

TM 9-2920-214-35

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

FIELD AND DEPOT MAINTENANCE MANUAL
(INCLUDING FIELD AND DEPOT MAINTENANCE REPAIR PARTS)
FOR
GENERATOR ASSEMBLY
(2920-735-5736)

(DELCO-REMY MODEL NO. 1117495)

END ITEM APPLICATION:

ENGINE, GASOLINE:

AMERICAN MOTORS MODEL AV 108-4 (TM 9-2805-217)

FORD MODEL M151 (TM 9-2805-213)

WILLYS MODEL MD (TM 9-8015-1)

DODGE MODEL T-245 (TM 9-1840A)

GMC MODEL 302 (TM 9-8025-1)

REO MODEL OA331 (TM 9-2805-222)

CONTINENTAL MODEL R 6602 (TM 9-2805-203)

LE ROI MODEL T-H844 (TM 9-8003-1)

ENGINE, DIESEL:

MACK MODEL ENDT 673 (TM 9-2815-207)

ENGINE, MULTIFUEL:

CONTINENTAL MODEL LDS-427-2 (TM 9-2815-204)

MILITARY MODEL LDS-465-1 (TM 9-2815-210)



HEADQUARTERS, DEPARTMENT OF THE ARMY

MARCH 1964

Technical Manual)
)
 No. 9-2920-214-35)

HEADQUARTERS
 DEPARTMENT OF THE ARMY
 Washington, D. C. 20025, 26 March 1964

GENERATOR ASSEMBLY

(2920-735-5736)

(Delco-Remy Model 1117495)

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* This manual supersedes TM 9-2920-214-35 dated 21 March, 1960 and TM 9-2920-214-35P dated 24 November, 1961.

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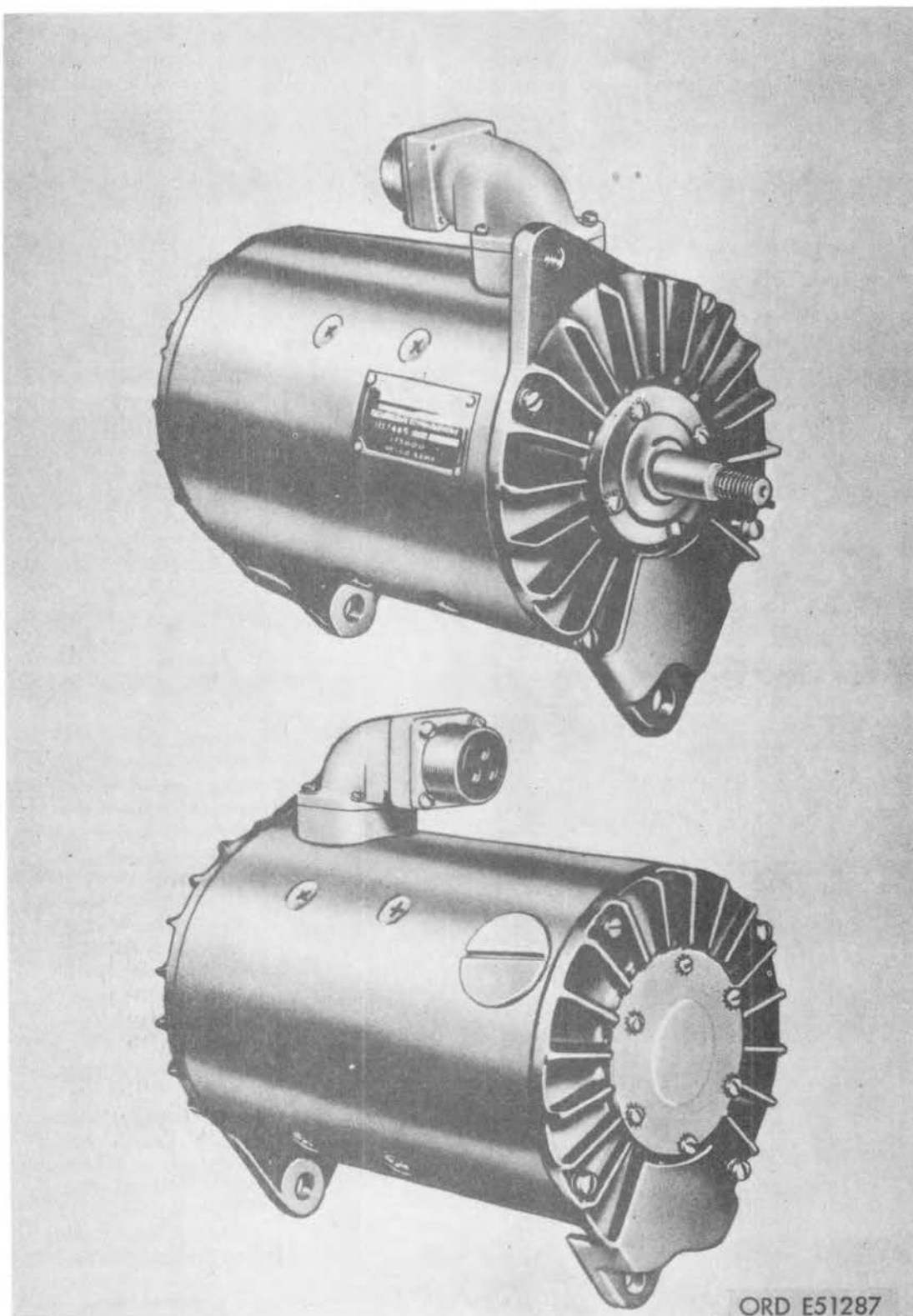


FIGURE 1. GENERATOR ASSEMBLY - 2920-735-5736 - ASSEMBLED VIEW.

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. SCOPE

a. This technical manual contains instructions for field and depot maintenance of the generator assembly, 2920-735-5736 (fig. 1). These instructions contain information on maintenance which is beyond the scope of the tools, equipment, or supplies normally available to using organizations. This manual contains descriptions of, and procedures for troubleshooting, disassembly, inspection, repair, and assembly of the generator.

b. Appendix I contains a list of current references applicable to the generator.

c. Appendix II contains an illustrated list of repair parts allocated to field and depot maintenance echelons.

d. This manual differs from TM 9-2920-214-35 dated 21 March 1960 and TM 9-2920-214-35P dated 24 November 1961 by revising

and correlating information on generator assembly, 2920-35-5736, and combining maintenance instructions and repair parts list in one manual.

e. Any errors or omissions will be brought to the attention of the Commanding General, U.S. Army Tank Automotive Center, 28251 Van Dyke, Warren, Michigan, 48090, ATTN: SMOTAN, using DA Form 2028.

2. FIELD AND DEPOT MAINTENANCE ALLOCATION

Refer to maintenance allocation chart in pertinent vehicle organizational maintenance manual. (See Appendix I.)

3. FORMS, RECORDS, AND REPORTS

For current and complete listing of all authorized forms, refer to current issue of DA Pamphlet 310-2. TM 38-750 contains instructions on use of forms for records and reports.

Section II. DESCRIPTION AND DATA

4. DESCRIPTION

a. General. The generator is a four-pole, two-brush unit. The generator is a heavy-duty, completely enclosed, waterproof, 24-volt, 25-ampere type which can be operated while submerged. The generator is of the shunt-field type with the field circuit internally grounded. The two brushes are retained by reaction-type brush holders (fig. 2). The field windings are connected directly across the brushes on this type of generator, and the output can increase to a point where sufficient heat will be generated to burn the generator. The output is controlled by a separately mounted generator regulator.

b. Construction. The generator consists of four main subassemblies; the housing and winding assembly, armature assembly, drive end bell assembly, and the commutator end bell assembly. The housing and winding assembly includes the pole shoes and field windings which create a magnetic field. The armature assembly consists of a core, a commutator and the

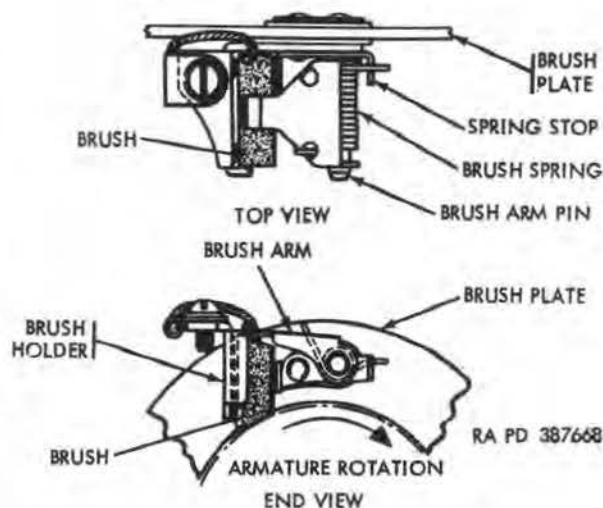


FIGURE 2. REACTION-TYPE BRUSH HOLDER.

windings. The core consists of an armature shaft with a number of iron laminations. The commutator is made up of a number of copper segments, insulated from each other by mica strips. The windings are a number of loops of copper wire wound into slots in the core laminations.

Note. The key letters shown below in parentheses refer to figure 3.

c. Detailed Description. The housing (BB), drive end bell (L), and commutator end bell (T) provide the structure for the mounting of internal and external parts. The armature shaft (G) is supported at each end by ball bearings (J and X) mounted in the drive end bell and the commutator end bell. The field windings (M) are retained by the pole shoes (Q) which are assembled on the inside of the housing. The brush plate assembly (U) is mounted to the inside of the commutator end bell. The terminal

wire outlets are housed and protected by a receptacle elbow (C) and receptacle connector (A) mounted to the housing. Waterproofing is accomplished by use of gaskets (B, D, and Y) and preformed packings (F and K) on the drive end bell, commutator end bell, bearings, receptacle elbow opening, and receptacle connector.

5. DATA

Manufacturer	Delco-Remy
Model No.	1117495
Ordinance No.	7355736
Federal Stock No.	2920-735-5736
Rating	24 volts dc, 25 amperes
Operating range	1750 - 8000 rpm
Type	shunt - field
No. of brushes	2
Armature rotation	clockwise from drive end
Control of maximum output	current regulator

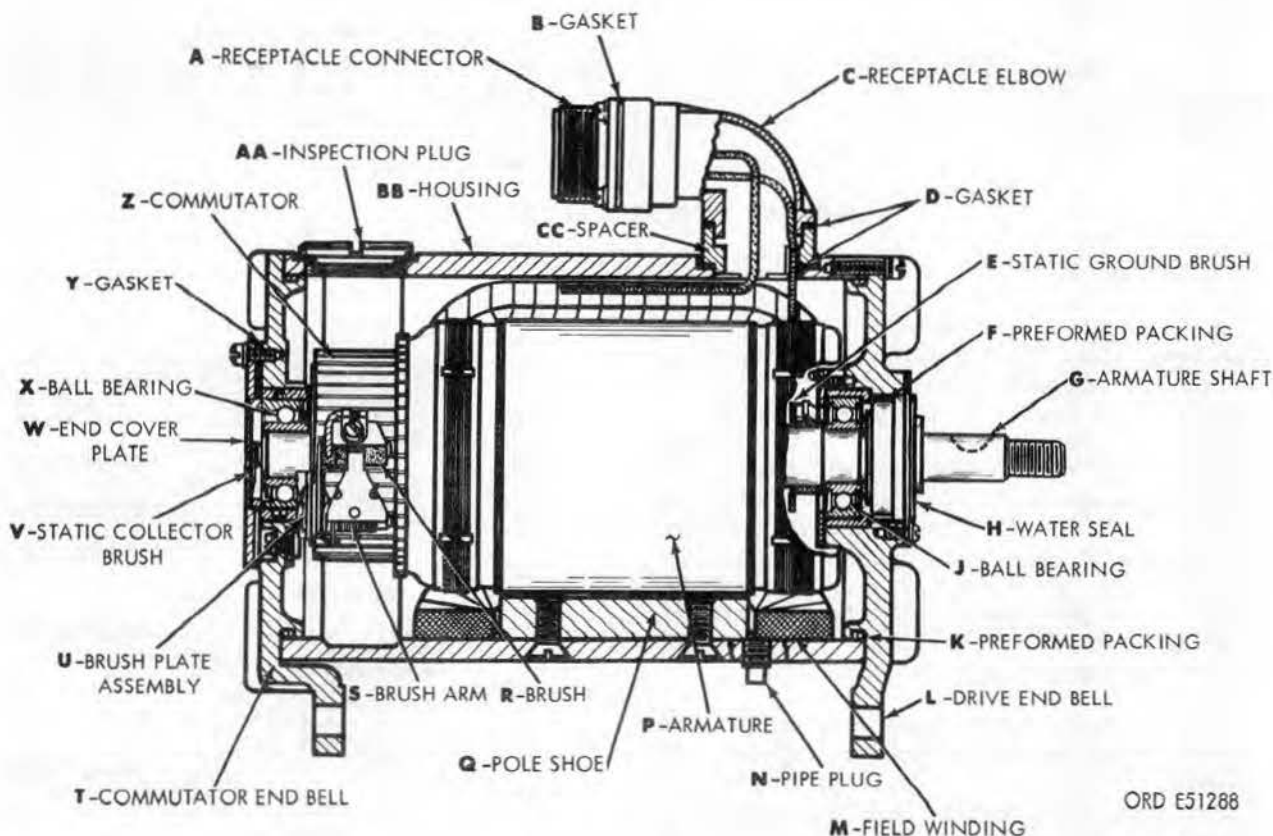


FIGURE 3. GENERATOR - SIDE SECTIONAL VIEW.

CHAPTER 2

PARTS, SPECIAL TOOLS, AND EQUIPMENT FOR FIELD MAINTENANCE

6. GENERAL

Tools, equipment, and maintenance parts over and above those available to the using organization are supplied to ordnance field maintenance units and depots for maintaining, repairing, and/or rebuilding the generator.

7. PARTS

Maintenance parts are listed in Appendix II, Field and Depot Maintenance Repair Parts List, which is the authority for requisitioning replacement parts.

8. COMMON TOOLS AND EQUIPMENT

Standard and commonly used tools and equipment having general application to this materiel are listed in DA Supply Manuals SM 9-4-4910-A02, A03, A38, A57, A73, A74, A75, A76, A78, A79, A80, A86, A87, and A88; SM 9-4-5180-A17, A82, and B14 and are authorized for issue by T/A and TOE.

9. SPECIAL TOOLS AND EQUIPMENT

No special tools or equipment are required to perform the repair operations contained in this manual.

10. IMPROVISED TOOLS

The improvised tools listed in table I and the dimensioned detail drawings (fig. 4) apply only to field units to enable these maintenance shops to fabricate the tools locally if desired. These tools are of chief value to maintenance organizations engaged in rebuilding a large number of identical components; however, they are not essential for rebuild and are not available for issue.

The following data is furnished for information only:

Table I. Improvised Tools for Field and Depot Maintenance

Item	References		Use
	Fig.	Par.	
HARNESS, wiring, test	4	14c, 37b, 39	To test field-current draw, generator output, and neutral point.
REPLACER, shaft collar	4	24c(3)	To seat new shaft collar.

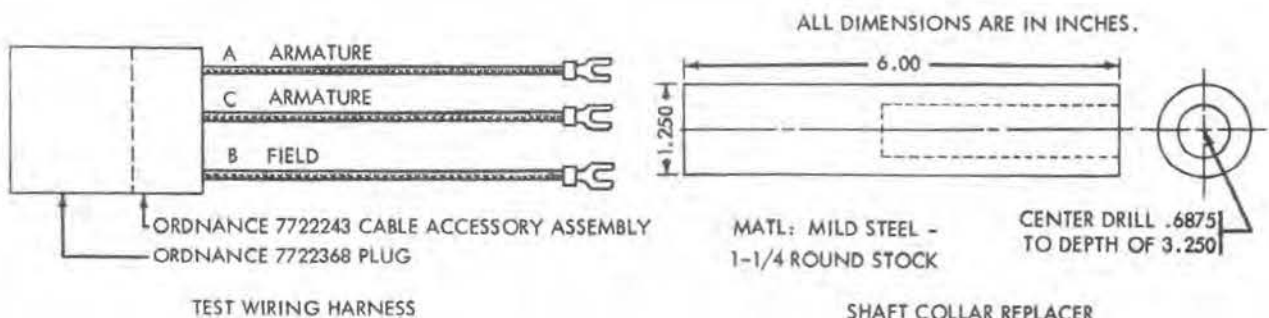


FIGURE 4. IMPROVISED TOOLS.

CHAPTER 3

TROUBLESHOOTING

Section I. GENERAL

11. PURPOSE

Note. Information in this chapter is for use of maintenance personnel in conjunction with and as a supplement to the troubleshooting section in the pertinent vehicle organizational maintenance manual. It provides continuation of instructions where a remedy in the organizational maintenance manual refers to maintenance personnel for corrective action.

Operation of a deadlined vehicle without a preliminary examination can cause further damage to a disabled generator and possible injury to personnel. By careful inspection and troubleshooting, such damage and injury can be avoided and, in addition, the causes of faulty operation can often be determined without extensive disassembly.

12. GENERAL INSTRUCTIONS AND PROCEDURES

This chapter contains inspection and trouble-

shooting procedures to be performed after the generator has been removed from the vehicle.

a. Check the troubleshooting section of the pertinent vehicle organizational maintenance manual and then proceed as outlined in this chapter.

b. Inspection after the generator is removed from the vehicle is performed to verify the diagnosis made when the generator was in the vehicle, to uncover further defects, or to determine malfunctions if the generator alone is received by the maintenance establishment. This inspection is particularly important in the last case because it is often the only means of determining the malfunction without completely disassembling the generator.

c. Troubleshooting a defective generator after it has been removed from the vehicle consists of subjecting it to certain specified tests. This chapter discusses those symptoms which can be diagnosed, and interprets the results in terms of probable causes.

Section II. TROUBLESHOOTING PROCEDURES

13. GENERAL

The major troubleshooting procedures performed on a generator after removal from a vehicle are made on a test stand. However, the generator should be inspected before the tests are performed to eliminate the possibility of further damage. Rotate the armature by hand to make sure it is free. If difficulty is encountered, disassemble the generator (pars. 18 through 22). If the armature turns freely continue with troubleshooting procedures. When the cause for failure has been determined, the generator should be disassembled and repaired before proceeding with further tests. Additional operational tests performed on a damaged generator would only increase the damage.

Note. Make certain that unusual noises are not produced by the test equipment.

14. TROUBLESHOOTING TESTS

Perform the following tests to determine the malfunction. After determining the malfunction, refer to table II for the probable causes and the corrective action to be taken.

a. Armature End-Play Test.

- (1) Mount a dial indicator on the generator housing, or drive end bell, with plunger of indicator aligned with and touching the end of the armature shaft.
- (2) Move the armature as far towards the commutator end as it will go and note the indicator reading, then move the armature as far toward the drive end as it will go and note reading. The difference in the two readings (end-play) must be between 0.003 and 0.010 inch.

- (3) If the end-play exceeds these limits this indicates improper generator assembly or a worn or incorrect spacer washer. If worn, replace washer and recheck end-play. Check to see if bearings are properly installed and seated.

b. Test Stand Requirements.

- (1) The test stand variable resistor and test switch must have a sufficient current capacity to handle the maximum current to be encountered in the test.
- (2) The heavy current encountered when a grounded field or armature exists may be many times the normal current. Therefore, always connect highest range of ammeter into circuit for initial tests. Apply current and note reading; then connect ammeter to the lowest range which will safely carry the current noted.

c. Measuring Field Current Draw.

- (1) Remove inspection plug and mount

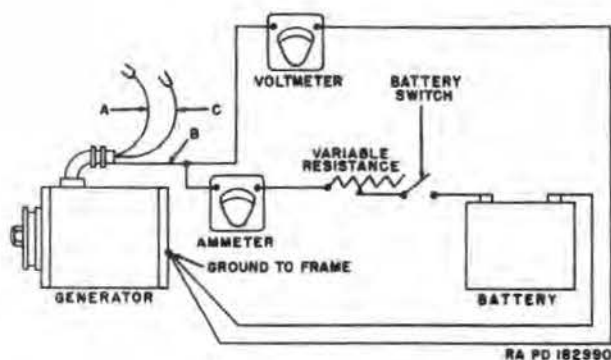


FIGURE 5. GENERATOR FIELD CURRENT DRAW TEST WIRING DIAGRAM.

generator on test stand. Connect the generator for field current draw test as shown in figure 5. The test battery must be fully charged and of same rated voltage as generator (24 volts).

- (2) Connect 1,000 ampere range of ammeter into circuit, close battery switch and note ammeter reading. Open switch and connect ammeter to lower range as explained in subparagraph b above.
- (3) To measure field coil current close the battery switch and adjust variable resistor until voltage is the value specified (24 volts). The field current must be between the limits specified (24 volts and 0.85 to 0.89 amps). If the current is not within these limits faulty field windings or connections are indicated. Repair connections or repair or replace the housing and winding assembly.

d. Generator Output (fig. 6). Measure generator output as described in paragraph 39b.

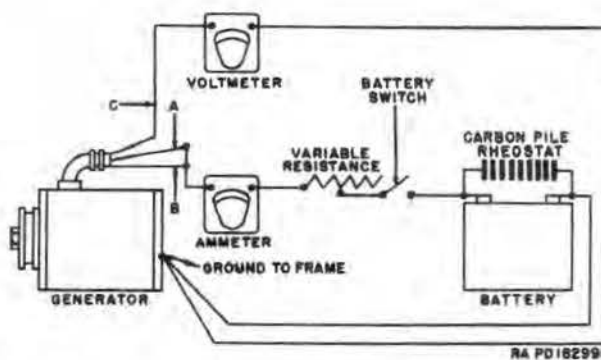


FIGURE 6. GENERATOR OUTPUT TEST WIRING DIAGRAM.

Table II. Troubleshooting

Malfunction	Probable Causes	Corrective Action
1. High field current.	Shorted field winding.	Replace field windings (pars. 18, 22, 25, 30, and 35).
2. Low or no field current.	<u>a.</u> Open field winding.	<u>a.</u> Replace field windings (pars. 18, 22, 25, 30, and 35).
	<u>b.</u> Open or poor connection.	<u>b.</u> Check and resolder open or poor connections (pars. 18, 25, and 35).
3. No output.	<u>a.</u> Sticking brush.	<u>a.</u> Remove brush plate assembly and clean brush holder (pars. 18, 19, 26, 33, 34 and 35).
	<u>b.</u> Brush lead loose or broken.	<u>b.</u> Replace brush (pars. 18, 19, 26, 33, 34 and 35).
	<u>c.</u> Incorrectly installed wiring.	<u>c.</u> Check internal and external wiring (figs. 6 and 32).
	<u>d.</u> Grounded insulated brush holder.	<u>d.</u> Disconnect terminal and lead cable assembly and remove brush (par. 19). Touch one probe of test lamp to brush holder and other probe to frame or end bell. Lighting of lamp indicates a ground. If grounded, clean brush plate assembly (par. 26a) and retest. If ground is still present, replace generator.
	<u>e.</u> Grounded armature.	<u>e.</u> Disassemble generator (pars. 18 through 22). Inspect brush plate assembly, brushes, terminal and lead cable assembly, receptacle connector, and armature (pars. 24 through 27). Repair or replace as necessary and reassemble generator (pars. 31 through 35).

Table II. Troubleshooting (cont.)

Malfunction	Probable causes	Corrective Action
3. No output - continued	<u>f.</u> Grounded, short circuited, or open windings.	<u>f.</u> Inspect windings for grounds, shorts, or open condition (par. 25). If any grounded, shorted, or open windings are found, replace windings (pars. 18, 22, 30, and 35).
	<u>g.</u> Open armature winding.	<u>g.</u> Inspect armature for open winding (par. 24b(4)). Replace armature (pars. 18 through 35).
	<u>h.</u> Short circuit in armature.	<u>h.</u> Inspect armature for shorts (par. 24b). Replace shorted armature (pars. 18 and 35).
4. Low or unsteady output.	<u>a.</u> Burned, dirty, or worn commutator; high mica between commutator segments.	<u>a.</u> Clean dirty commutator (par. 24a). Inspect commutator and repair (pars. 24b and 24c). Replace armature if necessary (pars. 18 and 35).
	<u>b.</u> Open armature winding.	<u>b.</u> Refer to 3g above.
	<u>c.</u> Improper neutral point adjustment.	<u>c.</u> Adjust neutral point (par. 37b).
5. Noisy generator	<u>a.</u> Worn bearings.	<u>a.</u> Replace bearings (pars. 18, 19, 20, 26, 32, 33, and 35).
	<u>b.</u> Armature rubbing pole shoe.	<u>b.</u> Replace bearing or tighten pole shoes (pars. 18 through 35).
6. Excessive brush movement or arcing.	<u>a.</u> Open armature winding.	<u>a.</u> Refer to 3g above.
	<u>b.</u> Dirty commutator.	<u>b.</u> Clean commutator (par. 24).
	<u>c.</u> Worn or out-of-round commutator.	<u>c.</u> Inspect commutator for out-of-round (par. 24b). Recondition commutator (par. 24b(2)). Replace armature if necessary (pars. 18 and 35).
	<u>d.</u> Faulty brushes or brush springs.	<u>d.</u> Inspect brushes and springs and replace if necessary (pars. 18, 19, 26, 33, 34, and 35).

CHAPTER 4

REPAIR OF GENERATOR

Section I. DISASSEMBLY

15. REMOVAL AND INSTALLATION

Refer to the appropriate organizational maintenance manual for instructions for removal and installation of generator.

16. CLEANING BEFORE DISASSEMBLY

Before disassembly of generator, clean exterior with dry-cleaning solvent or mineral spirits paint thinner. Dry with compressed air to remove loose grit and grease.

17. GENERAL

a. This section contains information for complete disassembly and repair of generator. The illustrated disassembly steps are also to be followed to the extent applicable by personnel performing partial disassembly and replacement operations. Where reference is made to an illustration follow the numbered steps in

order specified. The generator should not be disassembled beyond the point required to inspect the components and to make any necessary repairs or replacements. Judgement must be exercised in following the disassembly procedures to perform only the operations that are necessary.

b. Discard all packings, gaskets, and oil seals during disassembly, and replace with new parts during reassembly.

c. The exploded views in Appendix II may be used as a guide to show relationship of parts and subassemblies.

18. DISASSEMBLY INTO SUBASSEMBLIES (Fig. 7)

a. Refer to figure 8 and remove spacer collar from shaft of armature.

b. Refer to figure 9 and remove brush inspection plug and gasket.

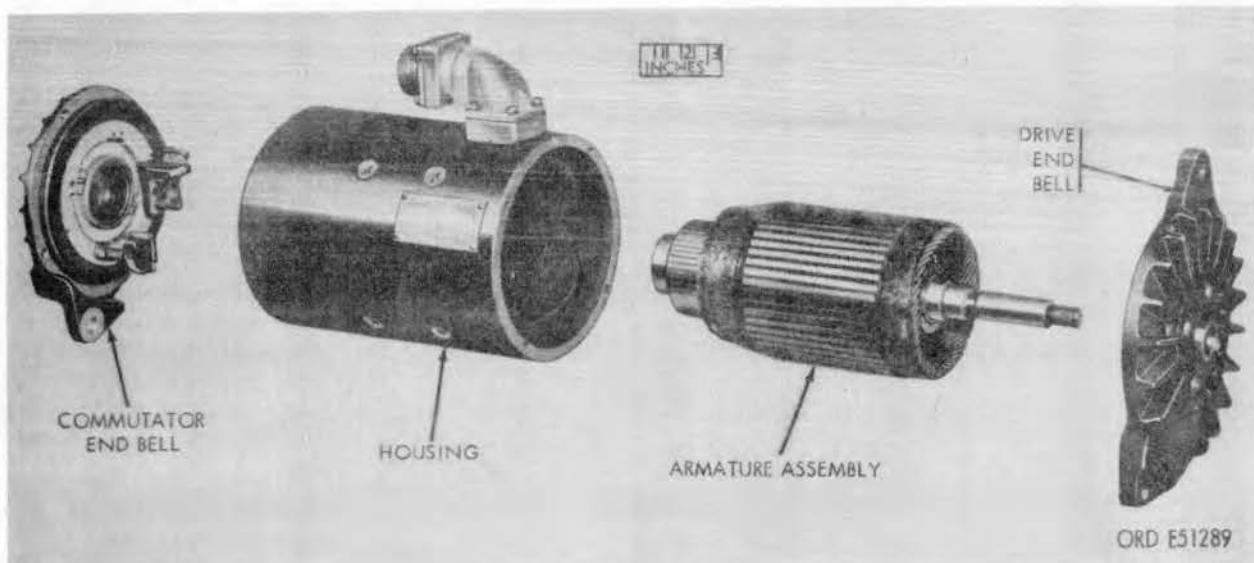


FIGURE 7. GENERATOR - EXPLODED VIEW.

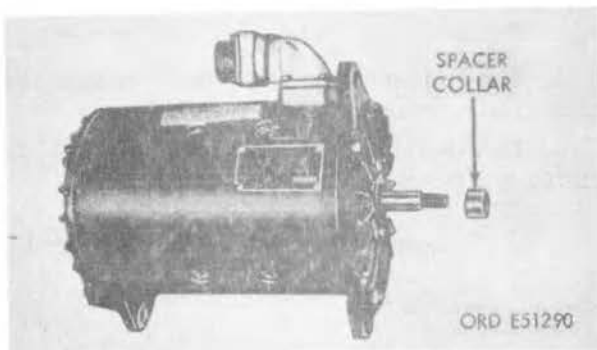


FIGURE 8. REMOVING SPACER COLLAR.

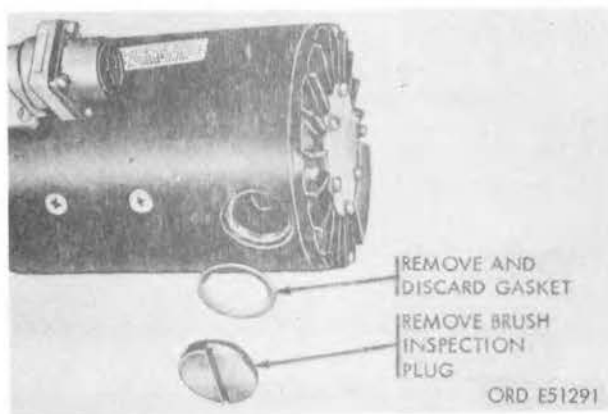


FIGURE 9. REMOVING BRUSH INSPECTION PLUG AND GASKET.

c. Refer to figure 10 and insert screwdriver through brush inspection plug hole and disconnect terminal lead and cable assembly by loosening brush lead screw and removing cable assembly from under screw.

d. Use a sharp tool and scribe a mark across commutator end bell and generator housing. Refer to figure 11 and remove end bell.

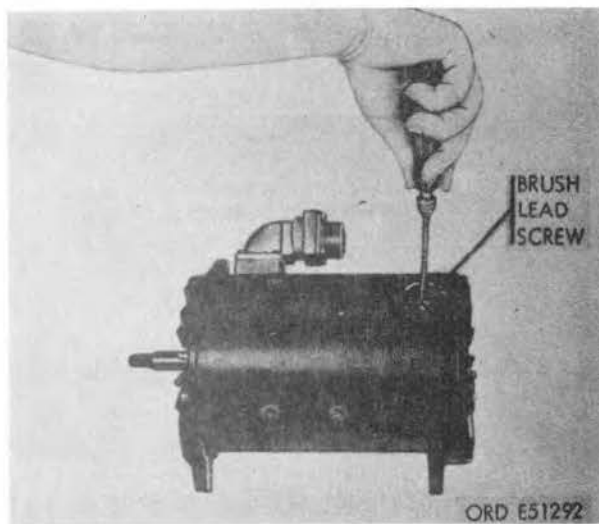


FIGURE 10. DISCONNECTING TERMINAL LEAD.

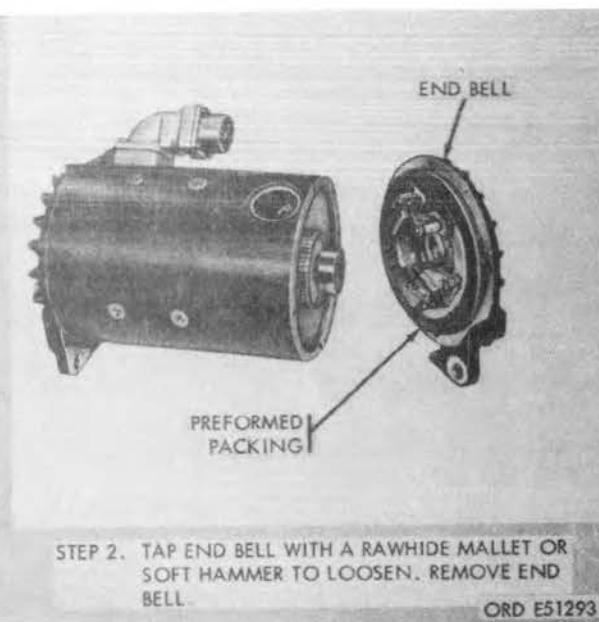
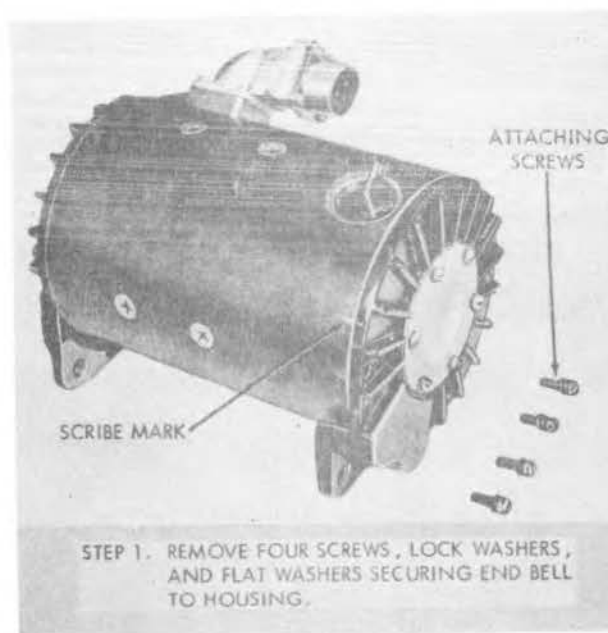


FIGURE 11. REMOVING COMMUTATOR END BELL.

e. Scribe a mark with a sharp tool across drive end bell and generator housing. Remove drive end bell as shown in figure 12.

f. Remove armature from housing and remove bearing from shaft, refer to figure 13.

19. DISASSEMBLY OF COMMUTATOR END BELL

a. The commutator end bell mounts the brush plate, brushes, and brush holders.

b. Disassemble commutator end bell as shown in figures 14 through 16.

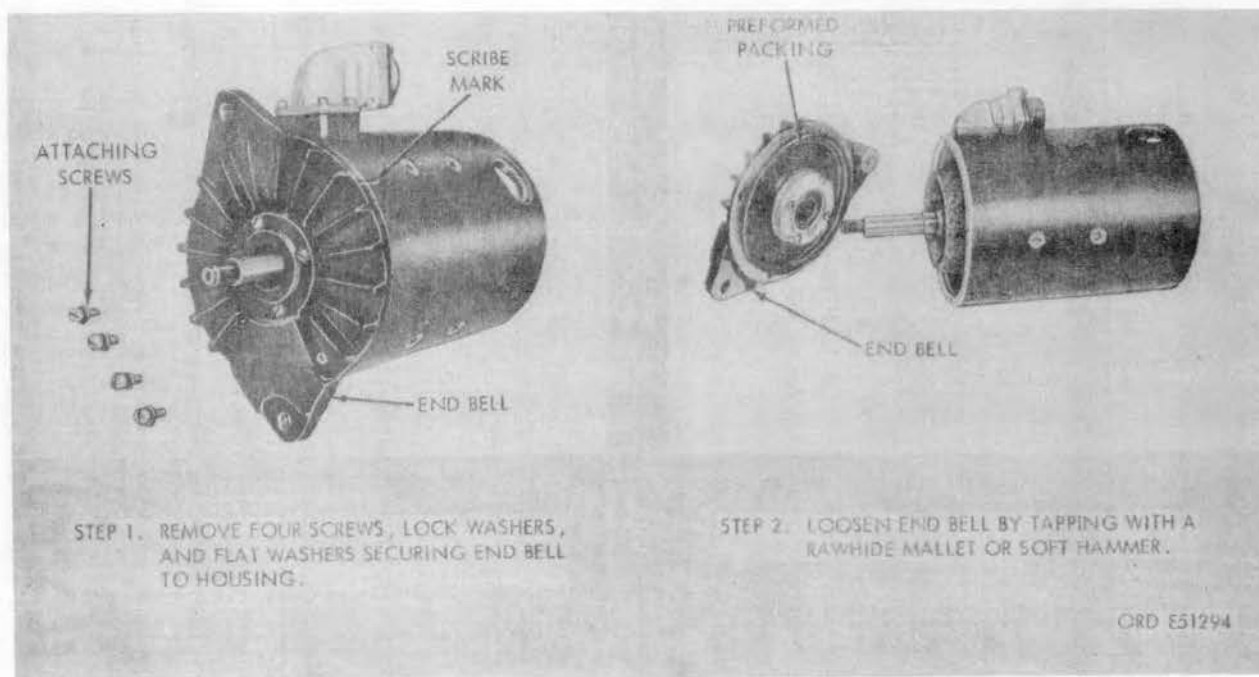


FIGURE 12. REMOVING DRIVE END BELL.

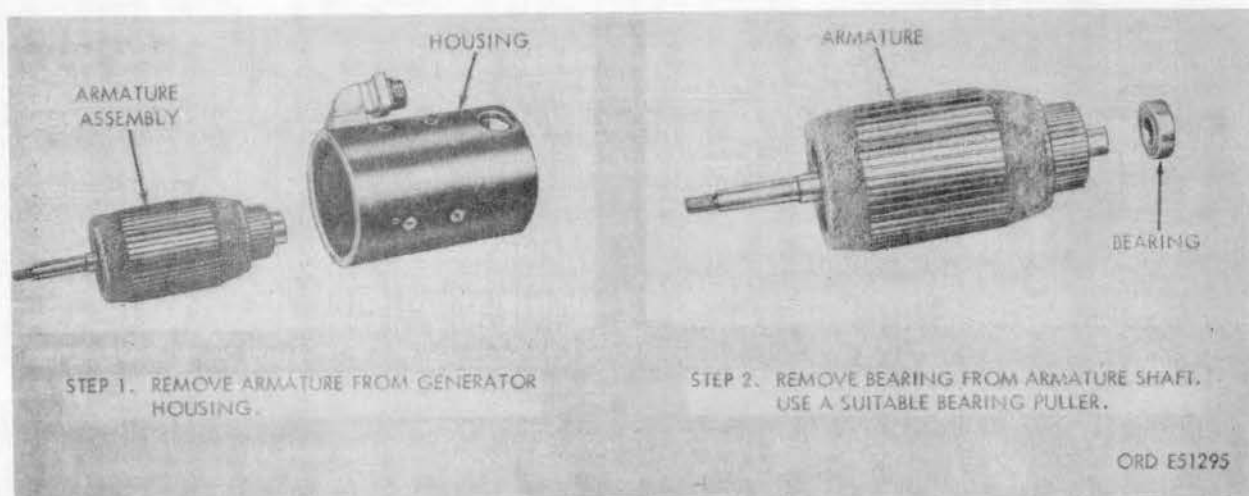


FIGURE 13. REMOVING AND DISASSEMBLING ARMATURE ASSEMBLY.

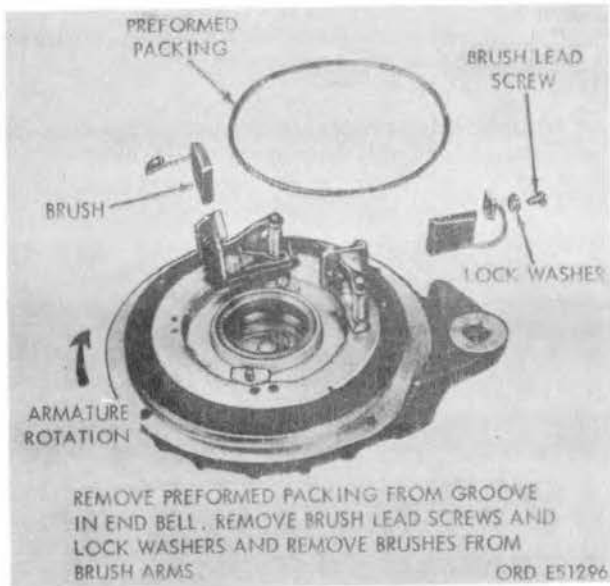


FIGURE 14. REMOVING PREFORMED PACKING AND BRUSHES.

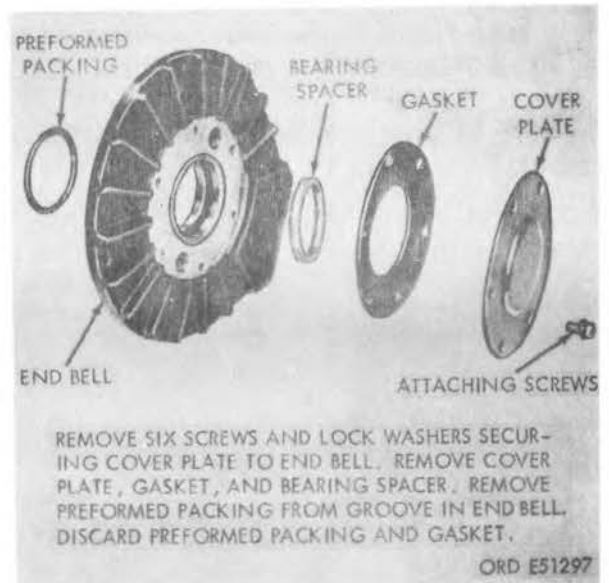


FIGURE 15. REMOVING COVER PLATE AND SPACER.

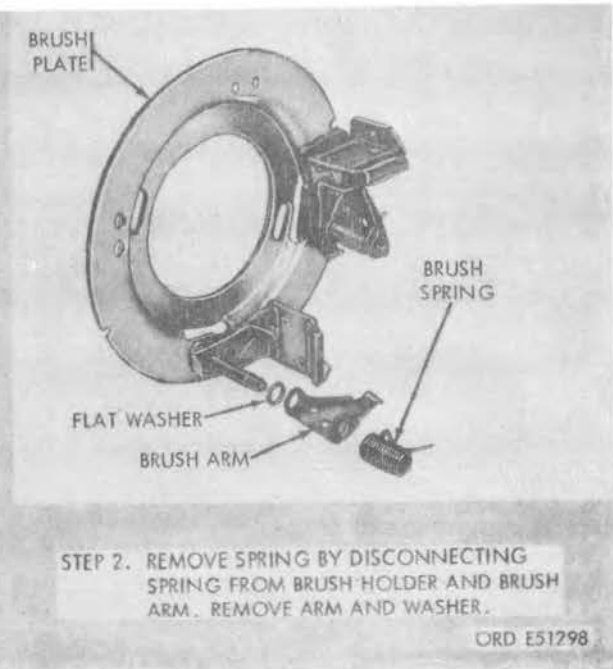
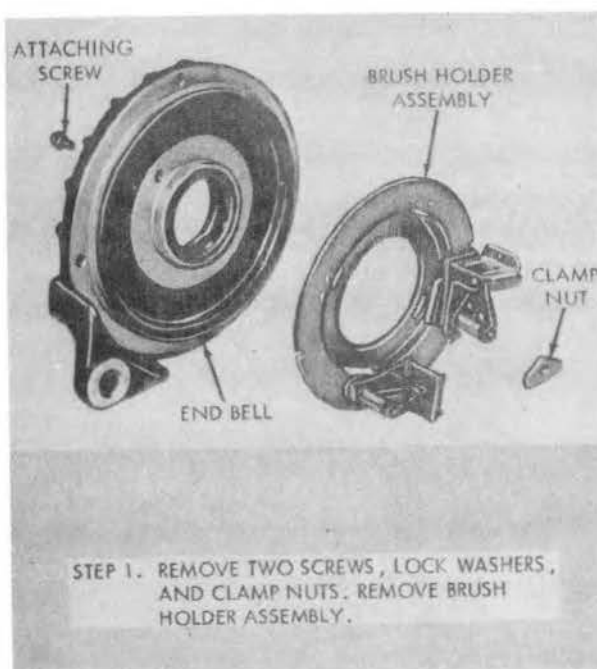


FIGURE 16. REMOVING BRUSH HOLDER ASSEMBLY AND BRUSH ARMS.

20. DISASSEMBLY OF DRIVE END BELL

a. The drive end bell mounts the armature shaft bearing and oil seal. A retaining plate and static ground brush are mounted on the inner surface of the end bell.

b. Disassemble drive end bell following instructions in figure 17.

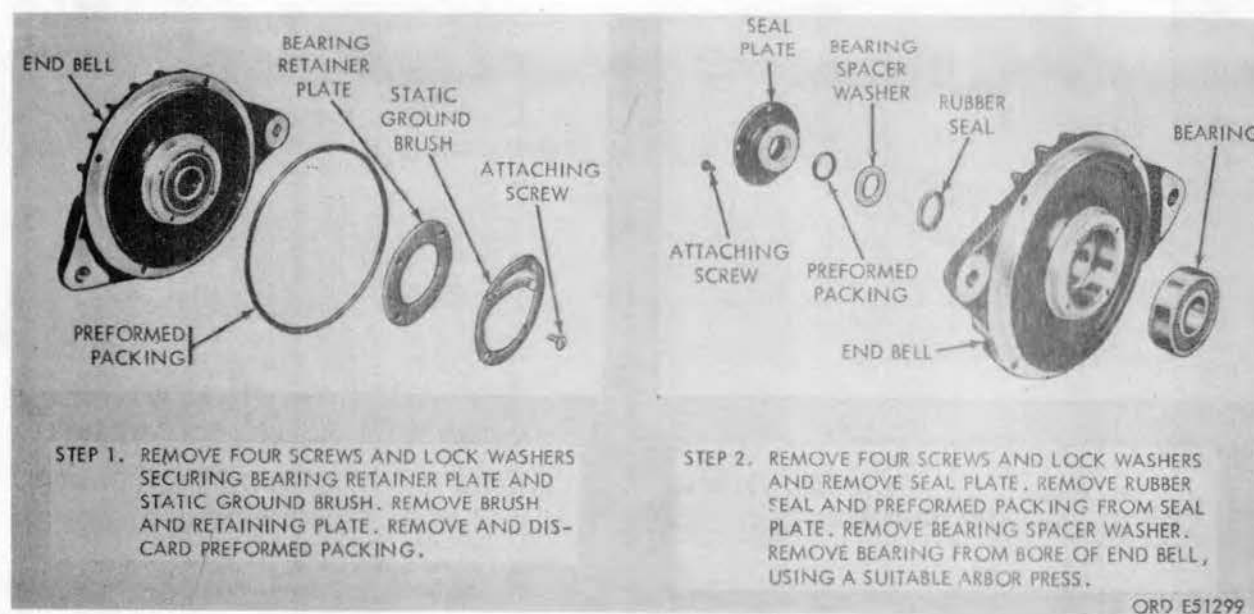


FIGURE 17. DISASSEMBLING DRIVE END BELL.

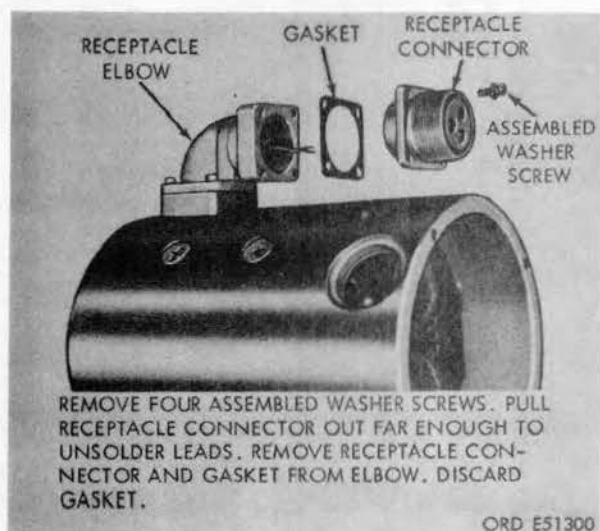


FIGURE 18. REMOVING RECEPTACLE CONNECTOR.



FIGURE 19. REMOVING RECEPTACLE ELBOW.

22. DISASSEMBLY OF GENERATOR HOUSING

a. The generator housing mounts the field windings and pole shoes. The removal of the windings and pole shoes requires the use of a pole shoe spreader and screwdriver.

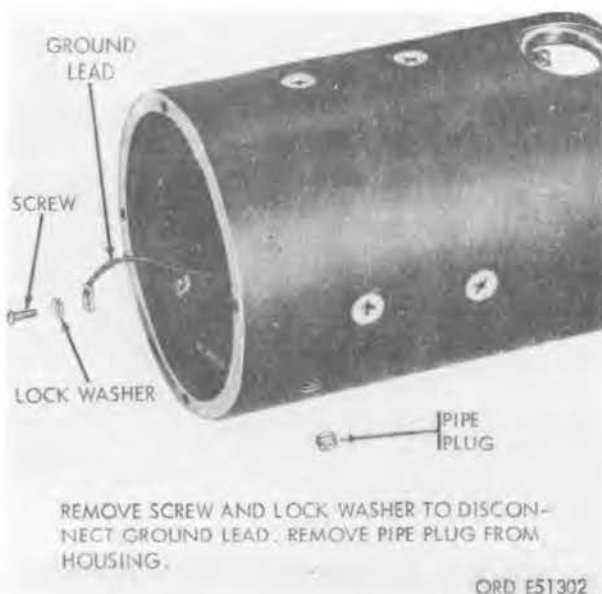


FIGURE 20. DISCONNECTING GROUND LEAD AND REMOVING PIPE PLUG.

b. Refer to figure 20 and disconnect ground lead attaching screw and lock washer and remove pipe plug from housing.

c. Refer to figure 21 and remove pole shoes, windings, and insulators from housing.

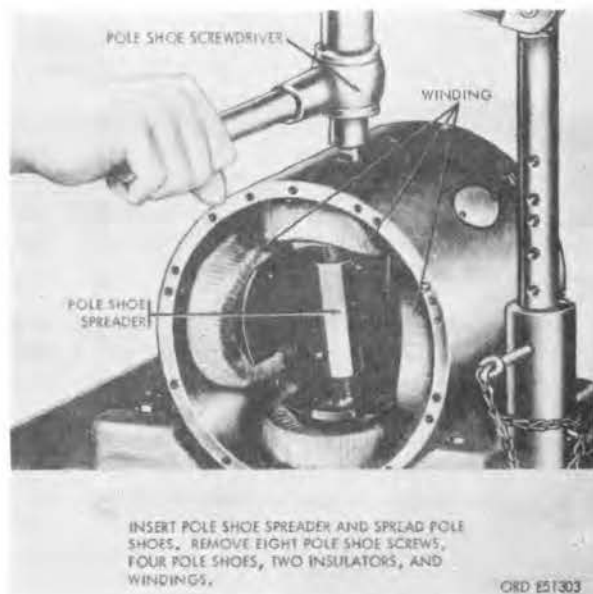


FIGURE 21. REMOVING POLE SHOES AND WINDINGS.

Section II. CLEANING, INSPECTION, AND REPAIR

23. GENERAL

The heavy current encountered when testing armature and field windings for grounds may be many times the normal current. Therefore, when using test equipment, always connect highest range of ammeter into circuit for initial tests. Apply current and note reading, then connect ammeter to the lowest range which will safely carry the current noted.

24. ARMATURE

a. Cleaning. Blow out commutator with compressed air. Wipe armature with a clean cloth slightly dampened in dry-cleaning solvent or mineral spirits paint thinner.

Caution: Never clean armature by any degreasing method since this would damage the insulation and ruin the armature. Clean commutator with 00 sandpaper. Blow off sand particles and wipe dirt from between commutator bars (segments).

b. Inspection.

- (1) Visual. Inspect commutator for roughness, grease, dirt, high mica, or evidence of burning. Inspect to see that windings are not loose from core and not unsoldered from commutator risers. Inspect bearing surfaces of armature for burs, pits, or excessive wear. Inspect armature shaft for straightness. Replace armature if shaft is bent.

- (2) Commutator run-out (fig. 22). Place armature in "V" blocks. Measure run-out using a dial indicator as shown in figure 22. Total indicated run-out must not exceed 0.001 inch, and variations between any two adjacent bars shall not exceed 0.0003 inch. If run-out exceeds these limits, recondition commutator (c below).
- (3) Check for grounds (fig. 23). Touch one probe of continuity tester to the armature shaft, or core, and the other, in turn, to each commutator riser.

Note. Do not touch probes to commutator bars or shaft bearing surfaces, as arcing will mar the smooth finish. If ground is present, armature must be replaced.

- (4) Check for open circuits. Touch test probes of continuity tester to risers on each of a pair of adjacent commutator bars as shown in figure 24. Repeat test on each pair of adjacent commutator bar risers. An armature may be repaired providing the commutator bars are not too badly burned. Do not touch brush surface of commutator.

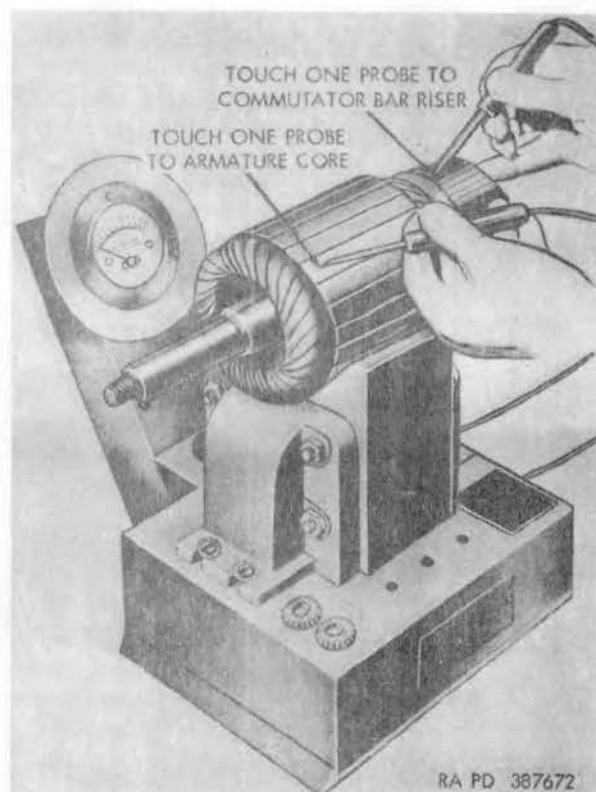


FIGURE 23. CHECKING FOR GROUNDS.

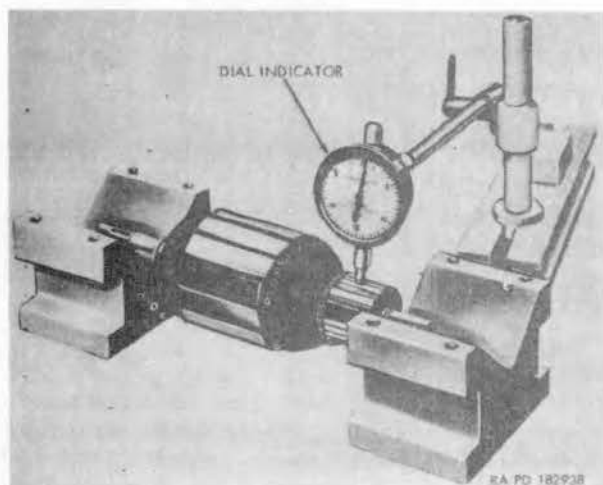


FIGURE 22. CHECKING COMMUTATOR RUN-OUT.

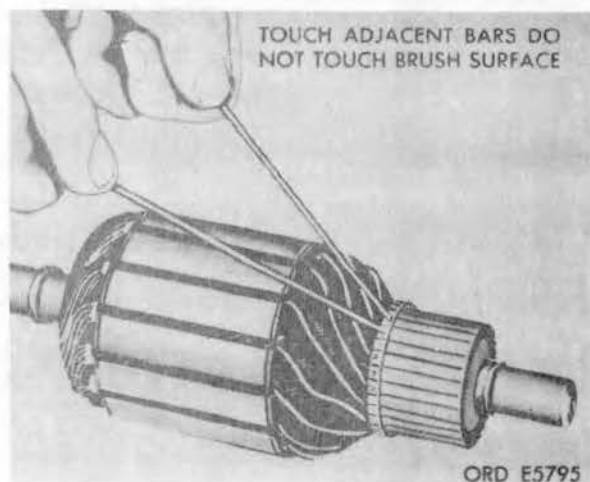


FIGURE 24. CHECKING ARMATURE FOR OPEN CIRCUITS.

- (5) **Check for short circuits.** Place armature on growler (fig. 25). Turn on switch. Hold a thin steel bar approximately 1/16 inch away from the armature core, and rotate armature slowly.

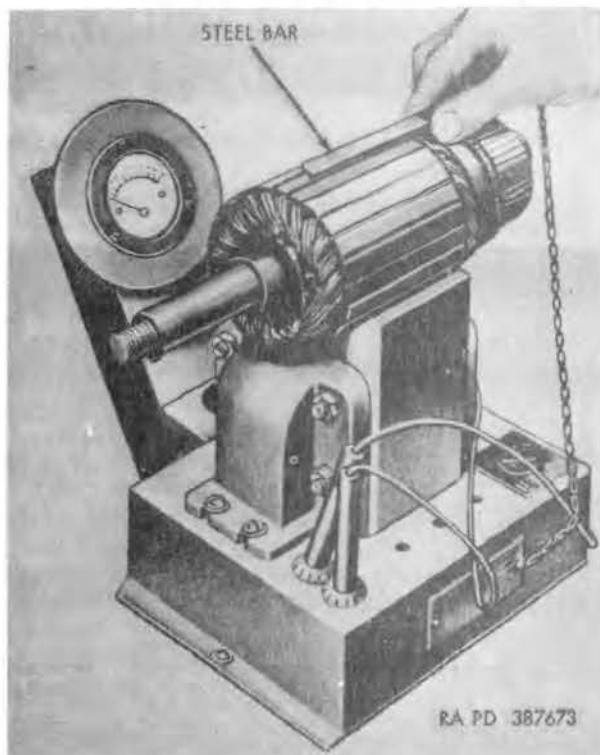
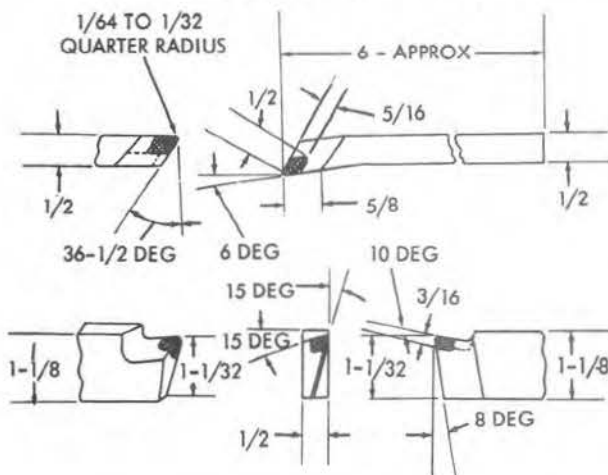


FIGURE 25. CHECKING ARMATURE FOR SHORT CIRCUITS ON GROWLER.



NOTE. ALL DIMENSIONS SHOWN ARE IN INCHES

FIGURE 26. CUTTING TOOL SHARPENING DIMENSIONS.

If a short circuit is present in the winding, the steel bar will vibrate, and the armature must be replaced.

c. Repair.

- (1) If commutator is worn, rough, out-of-round, or has high mica, filled slots, or burned spots, place the armature in a lathe and turn down the commutator. Use a commutator cutting tool sharpened as shown in figure 26. Mount the tool as shown in figure 27. Take a light cut across the entire surface of the commutator, refer to figure 28.

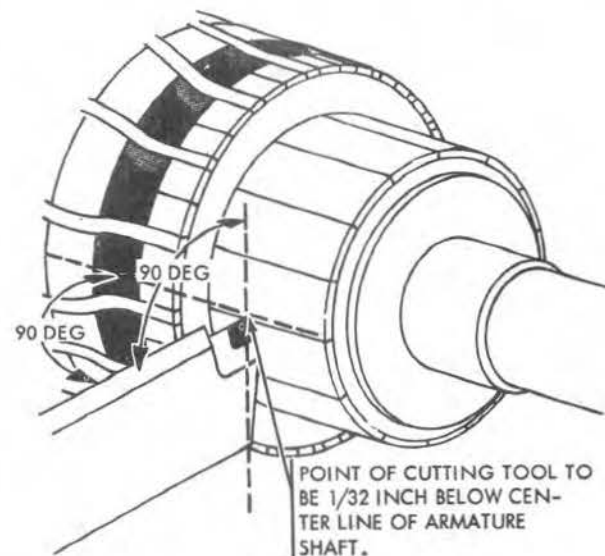


FIGURE 27. PROPER POSITION OF CUTTING TOOL.

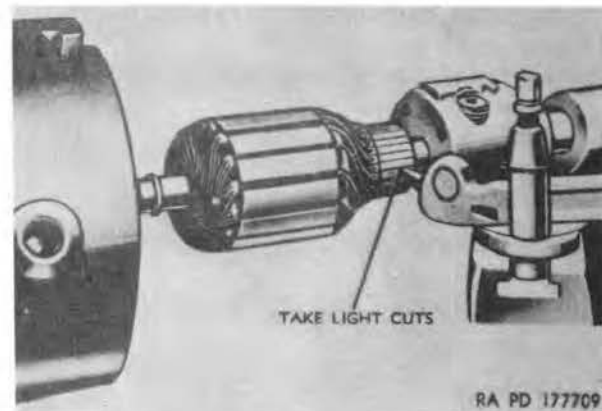


FIGURE 28. RECONDITIONING COMMUTATOR.

Cut no deeper than necessary, and smooth burs with No. 00 sandpaper after cutting (fig. 29). Replace armature if diameter of reconditioned commutator is less than 2.435 inch. Undercut mica of reconditioned commutator to a depth of 1/32 inch using an under-cutter (fig. 30).

Note. Use care in undercutting. Do not widen commutator slots by removing metal from bars, and do not leave thin edge of mica next to bars. Figure



FIGURE 29. SMOOTHING BURS WITH NO. 00 SANDPAPER.

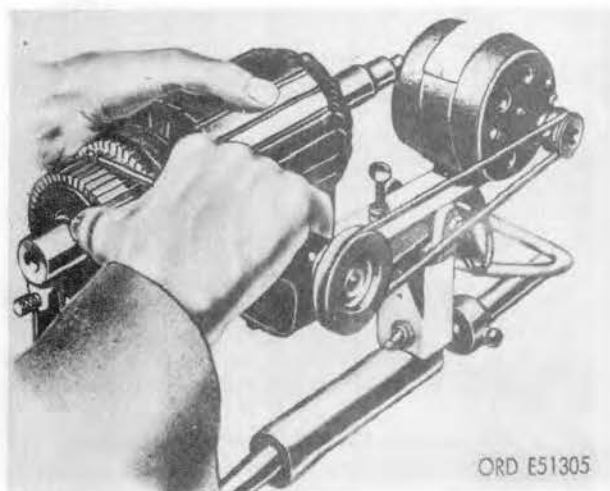


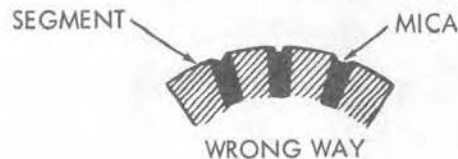
FIGURE 30. UNDERCUTTING COMMUTATOR MICA.

31 illustrates examples of good and bad undercutting. Measure the accuracy of the reconditioned commutator using a dial indicator gage as shown in figure 22. Total indicated run-out shall not exceed 0.001 inch, and variation between two adjacent bars shall not exceed 0.0003 inch.

- (2) If windings are unsoldered from commutator risers and the resulting open circuit has not caused the commutator to burn so badly that it cannot be repaired by reconditioning, the winding may be soldered. Use a rosin core flux when soldering windings.
- (3) Replace drive end shaft collars worn beyond prescribed limits.
 - (a) Fabricate new collar from 7/8 inch mild steel, round stock. Cut to 9/16 inch lengths. Center drill to 43/64 inch id.
 - (b) Turn down old collar on lathe to provide 0.002 inch press fit with id of new collar.
 - (c) Install new collar on shaft and press into place using improvised tool and arbor press (fig. 4).



MICA MUST BE CUT AWAY CLEAN BETWEEN SEGMENTS.



MICA MUST NOT BE LEFT WITH A THIN EDGE NEXT TO SEGMENTS.

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FIGURE 31. EXAMPLES OF GOOD AND BAD UNDERCUTTING.

- (d) Install armature assembly on lathe and turn new collar to 0.7872 inch od.

25. WINDINGS

a. Cleaning. Clean windings by wiping with a clean dry cloth.

Caution: Never clean windings by any degreasing method or use solvent of any kind since this would damage the insulation and ruin the coils. Be careful in handling the winding assembly to avoid breaking or weakening the connecting lead between windings.

b. Inspection.

(1) Visual. Inspect for worn or frayed insulation or defective connections. Repair or replace defective parts.

(2) Check field for "open" circuit.

(a) Touch one test probe of continuity tester on winding terminal (fig. 32) and the other probe on the housing. The lamp should light. If it does not light, the circuit as illustrated in figure 32 is "open". If the "open" is due to a broken lead or bad connection, it can be repaired, but if the "open" is inside one of the windings, the windings must be replaced.

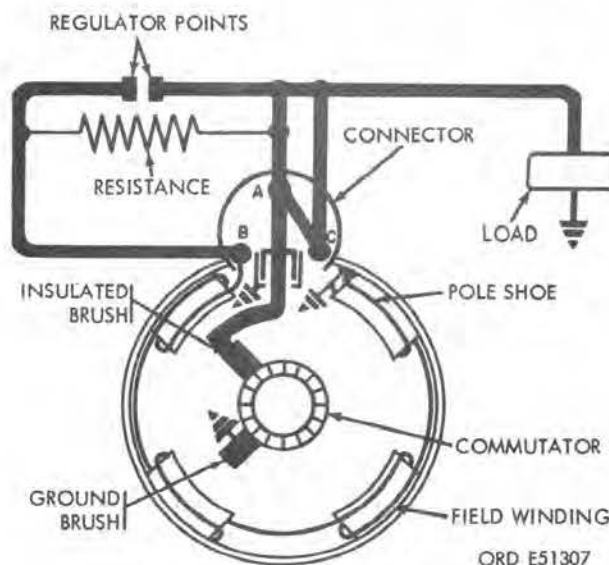


FIGURE 32. SCHEMATIC CIRCUIT WIRING DIAGRAM.

- (b) Connect voltmeter across two field winding leads. Adjust voltage, using the variable resistor, to the value specified for winding draw (28.5 volts) and note current reading on ammeter. Correct current draw must be 1.0 to 1.1 amps. Replace windings if current draw is not within limits.

c. Repair. If the winding insulation is charred or worn away so that the field circuit is, or could become grounded, it may be repaired by wrapping the field windings. This operation must be executed with care and neatness since excessive bulkiness of the wrapping will prevent assembling the windings under the pole shoes in the proper manner. If the insulating compound on outer surfaces of field windings is cracked or chipped, apply a coat of air-drying, fungus-resistant, insulating varnish. Apply varnish carefully and allow to dry thoroughly before installing windings in housing. Use rosin core flux solder for all soldered connections. If connecting leads between windings are defective, they may be re-soldered.

26. COMMUTATOR AND DRIVE END BELL ASSEMBLIES

a. Cleaning.

- (1) Soak bells, brush arms, brush springs, spacer collar, seal plate, static brush, bearing retaining plates, pole shoes, bearing spacer and washer, and all hardware parts in dry-cleaning solvent or mineral spirits paint thinner. Clean and dry thoroughly. Make certain all parts are free of lint.
- (2) Wipe brush plate assemblies and brushes with a clean, dry, lint-free cloth.
- (3) Refer to TM 9-214 for care and maintenance of ball bearings.

b. Inspection.

- (1) Visual. Inspect end bells and brush plate assemblies, brush retainers and seal plate for cracks, loose rivets, or warping. Replace defective parts. Inspect brushes and replace if cracked or oil soaked, if leads are loose, or if brushes are worn beyond the limits specified in Wear Limits (par. 42).

Inspect brush springs for signs of burning or overheating. An overheated spring becomes blued and must be replaced.

- (2) Check for grounded brush holder. Lift the ground brush from the commutator. Touch one probe of test lamp to brush plate and the other probe to the insulated brush holder. Should the lamp, by lighting, indicate a ground, replace the brush plate assembly.

- (3) Check brush spring tension. Make this check during assembly. With the brush plate installed on the end bell and the brushes in position, temporarily position the armature in the end bell. Hook a spring gage to brush arm or brush attaching screw and pull gage away from commutator in a line parallel to the face of the brush. Note gage reading as brush just leaves commutator. Correct brush spring tension is 24 to 32 ounces. If tension is not within these limits, replace brush spring.

c. Repair.

- (1) Replace cracked or warped end bells, bearing retainers, seal plate, static brush, distorted or grounded brush plate assemblies; bent brush arms; spent or burned brush springs; cracked, oil soaked, or worn brushes; and all defective hardware parts.
- (2) Check brush seat pattern. Refer to figure 35 for examples of satisfactory and unsatisfactory brush seats. All new

brushes must be seated until satisfactorily fitted to commutator. Perform this operation during assembly of the generator, refer to paragraph 34.

27. RECEPTACLE CONNECTOR AND ELBOW

a. Cleaning. Clean connector and elbow with dry-cleaning solvent or mineral spirits paint thinner and dry thoroughly.

b. Inspection. Inspect leads for worn or frayed insulation and secure connection to terminals. Inspect connector for stripped threads damaged plastic insert, and cracks in connector body. Inspect terminal holes in connector for dirt, chipping, and other damage. Inspect elbow for cracks and damage.

c. Repair. Discard all defective terminals, receptacle connector, and elbow. When soldering loose leads in terminals, use a rosin core solder and make a strong low resistance connection.

28. HOUSING AND MISCELLANEOUS PARTS

a. Cleaning. Clean housing and hardware parts in dry-cleaning solvent or mineral spirits paint thinner and dry thoroughly. Do not soak insulators.

b. Inspection. Inspect housing for cracks or distortions. A defective housing must be replaced. Replace burned, cracked, worn, or broken insulators and washers. Replace bent, broken, or stripped screws.

c. Repair. Solder loose leads or lead clips. Replace defective parts.

Section III. ASSEMBLY

29. GENERAL

a. Assembly procedures for the generator are covered in this section. Refer to illustrations in the disassembly section and to the exploded view of the generator for proper relationship and position of components.

b. The figure references in this section correspond to the disassembly steps, with assembly of the component essentially the reverse of disassembly.

30. ASSEMBLE HOUSING

a. Install field windings on pole shoes, along with insulators, and position shoes and windings in housing. Hold shoes in position with pole shoe spreader, refer to figure 21. Field ground lead must be near terminal port in housing.

b. Coat eight pole shoe screws with blue seal thread sealer and install in housing and pole shoes. Tighten with pole shoe screwdriver, refer to figure 21.

c. Connect field winding ground lead to housing terminal with a No. 8 x 5/16-inch machine screw and No. 8 lock washer, refer to figure 20.

d. Coat pipe plug with blue seal thread sealer and install plug in housing (fig. 20).

31. ASSEMBLE RECEPTACLE CONNECTOR AND ELBOW

a. Apply GAA automotive and artillery grease to gaskets and coat screws with blue seal thread sealer. Install gasket and spacer on housing (fig. 19). Install gasket and elbow on spacer and secure with four No. 8 x 1-inch round head assembled washer screws.

b. Install three lead terminals in receptacle connector (refer to figure 32 for correct terminal positions). Lead from field winding must be soldered to "B" terminal. Insulated brush lead must be soldered to "A" terminal. Jumper lead must be soldered between "A" and "C" terminals, refer to figure 33. All connections must be made with rosin core solder.

c. Apply GAA grease on gasket and blue seal thread sealer on screws and install gasket and connector (fig. 18) on elbow and secure connector with four No. 8 x 1/2-inch round head assembled washer screws.

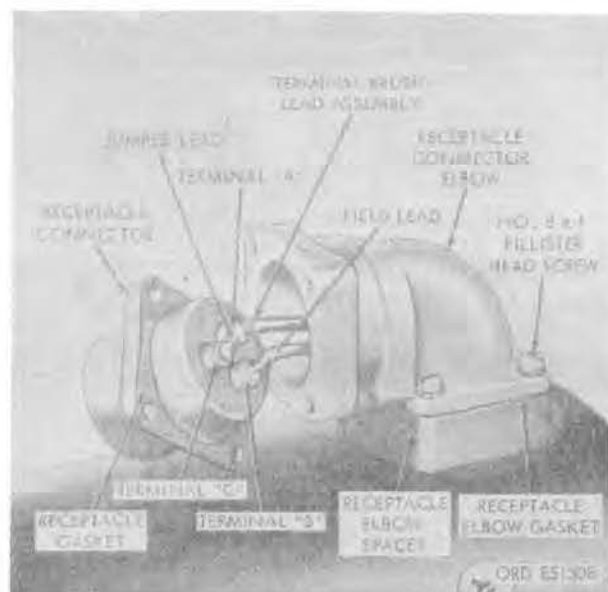


FIGURE 33. RECEPTACLE CONNECTOR WIRING.

d. Place insulated brush lead between field windings, and insert two strip type insulators between the pole shoes to keep brush lead from sagging on armature, refer to figure 34.

e. Paint all exposed parts inside housing with suitable fungicidal glyptol.

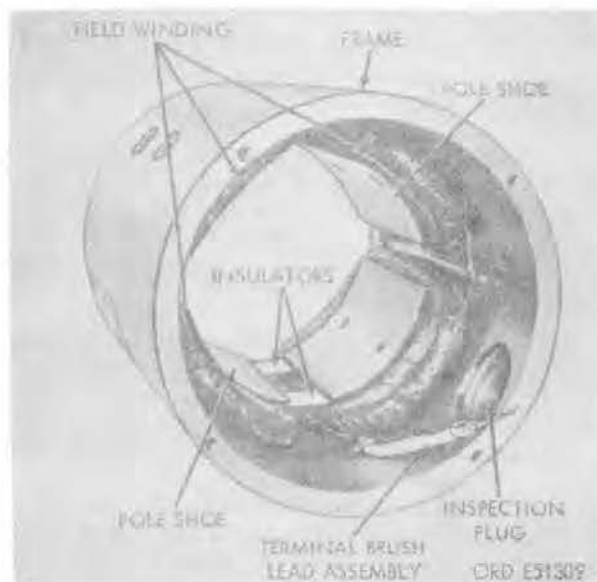


FIGURE 34. FRAME INTERNAL COMPONENTS.

32. ASSEMBLE DRIVE END BELL

a. Install ball bearing (fig. 17, step 2) into bore of end bell using an arbor press. Install bearing spacer washer in bore.

b. Install seal (fig. 17, step 2) on shoulder of seal plate. Install preformed packing into bore of seal plate.

c. Install seal plate on end bell and secure with four No. 8 x 5/16-inch machine screws and No. 8 lock washers.

d. Install bearing retainer plate (fig. 17, step 1) and static ground brush on end bell and secure with four No. 8 x 5/16-inch machine screws and No. 8 lock washers.

e. Coat preformed packing (fig. 17, step 1) lightly with GAA grease. Install packing in groove in drive end bell.

33. ASSEMBLE COMMUTATOR END BELL AND BRUSH HOLDER ASSEMBLY

a. Coat preformed packing (fig. 15) with GAA grease and install in groove in commutator end bell.

b. Install two flat washers (fig. 16, step 2), brush arms, and brush springs on posts of brush holder assembly. Straight end of spring must enter hole in brush arm. Hook bent end of spring under stop on brush holder, refer to figure 2.

c. Install brush holder assembly (fig. 16, step 1) on end bell so brushes will be near the inspection plug hole in housing and field assembly. Install two No. 10 x 1/2-inch machine screws, lock washers and plate nuts, and tighten finger tight.

Note. Do not tighten screws until after neutral point adjustment is made (par. 36b and c).

d. Install bearing spacer in end bell (fig. 15).

e. Coat cover plate gasket (fig. 15) with GAA grease and install gasket and cover plate on end bell.

f. Secure cover plate (fig. 15) to end bell with six No. 10 x 7/8 inch fillister head screws and No. 10 lock washers.

Note. Tighten screws only finger tight until after neutral point adjustment (par. 36b and c) is made. It is necessary to remove cover plate to make adjustments.

g. Lift brush arms and insert brushes (fig. 14) in brush arms. Direction of commutator rotation must be into toe of brush.

h. Connect brush leads to brush arms with two No. 6 x 1/4-inch machine screws (fig. 14) and No. 6 lock washers.

34. SEAT BRUSHES AND CHECK BRUSH SPRING TENSION

a. Install ball bearing on shaft of commutator end of armature using an arbor press (fig. 13, step 2).

b. Wrap armature assembly in cloth and place in vise.

c. Wrap a strip of No. 5/0 sandpaper, sand side out, around commutator and secure in place with suitable tape.

d. Install the assembled commutator end bell on commutator end of armature. Release brush spring tension to install commutator between brushes.

e. Rotate end bell in a counterclockwise direction, as viewed from commutator end of armature, until brushes are seated satisfactorily, refer to figure 35.

f. Release brush spring tension and remove commutator end bell from armature.

g. Remove sandpaper and brush all dust from armature and end bell.

h. Install commutator end bell on armature and check spring tension as outlined in paragraph 26b(3). Brush spring tension must be 24 to 32 ounces. Remove commutator end bell from armature, and armature from vise.

35. ASSEMBLE GENERATOR

a. Coat static ground brush with GAA grease and install drive end bell (fig. 12, step 2) on housing, aligning scribe marks on end bell and housing. Tap end bell into place if necessary. Do not damage preformed packing when installing end bell.

b. Secure end bell on housing with four No. 12 x 11/16-inch fillister head screws (fig. 12, step 1), No. 12 lock washers, and No. 12 flat washers.

c. Apply GAA grease to preformed packing (fig. 14) and collector spring button of commutator end plate. Install packing on commutator end bell. Install commutator end bell (fig. 11, step 2) on commutator end of armature. Release brush spring tension and install commutator between brushes.

d. Install armature, with attached end bell, in housing, aligning scribe marks on end bell and housing. Tap end bell into place with a soft hammer if necessary. Be careful not to damage preformed packing.

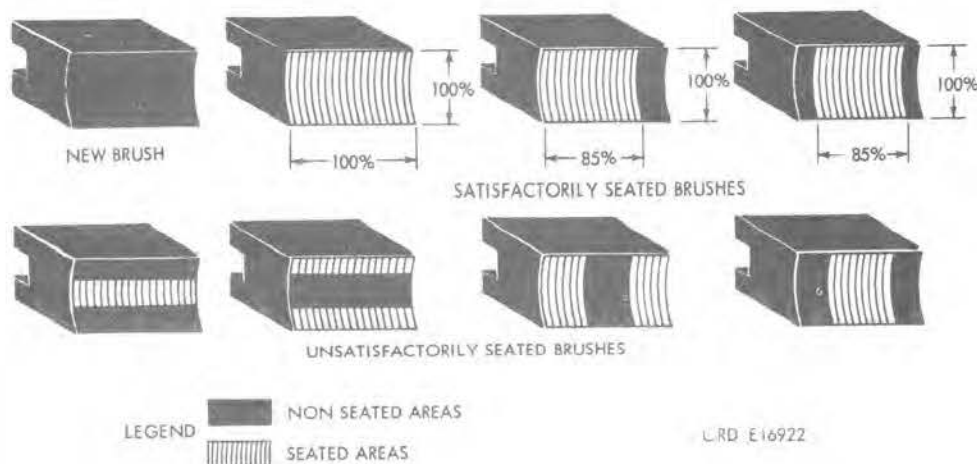


FIGURE 35. EXAMPLES OF SATISFACTORY AND UNSATISFACTORY BRUSH SEATS.

e. Secure end bell to housing with four No. 12 \times 11/16-inch fillister head screws (fig. 11, step 1), No. 12 lock washers, and No. 12 flat washers.

f. Check armature end-play, refer to paragraph 14a.

g. Connect lead from receptacle connector to insulated brush lead in brush arm with same screw and lock washer securing brush lead, refer to figure 10.

h. Install gasket and inspection plug (fig. 9) in inspection plug hole. Tighten only finger-tight.

Note. Gasket must be properly seated and brush lead must not touch plug before tightening plug.

i. Install spacer collar (fig. 8).

Section IV. TEST AND ADJUSTMENT

36. GENERAL

This section contains instructions for bench testing and adjusting the generator after repair and assembly. Use suitable test equipment. If a defective part is found during the test, and the part must be replaced, the generator must be disassembled as far as necessary to replace the defective part.

Caution: Connect ammeter or voltmeter in its highest range first. Apply current or voltage and, after noting meter reading, connect meter to range which will safely carry the indicated current or voltage.

37. POSITIONING BRUSHES

a. Proper positioning of the brushes is necessary to minimize arcing and obtain best com-

mutation. This adjustment must be made whenever a new brush, armature or field winding set has been installed, or whenever the generator has been disassembled or assembled.

b. To make neutral point adjustment, mount generator on test stand, but leave armature free to rotate. Connect generator as shown in neutral point test wiring diagram, figure 36. To facilitate connection, use improvised test-wiring harness as shown on figure 4. In making test, use minimum voltage that will cause armature to rotate, but never exceed rated generator voltage.

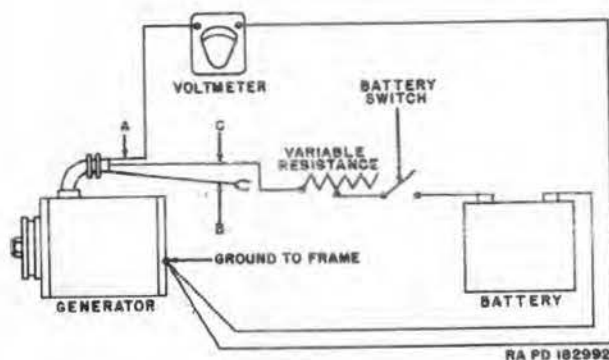


FIGURE 36. GENERATOR NEUTRAL POINT TEST WIRING DIAGRAM.

c. The neutral point is found by shifting the brush plate into the position at which there is no tendency for the armature to rotate in either direction. To shift the brush plate, it is necessary to remove the inspection plug and retaining plate to loosen the two brush plate clamping screws enough to allow brush plate to be moved. Move the brush plate by inserting a small rule through the inspection hole and between the brush and brush holder. After the brush plate has been shifted so the brushes are set at the neutral point, note dimension on rule at point where it is flush with top of inspection hole; then shift brush plate ahead in direction of armature rotation (clockwise from drive end) until the rule is $3/64$ to $9/64$ of an inch ahead of neutral point marking. After adjustment, tighten two brush plate clamping screws, and install retaining plate and inspection plug.

38. REPOLARIZING GENERATOR

Repolarize generator in the following manner: momentarily connect the system battery in series between field lead ("B" terminal) and ground (fig. 5). This allows a surge of current to flow through the field current to ground, and properly polarizes the generator with the battery.

39. TESTS

a. Field current draw. Measure field coil draw as described in paragraph 14c.

b. Generator Output. Connect generator as for motoring test (fig. 6). Connect generator to test-stand driving motor. Operate motor in clockwise rotation (as viewed from drive-end). Close battery switch and adjust carbon pile rheostat until voltage is as specified (24 volts). Increase speed slowly to 1600 revolutions per minute, noting voltage and current reading on meters. Adjust carbon pile rheostat, if necessary, to maintain specified voltage. The current output (28.5 volts and 25 amps) should be within the limits at the speed in revolutions per minute specified (1600 rpm). If reading is not as specified, refer to paragraph 14. Disconnect field jumper lead. Output should decrease. If output does not decrease check for incorrect wiring or grounded or shorted field terminals or leads.

Note. Do not operate generator at voltage or amperage in excess of rated maximum output (28.5 volts, 25 amperage) as heat developed during such operation will damage insulation and windings.

40. TEST FOR LEAKS

a. Connect the generator for motoring test (fig. 6); then connect an air hose to the hole covered by the inspection plug, or $1/8$ -inch pipe plug opening.

b. Place generator in tank of water until fully submerged; operate generator at 24 volts and apply 6 pounds air pressure to the generator.

c. Check for air bubbles, noting particularly all preformed packings and gasket sealing areas. If any bubbles appear, repair or replace parts as necessary.

Section V. REPAIR STANDARDS

41. GENERAL

These repair standards give minimum, maximum, and important clearance of new or rebuilt parts. They also give limits which indicate

that point to which a part may be worn before replacement. Normally, all parts which have not worn beyond dimensions shown or not damaged by corrosion will be approved for service. All dimensions shown are in inches, unless otherwise specified.

42. WEAR LIMITS

Figure No.	Reference letter	Point of measurement	Sizes and fits of new parts	Wear limits	
				Field	Depot
<u>a. Armature.</u>					
37	a	Armature end play	0.003 to 0.010	*	*
<u>b. Commutator.</u>					
37	b	Commutator diameter	2.500	2.435	2.435
37	b	Commutator run-out	0.001	*	*
<u>c. Brushes.</u>					
37	c	Brush length	7/8	7/16	7/16
<u>d. Brush Springs.</u>					
37	d	Spring tension	24-32 oz	*	*
<u>e. Drive End Shaft Collar.</u>					
37	e	Bearing surface	0.7872 od	0.7847	0.7847

* Single asterisk (*) indicates that tolerances on used part(s) must be same as for new part(s).

43. GENERATOR PERFORMANCE AND TEST DATA

data for the generator. The table includes all electrical data necessary for testing the unit and its subassemblies.

Table III below lists performances and test

Table III. Generator Performance and Test Data

Rotation, drive end view.	Clockwise	amperes	0.85 to 0.89
Poles	4	Cold output	
Brushes	2	volts	28.5
Rated volts	24	amperes	25
Ground polarity	Negative	max rpm	1600
Control current	CVR	Internal wiring	fig. 32
<u>Note.</u> CVR - Generator uses separately mounted vibrating type current and voltage regulator.		Test wiring	figs. 5 and 6
		Commutator mica undercut	1/32 (inches)
Field draw		Brush position	3/64 to 9/64
volts	24		ahead of neutral position measured on od of frame.

APPENDIX I

REFERENCES

1. PUBLICATION INDEXES

The following indexes should be consulted frequently for latest changes or revisions of references given in this appendix and for new publications relating to materiel covered in this technical manual.

Index of Army Motion Pictures, Film Strips, Slides, and Phono-Recordings -	DA Pam 108-1
Military Publications:	
Index of Administrative Publications - - - - -	DA Pam 310-1
Index of Blank Forms - - - - -	DA Pam 310-2
Index of Graphic Training Aids and Devices - - - - -	DA Pam 310-5
Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 4, 6, 7, 8, and 9), Supply Bulletins, Lubrication Orders, and Modification Work Orders.	DA Pam 310-4
Index of Training Publications - - - - -	DA Pam 310-3

2. SUPPLY MANUALS

The following Department of the Army Supply Manuals pertain to this materiel:

Shop Set, Field Maintenance; Auto Fuel and Electrical System (4910-754-0714)	SM 9-4-4910-A02
Shop Set, Field Maintenance; Automotive, Wheeled, Post, Camp and Station, Set A (4910-348-7696)	SM 9-4-4910-A03
Shop Set, Field Maintenance; Automotive, Basic (4910-754-0705) - - - - -	SM 9-4-4910-A38
Tool Kit, Auto Fuel and Electrical System Repairman; (4910-754-0655) - - -	SM 9-4-4910-A57
Shop Set, Field Maintenance; Automotive, Supplement No. 1 (4910-754-0706)	SM 9-4-4910-A73
Shop Set, Field Maintenance; Automotive, Supplement No. 2 (4910-754-0707)	SM 9-4-4910-A74
Shop Set, Field Maintenance; Auto Fuel and Electrical System, Supplement No. 1 (4910-390-7774)	SM 9-4-4910-A75
Shop Set, Field Maintenance; Auto Fuel and Electrical System, Supplement No. 2 (4910-390-7775)	SM 9-4-4910-A76
Shop Set, Field Maintenance; Automotive, Wheeled, Post, Camp and Station, Set B (4910-348-7697)	SM 9-4-4910-A78
Shop Set, Field Maintenance; Automotive, Wheeled, Post, Camp and Station, Set C (4910-348-7698)	SM 9-4-4910-A79
Shop Set, Field Maintenance; Automotive, Wheeled, Post, Camp and Station, Set D (4910-348-7699)	SM 9-4-4910-A80
Tool Kit, Organizational Maintenance; Set No. 2, Common (4910-754-0650)	SM 9-4-4910-A86
Tool Kit, Organizational Maintenance; Set No. 1, Supplemental (4910-754-0653)	SM 9-4-4910-A87
Tool Kit, Organizational Maintenance; No. 1, Common (4910-754-0654) - - -	SM 9-4-4910-A88
Tool Kit, Organizational Maintenance; Set A, Supplemental (5180-754-0653) -	SM 9-4-5180-A17
Tool Kit, Electricians; No. 2 (5180-545-8645) - - - - -	SM 9-4-5180-A82
Tool Kit, General Mechanics; Ordnance Field Supply or Depot Company (Army or Comz) (5180-322-6059)	SM 9-4-5180-B14

3. FORMS

DA FORM 2028, Recommended changes to DA Technical Manual Parts List or Supply Manual 7, 8 or 9 is used to report publications errors or omissions. For use of maintenance forms, refer to TM 38-750, The Army Equipment Record Systems and Procedures. Forms pertaining to the Army Safety Program are prescribed in SR 385-10-40.

4. ORGANIZATIONAL MAINTENANCE MANUALS

Truck, Utility: 1/4-Ton, 4 x 4, Lightweight, M422 (American Motors Engine AV108-4) TM 9-2320-225-20

Truck, Utility: 1/4-Ton, 4 x 4, M151 (Ford Model M151 Engine) - - - - - TM 9-2320-218-20

Truck, Utility: 1/4-Ton, 4 x 4, M38A1; and Ambulance, Front Line: 1/4-Ton, 4 x 4, M170 (Willys Model MD Engine) TM 9-8014

Truck, Cargo: 3/4-Ton, 4 x 4, M37 & M37B1; Truck, Command: 3/4-Ton, 4 x 4, M42; Truck, Ambulance: 3/4-Ton, 4 x 4, M43 & M43B1; Truck Chassis: 3/4-Ton, 4 x 4, M56 & M56B1; Truck, Panel: 3/4-Ton, 4 x 4, M152; and Truck, Maintenance: 3/4-Ton, 4 x 4, M201 (Signal Corps Model V-41(GT)) (Dodge Model T24S Engine). TM 9-8030

Truck, Cargo: 2-1/2-Ton, 6 x 6, M135 & M211; Truck, Dump: M215; Truck, Gasoline Tank: M217; Truck, Shop Van: M220; Truck Tractor: M221; and Truck, Water Tank: M222. TM 9-8024

Chassis, Truck: 2-1/2-Ton, 6 x 6, M44, M45, M46, M47; Truck, Cargo: 2-1/2-Ton, 6 x 6, M34, M35, M36, M36C; Truck, Dump: 2-1/2-Ton, 6 x 6, M47, M59; Truck, Earthboring Machine and Polesetter: 2-1/2-Ton, 6 x 6, V18A/MTQ; Truck, Maintenance: Telephone Construction, 2-1/2-Ton, 6 x 6, V17A/MTQ; Truck, Tank: Gasoline, 1200 Gal., 2-1/2-Ton, 6 x 6, M49; Truck, Tank: Water, 1000 Gal., 2-1/2-Ton, M50; Truck Tractor: 2-1/2-Ton, 6 x 6, M48, M275; Truck, Wrecker: Crane, 2-1/2-Ton, 6 x 6, M108; Truck, Wrecker: Light, 2-1/2-Ton, 6 x 6, M60; Truck, Van: Expansible, 2-1/2-Ton, 6 x 6, M290; Truck, Van: Shop, 2-1/2-Ton, 6 x 6, M109, M109C, M512, M512C, M512D, M512F, M512G; and Truck, Van: Missile Firing Data Computer, 2-1/2-Ton, 6 x 6, M472. (Reo Model OA331 Engine) TM 9-2320-209-20

Chassis, Truck: 5-Ton, 6 x 6, M39, M40, M40C, M61, M63, M63C, M139, M139C, M139D, M139F; Truck, Cargo: 5-Ton, 6 x 6, M41, M54, M54A1, M55; Truck, Dump: 5-Ton, 6 x 6, M51; Truck Tractor: 5-Ton, 6 x 6, M52, M52A1; Truck, Wrecker: Medium, 5-Ton, 6 x 6, M62; Truck Tractor, Wrecker: M246; Truck, Wrecker: Medium, 5-Ton, 6 x 6, M543. (Continental Model R6602 Engine, Mack Diesel Model ENDT 673 Engine and Military Model LDS 465-1 Engine) TM 9-2320-211-20

Truck Tractor: 10-Ton, 6 x 6, M123, M123C; and Truck, Cargo: 10-Ton, 6 x 6, M125. (Le Roi Model T-H 844 Engine) TM 9-2320-206-12

Truck, Cargo: 2-1/2-Ton, 6 x 6, M35A1 (Continental Model LDS 427-2 Engine) TM 9-2320-235-20

5. OTHER PUBLICATIONS

Inspection, Care, and Maintenance of Antifriction Bearings - - - - - TM 9-214

APPENDIX II

REPAIR PARTS LIST

Section I. INTRODUCTION

1. GENERAL

a. This appendix contains an illustrated list of repair parts allocated to Field and Depot Maintenance with the estimated quantities of component parts authorized for support of depot maintenance.

b. For fifth echelon, this list serves as a guide for recommended repair parts for the rebuild of 100 generators.

c. The non-supply items are not stocked for issue and are contained herein for identification only.

d. For prices of Ordnance items listed herein, see the appropriate supply manual of the SM 9-2 series, Stock List of All Items - Price List. Prices of items that are the responsibility of technical services other than Ordnance may be obtained from the appropriate type 2 supply manuals for those services.

e. Additional applications of items in this manual are listed in the supply manuals of the SM 9-3 series, Stock List of Repair Parts.

2. ILLUSTRATION AND TEXT RELATIONSHIP

a. Illustrated supply items are keyed by numbers to their text listing.

b. Non-illustrated supply items, if any, are listed under the text of the illustrated assembly to which they are most closely related.

c. Non-supply items will be identified by name and part number in a legend on the illustration and the identifying key number will be encircled to indicate non-supply status.

d. Lower case key letters are reference points for repair standards listed in the maintenance portion of this manual.

3. REQUISITION NOTES

a. If the exact item requisitioned is not furnished, or if other action is necessary, the exact nature of the action taken by the supplying agency will be indicated by standard symbols on prescribed forms.

b. When requisitioning an item, the requesting agency will order the listed item. However, the supplying agencies will take necessary action to issue the exhaust stock item until stock is exhausted, whether it be an individual item, kit, set, or assembly.

4. EXPLANATION OF COLUMNS

a. Illustrations. This column indicates the figure number of the illustration that depicts the item. When more than one item appears on the illustration, the item number is also indicated.

b. Source, Maintenance, and Recoverability Code. This column lists a code that indicates the selection status and source of supply of the repair part, the lowest echelon authorized to install or manufacture the repair part, and the recoverability and expendability aspects of the repair part. An example of this code is P-O-R. The "P" indicates that the item is a mission stockage list repair part procured and stocked on a national program basis, the "O" indicates the repair part is authorized to organizational echelons, and the "R" indicates that the repair part is an expendable, recoverable item. These codes will vary and contain different combinations of numbers and letters that pertain to pertinent item being coded. Refer to paragraph 6b "Symbols" for the identification of all symbols contained within this column.

c. Federal Stock Number. This column lists the Federal stock number assigned by the Cataloging Division, Defense Logistics Service Center.

d. Description. The Federal item name (shown in capital letters) and any additional description required for supply operations are listed in this column. All dimensions listed are in inches unless otherwise specified. For further identification, the technical service or manufacturer's part number is parenthetically listed at the end of each nomenclature.

e. Unit of Issue. The Unit of Issue column lists the actual unit of issue for each item (ea, ft, lg, etc.).

f. Quantity Incorporated in Unit. The quantity shown in this column indicates the number of the listed item required for the particular use indicated. This quantity does not reflect the total quantity of the part required for the generator since the part may have other functional uses.

g. 15-Day Maintenance Allowance Per 100 Major Items. No quantities are listed in these columns. Refer to TM 9-2300-223-34P for allowance factors for items to be stocked. If any item appears herein and is not listed in TM 9-2300-223-34P, it can be requisitioned as required for immediate use only.

h. Depot Maintenance Guide Per 100 Major Items.

- (1) This column lists the guide quantity factors for the repair parts recommended for the rebuild of 100 generators.
- (2) The quantities indicated in this column are for initial requisition. They will be revised by the depot organization to conform to actual usage, which may be more or less than the quantities indicated herein.

5. HOW TO FIND PARTS

Parts may be located by referring to the Table of Contents which lists the title of the illustration in this Appendix. Refer to paragraph 2, Appendix II for an explanation of text and illustration relationship.

6. ABBREVIATIONS AND SYMBOLS

a. Abbreviations.

AWG American Wire Gage
br brass

cd cadmium
cd-pltd cadmium plated
cond conduit, conductor
cop copper
cot-brd cotton braid
ctsk countersunk
deg degree
ext-teeth external teeth
fil-hd fillister head
fin. finish
fl-hd flat head
id inside diameter
in. inch(es)
ins insulated (ing) (tion)
int-teeth internal teeth
lt light
med medium
NC American National Coarse Thread
NF American National Fine Thread
no. number
NPT American Standard Taper Pipe Thread
od outside diameter
pan-hd pan head
rd-hd round head
S steel
sltd slotted
sp special
syn synthetic
thk thick (ness)
w/o without
zn-pltd zinc plated

b. Symbols.

- (1) Source, maintenance, and recoverability code.
 - (a) Source code. This code indicates the selection status and source for the listed item. Source codes used in this list are:
 - C Obtain through local procurement. If not obtainable from local procurement, requisition through normal supply channels with supporting statement of non-availability from local procurement.
 - P Requisition from the depot system of the responsible technical service (applies to high mortality parts).
 - (b) Maintenance level code. This code indicates the lowest maintenance echelons authorized to install the listed item. Maintenance level codes used in this list are:

O Organizational maintenance

F Direct Support Maintenance

H General Support Maintenance

(c) Recoverability code. This code indicates whether unserviceable items should be returned for recovery or salvage. When no code is indicated, the item will be considered expendable. Recoverability Code used in this list is:

R Items which are economically repairable at direct support and general support maintenance and are normally furnished by supply on an exchange basis

(2) Miscellaneous symbols.

≠ As required.

7. MANUFACTURERS' SYMBOLS

<u>Symbol</u>	<u>Manufacturer</u>
16764	Delco-Remy Div. of General Motors Corp.
96906	Military Standards

8. SUGGESTIONS AND RECOMMENDATIONS

Notice of discrepancies and recommendations for additions and deletions of repair parts should be forwarded on DA Form 2028 to Commanding General, U.S. Army Tank Automotive Center, 28251 Van Dyke, Warren, Michigan, 48090, ATTN: SMOTA-N.

(1) ILLUST		(2) SOURCE, MAINT AND RECOVERABILITY CODE				(3) FEDERAL STOCK NO	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) QTY INC IN UNIT	(7) 15-DAY MAINT ALW PER 100 EQUIP		(8) DEPOT MAINT GUIDE PER 100 EQUIP
(a) FIG NO	(b) ITEM NO	(a) MATERIAL CODE	(b) SOURCE	(c) MAINTENANCE LEVEL	(d) RECOVERABILITY					(a) DIR SUP	(b) GEN SUP	
1			P	O	R	2920-735-5736	SECTION II <u>FIELD AND DEPOT MAINTENANCE</u> <u>REPAIR PARTS LIST</u> GENERATOR ENGINE ACCESSORY: w/o pulley (7355736) (Refer to applicable field and depot maintenance repair parts manual for listing of generator assembly, attaching, and associated parts, and their issue allowances).	ea	1			

(1) ILLUST		(2) SOURCE, MAINT AND RECOVERABILITY CODE				(3) FEDERAL STOCK NO	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) QTY INC IN UNIT	(7) 15-DAY MAINT ALW PER 100 EQUIP		(8) DEPT MAINT GUIDE PER 100 EQUIP
(a) FIG NO	(b) ITEM NO	(a) MATERIAL CODE	(b) SOURCE	(c) MAINTENANCE LEVEL	(d) RECOVERABILITY					(a) DIR SUP	(b) GEN SUP	
							GENERATOR ASSEMBLY (Fig. 37)					
37	1	C	F			2920-737-2081	REPAIR KIT, GENERATOR: drive end bearing cover plate (7372081) Composed of:	ea	✓			100
	1.1						1 COLLAR (7538754)					
	1.2	P	F			5330-050-1224	1 PACKING, PREFORMED: 1/8 in. thk, 1-5/8 id (501224)	ea	1			10
	1.3						1 SEAL PLATE (7538786)					
	1.4						1 WASHER (7538787)					
	1.5						1 RUBBER SEAL: (Part of SEAL PLATE 7538786)					
	2	P	F			2920-753-8756	END BELL, ELECTRICAL ROTATING EQUIPMENT: drive end (7538756)	ea	1			4
	3	P	F			3110-156-8390	BEARING, BALL, ANNULAR: (7413226)	ea	1			20
	4	P	F			2920-753-8760	PLATE: retaining, drive end bell (7538760)	ea	1			4
	5	C	F			2920-544-0168	BRUSH: static, ground, armature shaft (7538784)	ea	1			100
	6	P	F			5310-045-3473	WASHER, LOCK: ext-teeth, S, cd-dichromate-fin., no. 8 screw size (retaining plate (4), seal plate (4)) (453473)	ea	8			80
	7	P	F			5330-291-7290	PACKING, PREFORMED: (546886)	ea	2			200
	8	P	F			2920-741-3317	ARMATURE, GENERATOR ASSEMBLY: (7413317)	ea	1			10
	9	P	F			5305-696-5275	SCREW, MACHINE: no. 8 (0.164) 32NC-2 x 5/16 (coil lead to ground (1), retaining plate (4), seal plate (4)) (453281)	ea	9			90
	10	P	F			5310-044-6161	WASHER, FLAT: S, 7/32 id, 7/16 od, 0.049 in. thk (446161)	ea	8			80
	11	P	F			5310-264-1985	WASHER, LOCK: split, lt, S, no. 12 (0.216) screw size (453708)	ea	8			80
	12	P	F			5305-285-3948	SCREW, MACHINE: fil-hd, S, cd-dichromate-fin., no. 12 (0.216) x 11/16	ea	8			80
	14	P	F			5330-641-4336	GASKET: shielded, electrical (7716562)	ea	3			300
	16	P	F			5305-042-0469	SCREW, ASSEMBLED WASHER: rd-hd, int-teeth lock washer, S, no. 8 (0.164) 32NC-2A x 1 (420469)	ea	4			40
	17	P	F			2920-699-6837	ELBOW, GENERATOR, RECEPTACLE: 90 deg (7716690)	ea	1			10
	18	P	F			5935-201-6673	CONNECTOR, RECEPTACLE, ELECTRICAL: (7722352)	ea	1			10
	19	P	F			5305-042-0465	SCREW, ASSEMBLED WASHER: rd-hd, int-teeth lock washer, S, no. 8 (0.164) 32NC-2A x 1/2 (420465)	ea	4			40
	21	P	F			5330-739-1018	GASKET: brush inspection hole plug (7391018)	ea	1			100
	23	P	F			4730-011-8831	PLUG, PIPE: sltd, br, 1/8-27NPT (118831)	ea	1			10
	25	P	F			5310-045-3299	WASHER, LOCK: split, med, S, no. 8 screw size (453299)	ea	1			10
	26	P	F			6145-500-0213	CABLE, POWER, ELECTRICAL: cond, cop, syn, ins, flame retardant cot-brd covering, stranded, black 18 AWG (818000)	ft	✓			bulk
	27	P	H			2920-629-2366	PARTS KIT, GENERATOR, WINDING: (5702300) Composed of:	ea	✓			6
	27.1	P	H			2920-570-1238	1 WINDING (5701238)	1	✓			6
	27.2	C	H			5970-737-4865	2 INSULATOR: strip type, field coil (7374865)	ea	2			12
	27.3	P	F			5305-045-3308	8 SCREW, MACHINE: fl-hd, ctsk, 5/16 x 7/8 (453308)	ea	8			80
	28	P	F			5310-741-3319	NUT, sp, S, cd-pltd, no. 10-32NF-2 (7413319)	ea	2			16
	29	P	F			2920-569-8906	KIT, BRUSH: (8333799) Composed of:	ea	✓			100
	29.1					5340-741-3315	2 SPRING, HELICAL: torsion brush (7413315)	ea	4			400
	29.2						2 BRUSH (7538749)					
	30	P	F			5977-358-6304	ARM, ELECTRICAL, BRUSH: (7373350)	ea	2			8
	31	C	F			5310-220-6573	WASHER, FLAT, SPACING: brush arm (7538767)	ea	4			40
	32	P	F			5310-753-8774	WASHER, LOCK: brush lead (7538774)	ea	2			20
	33	P	F			5305-019-3257	SCREW, MACHINE: pan-hd, S, cd-or zn-pltd, no. 6-32NC-2A x 1/4 (brush lead) (193257)	ea	2			20
	34	P	F			5977-669-9069	HOLDER ASSEMBLY: electrical contact, brush (7413318)	ea	1			10
	35	P	F			2920-753-8757	END BELL, ELECTRICAL ROTATING EQUIPMENT: commutator end (7538757)	ea	1			4
	36	P	F			5310-045-3296	WASHER, LOCK: S, no. 10 screw size (96906-35338-24)	ea	2			20
	37	P	F			5305-286-1934	SCREW, MACHINE: rd-hd, S, no. 10-32NF-2A x 1/2 (holder) (453464)	ea	2			20

(1) ILLUST		(2) SOURCE, MAINT AND RECOVERABILITY CODE				(3) FEDERAL STOCK NO	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) QTY INC IN UNIT	(7) 15-DAY MAINT ALW PER 100 EQUIP		(8) DEPOT MAINT GUIDE PER 100 EQUIP
(a) FIG NO	(b) ITEM NO	(a) MATERIAL CODE	(b) SOURCE	(c) MAINTENANCE LEVEL	(d) RECOVERABILITY					(a) DIR SUP	(b) GEN SUP	
37	38		P	F		3110-156-3510	BEARING, BALL, ANNULAR: (7538747)	ea	1			20
	39		P	F		5330-054-6859	PACKING, PREFORMED: commutator end ball bearing (546859)	ea	1			100
	41		P	F		2920-753-8759	GASKET: commutator end bearing cover (7538759)	ea	1			100
	42		P	F		2920-753-8783	PLATE: retaining, commutator end ball bearing (7538783)	ea	1			4
	43		P	F		5305-013-2033	SCREW, MACHINE: fil-hd, S, no. 10 (0.190)-24NC-2A x 3/8 (132033)	ea	6			60
	44		P	F		5310-045-3474	WASHER, LOCK: ext-teeth, S, cd-or zn-pltd, no. 10 (0.190) screw size (453474)	ea	6			60
							GENERATOR ASSEMBLY (Fig. 37) - Continued					

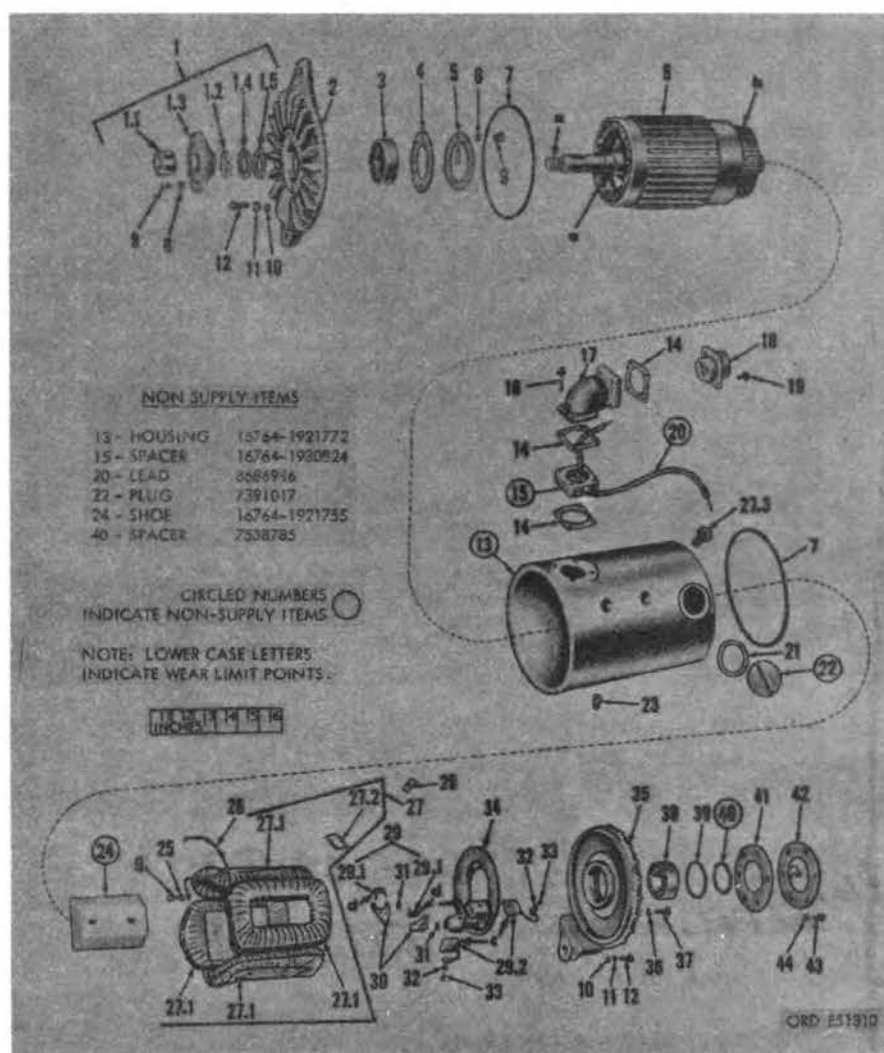


FIGURE 37. GENERATOR ASSEMBLY - EXPLODED VIEW.

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