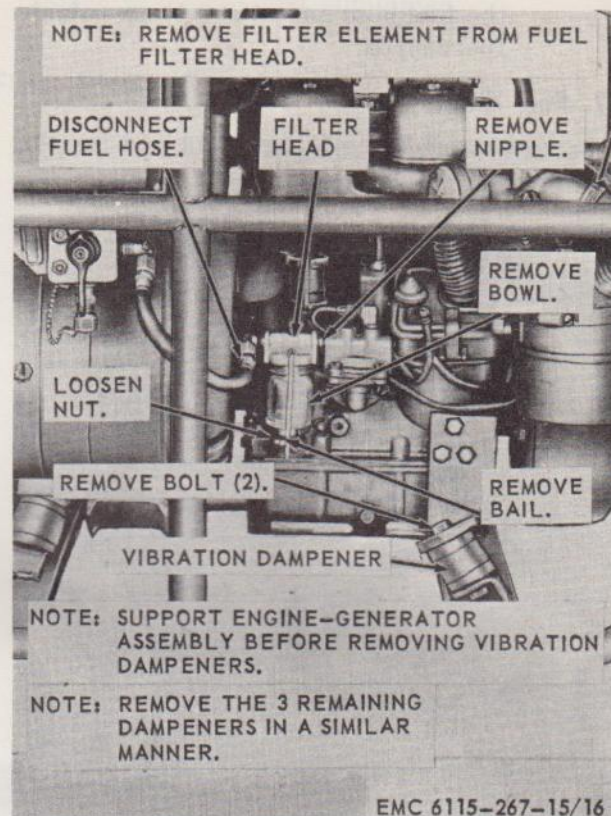


Figure 16. Fuel filter and vibration dampeners—removal and installation.

Section IX. ELECTRICAL AND VENTILATING SYSTEMS

55. General

a. This section includes maintenance instructions for the generator brushes, fan, control panel assembly, control box, load terminals and terminal boards, and associated wiring. The brushes are mounted on the brush gear inside the commutator and endbell. The endbell cover must be removed to gain access to the fan and brushes. The front of the control box serves as a mounting panel for the electrical controls and instruments.

b. The voltmeter, ammeter, ammeter shunt, start switch, and variable resistor are located on the control panel. The circuit breaker is mounted on brackets inside the control box. Its toggle levers protrude through an aperture in the control panel. The control box cable assembly is mounted on the floor of the control box. When performing maintenance on the

electrical system, refer to the wiring diagram (fig. 4).

Warning: Shut down the engine before removing or installing electrical components. The voltage of this generator set can cause serious burns to personnel.

56. Endbell Cover, Fan, and Vibration Dampeners

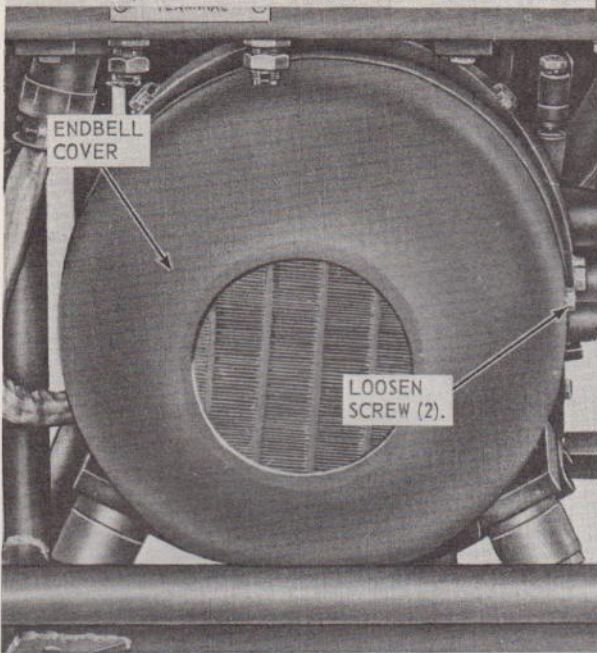
a. *Removal.*

- (1) Refer to figure 16 and remove the vibration dampeners.
- (2) Refer to figure 17 and remove the endbell cover and fan.

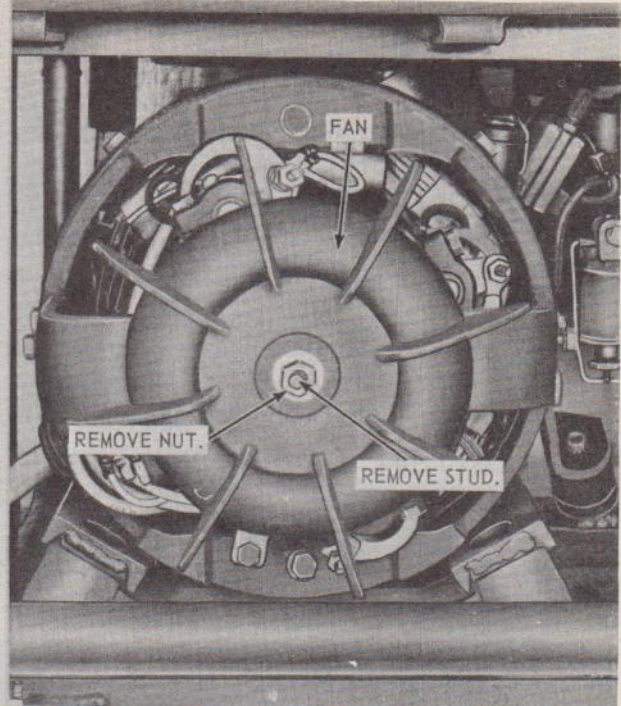
b. *Cleaning and Inspection.*

- (1) Clean all parts with an approved cleaning solvent and dry thoroughly.
- (2) Inspect the endbell cover and fan for cracks, breaks, and dents. Inspect the

NOTE: TURN COVER COUNTERCLOCKWISE, PULL TOWARD REAR, AND REMOVE THROUGH RIGHT SIDE OF FRAME.



A. ENDBELL COVER.



B. FAN.

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Figure 17. Endbell cover and fan—removal and installation.

vibration dampeners for stripped threads and deterioration of the elastic body.

- (3) Pound out minor dents in the endbell cover. Replace an unserviceable endbell cover, fan, or vibration dampener.

c. Installation.

- (1) Refer to figure 17 and install the endbell cover and fan.
- (2) Refer to figure 16 and install the vibration dampeners.

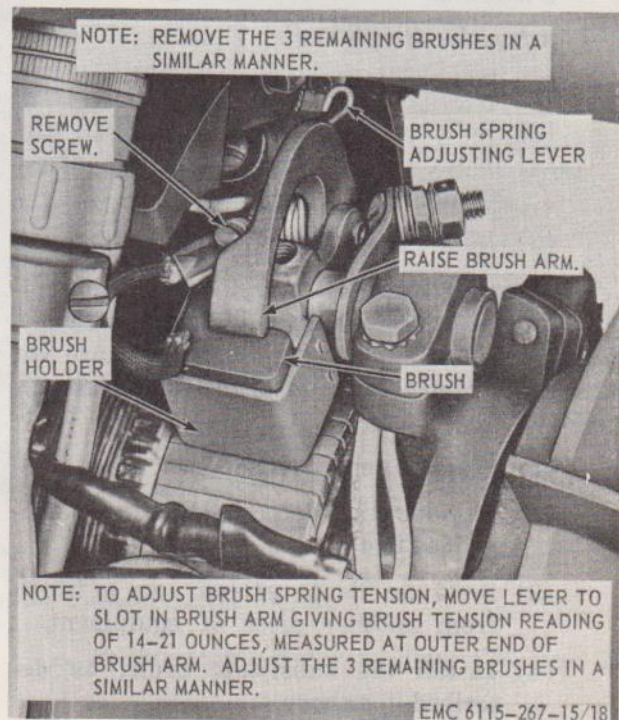
57. Generator Brushes

a. Removal.

- (1) Remove the endbell cover (par. 56).
- (2) Refer to figure 18 and remove the generator brushes.

b. Cleaning and Inspection.

- (1) Clean all parts with a dry, clean cloth.
- (2) Inspect the brushes for cracks, breaks, or excessive wear.



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Figure 18. Generator brushes—removal and installation, and brush spring tension adjustment.

- (3) Inspect the brush holders for faulty alignment, insecure mounting, and other damage.
- (4) Inspect the brush tension springs for weakened condition.
- (5) Inspect the commutator for pits, burning, and scoring. Remove slight imperfections from the commutator as in *d* below.
- (6) Replace defective brushes or brushes that are worn to less than one-half their original length of 1¼ in.
- (7) Report defective brush holders, springs, or commutator to field maintenance.

c. Seating New Brushes. Refer to TM 5-764 for seating new brushes.

d. Polishing Brush Contact Surfaces. Refer to TM 5-764 for instructions on polishing the brush contact surfaces of the commutator.

e. Installation.

- (1) Refer to figure 18 and install the brushes.
- (2) Install the endbell cover (par. 56).

f. Adjusting Brush Spring Tension.

- (1) Remove the endbell cover (par. 56).
- (2) Refer to figure 18 and adjust the brush spring tension, using a brush spring scale.
- (3) Install the endbell cover (par. 56).

g. Field Expedient Repairs. When the generator brushes become broken, cracked, or worn out in the field and stock replacements are not available, replace the unserviceable brush as follows:

- (1) Stop the generator set (par. 16).
- (2) Remove the defective brush as described in *a* above.
- (3) Sand or file to proper size a brush from another piece of equipment.
- (4) Install the substitute brush as described in *e* above.
- (5) Seat the substitute brush as described in *c* above.

58. Control Box Assembly

a. Removal. Refer to figure 19 and remove the control box as an assembly from the generator set.

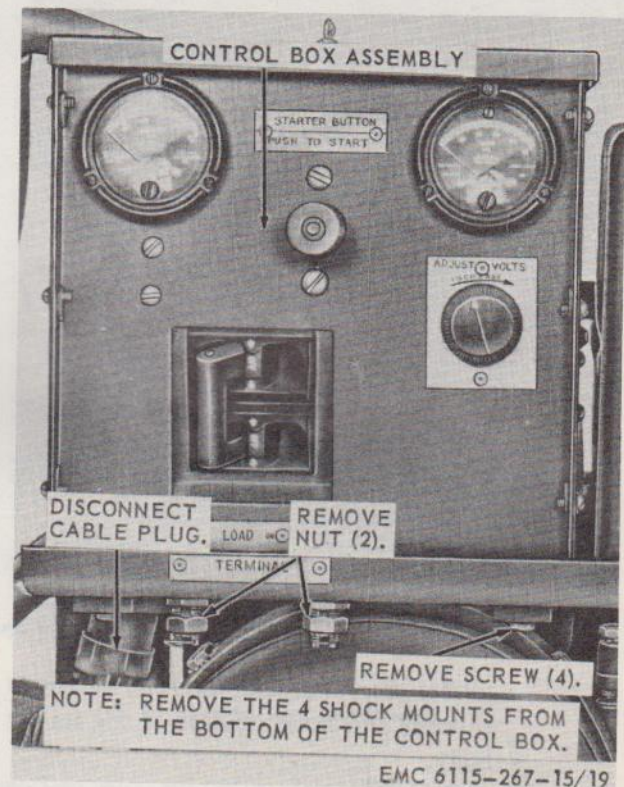


Figure 19. Control box assembly—removal and installation.

b. Disassembly. Refer to figures 20 and 21 and disassemble the control box.

c. Cleaning and Inspection.

- (1) Clean dirt and dust from the control box front (control) panel, top and rear panel assembly, and center section with an approved cleaner. Wipe grease and oil from the wiring. Carefully blow dust and dirt from the reverse current relay and voltage regulator with dry, low-pressure, compressed air.
- (2) Inspect the control box panels for bends, dents, corrosion, and other damage. Inspect the panels for gouges and damaged paint. Inspect the shock mounts for damage.