

TM 9-2920-247-34

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

DIRECT AND GENERAL SUPPORT
(INCLUDING REPAIR PARTS AND SPECIAL TOOL LISTS)

GENERATOR ASSEMBLY
(2920-903-9534)
(PRESTOLITE MODEL
GHA4804JUT)

HEADQUARTERS, DEPARTMENT OF THE ARMY
JUNE 1966

END ITEM APPLICATION

Truck, Utility: ¼-Ton, 4 x 4, Lightweight, M422	TM 9-2320-225
Truck, Utility: ¼-Ton, 4 x 4 M151	TM 9-2320-218
Truck, Utility: ¼-Ton, 4 x 4 x M38A1	TM 9-8014
Truck, Cargo: ¼-Ton, 4 x 4, M37 x M37B1	TM 9-8030
Truck, Cargo: 2½-Ton, 6 x 6 M135 & M211	TM 9-8024
Chassis, Truck: 2½-Ton, 6 x 6, M44, M45, M46, M47	TM 9-2320-209
Chassis, Truck: 5-Ton, 6 x 6, M39, M40	TM 9-2320-211
Truck Tractor: 10-Ton, 6 x 6, M123, M123C	TM 9-2320-206
Truck, Cargo: 2½-Ton, 6 x 6, M35A1	TM 9-2320-235

DIRECT AND GENERAL SUPPORT (INCLUDING REPAIR PARTS AND SPECIAL TOOL LISTS)

GENERATOR ASSEMBLY
 (2920-903-9534)
 (PRESTOLITE MODEL GHA 4804 JUT)

	Paragraph	Page
CHAPTER 1. INTRODUCTION		
Section I. General		
Scope.....	1-1	3
Field maintenance allocation.....	1-2	4
Forms, records and reports.....	1-3	4
II. Description and data		
Description.....	1-4	4
Data.....	1-5	4
CHAPTER 2. PARTS, SPECIAL TOOLS, AND EQUIPMENT FOR FIELD MAINTENANCE		
General.....	2-1	7
Parts.....	2-2	7
Common tools and equipment.....	2-3	7
Special tools and equipment.....	2-4	7
Improvised tools.....	2-5	7
CHAPTER 3. TROUBLESHOOTING		
Section I. General		
Purpose.....	3-1	8
General instructions and procedures.....	3-2	8
II. Troubleshooting procedures		
General.....	3-3	8
Troubleshooting tests.....	3-4	8
CHAPTER 4. REPAIR OF GENERATOR		
Section I. Disassembly		
General.....	4-1	12
Commutator end bell removal.....	4-2	12
Drive end bell and armature removal.....	4-3	12
Drive end bell disassembly.....	4-4	15
Commutator end bearing removal.....	4-5	15
II. Cleaning, inspection, and repair		
General.....	4-6	16
Frame, field, and receptacle assembly.....	4-7	16
Armature.....	4-8	17
Commutator end bell and brush holder assembly.....	4-9	19
Drive end bell and associated parts.....	4-10	21
III. Assembly		
General.....	4-11	22
Drive end bell and armature.....	4-12	22
Commutator end bell and bearing.....	4-13	22
Woodruff key.....	4-14	23
IV. Tests and adjustments		
General.....	4-15	23
Tests.....	4-16	23
V. Repair standards		
General.....	4-17	24
Wear limits.....	4-18	24
Generator performance and test data.....	4-19	24
APPENDIX A. REFERENCES.....		25
B. REPAIR PARTS LIST.....		27

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manual contains instructions for direct and general support maintenance of generator assembly, 2920-903-9534 (fig. 1-1). 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 assemble of the generator.

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

c. Appendix B contains an illustrated list of repair parts allocated to direct and general support maintenance echelons.

d. The direct reporting by the individual user of errors, omissions, and recommendations for improving this manual is authorized and encouraged. DA Form 2028 (Recommended Changes for DA Publications) will be used for reporting these improvement recommendations. This form will be completed using pencil, pen, or typewriter and forwarded direct to: the Commanding General, U.S. Army Tank-Automotive Center, 28251 Van



Figure 1-1. Generator assembly—2920-903-9534 assembled view.

ORD E75451

Dyke, Warren, Mich. 48090, ATTN: SMOTA-MT.

1-2. Field Maintenance Allocation

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

1-3. Forms, Records, and Reports

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

Section II. DESCRIPTION AND DATA

1-4. Description

a. General. The generator is a four-pole, two-brush unit with the output controlled by a separately mounted generator regulator. The generator is a heavy-duty, completely enclosed, waterproof, 28-volt, 25-ampere type which can be operated while submerged.

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

c. Detailed Description.

Note. The key letters shown below in parentheses refer to figure 1-2.

The drive end bell (E), and the commutator end bell (AA) provide the structure for the mounting of internal and external components. The armature assembly (EE) is supported at each end by sealed ball bearings (M and Y) mounted in the drive end bell and the commutator end bell. The field windings (N) are retained by the pole shoes that are assembled on the inside of the housing. The brush holder assembly (V) is mounted on the inside of the commutator end bell. The terminal

wire outlets are housed and protected by a receptacle assembly (A) mounted to the frame (P). Waterproofing is accomplished by use of gasket (B) and preformed packings (D, G, H, and S).

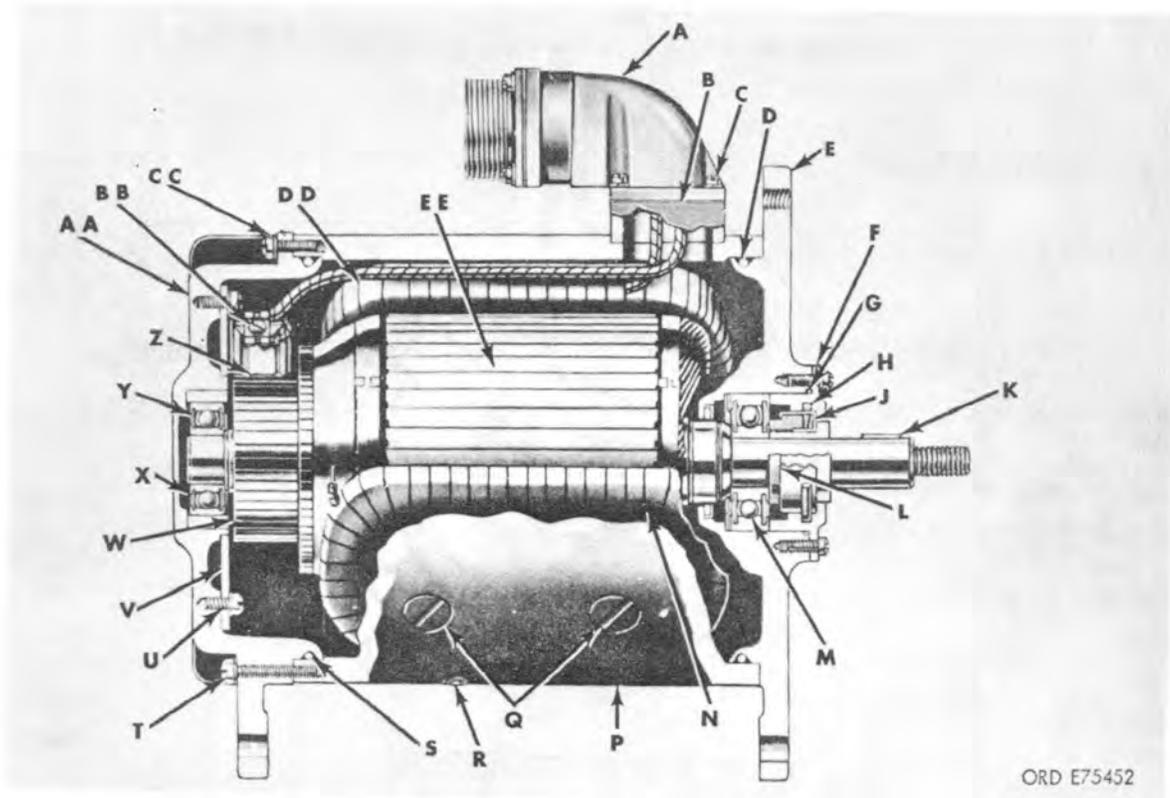
d. Control of Output. The generator output must be controlled by a remote voltage regulator to limit the current in the field circuit. Decreasing the current lowers the magnetic field strength and decreases the generator output. The field windings of the generator are connected directly across the brushes. With this generator, the output can increase to a point where sufficient heat will be generated to burn the generator. Therefore, the remote voltage regulator should be checked periodically to insure proper limiting of generator output.

1-5. Data

Manufacturer.....	Prestolite
Model No.....	GHA-4804-JUT
Ordance No.....	10950808
Federal Stock No.....	2920-903-9534
Rating (1900-5800 rpm).....	28 volts dc, 25 amperes.
Operating range.....	1900-5800 rpm
Maximum operating speed.....	8000 rpm
Type.....	Shunt-field
No. of brushes.....	2
Ground polarity.....	Negative
Armature rotation.....	Clockwise from drive end.
Control of maximum output.....	Remote voltage regulator.

Specifications:

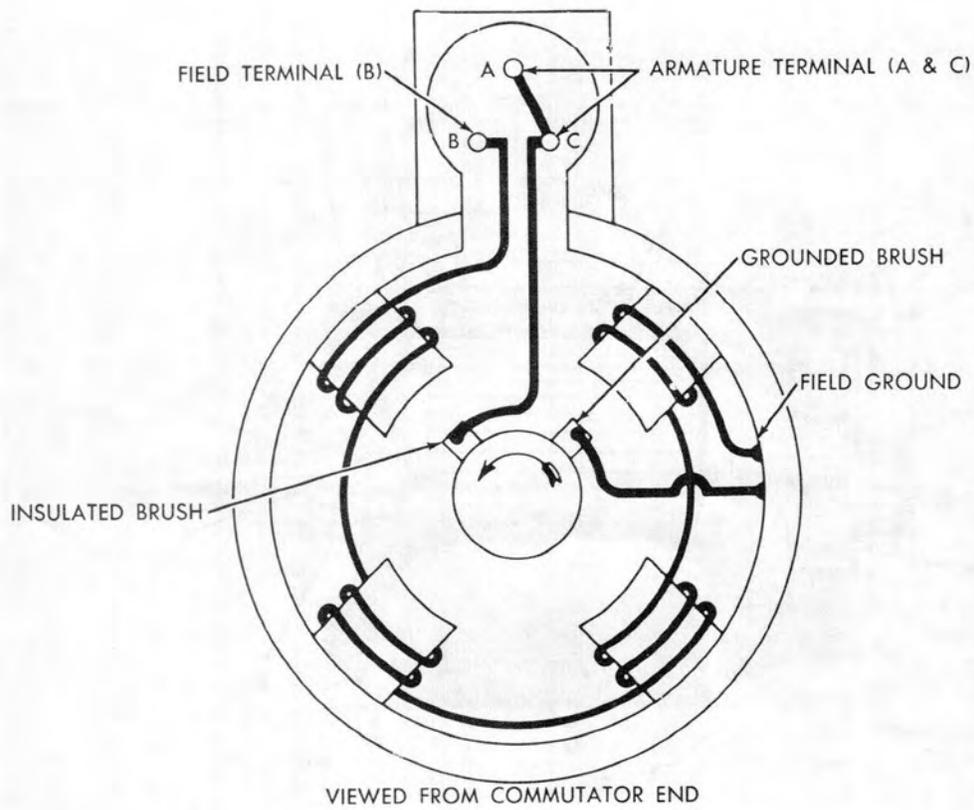
Class.....	B
Grade.....	I
Group.....	A



ORD E75452

- | | | |
|---|--|--|
| <p>A—Receptacle assembly
 B—Gasket
 C—Round head screw
 D—Preformed packing
 E—Drive and bell
 F—Bearing retainer
 G—Preformed packing
 H—Preformed packing
 J—Plain encased seal
 K—Woodruff key</p> | <p>L—Spacer
 M—Ball bearing, sealed
 N—Generator field windings
 P—Frame
 Q—Pole shoe screw
 R—Pipe plug
 S—Preformed packing
 T—Fillister head machine screw
 U—Fillister head machine screw
 V—Brush holder assembly</p> | <p>W—Commutator
 X—Bearing recess
 Y—Ball bearing, sealed
 Z—Brush
 AA—Commutator end bell
 BB—Hexagon head machine screw
 CC—Fillister head machine screw
 DD—Generator field winding
 EE—Armature assembly</p> |
|---|--|--|

Figure 1-2. Generator—sectional view.



ORD E5774

Figure 1-3. Generator—schematic wiring diagram.

CHAPTER 2

PARTS, SPECIAL TOOLS, AND EQUIPMENT FOR DIRECT AND GENERAL SUPPORT MAINTENANCE

2-1. General

Tools, equipment, and maintenance parts over and above those available to the using organization are supplied to direct and general support maintenance for repairing, and/or rebuilding the generator.

2-2. Parts

Maintenance parts are listed in appendix II which is the authority for requisitioning replacement parts.

2-3. Common Tools and Equipment

Standard and commonly used tools and equipment having general application to this materiel are listed in DA Supply Manuals 9-4-4910-A02, 9-4-4910-A03, 9-4-4910-A57, 9-4-4910-A74, 9-4-4910-A79, 9-4-4910-A80, and Supply Catalogs 4910-95-CL-A31, 4910-95-CL-A62, 4910-95-CL-A64, 4910-95-CL-A65, 4910-95-CL-A67, 4910-95-CL-A72, 4910-95-CL-A73, 4910-95-CL-A12, 4910-95-CL-A74, and are authorized for issue by T/A and TOE.

2-4. Special Tools and Equipment

No special tools or equipment are required to

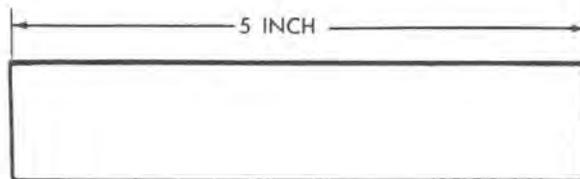
perform the repair operations contained in this manual.

2-5. Improvised Tools

The improvised tool listed in table 2-1 and the dimensioned detail drawing (fig. 2-1) applies only to support units to enable these maintenance organizations to fabricate the tool locally if desired. This tool is of chief value to maintenance shops engaged in rebuilding a large number of identical components; however, it is not essential for rebuild and is not available for issue. The following data is furnished for information only:

Table 2-1. Improvised Tool for Direct and General Support Maintenance

Item	Reference		Use
	Figure	Paragraph	
Tool, drive end bell bearing installing.	2-1 4-22	4-12	Installing drive end bell bearing on armature.



BEARING INSTALLING TOOL
MATERIAL - 3/4 INCH (INSIDE DIAMETER)
STEEL PIPE

ORD E75453

Figure 2-1. Improvised tool.

CHAPTER 3

TROUBLESHOOTING

Section I. GENERAL

3-1. Purpose

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.

Warning: Operation of a deadlined engine 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.

3-2. General Instructions and Procedures

This chapter contains inspection and troubleshooting procedures to be performed after the generator has been removed from the engine.

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

b. Inspect the generator after it has been removed from the engine to verify the diagnosis made when the generator was installed on the engine, 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 engine 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

3-3. General

The major troubleshooting procedures performed on a generator after removal from an engine 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 (paras 4-1—4-5). 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.

3-4. Troubleshooting Tests

Perform the following tests to determine the malfunction. After determining the malfunction,

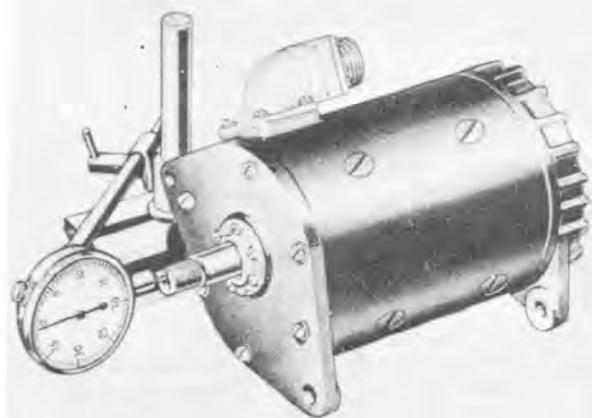
refer to table 3-1 for the probable causes and the corrective action to be taken.

a. Armature End-Play Test.

- (1) Mount a dial indicator on generator frame, or drive end bell, with plunger of indicator aligned with, and touching the shaft on the end of the armature (fig. 3-1).
- (2) Move the armature to its two extreme positions and read indicator. End-play must not exceed 0.010 inch.
- (3) If end-play is not within these limits improper generator assembly, or damaged bearings in the drive end bell or commutator end bell is indicated.
- (4) Inspect drive end and commutator end bell bearings for looseness. The drive end bell bearing must be against shoulder on shaft.

b. Test Stand Requirements.

- (1) The test stand variable resistor and test



ORD E75454

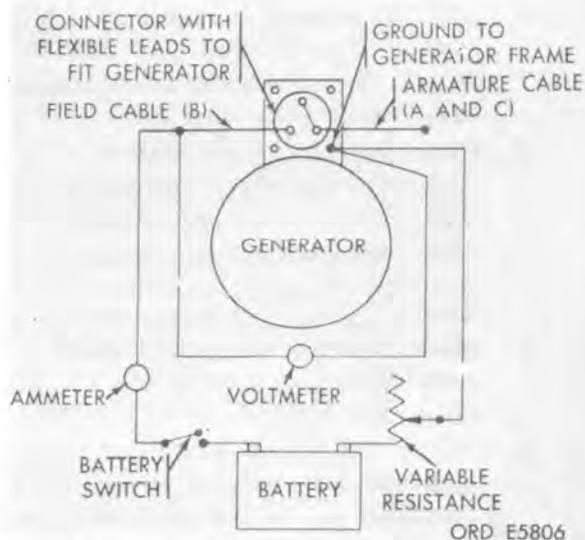
Figure 3-1. Measuring end play with dial indicator.

switch must have sufficient capacity to handle the maximum current 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 Coil Current Draw.

- (1) Mount generator on test stand. Connect generator for field current draw test as shown in figure 3-2. If required, make a test connector by connecting leads to a plug that will mate with the generator receptacle. Connect A and C terminals together and to one test lead. Connect B terminal pin to second lead. Plug this connector into generator receptacle.



ORD E5806

Figure 3-2. Field current draw test hook-up.

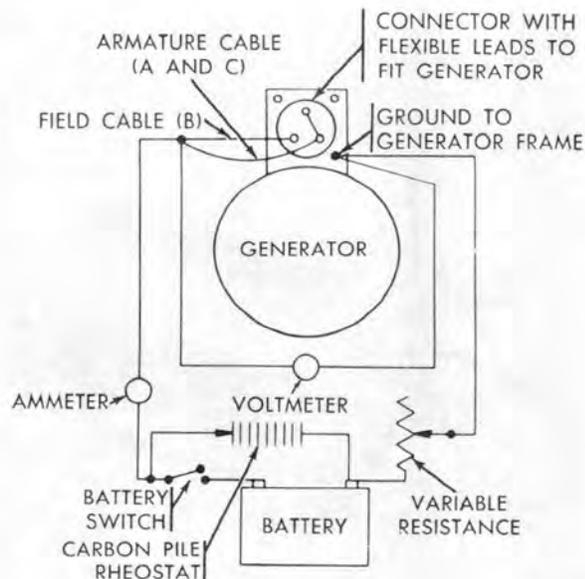
- (2) The test stand battery must be fully charged and be the same rated voltage as generator (24 volts). Connect voltmeter leads and one test stand battery lead to B terminal pin. Connect other battery lead to generator frame through a variable resistance, and connect second voltmeter lead directly to generator frame.
- (3) Close the test stand battery switch and adjust variable resistance to indicate 24 volts on the voltmeter. Current must be within the limits specified (24 volts, and 0.9 to 1.0 amps). Any readings not within these limits, indicate faulty field windings or connections. Repair or replace the frame and field assembly (para 4-7).

d. Measuring Motoring Draw. Motoring draw is the term applied to the amount of input electrical energy, measured in amperes, required to operate the generator as a motor.

- (1) Connect battery ground lead to frame and field assembly for negative polarity. Connect ammeter and variable resistance

in series between second battery terminal and A and C terminal pins. Also connect B terminal pin to A and C terminals, and voltmeter from generator terminals to frame (fig. 3-3).

- (2) Close the test stand battery switch. The generator must operate as a motor with armature turning slowly.
- (3) Allow the generator to operate in this manner for 10 to 15 minutes to seat brushes. Open the battery switch and allow generator to cool to room temperature.
- (4) Close the battery switch. Adjust to voltage value of 24 volts and read the ammeter. If current is not within specifications (5.5 amps max.), worn bearings, incorrect bearing alinement, shorts, or improper generator assembly is indicated.
- (5) Open the test stand battery switch.



ORD E5807

Figure 3-3. Motoring current draw and output test hook-up.

Table 3-1. Troubleshooting

Malfunction	Probable causes	Corrective action
1. High field current.....	Shorted field winding.....	Replace frame and field assembly (paras 4-1-4-14).
2. Low or no field current.....	a. Open field winding.....	a. Replace frame and field assembly (paras 4-1-4-14).
	b. Open or poor connection.....	b. Check and resolder open or poor connections (paras 4-1-4-14).
3. Low motoring current.....	a. Open armature winding.....	a. Inspect armature for open winding (para 4-8). Replace armature (paras 4-1-4-14).
	b. High resistance from faulty solder connections, worn brushes, or dirty or worn commutator.	b. Repair faulty connections, replace worn brushes, or clean or repair commutator (paras 4-1-4-14).
4. High motoring current with armature not turning.	a. Grounded or shorted windings or armature.	a. Inspect, repair, or replace windings and armature (paras 4-1-4-14).
	b. Restricted armature or defective bearings.	b. Turn armature by hand. There should be a slight drag. If armature does not turn easily, inspect for worn or dirty brushes and replace defective parts (paras 4-1-4-14). Inspect for foreign matter between armature field windings of generator (paras 4-1-4-14).
5. No output.....	a. Sticking brush.....	a. Remove brush plate assembly and clean brush holder (paras 4-2, 4-9, and 4-13).
	b. Brush lead loose or broken.....	b. Replace brush (paras 4-2, 4-9, and 4-13).
	c. Incorrectly installed wiring.....	c. Check wiring (fig. 1-3).

Table 3-1. Troubleshooting—Continued

Malfunction	Probable causes	Corrective action
5. No output—Continued	<p><i>d.</i> Grounded insulated brush holder</p> <p><i>e.</i> Grounded armature</p> <p><i>f.</i> Grounded, short circuited, or open field windings,</p> <p><i>g.</i> Open armature winding</p> <p><i>h.</i> Short circuit in armature</p>	<p><i>d.</i> Disconnect terminal and lead cable assembly and remove brush (para 4-2). 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 (paras 4-2, 4-9, and 4-13) and retest. If ground is still present, replace brush holder assembly.</p> <p><i>e.</i> Disassemble generator (paras 4-1—4-5). Inspect brush plate assembly brushes terminal and lead cable assembly, receptacle connector, and armature (para 4-8). Repair or replace as necessary and reassemble generator (paras 4-11—4-14).</p> <p><i>f.</i> Inspect field windings for grounds, shorts, or open condition (para 4-7). If any grounded, shorted, or open field windings are found, replace frame and field assembly (paras 4-1—4-14).</p> <p><i>g.</i> Refer to 3<i>a</i> above.</p> <p><i>h.</i> Inspect armature for shorts (para 4-8). Replace shorted armature (paras 4-1—4-14).</p>
6. Low or unsteady output	<p><i>a.</i> Burned, dirty, or worn commutator; high mica between commutator segments.</p> <p><i>b.</i> Open armature winding</p>	<p><i>a.</i> Clean dirty commutator (para 4-8). Inspect commutator and repair (para 4-8). Replace armature if necessary (paras 4-1—4-14).</p> <p><i>b.</i> Refer to 3<i>a</i> above.</p>
7. Noisy generator	<p><i>a.</i> Worn bearings</p> <p><i>b.</i> Armature rubbing windings</p>	<p><i>a.</i> Replace bearings (paras 4-1—4-14).</p> <p><i>b.</i> Replace bearings (paras 4-1—4-14).</p>
8. High motoring current with armature turning.	<p><i>a.</i> Armature drag</p> <p><i>b.</i> Incorrectly installed wiring</p>	<p><i>a.</i> Inspect for worn bearings, high brush tension, worn or rough commutator, or interference (paras 4-1—4-14).</p> <p><i>b.</i> Refer to 5<i>c</i> above.</p>
9. Excessive brush movement or arcing.	<p><i>a.</i> Open armature</p> <p><i>b.</i> Dirty commutator</p> <p><i>c.</i> Worn or out-of-round commutator</p> <p><i>d.</i> Faulty brushes or brush springs</p>	<p><i>a.</i> Refer to 3<i>a</i> above.</p> <p><i>b.</i> Clean commutator (para 4-8).</p> <p><i>c.</i> Inspect commutator for out-of-round (para 4-8). Recondition commutator (para 4-8). Replace armature if necessary (paras 4-1—4-14).</p> <p><i>d.</i> Inspect brushes and springs and replace if necessary (paras 4-2, 4-9, and 4-13).</p>

CHAPTER 4 REPAIR OF GENERATOR

Section I. DISASSEMBLY

4-1. General

This section contains information for complete disassembly and repair of the generator. Disassembly of the generator should be accomplished by following the illustrated disassembly steps. Refer to appropriate vehicle organizational maintenance manual for instructions for removal and installation of generator. Clean exterior of generator with dry-cleaning solvent or mineral spirits paint thinner. Dry with compressed air to remove loose dirt and grease. Remove key, as shown in figure 4-1.

4-2. Commutator End Bell Removal

Remove commutator end bell and disassemble brush plate as shown in figures 4-2 and 4-3.

4-3. Drive End Bell and Armature Removal

a. General. The drive end bell and armature assembly are removed from the frame and field assembly as a unit, and the drive end bell removed from the armature assembly.

b. Removal. Remove the drive end bell, with the armature attached, as shown in figure 4-4. Remove the drive end bell from the armature as shown in figure 4-5.

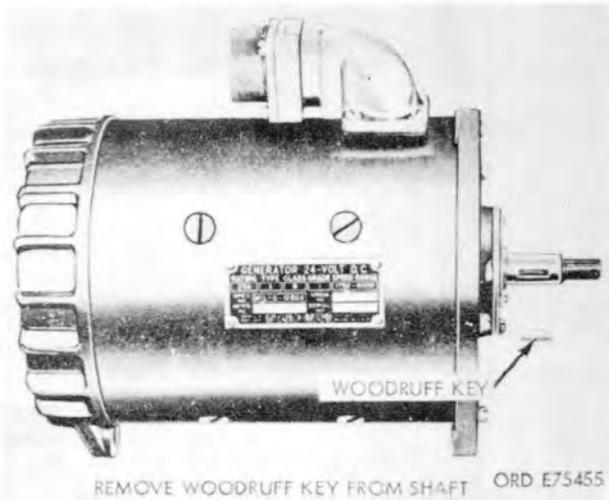
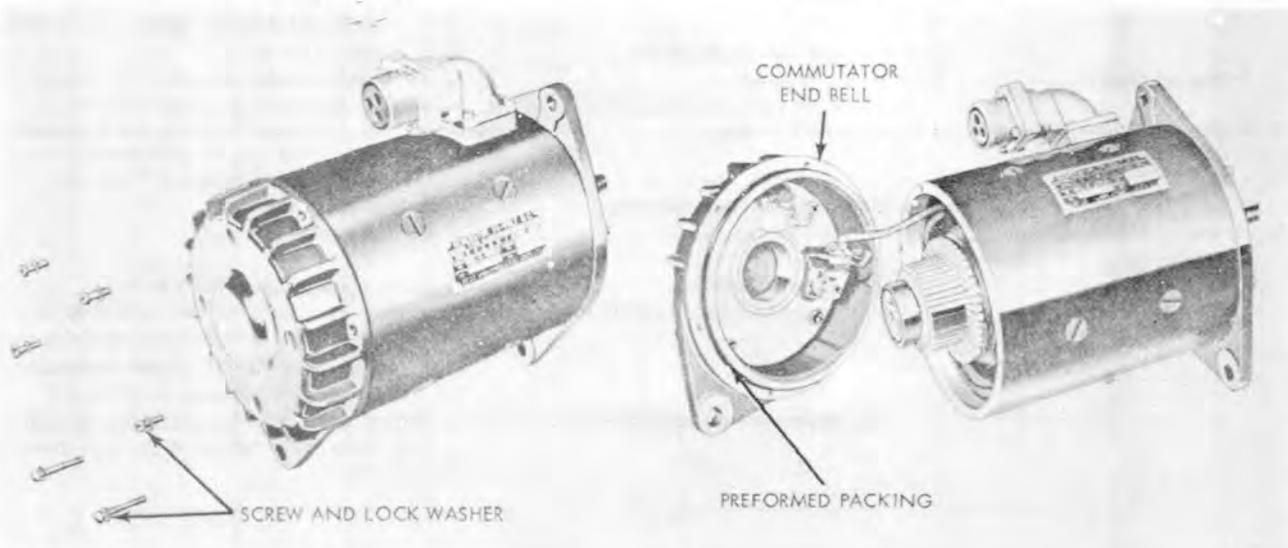


Figure 4-1. Removing woodruff key.



STEP 1. REMOVE SIX SCREWS AND LOCK WASHERS SECURING COMMUTATOR END BELL TO FRAME. NOTE POSITION OF LONG SCREWS.

STEP 2. REMOVE COMMUTATOR END BELL BY TAPPING WITH A SOFT HAMMER IN DIRECTION AWAY FROM MOUNTING LUG TO AVOID DAMAGE TO BRUSHES.

ORD E75456

Figure 4-2. Removing commutator end bell.

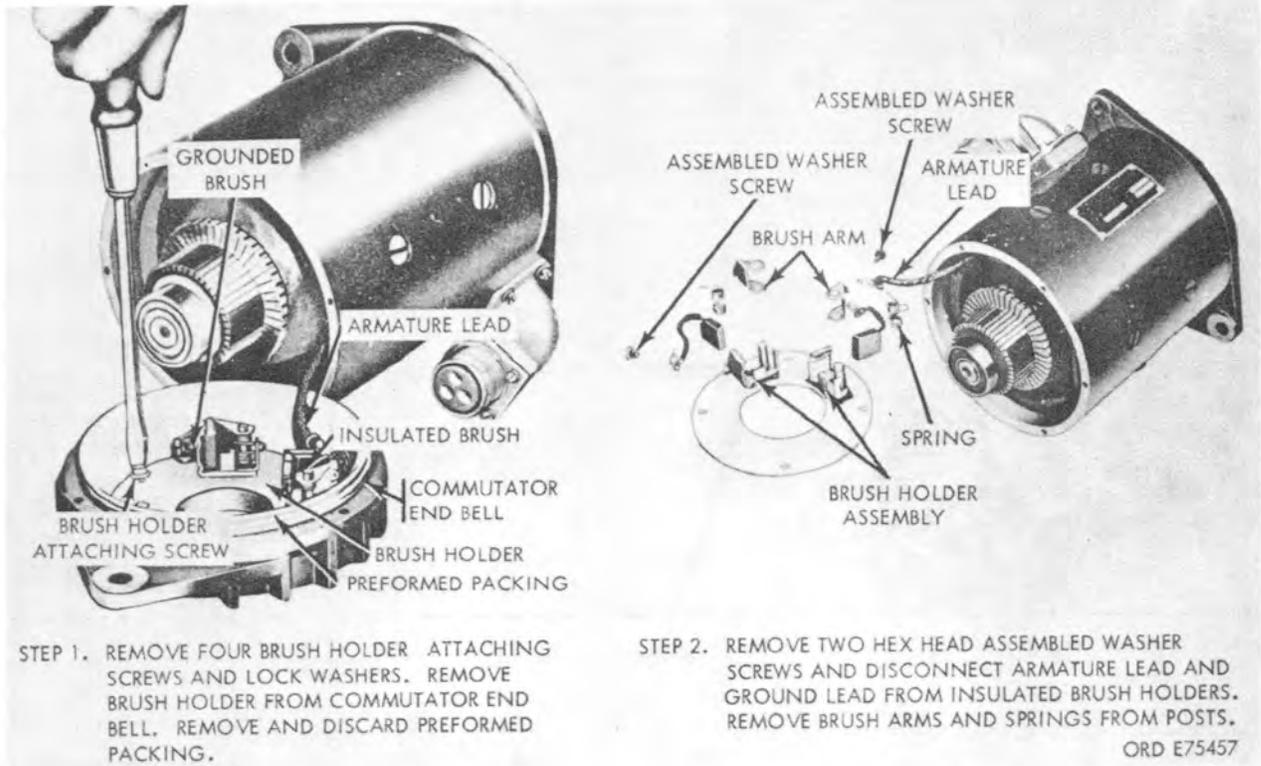


Figure 4-3. Removing and disassembling brush holders.

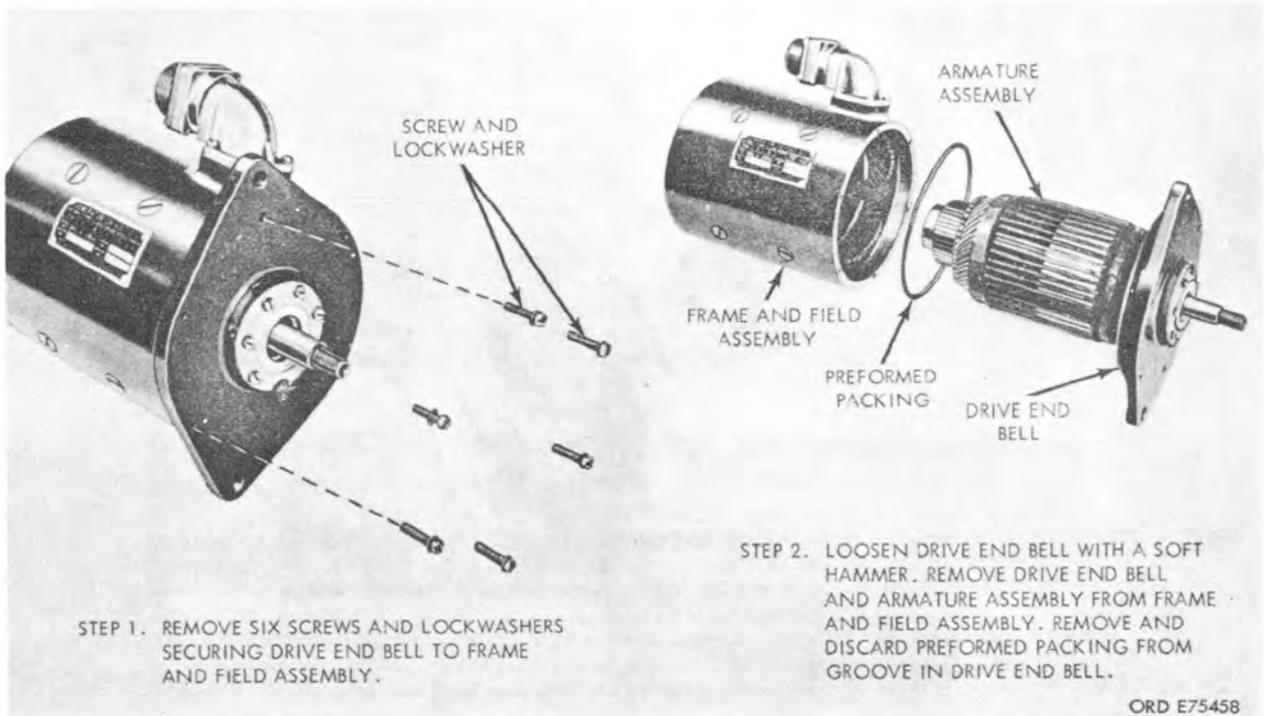


Figure 4-4. Removing drive end bell and armature assembly.

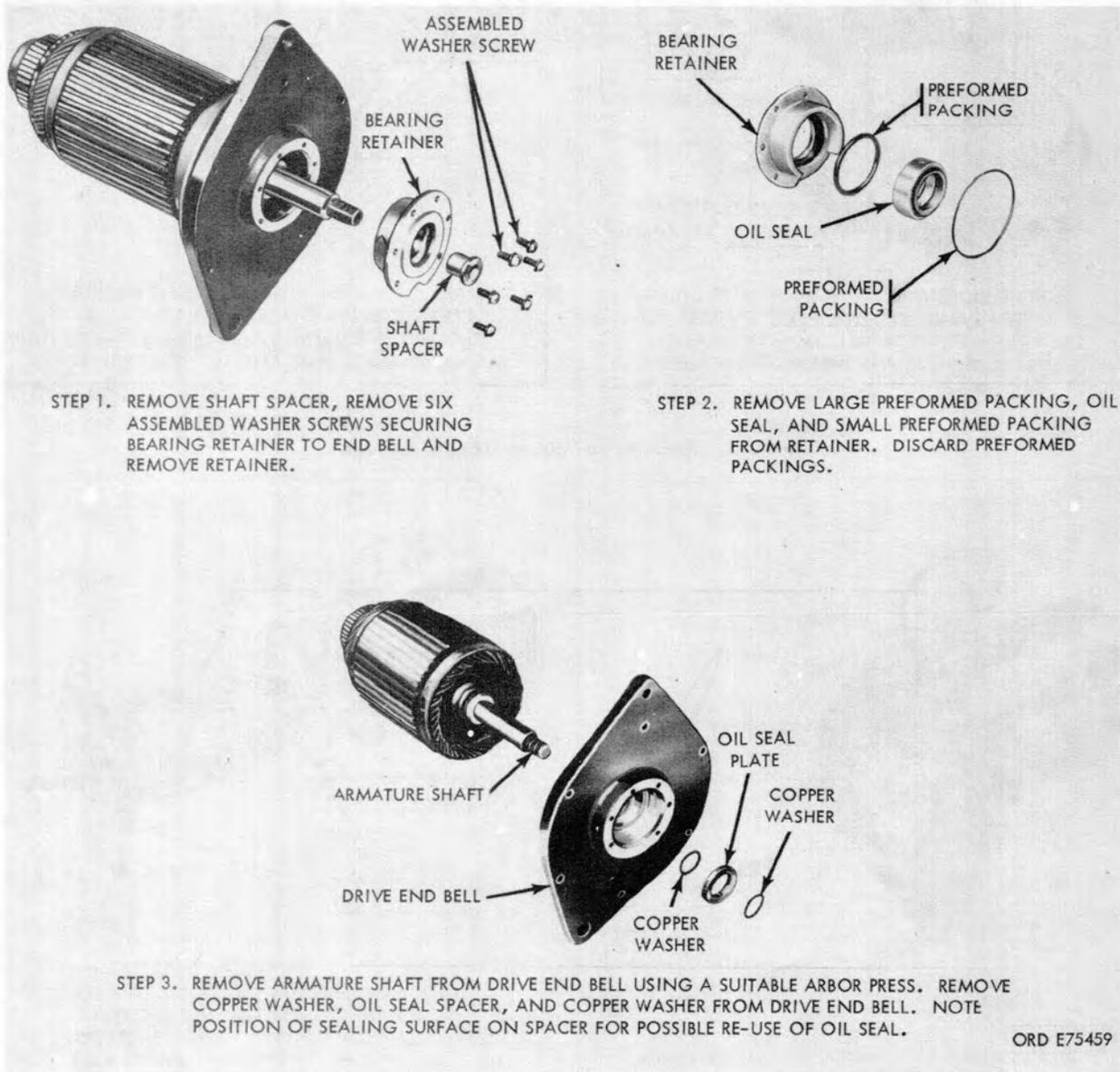


Figure 4-5. Removing armature assembly from drive end bell.

4-4. Drive End Bell Disassembly

a. *General.* The drive end bell mounts to the field frame and encloses a bearing which supports the armature.

b. *Disassembly.* Remove the bearing and associated parts from the end bell as shown in figure 4-6.

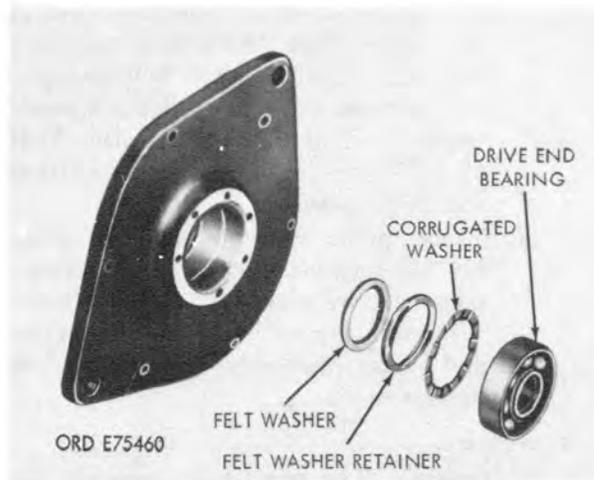


Figure 4-6. Disassembling drive end bell.

4-5. Commutator End Bearing Removal

(Fig. 4-7)

Remove commutator end bearing and washer from armature shaft, using a suitable bearing puller. Remove bearing carefully. Do not damage shaft.

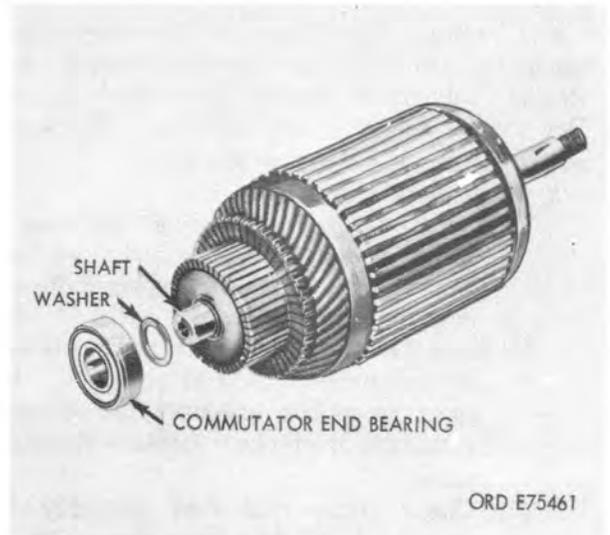


Figure 4-7. Removing commutator end bearing and washer.

Section II. CLEANING, INSPECTION, AND REPAIR

4-6. General

Clean parts as described in paragraphs 4-7 through 4-10.

4-7. Frame, Field, and Receptacle Assembly

a. Cleaning. Clean frame, field, and receptacle assembly with a cloth dampened with dry-cleaning solvent or mineral spirit paint thinner. Dry with clean, dry, compressed air. Be careful not to damage insulation or leads.

b. Inspection.

- (1) Inspect frame and windings for worn or frayed insulation, broken leads, and loose or corroded terminals. Repair or discard defective parts.
- (2) Inspect leads for worn or frayed insulation, secure connections, and corrosion. Inspect receptacle assembly for stripped threads and cracks. Replace defective parts.
- (3) Check frame and field assembly for grounds by following steps shown in figure 4-8.
- (4) Check field winding for open circuits with test probes as illustrated in figure 4-9.

(5) If windings are not open or grounded, connect an ammeter, battery, and a variable resistance in series with the B connector pins and the winding ground terminal. Connect a voltmeter between the B lead and the field winding ground lead, refer to figure 3-2. Adjust the voltage with the variable resistor, to the field winding draw voltage specified in table 4-1 and check the ammeter reading. If current is not within limits of field winding draw, replace frame and field assembly.

(6) Inspect pilots of frame and field assembly for roughness which could cause a poor seal with the end bells. Inspect threads in tapped holes. Discard frame and field assembly if threads are unserviceable.

c. Repair.

(1) *General.* The receptacle assembly connects the generator to the vehicle electrical system. The assembly is an internally sealed unit and cannot be repaired. If the tests prescribed in

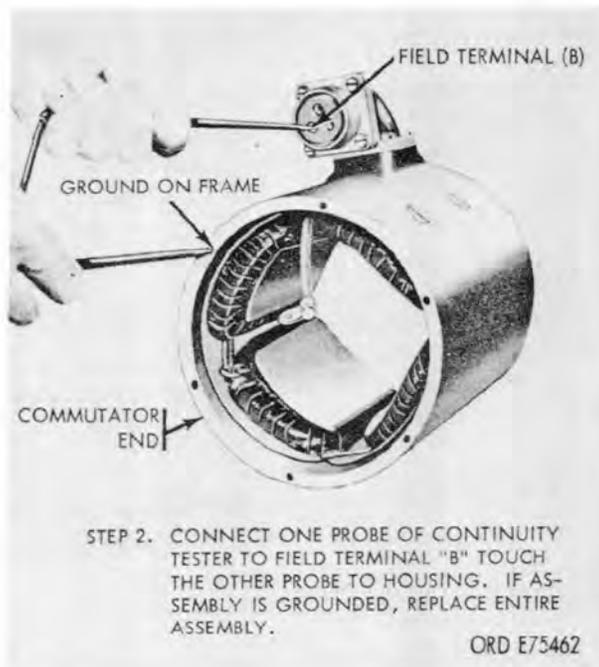
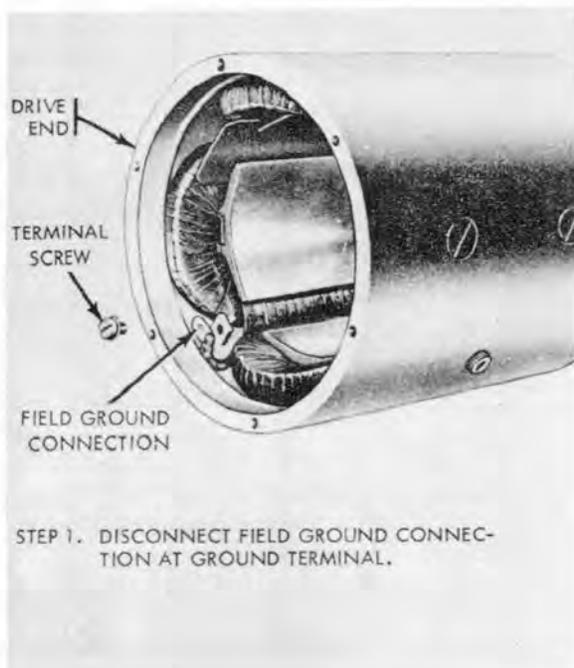


Figure 4-8. Checking frame and field assembly for grounds.

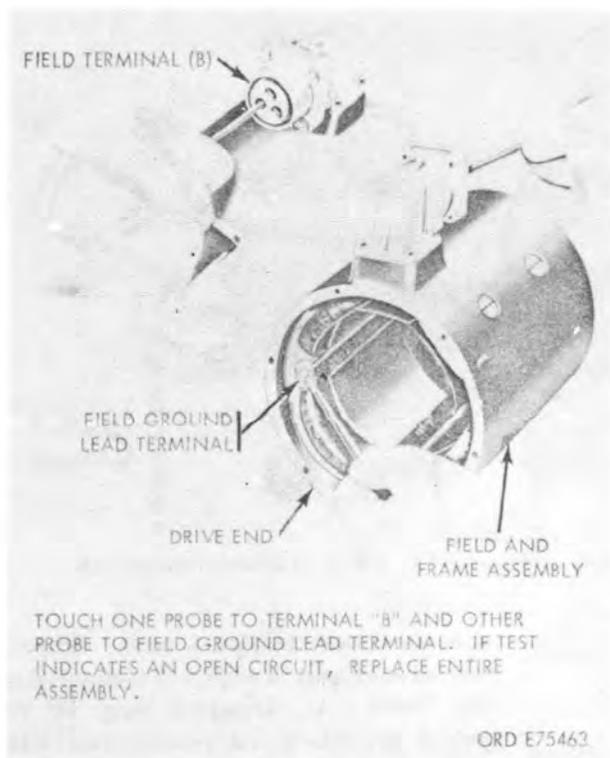


Figure 4-9. Checking housing and windings for open circuits.

paragraph 4-8b (3) and (4) indicate damage, the assembly must be replaced.

- (2) *Receptacle assembly.* Replace receptacle assembly as shown in figure 4-10.
- (3) *Frame and field assembly.* If the insulating compound on outer surface of field windings is dry, cracked or chipped, apply a coat of air-drying, fungus-resistant insulating varnish. Brush varnish on carefully so as not to get varnish on end bell seating surfaces and insulated brush lead. Allow varnish to dry thoroughly before assembling generator.

4-8. Armature

a. Cleaning. Blow out commutator with compressed air. Clean commutator slots. Copper or brush dust may cause short circuits during test. Wipe armature with a clean cloth slightly dampened in dry-cleaning solvent or mineral spirits paint thinner. Refer to TM 9-214 for care and maintenance of sealed bearings.

Caution: Never clean armature by any degreasing method since this would damage the insulation and ruin the armature. Clean com-

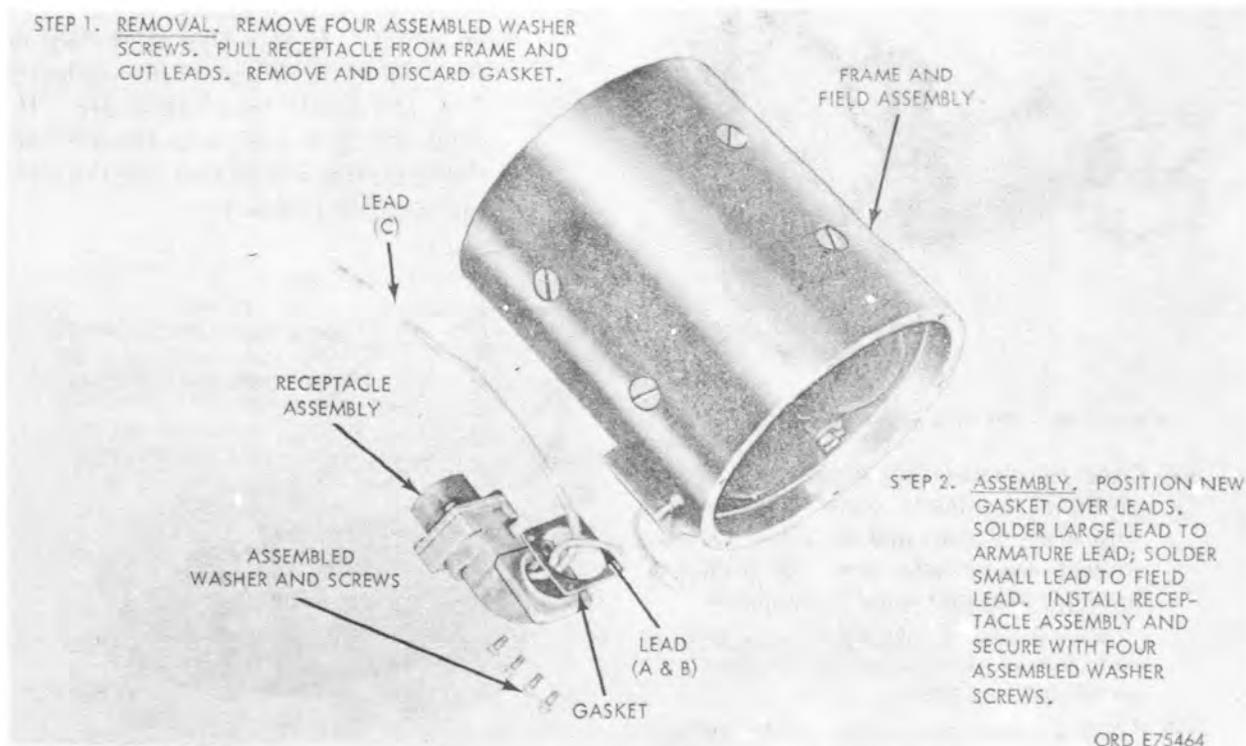


Figure 4-10. Replacing receptacle assembly.

mutator with 00 sandpaper. Blow off sand particles and wipe dirt from between commutator bars (segments).

b. Inspection.

- (1) *Visual.* Inspect commutator for roughness, grease and 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 burrs, pits, or excessive wear. Inspect armature shaft for straightness. Replace armature if shaft is bent. Inspect sealed ball bearings in accordance with TM 9-214.
- (2) *Commutator run-out* (fig. 4-11). Place armature in V blocks. Measure run-out using a dial indicator as shown in figure 4-11. Total indicated run-out must not exceed 0.001 TIR and variations between any two adjacent bars should not exceed 0.0003 inch. If run-out exceeds those limits, recondition commutator (*c* below).

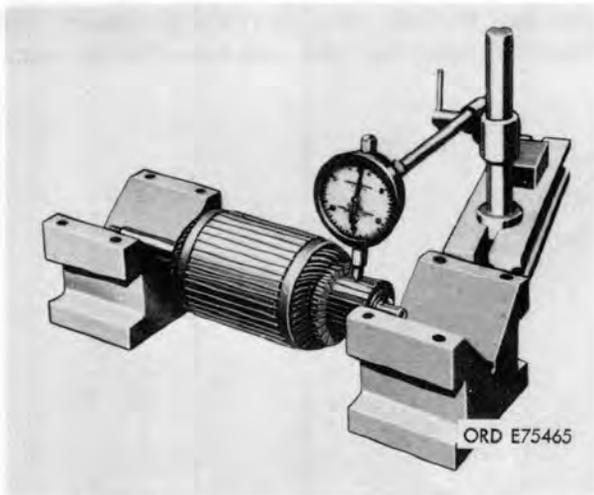


Figure 4-11. Checking commutator run-out.

- (3) *Check for grounds* (fig. 4-12). Touch one probe of continuity tester to the armature shaft or core, and the other, in turn, to each commutator riser. If ground is present, armature must be replaced.

Note. Do not touch probes to commutator bars or shaft bearing surfaces, as arcing may mar the smooth finish.

- (4) *Check for open circuits* (fig. 4-13). Touch test probes of continuity tester to risers on each of a pair of adjacent commutator

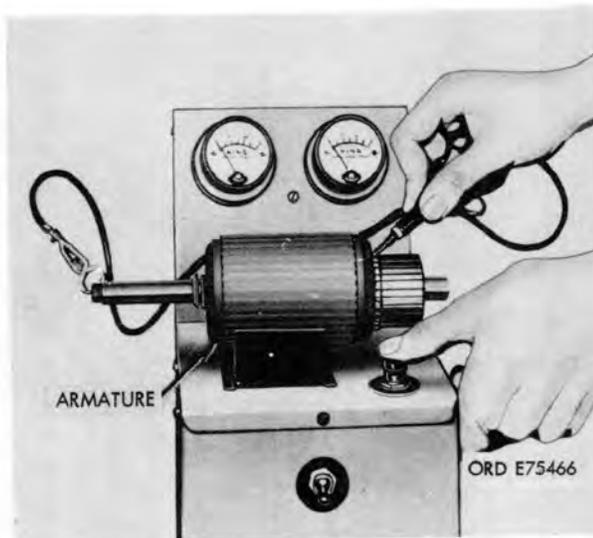


Figure 4-12. Checking armature for grounds.

bars as shown in figure 4-13. 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.

- (5) *Check for short circuits* (fig. 4-14). Place armature on growler (fig. 4-14). Turn on switch. Hold a thin steel strip approximately $\frac{1}{16}$ inch away from armature core, and rotate armature slowly. If a short circuit is present in the windings, the steel strip will vibrate and the armature must be replaced.

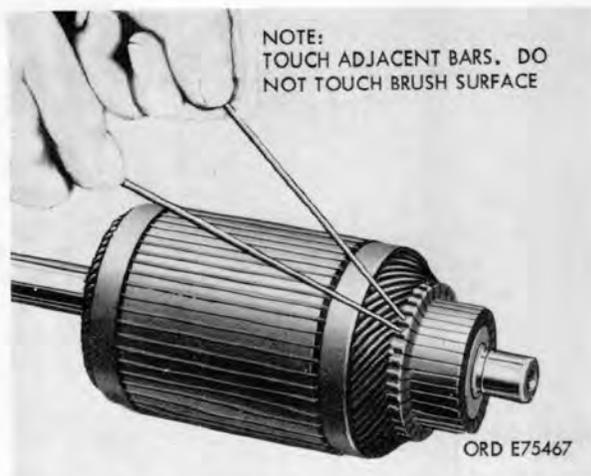


Figure 4-13. Checking armature for open circuits.

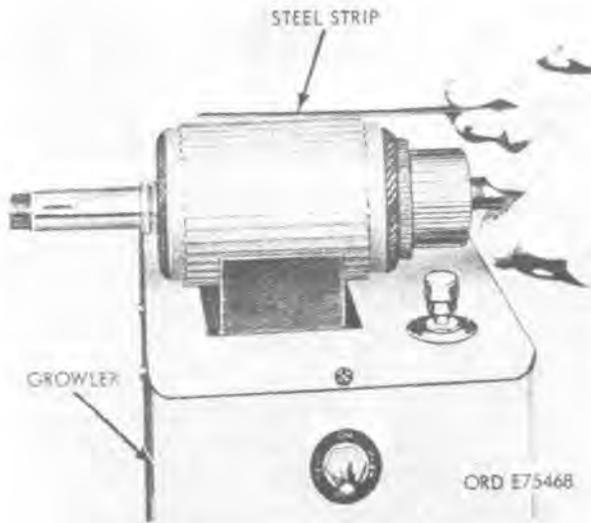


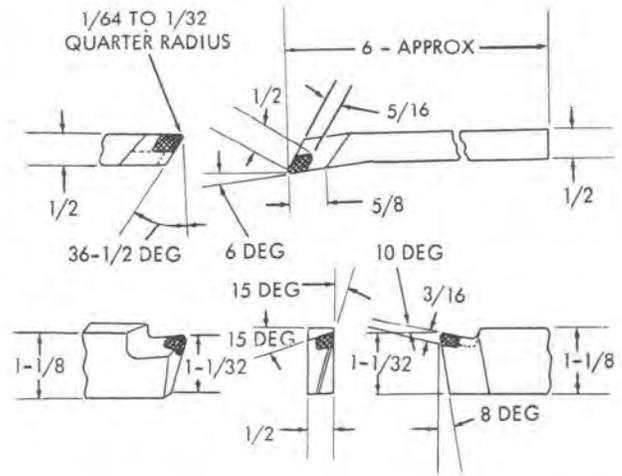
Figure 4-14. Checking armature for short circuits on a growler.

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 the commutator. Use a commutator cutting tool properly sharpened as shown in figure 4-15. Mount the tool as shown in figure 4-16 and 4-17. Take a light cut across the entire surface of commutator. Cut no deeper than necessary and smooth burs with size 00 sandpaper after cutting (fig. 4-18). Replace armature if diameter of reconditioned commutator is less than 2.150 inch. Undercut mica of reconditioned commutator to a depth of $\frac{1}{32}$ inch using an undercutter (fig. 4-19).

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 4-20 illustrates examples of good and bad undercutting

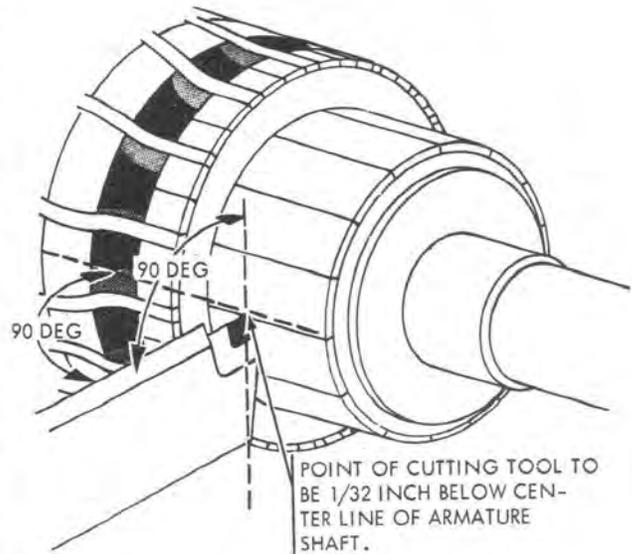
- (2) If windings are unsoldered from commutator risers and the resulting opening has not caused the commutator to burn so badly that it cannot be repaired by turning, the winding may be soldered. Use a rosin core flux when soldering windings. Measure the accuracy of the refinished commutator using a dial indicator gage as shown in figure 4-11. Runout shall not exceed 0.001 inch, and



NOTE. ALL DIMENSIONS SHOWN ARE IN INCHES

ORD E16911

Figure 4-15. Cutting tool sharpening dimensions.



ORD E16912

Figure 4-16. Proper position of cutting tool.

variation between adjacent bars shall not exceed 0.003 inch, (b(2) above).

4-9. Commutator End Bell and Brush Holder Assembly

a. Cleaning.

- (1) Clean commutator end bell, brush arms, brush springs and associated parts in

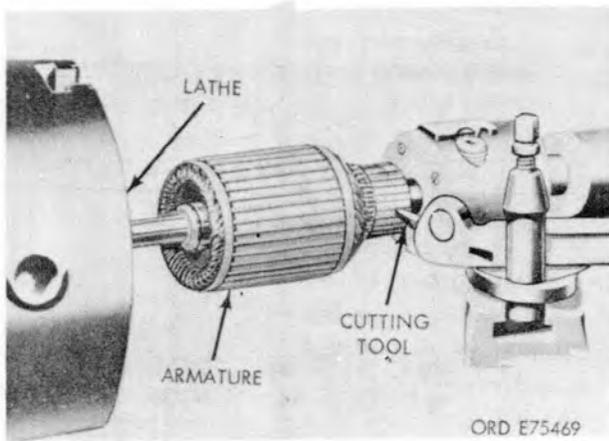


Figure 4-17. Reconditioning commutator.

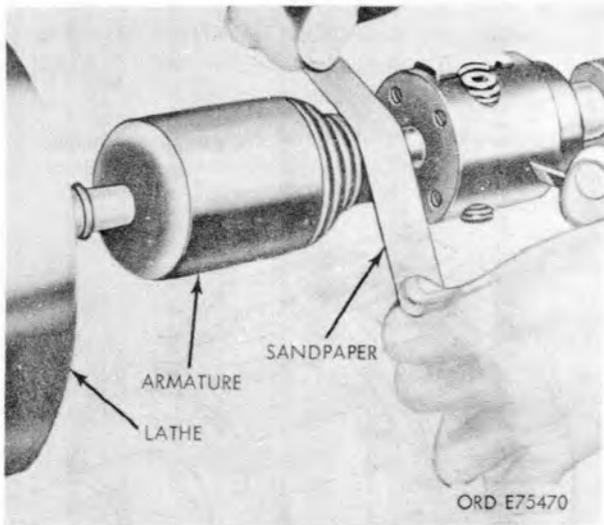


Figure 4-18. Removing burs with 00 sandpaper.

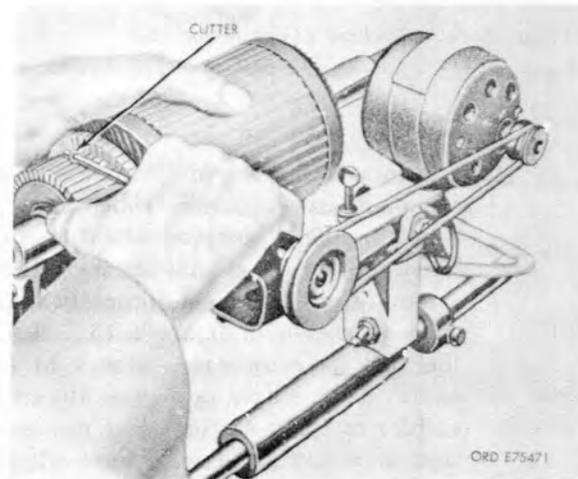


Figure 4-19. Undercutting commutator mica.

dry-cleaning solvent or mineral spirits paint thinner and dry with compressed air.

- (2) Wipe brush holder assembly and brushes with a clean, dry, lint-free cloth.

Caution: Do not use dry-cleaning solvent or mineral spirits paint thinner to clean brushes and brush holder assembly.

b. Inspection.

- (1) Inspect commutator end bell, brush arms, brush springs, brush holder assembly and attaching parts for cracks, warping, distortion, corrosion, nicks, burs, and

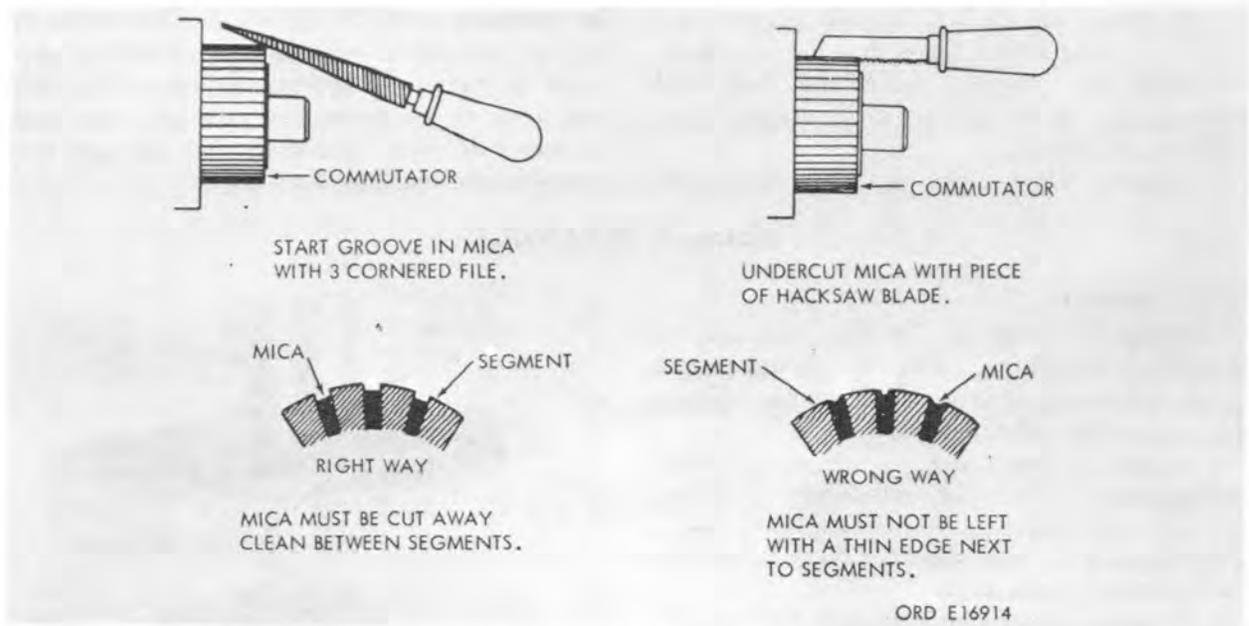


Figure 4-20. Examples of good and bad undercutting.

scratches. Inspect brush springs for signs of burning or overheating. Overheating is indicated by discoloration. Overheated springs must be replaced. A cracked or corroded brush holder assembly must be replaced.

- (2) Inspect brushes for cracks, damaged or loose leads, oil soaked condition, or wear beyond dimensions specified in Wear Limits (para. 4-18). Replace damaged or unserviceable brushes.
- (3) Test the brush holder assembly for a ground by touching one test probe of continuity tester to the insulated brush holder and other probe to the plate. If a ground is indicated, discard brush holder assembly.
- (4) Check brush spring tension as shown in figure 4-21 by hooking spring scale in hole in end of brush arm. Pull on a line perpendicular to the brush arm and take reading when arm is slightly above brush holder. If spring tension is not within limit specified in paragraph 4-18, replace spring.

c. Repair. Do not attempt to straighten bent parts. Defective parts must be replaced.

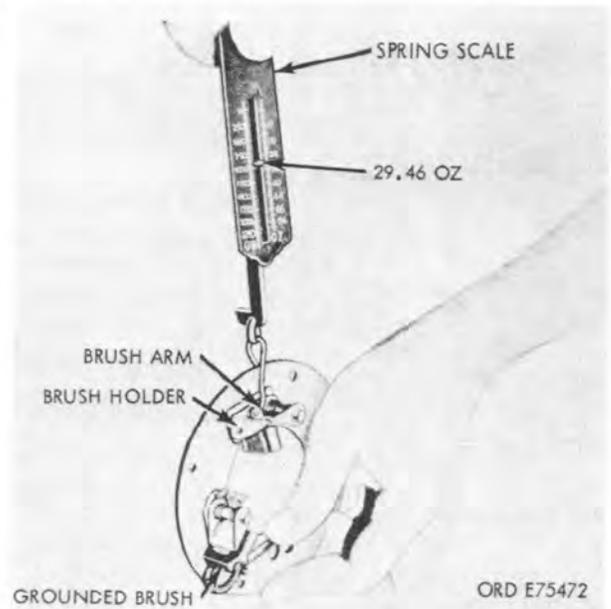


Figure 4-21. Checking brush spring tension.

4-10. Drive End Bell and Associated Parts

a. Cleaning.

- (1) Clean drive end bell, oil seal spacer, bearing retainer, shaft spacer, and associated parts in dry-cleaning solvent or mineral spirits paint thinner and dry with compressed air.

(2) Wipe felt washer, washer retainer and oil seal with a clean, dry, lint-free cloth.

b. Inspection. Inspect drive end bell, and shaft spacer, for distortion, wear, cracks, nicks and damaged threads.

c. Repair. Minor nicks or raised metal may

be removed with an oil stone. No additional repairs are recommended and defective parts must be replaced. A generator repair kit 2920-903-0582 is available and includes the parts necessary to repair the drive end bell and associated parts (see app. II).

Section III. ASSEMBLY

4-11. General

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

b. Follow the illustrations in this section which highlight certain assembly procedures. Other figure references correspond to the disassembly steps, with assembly of the component being essentially the reverse of disassembly.

c. A generator repair kit 2920-903-0582 is available. Whenever any part of the kit is required for generator overhaul, all parts in the kit must be used.

4-12. Drive End Bell and Armature

a. Install felt washer with neoprene side of felt toward armature. Install felt washer retainer using suitable press (fig. 4-6).

b. Install new corrugated washer in end bell. Position sealed ball bearing in end bell bore with trademark and/or part number toward armature. Install drive end bell and bearing over armature shaft and press bearing and end bell until bearing rests against armature shaft shoulder using improvised end bell bearing installing tool (fig. 4-22) and arbor press. Exercise care to prevent pushing felt washer and retainer from recess.

c. Install copper washer (step 3, fig. 4-5), oil seal plate and copper washer on shaft as shown in figure 4-23. Position components against bearing using improvised end bell bearing installing tool.

d. Hold armature securely and rotate drive end bell. End bell must rotate freely, with no binding in bearing.

e. Coat oil seal preformed packing and bearing retainer preformed packing (step 2, fig. 4-5), with waterproof grease. Install small preformed packing in groove in bearing retainer. Press oil seal in bearing retainer with sealing surface toward armature. Exercise care not to damage oil sealing surface.

f. Install large preformed packing on bearing retainer and install retainer assembly on drive

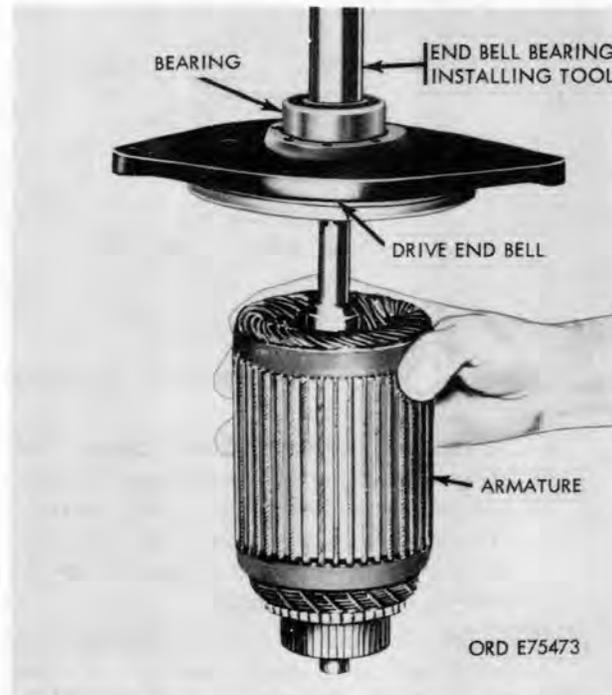


Figure 4-22. Installing drive end bell and bearing.

end bell and secure with six No. 8 x $\frac{1}{2}$ -inch assembled washer screws (step 1, fig. 4-5). Install shaft spacer on armature shaft with flanged end away from armature.

g. Coat preformed packing (step 2, fig. 4-4), with waterproof grease and install packing in groove on drive end bell. Install armature and drive end bell assembly in frame and field assembly. Secure with six No. 10 x $\frac{3}{8}$ -inch round head screws and No. 10 lockwashers.

4-13. Commutator End Bell and Bearing

a. Assemble Commutator End Bell.

- (1) Install plain washer and commutator end sealed bearing (fig. 4-7), on armature shaft. Use a suitable sleeve and an arbor press and press bearing and washer on shaft until washer seats against shoulder on commutator.

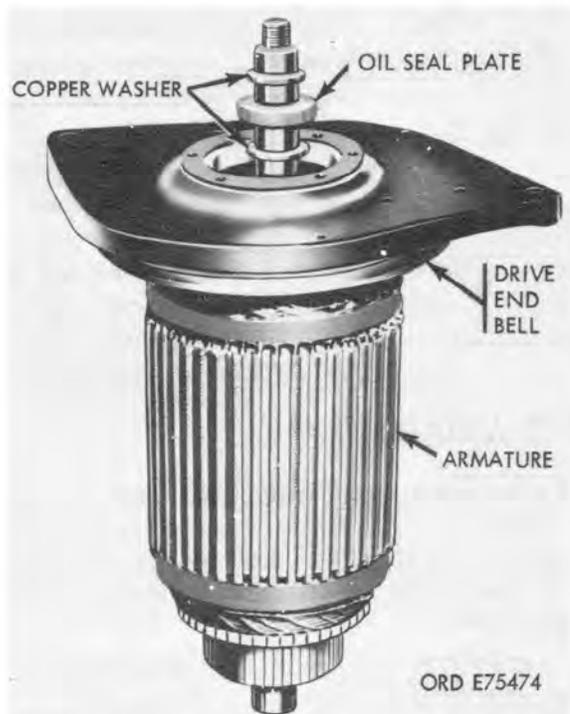


Figure 4-23. Installing washers and spacer.

- (2) Install brush arms (step 2, fig. 4-3), and springs on posts of brush holders on brush plate assembly. Install brushes in brush holders and arms. Connect armature lead and insulated brush lead to insulated brush holder and secure with No. 8 x 1/4-inch hex head assembled washer screw. Attach remaining brush to brush holder with remaining No. 8 x 1/4-inch hex head assembled washer screw.
- (3) Install assembled brush plate assembly (step 1, fig. 4-3), in commutator end bell and secure with four No. 10 x 7/16-inch pan head machine screws and No. 10 lockwashers.

b. Install Commutator End Bell.

- (1) Install large preformed packing (step 2, fig. 4-2), in groove of end bell. Coat end

bell preformed packing with waterproof grease.

- (2) Stand generator on drive end in a suitable support. Place commutator end bell in position on housing. Release brushes to clear commutator as shown in figure 4-24.
- (3) Secure end bell to frame with four No. 10 x 5/8-inch fillister head machine screws, two No. 10 x 1/4-inch fillister head machine screws, and six No. 10 lockwashers (step 1, fig. 4-2).

Note. Install two long screws in correct holes noted on removal (step 1, fig. 4-2).

- (4) Rotate armature. Armature must rotate freely with no binding in bearings.

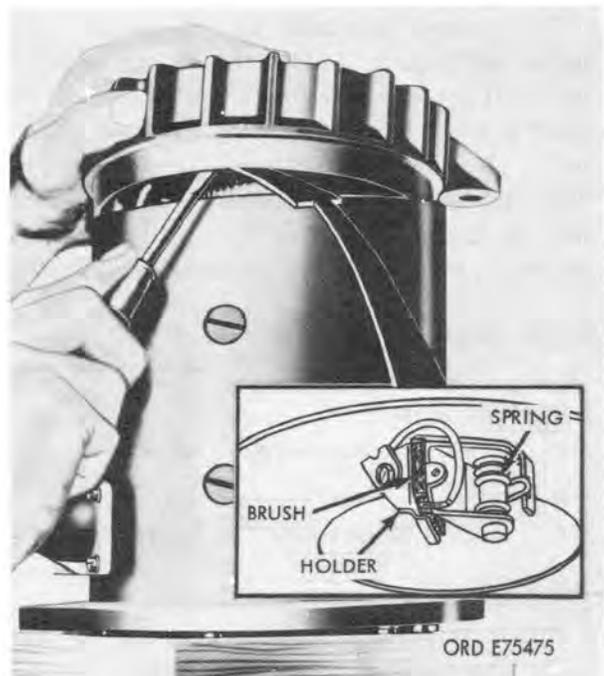


Figure 4-24. Releasing brushes.

4-14. Woodruff Key

Install Woodruff key (fig. 4-1), in slot in shaft and secure key with tape. Coat threads on armature shaft with GAA grease.

Section IV. TESTS AND ADJUSTMENTS

4-15. General

This section contains instructions for bench testing and adjusting the generator after repair and assembly. Use suitable test equipment and follow the manufacturer's instructions.

4-16. Tests

a. Measure End-Play. Measure end-play of the armature shaft as described in paragraph 3-4a.

b. Measure Field Coil Current Draw. Measure field coil draw as described in paragraph 3-4c.

c. *Measure Motoring Current Draw.* Measure motoring draw of the generator as described in paragraph 3-4d.

d. *Measuring Generator Output.*

- (1) Connect as shown in figure 3-3, except turn variable resistance to "all out" position and connect a load rheostat across the battery.
- (2) Connect generator to a driving motor to rotate generator in clockwise direction viewed from the drive end.
- (3) Operate motor and increase speed slowly. Adjust rheostat until voltage is 24 volts.

Note the ammeter reading as speed increases. The current output and voltage (28.5 volts and 25 amps) must not exceed the specified limits at 1800 rpm.

- (4) Do not operate the generator at voltage or current higher than specified as there is danger of burning armature and field windings. If output cannot be obtained or if speed is excessive, there are high resistance connections, dirty commutator, worn or oil-soaked brushes, poor contact, faulty armature or field windings.

Section V. REPAIR STANDARDS

4-17. General

These repair standards give minimum, maximum, and important clearances 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 damaged by corrosion will be approved for service. All dimensions shown are in inches unless otherwise specified.

4-18. Wear Limits

Figure No.	Reference letter	Point of measurement	Sizes and fits of new parts	Wear limits
<i>a. Brush Springs.</i>				
A-2	a	Spring tension	40 to 60 oz.	(*)
<i>b. Brushes.</i>				
A-2	b	Brush length	0.875	0.500
<i>c. Commutator.</i>				
A-2	c	Commutator diameter	2.250	2.150
A-2	c	Commutator run-out	0.001	
<i>d. Armature.</i>				
A-2	d	Armature end play	0.010 max.	

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

4-19. Generator Performance and Test Data

Table 4-1 below lists performances and test data for the generator. The table includes all electrical data necessary for testing the unit and its sub-assemblies.

Table 4-1. Generator Performance and Test Data

Rotation, drive end view	Clockwise
Poles	4
Brushes	2
Rated volts	28
Ground polarity	Neg.
Control	*VCR
Field draw (at 70° F.):	
Volts	24
Amperes	.96-1.12
Motoring draw:	
Volts	24
Amperes (max.)	5.5
Output (at 70° F.):	
Volts	28.5
Amperes	25
Max. rpm	1700
Internal wiring	fig. 1-3
Test wiring	figs. 3-2 and 3-3
Regulator	VBC 4004 UT
Commutator bar-to-bar reading (inches)	0.0003 max.
Commutator mica undercut (inches) (w/1/32-inch wide undercut)	1/32 wide-3/64 deep

*VCR—Generator uses separately mounted vibrating type voltage and current regulator.

APPENDIX A

REFERENCES

A-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 7, 8, and 9), Supply Bulletins, Lubrication Orders, and Modification Work Orders.	DA Pam 310-4
Index of Training Publications	DA Pam 310-3

A-2. Supply Catalogs and Supply Manuals

The following Department of the Army Supply Catalogs and 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) (Line Item 440544).	SC 4910-95-CL-A31
Tool Kit, Auto Fuel and Electrical System Repairman; (4910-754-0655) . .	SM 9-4-4910-A57
Shop Set, Field Maintenance; Automotive, No. 1 Supplemental (4910-754-0706) (Line Item 440547).	SC 4910-95-CL-A62
Shop Set, Field Maintenance; Automotive, Supplement No. 2 (4910-754-0707) .	SM 9-4-4910-A74
Shop Set, Fuel and Electrical Systems Field Maintenance Supplemental No. 1 (4910-390-7774) (Line Item T30551 formerly Line Item 440525) and Shop Set, Fuel and Electrical Systems Field Maintenance, Supplemental No. 1, MAP only (4910-919-0079).	SC 4910-95-CL-A64
Shop Set, Fuel and Electrical Systems: Field Maintenance, Field Maintenance, Supplemental No. 2 (4910-390-7775) (Line Item T30688 formerly Line Item 440526) and Shop Set Fuel and Electrical System: Field Maintenance Supplemental No. 2 MAP only (4910-919-0080).	SC 4910-95-CL-A65
Shop Set, Field Maintenance; Automotive, Wheeled, Post, Camp and Station, Set B (4910-348-7697) (Line Item 440555).	SC 4910-95-CL-A67
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, Automotive Maintenance: Organizational Maintenance, Common, Set No. 2 (4910-754-0650) (Line Item W32730, Formerly Line Item 453895) and Tool Kit, Automotive Maintenance: Organizational Maintenance, Common, Set No. 2 MAP only (4910-919-0082).	SC 4910-95-CL-A72
Tool Kit, Automotive Maintenance: Organizational Maintenance, Set No. 1, Supplemental (4910-754-0653) (Line Item W32867 Formerly Line Item 453905) and Tool Kit, Automotive Maintenance: Organizational Maintenance, Set No. 1, Supplemental MAP only (4910-919-0097).	SC 4910-95-CL-A73

- Tool Kit, Automotive Maintenance: Organizational Maintenance, Common No. 1 (4910-754-0654) (Line Item W32593 Formerly Line Item 453890) and Tool Kit, Automotive Maintenance: Organizational Maintenance, Common No. 1 MAP only (4910-919-0098). SC 4910-95-CL-A74
- Tool Set, Field Ordnance Supply or Depot Company: (4940-322-6059) (Line Item W61363 formerly Line Item 454560) and Tool Set, Field Ordnance Supply or Depot Company MAP only (4940-919-0114). SC 4940-95-CL-A12

A-3. Forms

DA FORM 2028 (Recommended Changes to DA Publications) is used to report publications errors or omissions. For use of maintenance forms, refer to TM 38-750 (Army Equipment Record Procedures). Forms pertaining to the Army Safety Program are prescribed in SR 385-10-40.

A-4. Organizational Maintenance Manuals

- Truck, Utility: $\frac{1}{4}$ -Ton, 4 x 4, Lightweight, M422 (American Motors Engine Engine AV108-4). TM 9-2320-225-20
- Truck, Utility: $\frac{1}{4}$ -Ton, 4 x 4, M151 (Ford Model M151 Engine). TM 9-2320-218-20
- Truck, Utility: $\frac{1}{4}$ -Ton, 4 x 4, M38A1; and Ambulance, Front Line: $\frac{1}{4}$ -Ton, 4 x 4, M170 (Willys Model MD Engine). TM 9-8014
- Truck, Cargo: $\frac{3}{4}$ -Ton, 4 x 4, M37 & M37B1; Command: $\frac{3}{4}$ -Ton, 4 x 4, M42; Truck, Ambulance: $\frac{3}{4}$ -Ton, 4 x 4, M43 & M43B1; Truck Chassis: $\frac{3}{4}$ -Ton, 4 x 4, M56 & M56B1; Truck, Panel: $\frac{3}{4}$ -Ton, 4 x 4, M152; and Truck Maintenance: $\frac{3}{4}$ -Ton, 4 x 4, M201 (Signal Corps Model V-41 (GT) (Dodge Model T24S Engine). TM 9-8030
- Truck, Cargo: $2\frac{1}{2}$ -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: $2\frac{1}{2}$ -Ton, 6 x 6, M44, M45, M46, M47; Truck, Cargo: $2\frac{1}{2}$ -Ton, 6 x 6, M34, M35, M36, M36C; Truck, Dump: $2\frac{1}{2}$ -Ton, 6 x 6, M47, M59; Truck, Earthboring Machine and Polesetter: $2\frac{1}{2}$ -Ton, 6 x 6, V18A/MTQ; Truck, Maintenance: Telephone Construction, $2\frac{1}{2}$ -Ton, 6 x 6, V17A/MTQ; Truck, Tank: Gasoline, 1200 Gal., $2\frac{1}{2}$ -Ton, 6 x 6, M49; Truck, Tank: Water, 1000 Gal., $2\frac{1}{2}$ -Ton, M50; Truck Tractor: $2\frac{1}{2}$ -Ton, 6 x 6, M48, M275; Truck, Wrecker: Crane, $2\frac{1}{2}$ -Ton, 6 x 6, M108; Truck, Wrecker: Light, $2\frac{1}{2}$ -Ton, 6 x 6, M60; Truck, Van: Expansible, $2\frac{1}{2}$ -Ton, 6 x 6, M290; Truck, Van: Shop, $2\frac{1}{2}$ -Ton, 6 x 6, M109, M109C, M512, M512C, M512D, M512F, M512G; and Truck, Van: Missile Firing Data Computer, $2\frac{1}{2}$ -Ton, 6 x 6, M472 (Reo Model OA331 Engine). TM 9-2320-209-20
- Chassis, Truck: 5-Ton, 6 x 6, M39, M40, M40C, 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: $2\frac{1}{2}$ -Ton, 6 x 6, M35A1 (Continental Model LDS 427-2 Engine). TM 9-2320-235-20

A-5. Other Publications

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

APPENDIX B

REPAIR PARTS LIST

Section I. INTRODUCTION

B-1. General

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

b. For depot maintenance this list serves as a guide for recommended repair parts for the rebuild of 100 generators.

c. The nonsupply 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.

B-2. Illustration and Text Relationship

a. Illustrated supply items are keyed by numbers to their text listing. In all cases, the illustration and its listing are on the same or the facing page.

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

c. Nonsupply 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 nonsupply status.

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

B-3. Requisition Notes

a. If the item requisitioned is not furnished, or if other action is necessary, the 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.

B-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 maintenance unit 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 maintenance units, 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 the pertinent item being coded.

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.

B-5. Abbreviations

assy.....	assembly
alw.....	allowance
dir.....	direct
ea.....	each
ech.....	echelon
equip.....	equipment
fig.....	figure
gen.....	general
hex.-hd.....	hexagon head
illust.....	illustration
inc.....	incorporated
maint.....	maintenance
NC.....	American National Coarse Thread
NF.....	American National Fine Thread
no.....	number
pan-hd.....	pan head
qty.....	quantity
sup.....	support
w/.....	with

B-6. Explanation of Codes

a. Source Code.

P1—Applies to repair parts which are low mortality parts; procured by materiel agencies; stocked in, and supplied from the materiel agency depot systems; and authorized for installation at the indicated category of maintenance.

P—Applies to repair parts which are high mortality parts, procured by materiel agencies, stocked and supplied from the depot system, and authorized for use at the indicated categories of maintenance.

b. Maintenance Code.

O—Assigned to all repair parts authorized to the organizational category of maintenance.

F—Assigned to all repair parts authorized to the direct support category of maintenance.

H—Assigned to all repair parts authorized to the general support category of maintenance.

c. Recoverability Code.

RF—Identifies repair parts which are recoverable at direct support level only. If the part cannot be repaired using the repair parts, tools and equipment authorized at direct support level, the part will be disposed of in accordance with local policy. Exceptions are those parts authorized for movement to a higher category of maintenance due to excess work loads.

RH—Identifies the repair parts which are recoverable at general support level only. If the part cannot be repaired using the repair parts, tools and equipment authorized at general support level, the part will be disposed of in accordance with local policy. Exceptions are those parts authorized for movement to a higher category of maintenance due to excess work loads.

NXR—Nonexpendable recoverable: This is a nonexpendable item which may be repaired or which has salvage value and must be returned to the supporting service.

d. Miscellaneous symbols.

‡—As required.

**—Indicates items available or part of SET or KIT as shown.

B-7. Manufacturers' Symbols

<i>Symbol</i>	<i>Manufacturer</i>
19728.....	Prestolite Co., The
96906.....	Military Standards

B-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, Mich. 48090 ATTN: SMOTA-MT.

Section II. DIRECT AND GENERAL SUPPORT MAINTENANCE REPAIR PARTS LIST

(1) Illustration		(2) Source, maintenance, and recoverability code				(3)	(4)	(5)	(6)	(7) 15-day maintenance allowance per 100 equipments		(8)
Figure No.	Item No.	Technical service No.	Source	Maintenance level	Recoverability	Federal stock No.	Description	Unit of issue	Quantity incorporated in unit	3d echelon (direct supply)	4th echelon (general supply)	Depot maintenance guide per 100 equipments (5th echelon)
(a)	(b)	(a)	(b)	(c)	(d)					(a)	(b)	
1-1	-----	-----	P	O	R	2920-903-9534	<p>GENERATOR, ENGINE ACCESSORY (10950808).</p> <p>(Refer to applicable field and depot maintenance repair parts manual for listing of generator assembly, attaching, and associated parts, and their issue allowances).</p> <p>GENERATOR ASSEMBLY—DRIVE END (Fig. B-1)</p>	ea	1			
B-1	1	-----	P	F	-----	2920-903-0582	<p>PARTS KIT, ENGINE GENERATOR (5703308).</p> <p>Composed of:</p> <p>2 PACKING (7412437) (also see Item 13, Figure B-2)</p> <p>1 WASHER (7374858)</p> <p>1 BEARING, BALL (10950815)</p> <p>2 WASHER (7374857)</p> <p>1 SPACER (10944625)</p> <p>1 KEY (96906-35756-8)</p> <p>1 PACKING (7375328)</p> <p>1 PACKING (96906-29513-220)</p> <p>1 PLATE AND SEAL ASSY. (10950813)</p> <p>1 RETAINER (7374860)</p> <p>1 WASHER, FELT (7374859)</p> <p>1 WASHER (7374866)</p> <p>1 NUT (8668790)</p> <p>2 BRUSH (7374852) (Refer to Item 11 Figure A-2).</p> <p>1 BEARING, BALL (10950814) (Refer to Item 4 Figure B-2).</p> <p>1 PLUG, BREAKOFF (10950799) (Not used in this generator).</p> <p>1 PACKING (7375329) (Not used in this generator).</p>	ea	-----		100	
	1.1	-----				-----						
	1.2	-----				-----						
	1.3	-----				-----						
	1.4	-----				-----						
	1.5	-----				-----						
	1.6	-----				-----						
	1.7	-----				-----						
	1.8	-----				-----						
	1.9	-----				-----						
	1.10	-----				-----						
	1.11	-----				-----						
	1.12	-----				-----						
	1.13	-----				-----						
	2	-----	P	I	F	5310-012-1801	<p>WASHER, LOCK: No. 10 screw size (drive end bell) (121801).</p>	ea	6			60
	3	-----	P	I	F	5305-043-6753	<p>SCREW, MACHINE: pan-head, No. 10-32NF-2A x ¾ (drive end bell) (96906-35226-66).</p>	ea	6			60

(1) Illustration		(2) Source, maintenance, and recoverability code				(3)	(4)	(5)	(6)	(7) 15-day mainte- nance allowance per 100 equipments		(8)
Figure No.	Item No.	Technical service No.	Source	Maintenance level	Recoverability	Federal stock No.	Description	Unit of issue	Quan- tity incor- porated in unit	3d echelon (direct supply)	4th echelon (general supply)	Depot maintenance guide per 100 equipments (5th echelon)
(a)	(b)	(a)	(b)	(c)	(d)					(a)	(b)	
B-1	4	----	P	I	F	2920-999-5281	PARTS KIT, ENGINE GEN- ERATOR (5703308)—Con. END BELL, ELECTRICAL ROTATING EQUIPMENT: drive end (10950810).	ea	1	-----	-----	10
	5	----	P	I	F	5310-013-8530	WASHER, LOCK: No. 8 screw size (bearing retainer) (96906- 35333-21).	ea	6	-----	-----	60
	6	----	P	I	F	5305-043-6695	SCREW, MACHINE: pan-head, No. 8-32NC x ½ (bearing retainer) (96906-35225-45).	ea	6	-----	-----	60
B-2							GENERATOR ASSEMBLY— COMMUTATOR END (Figure B-2)					
	1	----	P	I	F	5310-527-3288	WASHER, LOCK: No. 10 screw size (brush holder 4) (Commu- tator end bell 6) (96906- 35333-22).	ea	10	-----	-----	100
	2	----	P	I	F	5305-043-6749	SCREW, MACHINE: pan-hd, No. 10-32NF-2A x ⅜ (brush holder) (96906-35226-62).	ea	4	-----	-----	40
	3	----	P	I	F	2920-737-4886	HOLDER ASSEMBLY, ELEC- TRICAL CONTACT BRUSH: w/brushes and springs (7374886).	ea	1	-----	-----	10
	5	----	P	I	F	2920-903-1137	ARMATURE, GENERATOR (10950809).	ea	1	-----	-----	10
	7	----	P	I	F	5330-771-6562	GASKET, receptacle (7716562)---	ea	1	-----	-----	10
	8	----	P	I	F	-----	RECEPTACLE ASSEMBLE (10950812).	ea	1	-----	-----	10
	9	----	P	I	F	5310-013-8530	WASHER, LOCK: No. 8 screw size (receptacle attaching) (96906-35333-21).	ea	4	-----	-----	40
	10	----	P	I	F	5305-043-6694	SCREW, MACHINE: pan-hd, No. 8-32NC x ⅜ (receptacle attaching) (96906-35225-44).	ea	4	-----	-----	40
	12	----	P	I	F	5305-270-7323	SCREW, hex-hd, No. 8-32NC x ¼ (brush lead) (8332226).	ea	2	-----	-----	20
	14	----	P	I	F	5305-013-2119	SCREW, MACHINE: fil-hd, No. 10-32NF-2A x ⅝ (commu- tator end bell) (132119).	ea	4	-----	-----	40
	15	----	P	I	F	5305-043-6755	SCREW, MACHINE: fil-hd, No. 10-32NF-2A x 1¼ (com- mutator end bell) (96906- 35226-68).	ea	2	-----	-----	20

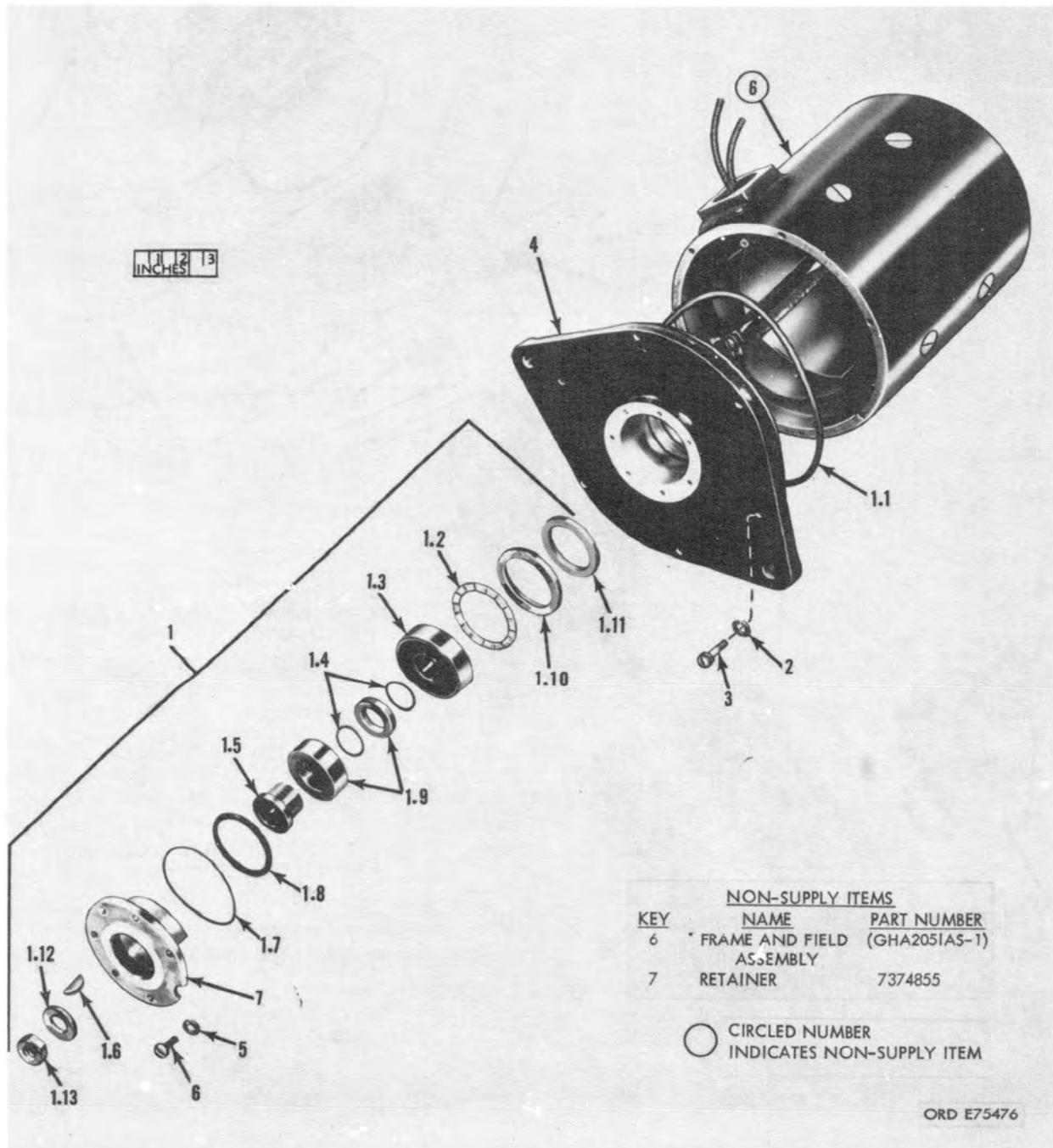
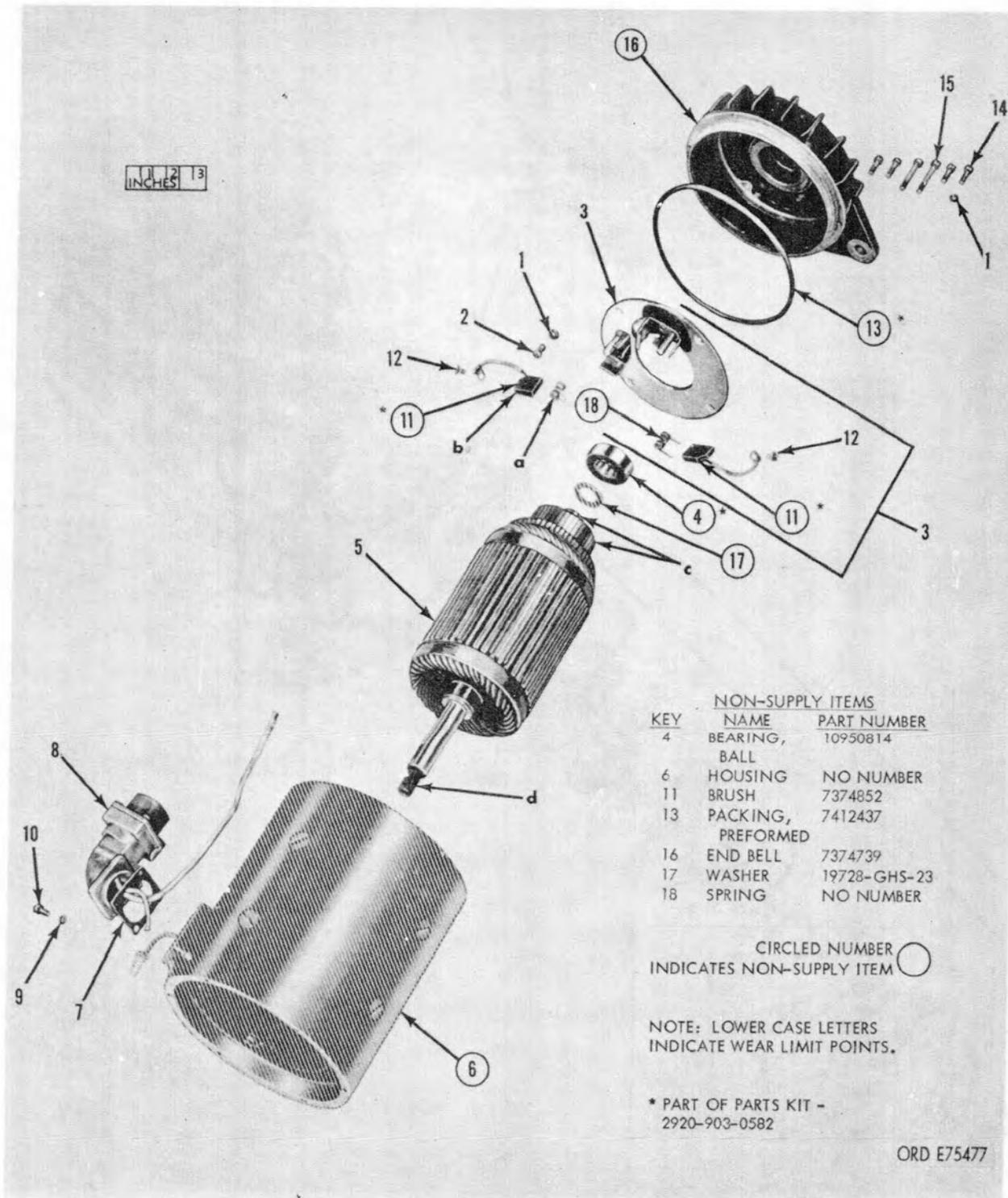


Figure B-1. Generator assembly—partial exploded view.



NON-SUPPLY ITEMS		
KEY	NAME	PART NUMBER
4	BEARING, BALL	10950814
6	HOUSING	NO NUMBER
11	BRUSH	7374852
13	PACKING, PREFORMED	7412437
16	END BELL	7374739
17	WASHER	19728-GHS-23
18	SPRING	NO NUMBER

CIRCLED NUMBER INDICATES NON-SUPPLY ITEM

NOTE: LOWER CASE LETTERS INDICATE WEAR LIMIT POINTS.

* PART OF PARTS KIT - 2920-903-0582

ORD E75477

Figure B-2. Generator assembly—partial exploded view.

PART NUMBER INDEX

(1) Part No.	(2) Federal stock No.	(3) Illustration		(1) Part No.	(2) Federal stock No.	(3) Illustration	
		(a)	(b)			(a)	(b)
		Fig. No.	Item No.			Fig. No.	Item No.
121801	5310-012-1801	B-1	2	10950809	2920-903-1137	B-2	5
132119	5305-013-2119	B-2	14	10950810	2920-999-5281	B-1	4
7374852	-----	B-1	1. 14	10950812	-----	B-2	8
7374857	-----	B-1	1. 4	10950813	-----	B-1	1. 9
7374858	-----	B-1	1. 2	10950814	-----	B-2	4
7374859	-----	B-1	1. 11	10950815	-----	B-1	1. 3
7374860	-----	B-1	1. 10	96906-29513-220	-----	B-1	1. 8
7374866	-----	B-1	1. 12	96906-35225-44	5305-043-6694	B-2	10
7374886	2920-737-4886	B-2	3	96906-35225-45	5305-043-6695	B-1	6
7375328	-----	B-1	1. 7	96906-35226-62	5305-043-6749	B-2	2
7375329	-----	-----	-----	96906-35226-66	5305-043-6753	B-1	3
7412437	-----	B-1	1. 1	96906-35226-68	5305-043-6755	B-2	15
7716562	5330-771-6562	B-2	7	96906-35333-21	5310-013-8530	B-1	5
8332226	5305-270-7323	B-2	12	-----	-----	B-2	9
8668790	-----	B-1	1. 13	96906-35333-22	5310-527-3288	B-2	1
10944625	-----	B-1	1. 5	96906-35756-8	-----	B-1	1. 6
10950799	-----	-----	-----	-----	-----	-----	-----
10950808	2920-903-9534	1-1	1	-----	-----	-----	-----

STOCK NUMBER INDEX

(1) Federal Stock No.	(2) Part No.	(3) Illustration	
		(a)	(b)
		Fig. No.	Item No.
2920-737-4886	7374886	B-2	3
2920-903-1137	10950809	B-2	5
2920-903-9534	10950808	1-1	-----
2920-999-5281	10950810	B-1	4
5305-013-2119	132119	B-2	14
5305-043-6694	96906-35225-44	B-2	10
5305-043-6695	96906-35225-45	B-1	6
5305-043-6749	96906-35226-62	B-2	2
5305-043-6753	96906-35226-66	B-1	3
5305-043-6755	96906-35226-68	B-2	15
5305-270-7323	8332226	B-2	12
5310-012-1801	121801	B-1	2
5310-013-8530	96906-35333-21	B-1	5
-----	-----	B-2	9
5310-527-3288	96906-35333-22	B-2	1
5330-771-6562	7716562	B-2	7

By Order of the Secretary of the Army:

HAROLD K. JOHNSON,
*General, United States Army,
Chief of Staff.*

Official:

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

Distribution:

To be distributed in accordance with DA Form 12-32, Section II, Unclassified requirements for direct and general support maintenance (including repair parts and special tools lists) applicable to Honest John and Hawk Guided Missile systems; to be also distributed in accordance with DA Form 12-33, requirements pertaining to direct and general support maintenance (including repair parts and special tool lists) for ¼ Ton Truck, Utility, M38, M38C, M38A1, M38A1C, M38A1D, M151; Truck, Ambulance, Front Line, M170; ¾ Ton, 4x4, Truck, Chassis, M56, M56B1; Truck, Cargo, M37, M37B1; Truck, Command, M42; Truck, Ambulance, M43, M43B1; Truck, Maintenance, M201, M201B; 2½ Ton, 6x6, Truck, Chassis, M44, M45, M46, M47, M48; Truck, Cargo, M34, M35, M35A1, M35A2, M35E8, M36, M135, M211; Truck, Dump, M47, M59, M215; Truck, Maintenance, V-18A-MTQ, V17A1-MTQ; Truck, Tank: M49, M49C, M217, M217C, M222; Truck, Tractor, M48, M221, M275; Truck, Van: Expansible, M292, M292A1; Truck, Van: Shop, M109, M109A1, M109C, M109D, M220, M220C; Truck, Wrecker: Crane, M108; Truck, Wrecker, Light, M60; Truck, Van, Electronic, XM567 and for 5 Ton, 6x6, Truck, Chassis, M39, M40, M61, M63, M139C, M139D; Truck, Cargo, M41, M54, M55; Truck Tractor, M52, M246; Truck, Wrecker, Medium, M62, M543, and for 10 Ton, 6x6, Truck, Cargo, M125; Truck, Tractor, M123.