TM 9-2920-224-34&P

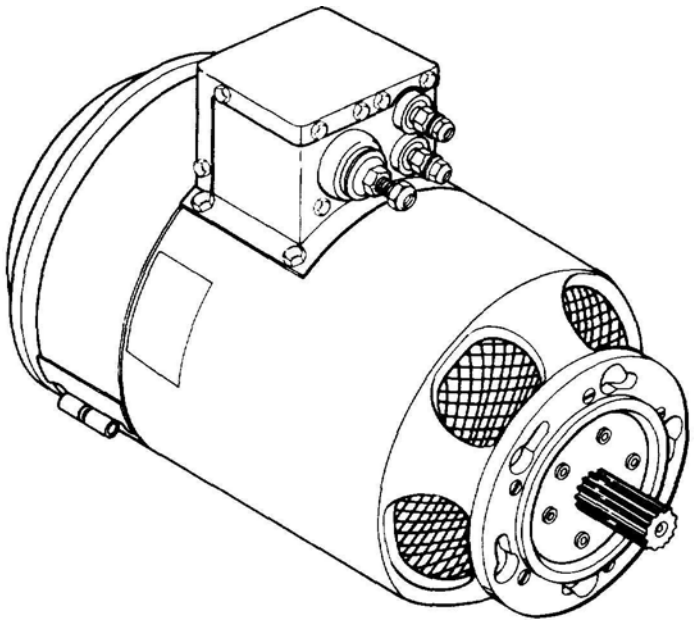
TECHNICAL MANUAL

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL

(Including Direct Support, General Support, and Depot Maintenance Repair Parts and Special Tools Lists)

GENERATOR ASSEMBLY, ENGINE (300 AMP)

MS51004-1 (2920-00-795-6627), G22-6F (2920-00-830-6660), 11642898 (2920-00-169-5715)



Supersedure Notice: This manual supersedes TM 9-2920-224-34&P, dated 3 February 1986, including all changes.

Distribution Statement A: Approved for public release; distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY

DECEMBER 2005

WARNING SUMMARY

WARNING

Dry-cleaning solvent (P-D-680) used to clean parts, is toxic and flammable. Wear protective goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes. Do not breathe vapors. Do not use near open flame or excessive heat. Do not smoke when using solvent. Failure to do so could cause SERIOUS INJURY. If you become dizzy while using cleaning solvent, get fresh air immediately, and if necessary, get medical attention. If contact with skin or clothes is made, flush thoroughly with water. If the solvent contacts your eyes, flush with water immediately, and obtain medical aid (ref. FM 4-25.11).

WARNING

Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).

Refer to FM 4.25-11 for first aid instructions.

END ITEM APPLICATION

AVDS-1790-2D, AVDS-1790-2DA, and AVDS-1790-2DR

Vehicles	TM No. Series
Tank, Combat, Full Tracked: 105-MM Gun, M60	9-2350-260
Tank, Combat, Full Tracked: 105-MM Gun, M48A5	9-2350-258
Tank, Combat, Full Tracked: 105-MM Gun, M60 and M60A1	9-2350-215
Armored Vehicle Launched Bridge: M48A2 AVLB	5-5420-200
Armored Vehicle Launched Bridge: M60A1 AVLB	5-5420-202
Armored Vehicle Launched Bridge: M48A5 AVLB	5-5420-226
Vehicle, Armored Reconnaissance/Airborne Assault, Full Tracked, 152 mm Gun/Launcher: M551, M551 A1	9-2350-230
Vehicle, Combat Engineer, Full Tracked: M728	9-2350-222
Carrier, Ammunition, Tracked: M992	9-2350-267
Recovery Vehicle, Full Tracked: Medium, M88A1	9-2350-256
Howitzer, Heavy, Self- Propelled, FuII Tracked, 8-lnch: M110A2	9-2350-304

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LIST OF EFFECTIVE PAGES/WORK PACKAGES

Date of issue for original and changed pages/work packages are:

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WP 0001 00 (4 pages)	0
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DA Form 2028 (4 pages)	0
Conversion Table (2 pages)	0
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HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington D.C., 31 December 2005

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL

(INCLUDING DIRECT SUPPORT, GENERAL SUPPORT AND DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST)

GENERATOR ASSEMBLY, ENGINE (300 AMP)
MS51004-1 (2920-00-795-6627)
G22-6F (2920-00-830-6660)
11642898 (2920-00-169-5715)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Submit your DA Form 2028 (Recommended Changes to Equipment Technical Publications), through the Internet on the Army Electronic Product Support (AEPS) website. The Internet address is https://aeps.ria.army.mil. If you need a password, scroll down and click on "ACCESS REQUEST FORM". The DA Form 2028 is located in the ON-LINE FORMS PROCESSING section of the AEPS. Fill out the form and click on SUBMIT. Using this form on the AEPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, fax or email your letter, DA Form 2028, direct to: Technical Publication Information Office, TACOM-RI, 1 Rock Island Arsenal, Rock Island, IL 61299-7630. The email address is TACOM-TECH-PUBS@ria.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726. A reply will be furnished directly to you.

TABLE OF CONTENTS

*Supersedes TM 9-2920-224-34&P, dated 3 February 1986.

TABLE OF CONTENTS – CONTINUED

HOW TO USE THIS MANUAL

1. This technical manual describes the Direct Support (DS) and General Support (GS) maintenance and repair requirements for the Teledyne Walterboro Model G22 series Engine Generator Assemblies (300 Amp). To use the maintenance work packages in this manual properly, you must familiarize yourself with the entire work package before beginning the maintenance task. Information in this manual is divided into four chapters and an index. Work packages are numbered sequentially throughout all chapters. Where references are made to tables, figures, and work packages, refer to those portions of the text.
2. Chapter 1 contains the general introductory information and a description of the characteristics, capabilities, and major components of the generators.
3. Chapter 2 lists common and special tools and manufactured items required to repair the generator. This chapter also contains instructions for inspecting and troubleshooting the generator.
4. Chapter 3 contains the procedures for disassembly, cleaning, inspection, repair, and assembly of the generator. Lubrication instructions and testing, are also included in this chapter.

   Throughout the disassembly portion of this chapter, you are instructed to remove and discard certain items such as gaskets, seals, and bearings. These disposable parts are furnished in various generator parts kits (refer to the Repair Parts and Special Tools List in WP 0015 00). All kit parts listed must be used during assembly of generators.
5. WP 0013 00 is an Illustrated List of Manufactured Items.
6. Chapter 4 contains all supporting information.
   a. WP 0014 00, References, provides a listing of U.S. Army publications which apply to this manual.
   b. WP 0015 00 is the Repair Parts and Special Tools List.
   c. WP 0016 00, Expendable Supplies and Materials, is a list of consumable material required to maintain the generator at DS/GS level.
   d. WP 0017 00 is a Tool Identification List.
7. An alphabetical index is also provided at the end of this manual, and a metric conversion table is included on the inside back cover.

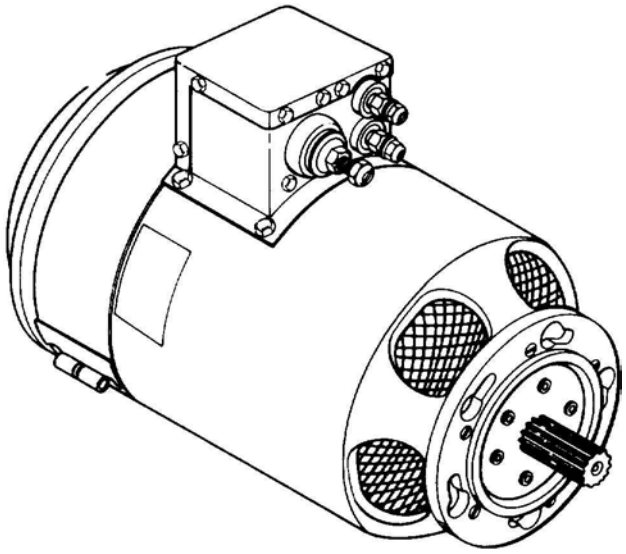
CHAPTER 1

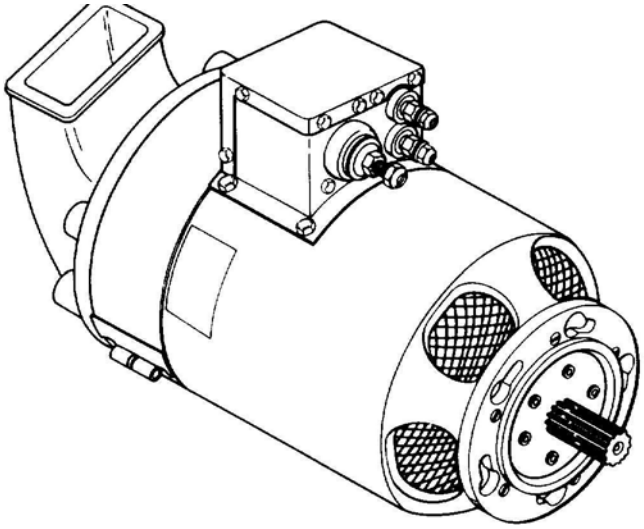
INTRODUCTION

GENERAL INFORMATION 0001 00

THIS WORK PACKAGE COVERS:
General Information

8717421





11642898

10889713

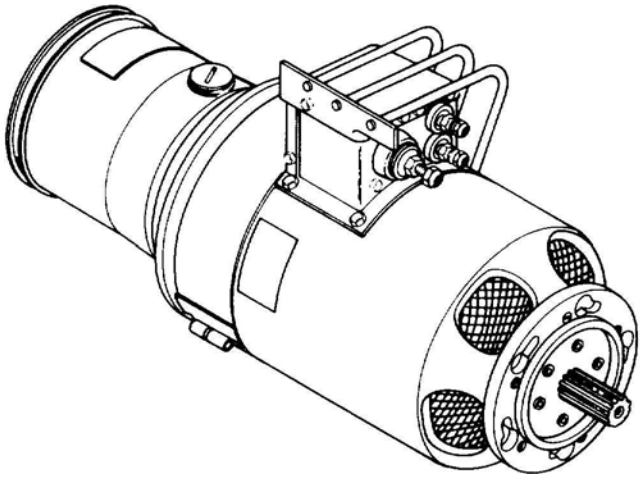


Figure 1-1. Generator Assemblies.

GENERAL INFORMATION - CONTINUED 0001 00

SCOPE

Type of Manual: This technical manual contains Instructions for maintenance and repair of Teledyne Walterboro Model G22 series Engine Generator Assemblies at Direct and General Support.

Equipment Identification: The three configurations of generator assemblies covered in this manual are essentially the same in their power-producing parts. The way in which cooling air for the generator is provided gives each model a distinct appearance. Refer to table 1-1 for applications of each configuration.

Purpose of the Equipment: Generators are engine driven electrical power supply mechanisms. Their purpose is to produce electricity of the proper voltage and in sufficient quantities to power electrical accessories.

Superseded Manual: This manual differs from TM 9-2920-224-34 (Feb 86), which it supersedes, in format to MIL-STD-40051.

DS/GS ALLOCATIONS

Refer to maintenance allocation chart in TM 9-2350-258-20 for assignment of maintenance functions.

MAINTENANCE FORMS, RECORDS AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 750-8. The Army Maintenance Management System (TAMMS) as contained in the Maintenance Management update.

Accidents involving injury to personnel or damage to materiel will be reported on DA Form 285 (Accident Reporting) in accordance with AR 385-40.

Table 1-1. Application of generator models

Army Part No.	Model No.	National Stock Number	Used On
8717421	G22-3	2920-00-795-6627	APU of M551, M551A1, M88A1, and M728
10889713	G22-6F	2920-00-830-6660	Engine of M88A1 and Engines AVDS-1790-2D, A VDS-1790-2DA, AVDS-1790-2DR
11642898	(NONE)	2920-00-169-5715	APU on M109

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS

If your generator assembly needs improvement, let us know. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on a SF 368 (Quality Deficiency Report). Mail it to the address specified in DA PAM 750-8.

CORROSION PREVENTION AND CONTROL

Corrosion Prevention and Control (CPC) or Army materiel is a continuing concern It is important that any corrosion problem with the generator be reported so that improvements can be made to prevent the problem in the future. While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem. If a corrosion problem is identified, it can be reported using SF 368, (Product Quality Deficiency Report). Use of keywords such as "corrosion", "rust", deterioration", or "cracking" will ensure that the information is identified as a CPC problem. SF 368 should be submitted to the address specified in DA PAM 750-8.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Refer to TM 750-244-6 for procedures on how to destroy the generator.

Below are some general guidelines to follow in destruction of equipment to prevent enemy use.

Destruction of equipment, when subject to capture or abandonment in a combat zone, will be undertaken only when such action is necessary in accordance with orders of, or policy established by the Army commander.

GENERAL INFORMATION - CONTINUED 0001 00

In general, destruction of essential parts, followed by burning, will usually be sufficient to render equipment useless. Time is usually critical.

Material must be damaged so that it cannot be restored to usable condition by either repair or cannibalization. If lack of time or personnel prevents destruction of all parts, give priority to destruction of parts hardest to replace. It is important that the same parts be destroyed on all starters to prevent construction of one complete starter from several damaged ones.

PREPARATION FOR STORAGE AND SHIPMENT

Refer to TM 9-2350-256-20 for instructions on preparation for storage and shipment.

QUALITY OF MATERIAL

Material used for replacement, repair, or modification must meet the requirements of this manual. If quality of material requirements are not stated in this manual, the material must meet the requirements of the drawings, standards, specifications, or approved engineering change proposals applicable to the subject equipment.

END OF WORK PACKAGE

EQUIPMENT DESCRIPTION AND DATA 0002 00

THIS WORK PACKAGE COVERS:
Equipment Description and Data

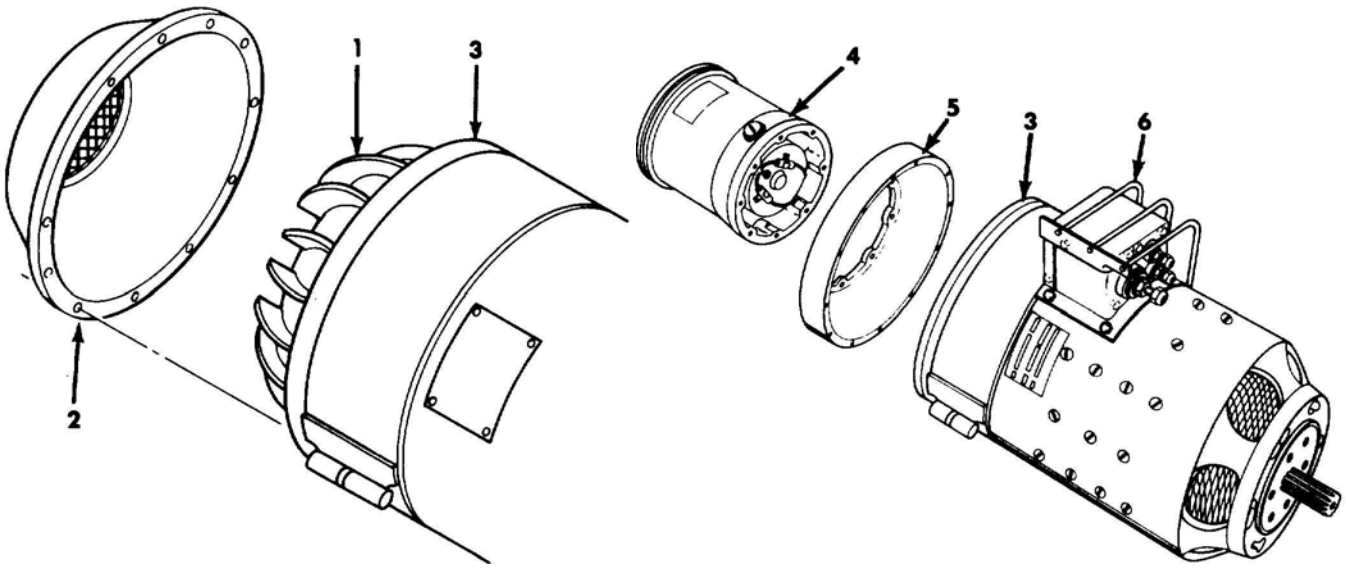
GENERAL DESCRIPTION OF GENERATOR

a. Similarity Among Models. All generators covered in this manual are six-pole, six-brush units. The generator armature is coupled to the engine's drive mechanism through a drive shaft with spring-loaded friction plates which dampen and absorb sharp increases in torque from the engine drive mechanism. All models are cooled by constant air circulation and are equipped with radio-noise suppression capacitors for protection of nearby communications equipment. All models are alike with respect to output, rotation, drive mechanism, and brush arrangement.

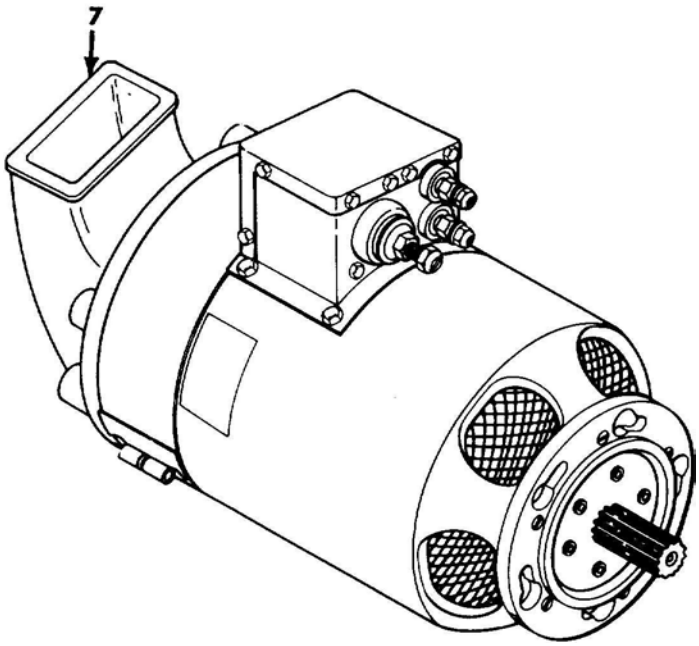
b. Difference Between Models. The difference between generator models is in the method used to deliver cooling air to the generator.

1) Model G22-3 (8717421) is equipped with a fan at commutator end mounted directly on tubular armature shaft. Fan (1) is enclosed by a fan cover assembly (2) which completes the commutator end of generator housing (3) and contains an air inlet grille at the center of the cover.

2) Model G22-6F (10889713) is equipped with a separate cooling fan assembly (4) attached to the commutator end of generator (3) in place of an internal fan. This fan unit is mounted axially and attached to the generator housing through fan adapter (5). This model also has a guard (6) for ground terminal.



3) Generator (11642898) consists of a basic generator housing with neither internal nor direct-mounted external cooling fan. End cover (7) has an opening for attaching a cooling air duct, thus permitting the generator to be cooled by a remote source of air.



DETAILED DESCRIPTION OF GENERATOR

NOTE

Reference numbers shown in parentheses refer to Figure 1-2.

a. Major Components. The major components of the generator are the stator assembly (1), armature (19), brush holder (7), brushes (6), damper mechanism (16), end bell (8), filter assembly (3), fan cover (9), and drive shaft assembly (15).

b. Stator Assembly. The stator assembly consists of field coils (20), pole shoes (2), and interpole coils (13) mounted in and supported by the heavy steel cylindrical frame.

1) Shunt field coils (20) are held in position on inside wall of the frame by pole shoes (2). Each pole shoe is secured in place by four screws and each interpole (13) by three screws.

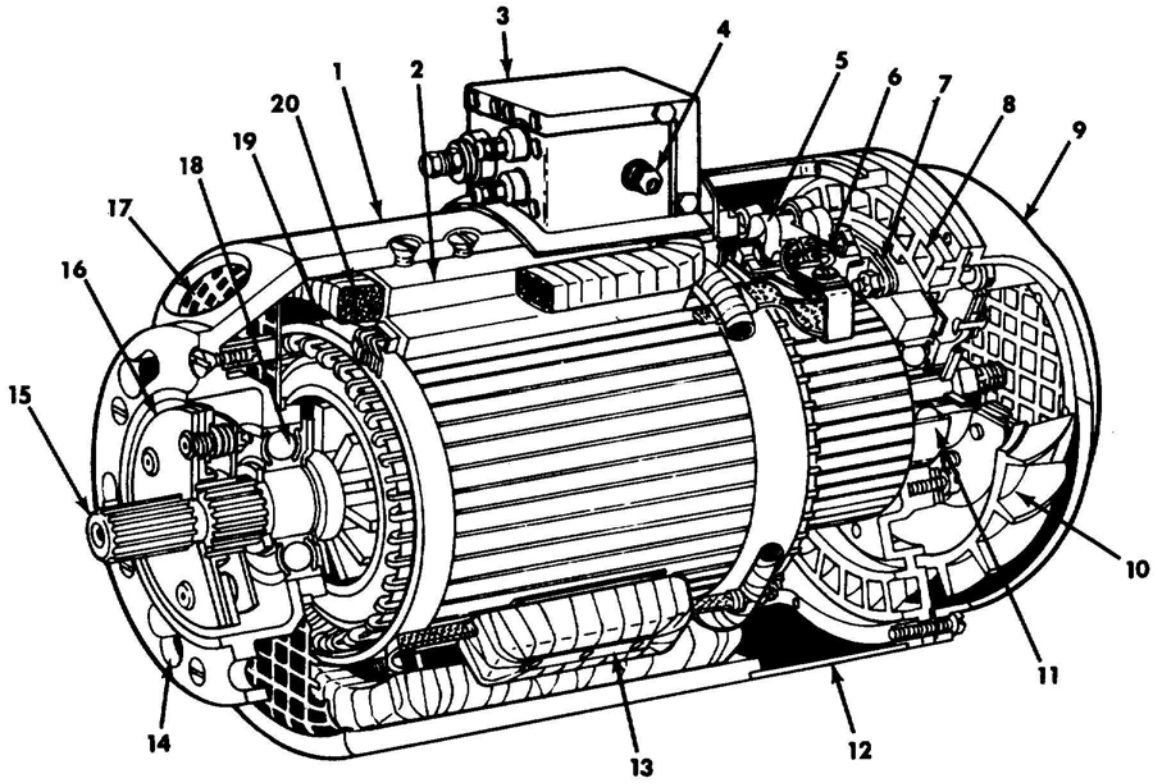
2) Each pole shoe (2) and interpole (13) carries four turns of heavy gage conductor which makes up series field winding.

EQUIPMENT DESCRIPTION AND DATA - CONTINUED 0002 00

c. Drive Shaft Assembly. The drive shaft assembly (15) consists of a flexible splined shaft and a friction damper mechanism (16). Flexibility is obtained with damper mechanism to absorb sharp peaks which may occur in the drive torque. Friction damper pressure is adjustable.

d. Armature. Armature (19) rotates in a pair of ball bearings (11 and 18). Both bearings are sealed and permanently lubricated.

e. Cooling Air. The flow of cooling air is provided by a fan (10) driven by the armature, by an electrically driven axial fan (on 10889713) or by a remote source of air ducted to the end bell (8) (on 11642898).



1. Stator assembly
2. Pole shoe
3. Filter assembly
4. Ground lead
5. Brush spring
6. Brush assembly
7. Brush holder
8. End bell
9. Fan cover
10. Cooling fan
11. Commutator end bearing
12. Brush cover band assy
13. Interpole coil
14. Keyhole-type mounting hole
15. Drive shaft assembly
16. Damper mechanism
17. Air-outlet grille
18. Drive end bearing
19. Armature
20. Field coil

Figure 1-2. Sectional View of Typical Generator Assembly.

EQUIPMENT DESCRIPTION AND DATA - CONTINUED 0002 00

EQUIPMENT DATA

Item	Model G22-3	Model G22-6F	Model (None)
Manufacturer	Teledyne Walterboro	Teledyne Walterboro	Teledyne Walterboro
Part Number	8717421	10889713	11642898
Mounting	Keyholed Flange	Keyholed Flange	Keyholed Flange
Rating			
Volts	30	30	30
Amperes	300	300	300
Kilowatts	9	9	9
Load – continuous amperes (within speed range)	300	300	300
Speed Range (rpm)	2500-6500	2500-6500	2500-6500
Direction of Rotation (viewed at drive end)	Counter-clockwise	Counter-clockwise	Counter-clockwise
Number of mounting holes	6	6	6
Flange diameter (Inches)	6.0	6.0	6.0
Number of teeth in drive spline	16	16	16
Positive Terminal Marking	"B"	"B"	"B"
Negative Terminal Marking	"E"	"E"	"E"
Positive Field Terminal Marking	"A"	"A"	"A"
Equalizer Terminal Marking	"D"	"D"	"D"
Type of Cooling	Internal Fan	External Fan	External Air Source (Remote Location)
Cooling Blower Motor:			
Horsepower		1/5	
RPM		12,000	
Duty		Continuous	
Volts (DC)		24	
Amperes		11	
Brush length (new, inches)	1 3/16	1 3/16	1 3/16
Brush length (worn, inches minimum)	11/16	11/16	11/16
Damper slip torque (pound-feet)	18-22	18-22	18-22
External dimensions:			
Length – overall (inches)	16.83	22.15	16.99
Diameter of housing (inches) Height of radio-noise filter above housing (inches)	8.0	8.0	8.0
Length from mounting face (inches)	15.14	20.46	15.30
Center of Gravity from mounting face (inches)	6.50	6.87	6.65
Cooling fan housing diameter (inches)		4.960	
Cooling fan housing length (inches)		5.14	
Weight (pounds)	94	96	95
Voltage drop for paralleling purposes (at 6500 rpm, 30 volts, and 300 amps, with 77° F air inlet	1.3	1.3	1.3

END OF WORK PACKAGE

THEORY OF OPERATION 0003 00

THIS WORK PACKAGE COVERS:
Theory of Operation and Equipment Data

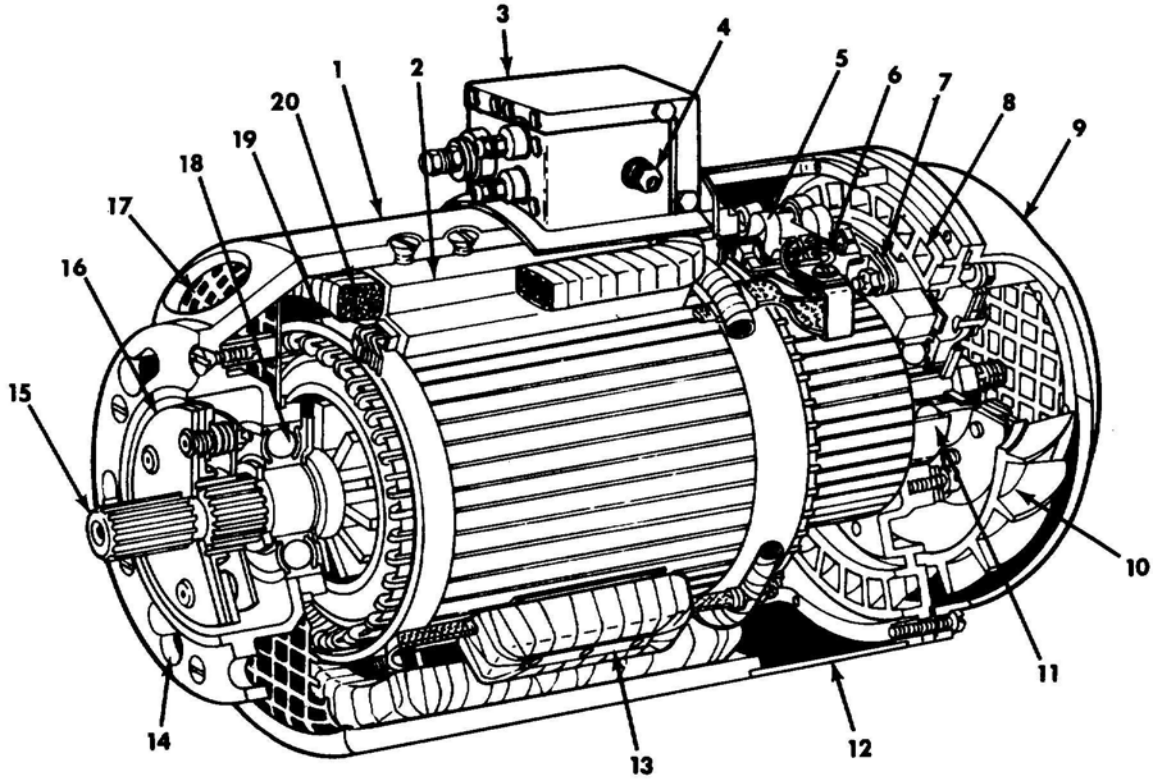
GENERATOR OPERATION

a. Mounting Holes. The generator is mounted to mounting pad on the engine by six studs which correspond to six keyhole-type mounting holes (14) in flanged end of generator housing.

b. Generator drive shaft (15) is spline coupled to the engine drive and transmits engine drive torque to both ends of hollow armature shaft. Connection between drive shaft and armature shaft at drive end is not rigid but through friction damper mechanism (16) on the drive shaft. Connection between drive shaft and armature shaft at commutator end is made quite rigid by tapered splines drawn together.

1) Friction damper mechanism (16) is adjusted to allow limited slippage at about 20 lb-ft. Input torques which exceed setting of damper mechanism use the length of drive shaft (15) as a torsion bar. Torsion spring action absorbs shocks (sharp peaks in drive torque) which could damage generator.

2) Damper mechanism (16) also permits at least 0.010 inch displacement between axis of generator input spline and axis of male spline on armature (19).



1. Stator assembly
2. Pole shoe
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14. Keyhole-type mounting hole
15. Drive shaft assembly
16. Damper mechanism
17. Air-outlet grille
18. Drive end bearing
19. Armature
20. Field coil

Figure 1-2. Sectional View of Typical Generator Assembly.

THEORY OF OPERATION - CONTINUED 0003 00

c. Power Generation. When armature (19) turns, an electrical charge is produced as armature coils cut the magnetic lines of force around the generator's field coils (20). The electricity produced is conducted from the armature windings to the commutator where it is collected by the brushes and delivered to output terminals and noise suppression capacitors. These capacitors minimize stray currents which could interfere with communications equipment operating within the vicinity of the generator.

1) DC voltaqe applied across A and E terminals on-filter assembly (3) causes a current flow in the shunt winding which produces a magnetic field with six poles. Three N poles and three S poles are generated by the current flow and these poles are positioned so that each armature coil must cut six fields of alternate polarities as it makes one revolution.

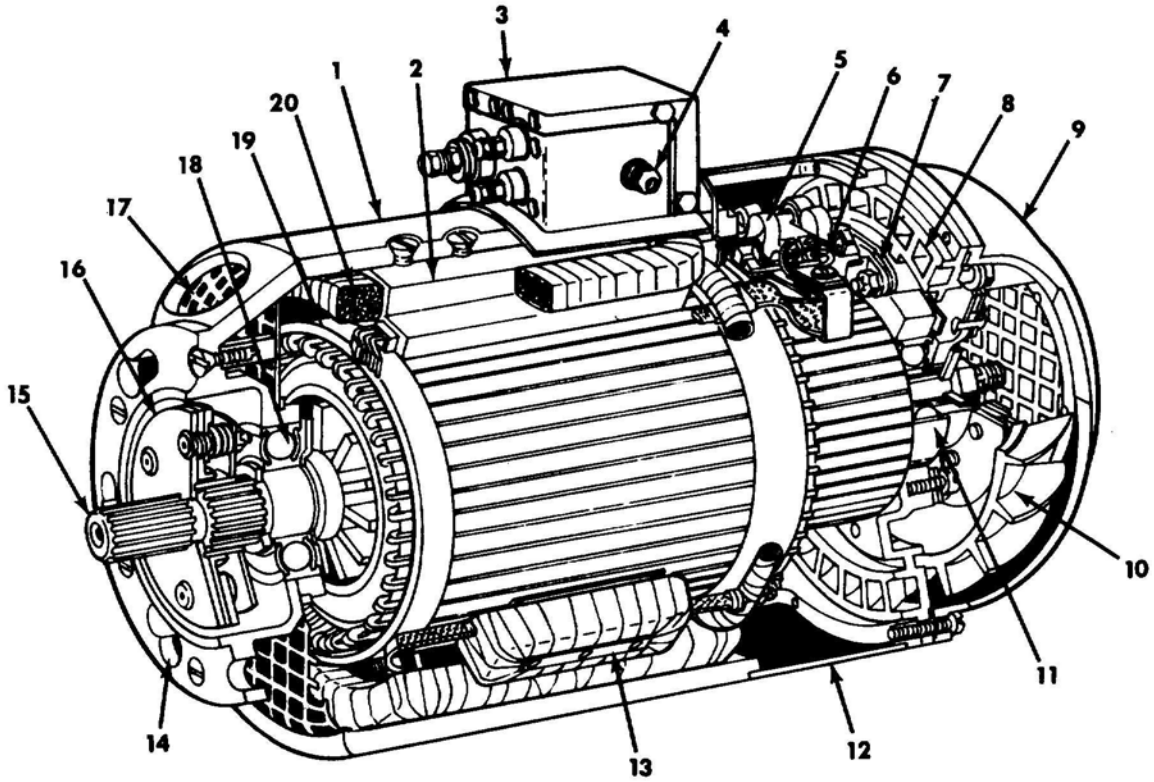
2) Voltage generated in each armature coil will thus change polarity six times per revolution. The commutator bars and brushes provide a reversing switch so that polarity of generated voltage is always the same at any brush terminal. While alternating current is being generated in the armature windings, the switching action of commutator and brushes rectifies the generated current to a DC output.

3) Residual magnetism in the pole shoes (2) can produce an output as soon as armature (19) begins rotation. If generator output at filter terminal B were connected directly to the field excitation terminal A, output could increase to damaging magnitude. The generator is always operated with an external voltage regulator which controls excitation to the shunt windings.

4) Since output from the armature (19) tends to increase with speed of rotation, it is a function of the voltage regulator to reduce excitation current in the field as necessary to hold generator output at rated voltage for any output load within operating range. Normally used in circuit with a storage battery, generator output is controlled to offset any load which would produce a voltage drop at battery terminals.

d. Parallel Generators. The series winding (Interpole) (13) provides another control on generator output so that one or more generators can be operated in the same circuit with this generator. Connection to this winding is made at filter (3) terminal D.

e. Filter. Generator output (terminals B and E), field excitation (terminals A and E), and paralleling circuit (terminals A and E) are parallel-connected to capacitors which provide suppression of voltages which could produce interference in nearby communications equipment.



THEORY OF OPERATION - CONTINUED 0003 00

WIRING DIAGRAM

The schematic wiring diagram (Fig. 1-3) shows internal connections and external terminals of these generators.

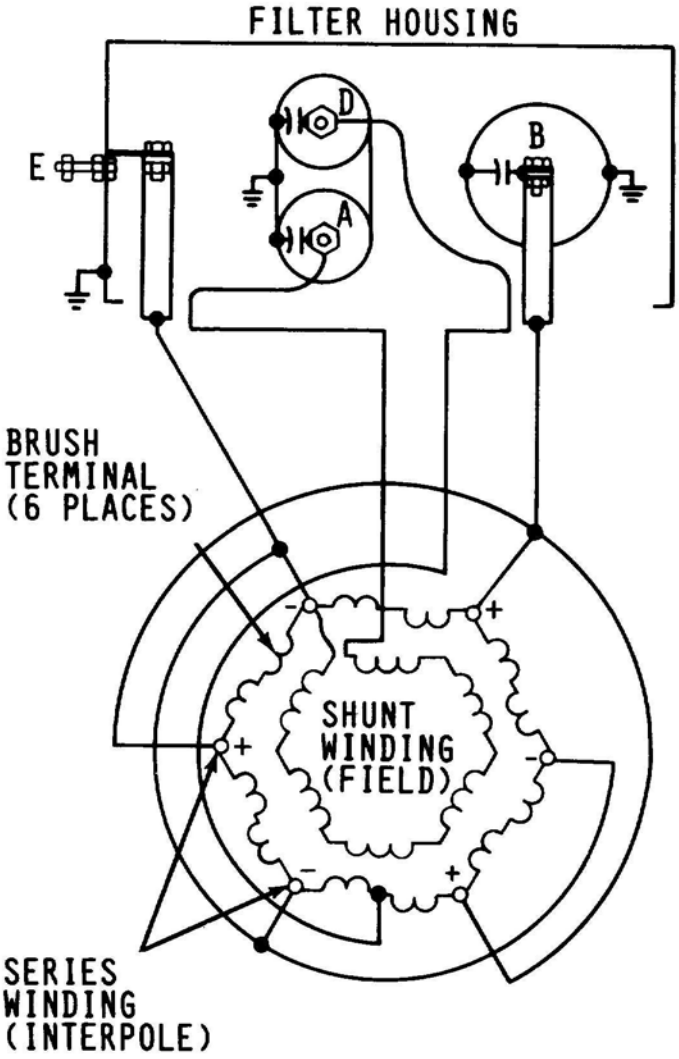


Figure 1-3. Schematic Wiring Diagram.

END OF WORK PACKAGE

CHAPTER 2

MAINTENANCE INSTRUCTIONS

REPAIR PARTS, SPECIAL TOOLS, AND SUPPORT EQUIPMENT 0004 00

THIS WORK PACKAGE COVERS:

Repair Parts, Special Tools, and Support Equipment

COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

SPECIAL TOOLS

No special tools are required to perform the maintenance procedures described in this manual.

REPAIR PARTS

Repair parts are listed and illustrated in WP 0015 00 of this manual.

ILLUSTRATED LIST OF MANUFACTURED ITEMS

Manufactured items are listed and illustrated in WP 0013 00 of this manual.

a. Brush Spring Lifter. The brush spring lifter is used to raise the brush spring in order to remove the brush.

b. Armature Turning Center. The armature turning center is used to mount armature in a lathe for reconditioning.

END OF TASK

TROUBLESHOOTING INSTRUCTIONS 0005 00

THIS WORK PACKAGE COVERS:

Troubleshooting Instructions and Malfunction/ Corrective Action Table

TROUBLESHOOTING INSTRUCTIONS

a. Visual Examination. Visually check for cracks, obvious damage, and missing screws or nuts on generator housing and radio-noise suppression housing and its terminals.

Model G22-6F generator must be additionally checked for cracks and obvious damage to axial fan housing and its electrical connector.

b. Generator Rotational Freedom Check. Try to rotate the generator drive shaft by hand. The drive shaft should turn freely, but inertia of rotor (resistance due to rotor's weight) should be sensed as rotation starts or is stopped.

1) If internal binding prevents manual rotation of the drive shaft, disassemble as necessary to repair and correct cause of bind. (See WP 0008 00 for disassembly instructions.)

2) If generator drive shaft does not bind, but there is no rotor resistance, remove drive shaft assembly. (See WP 0008 00 for disassembly instructions.)

c. Operating Tests. Table 2-1 lists common malfunctions that may be encountered, their probable cause, and the recommended corrective action. If operating tests are required in order to determine the condition of generator, see WP 0011 00.

Table 2-1. Troubleshooting

MALFUNCTION	PROBABLE CAUSE(S)	CORRECTIVE ACTION
1. No generator output.	a. Brushes making poor contact with commutator.	Replace brushes and recondition commutator if necessary (WP 0009 00).
	b. Short circuited or grounded armature.	Replace armature assembly (WP 0008 00).
	c. Defective voltage regulator on test stand.	Repair or replace voltage regulator used on test stand.
	d. Insufficient residual magnetism in generator field poles.	With generator running at 1000 rpm or higher, close circuit across reverse current relay (used on test stand). Generator should pick up the charge and continue at normal output.
	e. Reversed generator polarity.	Generator field should be "flashed" to restore correct residual polarity within field coils (WP 0011 00).
	f. Broken drive shaft.	Replace drive shaft assembly (WP 0010 00).
2. Generator output is very low.	a. Brushes making poor contact with commutator.	Replace brushes if approaching the minimum length. Seat brushes (WP 0010 00) and run-in (WP 0011 00).
	b. Short-circuited or grounded armature.	Replace armature assembly (WP 0008 00).
	c. Improperly adjusted voltage regulator on test stand.	Adjust, repair, or replace voltage regulator on test stand.
	d. Short-circuited or grounded field windings.	Replace housing assembly (WP 0008 00).

TROUBLESHOOTING INSTRUCTIONS - CONTINUED 0005 00

MALFUNCTION	PROBABLE CAUSE(S)	CORRECTIVE ACTION
3. Generator produces full voltage with reverse polarity. reversed.	a. Voltmeter connections on test stand.	Connect test stand voltmeter correctly.
	b. Defective field current.	Check for proper connections at brush holders (WP 0010 00). If connected properly, the housing assembly is defective and must be replaced.
	c. Field coil energized with reversed polarity.	Flash the field by closing the circuit across reverse current relay with generator running at 2500 rpm.
4. Excessive sparking at brushes.	a. Open-circuited or short-circuited armature.	Replace armature assembly (WP 0008 00).
	b. Brushes not properly seated on commutator.	Seat brushes (WP 0010 00) and run-in (WP 0011 00).
	c. Short-circuited field windings.	Replace housing assembly (WP 0008 00).
	d. Pitted or eccentric commutator.	Recondition commutator (WP 0009 00).
	e. Worn ball bearings.	Replace ball bearings (WP 0008 00 and WP 0010 00).
	f. Weak or broken brush springs.	Replace brush springs and check for proper tension (WP 0010 00).
5. Generator overheats.	a. Obstruction in air passages.	Disassemble and clean the generator.
	b. Broken or damaged cooling fan.	Replace cooling fan assembly (WP 0008 00 and WP 0010 00).
	c. Open armature winding.	Replace armature assembly (WP 0008 00 and WP 0010 00).
	d. Grounded positive brush.	Replace insulators in electrical end bell (WP 0010 00).
	e. Inoperative tube axial fan.	Repair or replace tube axial fan (WP 0010 00).
6. Excessive brush movement.	a. Worn or out-of-round commutator.	Recondition commutator (WP 0009 00).
	b. Broken or weak brush spring.	Replace brush springs and check for proper tension (WP 0010 00).

END OF TASK

CHAPTER 3

MAINTENANCE PROCEDURES

GENERAL MAINTENANCE INSTRUCTIONS 0006 00

THIS WORK PACKAGE COVERS:

General Maintenance Instructions

PURPOSE

This work package contains information for general cleaning; disassembly; cleaning, inspection, and repair of component parts; assembly and operational and leak testing of generator assemblies after they have been removed from the engine.

APPLICATION

All procedures in this chapter apply to all three generator configurations covered by this manual except where identified as applicable to only one or two of the generator configurations.

ORGANIZATION

Each maintenance task described in this work package will be organized in the following manner:

a. This Work Package Covers. Provides a description of the scope of the work package.

b. Initial Setup. lists the information you will need before starting the procedure, such as:

   1) Tool requirements.

   2) Material and supplies requirements.

   3) Personnel requirements.

   4) Equipment condition.

c. Procedure. Outlines the process for performing the task in step-by-step sequence.

ILLUSTRATIONS

Each illustration, used to describe a procedural step, will be located following that step(s).

REMOVAL AND INSTALLATION

Refer to TM 9-2815-220-34 for instructions covering the removal and installation of the generator.

END OF TASK

GENERAL CLEANING 0007 00

THIS WORK PACKAGE COVERS:
General Cleaning

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0017 00)

Materials/Parts
Solvent (item 1, WP 0016 00)
Clean rags (item 2, WP 0016 00)
Tape (item 3, WP 0016 00)
Sandpaper (item 4, WP 0016 00)

Materials/Parts - Continued
Soft brush (item 5, WP 0016 00)
Hard bristle brush (item 6, WP 0016 00)
Goggles (item 7, WP 0016 00)
Rubber gloves (item 8, WP 0016 00)

Equipment Condition
Generator on workbench

GENERAL CLEANING

a. Using tape seal air inlet opening and air outlet openings.

WARNING

Dry-cleaning solvent (P-D-680) used to clean parts, is toxic and flammable. Wear protective goggles and gloves and use only in a well-ventilated area. Avoid contact with skin, eyes, and clothes. Do not breathe vapors. Do not use near open flame or excessive heat. Do not smoke when using solvent. Failure to do so could cause SERIOUS INJURY. If you become dizzy while using cleaning solvent, get fresh air immediately, and if necessary, get medical attention. If contact with skin or clothes is made, flush thoroughly with water. If the solvent contacts your eyes, flush with water immediately, and obtain medical aid (ref. FM 4.25-11).

CAUTION

Never use a wire brush or steel blade scraper on exterior surfaces of the generator.

b. Using a bristle brush and solvent, remove dirt, oil, and other contaminants from all exterior surfaces.

c. Use a clean rag moistened with solvent to clean hard to reach areas.

WARNING

Compressed air used for cleaning purposes will not exceed 30 psi (207 kPa). Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).

d. Blow cleaned surfaces dry with compressed air.

e. Use sharp edge of a piece of plastic or wood to remove old sealant from parts.

f. Cleaning Instructions for Specific Components.

1) Generator Housing. Wipe outer surfaces of field coils, pole shoes, and frame with a rag moistened with solvent. Be careful that the protective insulation coating is not damaged.

2) Generator Armature. Remove loose particles from armature with compressed air. Wipe surfaces with a clean rag moistened with solvent. Clean commutator surface lightly with No. 3/0 sandpaper, then remove all traces of dust with low-pressure compressed air.

GENERAL CLEANING - CONTINUED 0007 00

3) Electrical End Bell. If electrical end bell assembly has not been disassembled, clean holders, springs, screws, nuts, and generator support assembly with a soft brush dipped in solvent. Use a clean rag moistened with solvent to clean insulator plates.

4) Tube Axial Fan. Clean external surfaces only of the fan motor and fan housing with a clean rag moistened with solvent.

5) Electrical Contact Brushes. If brushes will be re-used, clean by wiping with a clean, dry rag. Do not permit solvent to contact brushes.

6) Capacitors and Capacitor Assembly. Do not immerse in solvent. Clean exterior surfaces with a clean rag moistened with solvent.

NOTE

Annular ball bearings are packed with lubricant and sealed. These bearings will normally require cleaning and lubricating only at overhaul or repair periods.

7) Annular Ball Bearings. Refer to TM 9-214 for the instructions for cleaning and inspecting the annular ball bearings.

END OF TASK

DISASSEMBLY OF THE GENERATOR ASSEMBLY 0008 00

THIS WORK PACKAGE COVERS:

Disassembly

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0017 00)
Brush spring lifter (item 2, WP 0017 00)
Metal scriber (item 3, WP 0017 00)
Retaining ring pliers (item 4, WP 0017 00)
Holder, inserted hammer face (item 5, WP 0017 00)
Face, hammer, inserted (item 6, WP 0017 00)
Face, hammer, inserted (item 7, WP 0017 00)
Iron, soldering (item 8, WP 0017 00)
Adapter, spline (item 9, WP 0017 00)
Caliper set, micrometer, outside (item 10, WP 0017 00)

Tools and Special Tools - Continued

Telescope gage set (item 11, WP 0017 00)
Dial indicator (item 12, WP 0017 00)
Hacksaw blade (item 13, WP 0017 00)
Puller, mechanical (item 14, WP 0017 00)

Materials/Parts

Pipe stock, tubular (item 9, WP 0016 00)

Equipment Conditions

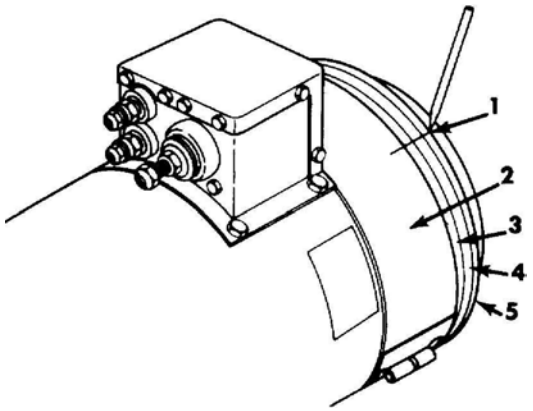
Generator on workbench

Disassembly

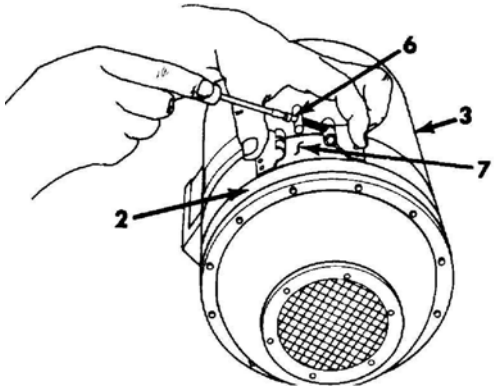
NOTE

Before performing disassembly of the generator, read WP 0007 00, GENERAL CLEANING.

1. Brush Cover Band.
   a. Scribe a mark (1) to provide for reassembly alignment of brush cover (2), generator housing (3), support assembly (4), and fan cover/fan housing/air duct (5). Cut and peel sealant. Sealant is not used on generator 8717421.

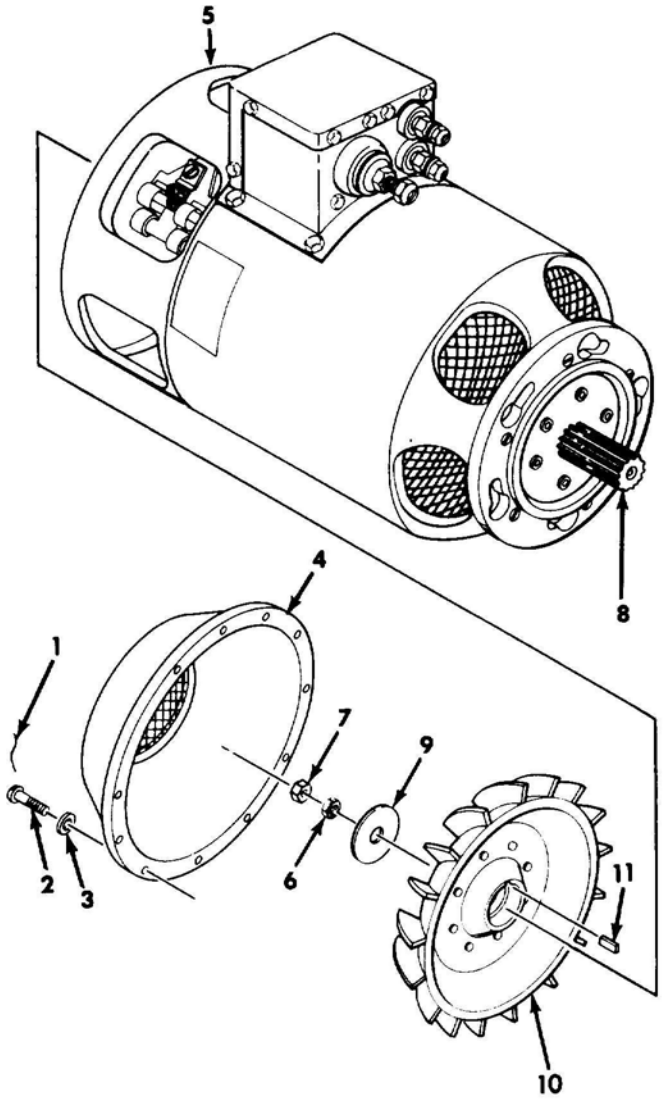


   b. Loosen clamp screw (6) on brush cover (2) disengage clamp and remove cover.
   c. Remove and discard gasket (7) from under brush cover (2) to expose brush access openings in generator housing (3).



DISASSEMBLY OF THE GENERATOR ASSEMBLY - CONTINUED 0008 00

2. Cooling Fan - Generator (8717421).
   a. Cut, remove, and discard lockwire (1). Remove 12 socket head screws (2) and 12 flat washers (3).
   b. Using a plastic mallet, tap fan cover (4) outward if necessary to start and remove fan cover from support assembly (5).
   c. Hold inner sleeve nut (6) with a wrench and remove outer hex nut (7).
   d. Hold drive shaft assembly (8) while removing inner sleeve nut (6).
   e. Remove special washer (9).
   f. Remove cooling fan (10) and machine key (11).



DISASSEMBLY OF THE GENERATOR ASSEMBLY - CONTINUED 0008 00

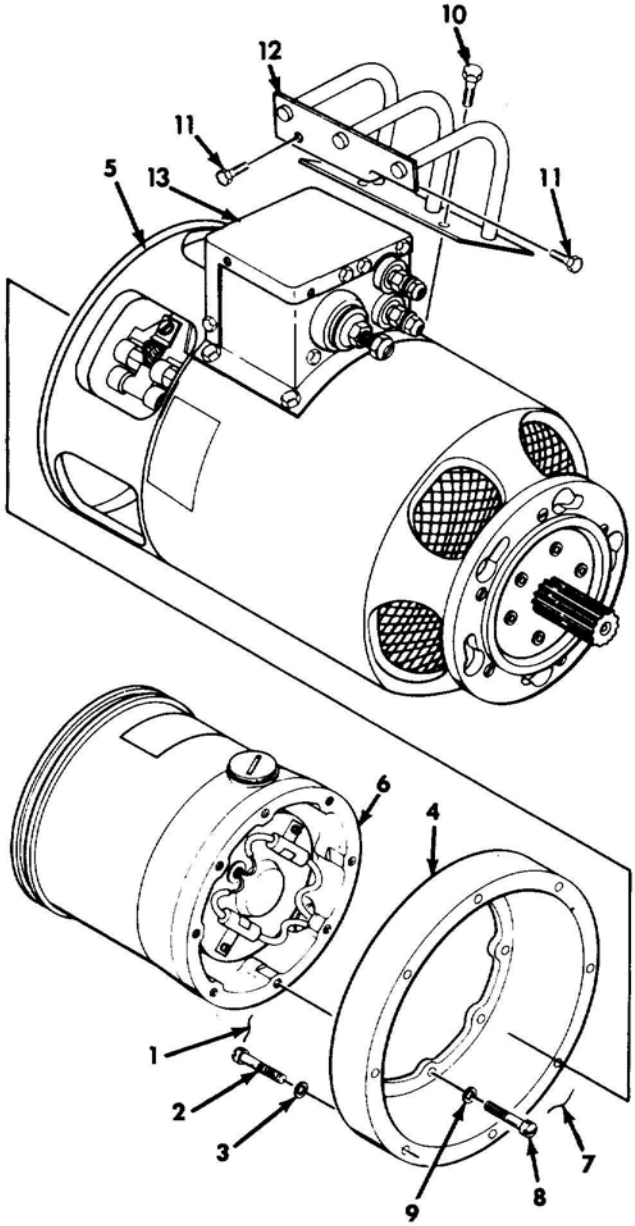
3. Fan, Adapter, And Guard – Generator (10889713).

   a. Cut, remove, and discard lockwire (1). Remove 12 screws (2) and washers (3) which attach adapter (4) to support assembly (5).

   b. Using a plastic mallet, tap adapter (4) outward if necessary to start and remove adapter with tube axial fan (6) from support assembly (5).

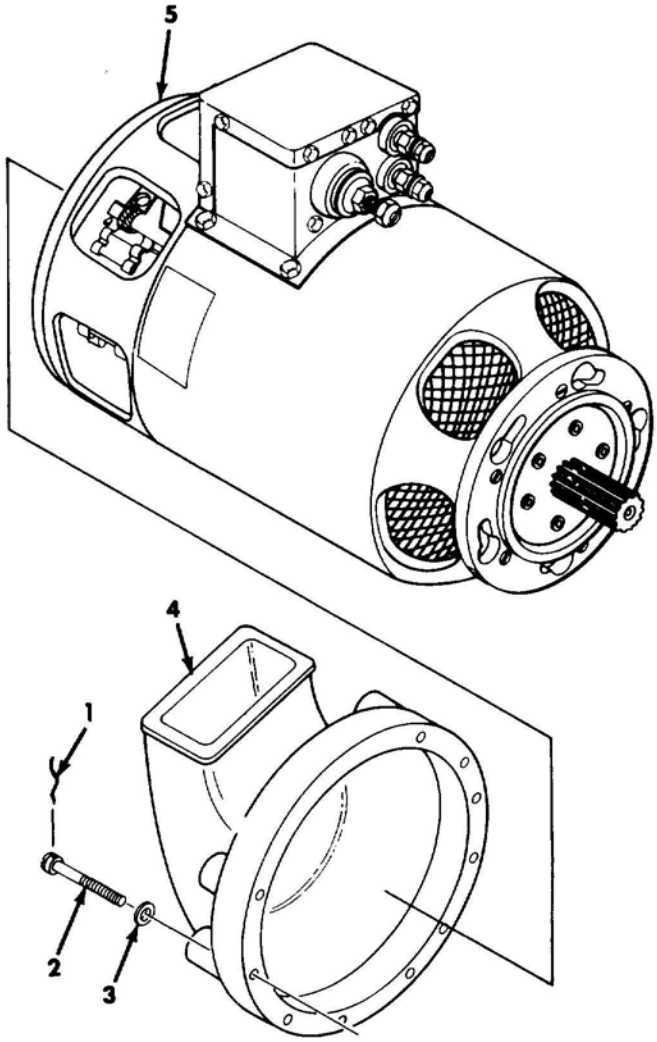
   c. Cut, remove, and discard lockwire (7). Remove eight screws (8) and washers (9) which attach tube axial fan (6) to adapter (4).

   d. Remove two screws (10), two screws (11), and take guard (12) off filter housing (13).



DISASSEMBLY OF THE GENERATOR ASSEMBLY - CONTINUED 0008 00

4. Air Intake - Generator (11642898).
   a. Cut, remove, and discard lockwire (1) and remove ten screws (2) and washers (3).
   b. Cut and peel sealant. Using a plastic mallet, tap air intake (4) to start and remove from support plate (5).
   c. Inspect air intake for cracks, corrosion, or other obvious conditions which might cause trouble during operation. Replace if defective.



DISASSEMBLY OF THE GENERATOR ASSEMBLY - CONTINUED 0008 00

5. Basic Generator Assembly.

NOTE

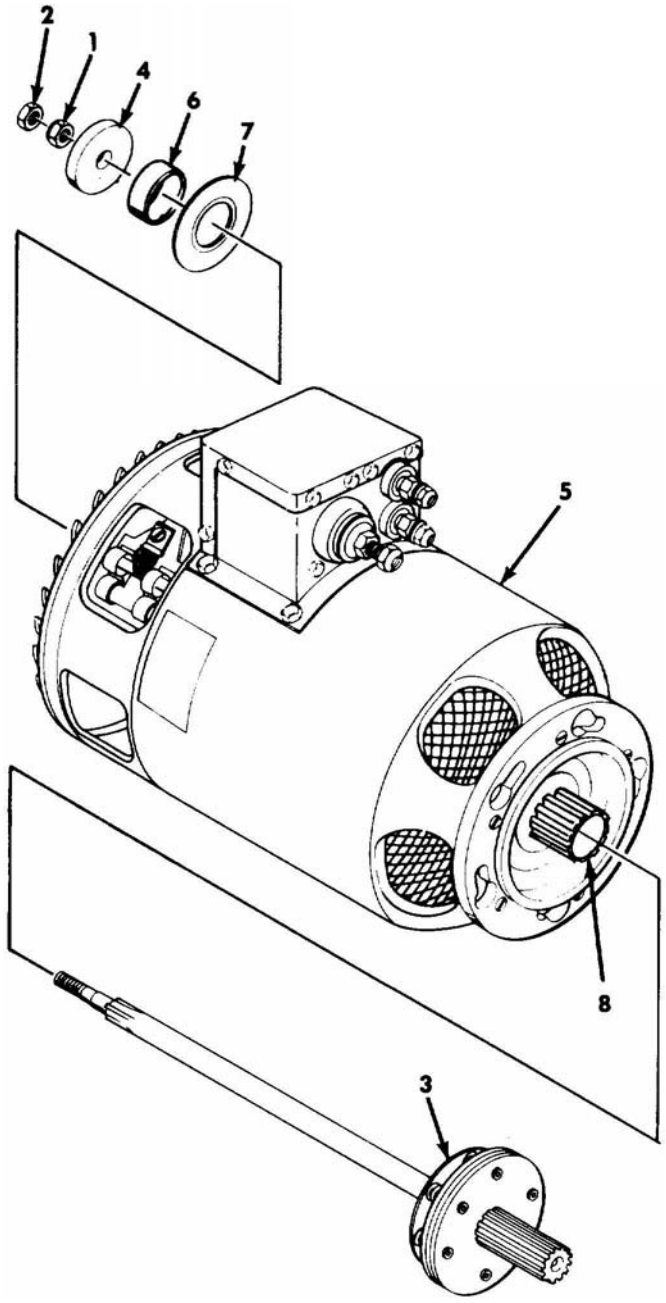
Inspect all bolts, screws, nuts, and plugs for worn or damaged threads. Replace if defective.

a. Hold inner sleeve nut (1) with wrench while removing outer hex nut (2). Using spline adapter hold generator drive shaft (3) while removing sleeve nut (1).

b. Remove recessed washer (4) from end of generator drive shaft (3).

c. Using a plastic mallet, tap the threaded end of generator drive shaft (3) to unseat tapered splines. Remove generator drive shaft (3) from main body of generator (5).

d. Remove spacer (6), shouldered and recessed washer (7) from end of armature shaft (8).



DISASSEMBLY OF THE GENERATOR ASSEMBLY - CONTINUED 0008 00

e. Remove six binding head machine screws (9) from brush leads (10).

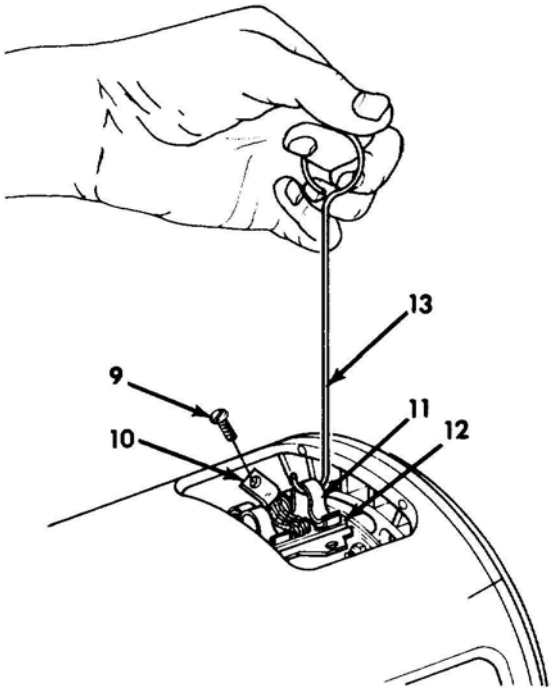
NOTE

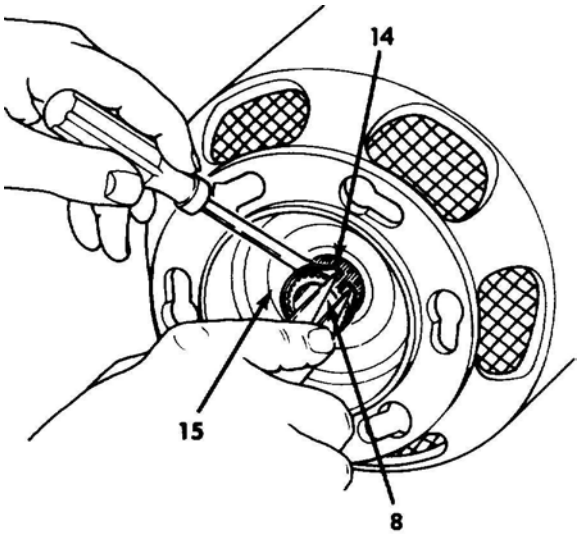
These screws also connect field leads to brush holders on the electrical end bell.

f. Raise torsion spiral springs (11) high enough to permit electrical contact brush (12) to be lifted out by its lead, using brush spring lifter (13). Mark brushes so they can be installed in the same brush holders, if they are not worn beyond minimum lengths and are to be re-used. Remove all six electrical contact brushes (12) in this manner.

g. Remove armature assembly as follows.

h. Using retaining ring pliers, expand and remove retaining ring (14) at drive end of armature shaft (8). Remove dirt and liquid deflector (15).

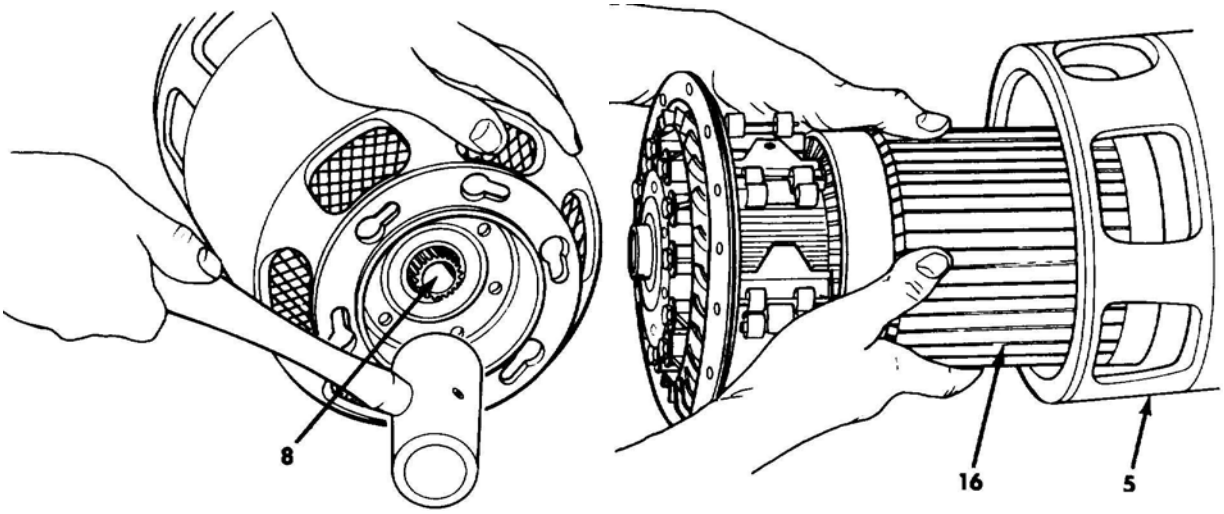




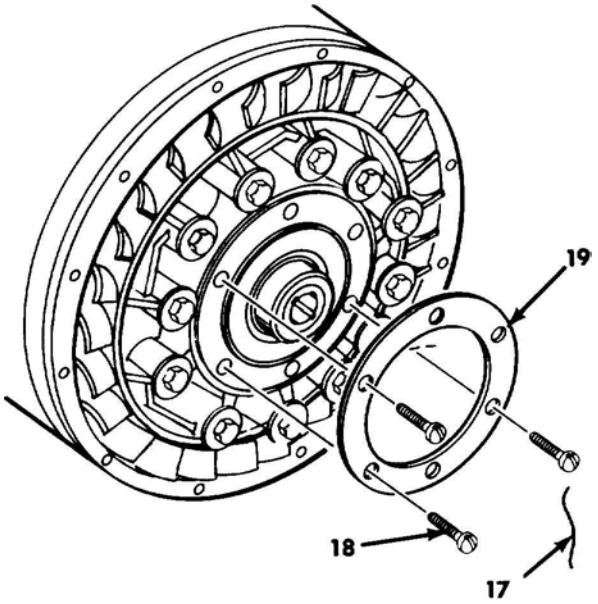
DISASSEMBLY OF THE GENERATOR ASSEMBLY - CONTINUED 0008 00

i. Using a soft-faced mallet, hit drive end of armature shaft (8) to drive armature assembly (16) out with its bearing. It may be necessary to hit several times.

j. Remove armature assembly (16) with bearing and brush holder support assembly attached from generator housing (5).



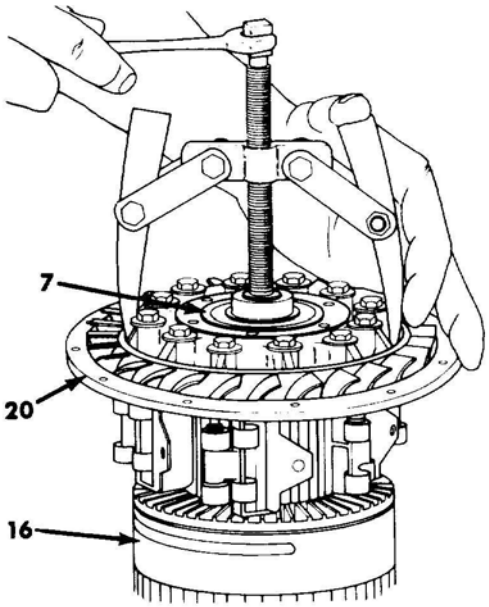
k. Cut, remove, and discard lockwire (17). Remove six machine screws (18) and bearing retaining ring (19).



DISASSEMBLY OF THE GENERATOR ASSEMBLY - CONTINUED 0008 00

l. Remove electrical end bell (20) from generator armature (16), using a mechanical puller with hooks on puller arms inserted through openings in generator support assembly [part of electrical end bell (20)].

m. Remove shouldered and recessed washer (7) from armature shaft (8).

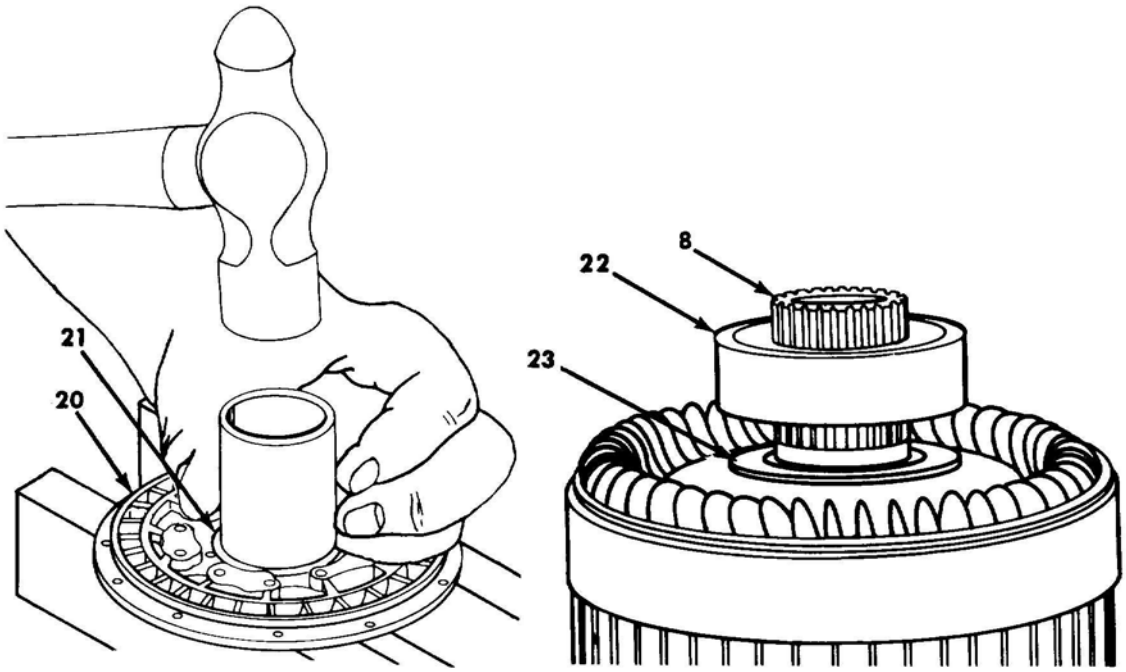


n. Remove commutator-end annular ball bearing (21) by hand. Support electrical end bell (20) on blocks and using a hammer and a 2-inch section of pipe stock, placed on outer race of bearing, drive bearing out.

o. Remove annular ball bearing (22) from drive-end of armature shaft (8) by hand or use a mechanical puller if necessary.

p. Remove dirt and liquid deflector (23) from drive-end of armature shaft (8).

q. Check and replace annular ball bearing if inside diameter exceeds 1.1807 to 1.1811 inch or outside diameter exceeds 0.24407 to 2.4409 inch. The fit of the bearing in support assembly shall be within 0.0003 inch (tight fit) to 0.0001 inch (loose fit). Field wear limit shall be 0.0003 inch loose fit.



DISASSEMBLY OF THE GENERATOR ASSEMBLY - CONTINUED 0008 00

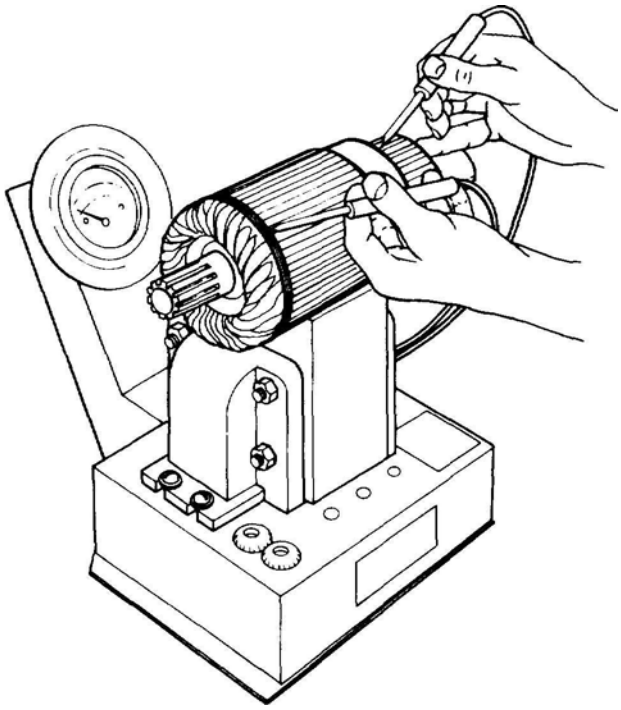
r. Check armature shaft and commutator. Replace if armature shaft bearing diameter exceeds 1.1810 to 1.1813 inch at commutator end or at drive end. The fit of the shaft in the bearing shall be 0.0006 inch (tight fit) to 0.0001 inch (loose fit).

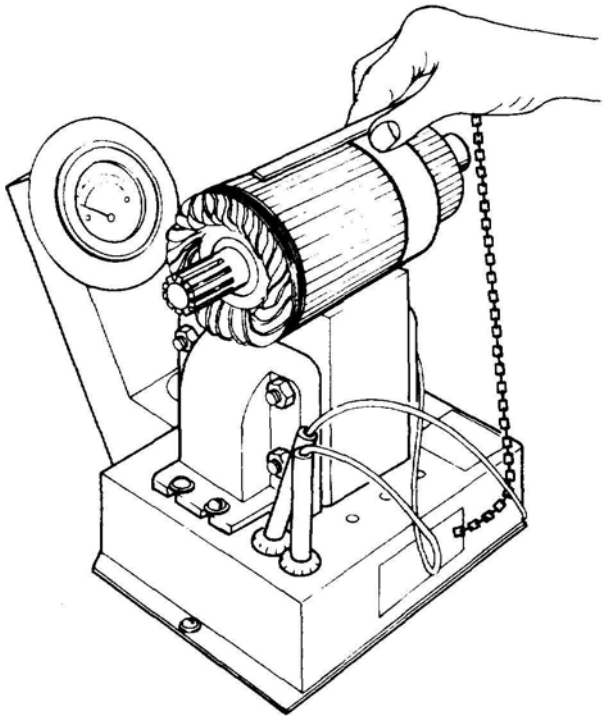
WARNING

Do not use test voltage greater than 220 V, and use care when testing insulation resistance. Bodily injury can result from contact with test voltage.

s. Inspect armature for grounds with an insulation test circuit (110 or 120 V in series with 50-watt lamp) by touching one of the test probes to armature core and the other probe to one of the commutator bars. If test light glows, the armature is grounded and must be replaced.

t. Inspect armature for short circuits using a growler fixture. Place the armature in growler. Hold a thin strip of steel, such as a hacksaw blade on armature. While holding the steel strip in position, rotate armature slowly in growler. A short circuit will cause the strip to vibrate. If a short circuit is found, replace armature.





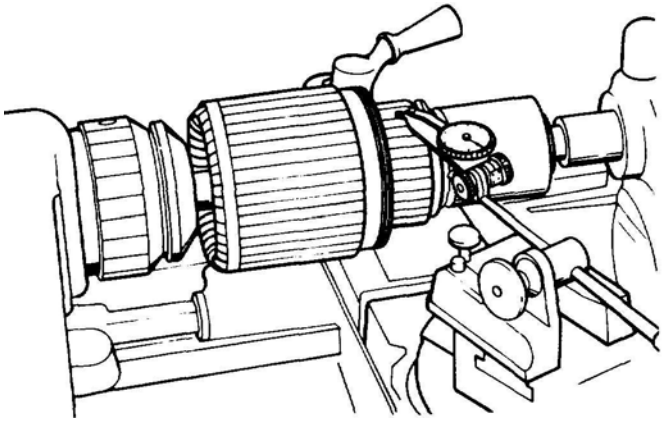
DISASSEMBLY OF THE GENERATOR ASSEMBLY - CONTINUED 0008 00

u. Inspect armature shaft splines for wear or damage. Replace armature if splines are defective.

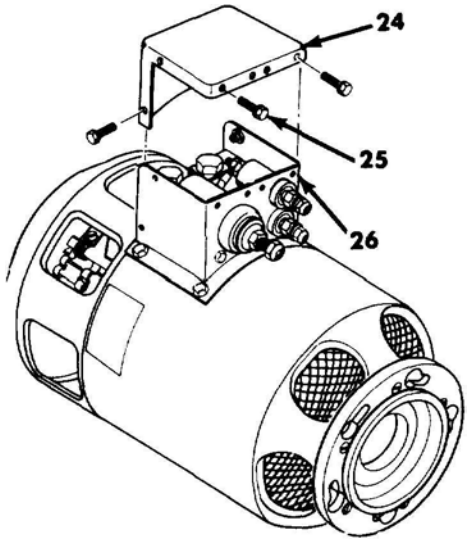
v. Install a serviceable annular ball bearing on commutator-end of armature shaft and use locally manufactured armature turning center to mount armature in a lathe. Inspect armature shaft and commutator for eccentricity with a dial indicator. If the eccentricity exceeds 0.001 TIR, the commutator must be resurfaced provided it will not be cut below 3.2200 inch diameter limits.

w. Inspect commutator contact surface. A satisfactory condition is indicated by an even, highly burnished, dark-copper color. If the contact surface is rough, pitted, scored, burned, or coated with hard carbon or oil, commutator must be resurfaced. If mica is not 0.025 to 0.032 inch below surface of commutator, it must be undercut to the correct depth.

x. Remove radio interference filter and housing as follows.

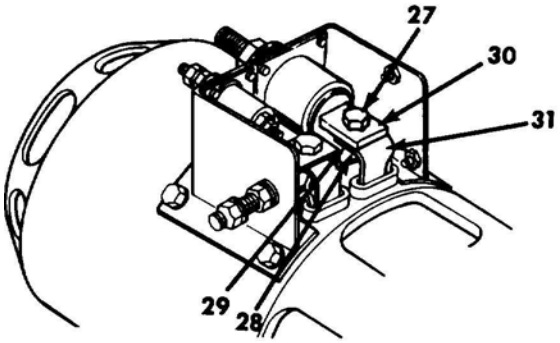


y. It may be necessary to cut sealant from around cover (24). Cut and peel sealant for access to electrical connections as necessary. Remove six washer screws (25) and tap around edge of cover with a soft-faced mallet to loosen and remove cover from filter housing (26).



DISASSEMBLY OF THE GENERATOR ASSEMBLY - CONTINUED 0008 00

z. Remove machine bolt (27), self locking nut (28) and brass flat washer (29) to disconnect flat terminal of capacitor (30) from positive brush bus (31) [stamped “B”].

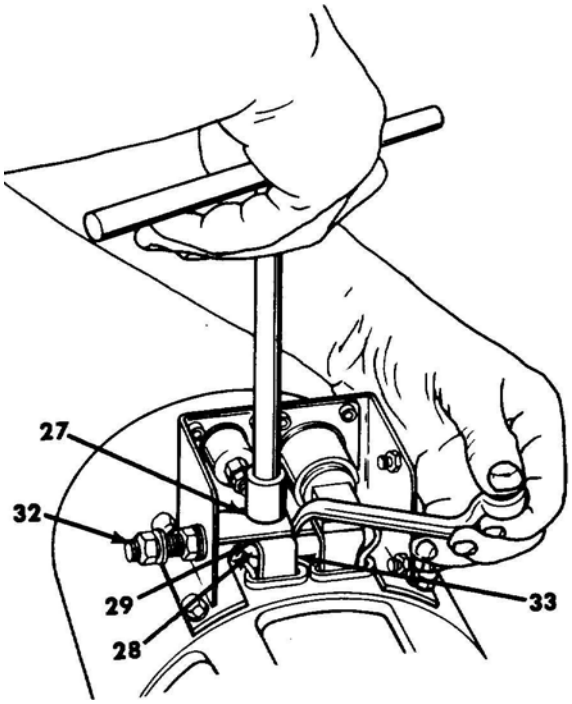


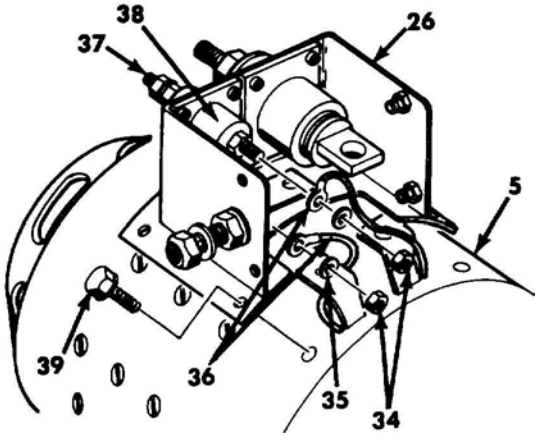
aa. Remove machine bolt (27), self-locking nut (28) and brass flat washer (29) to disconnect ground lead assembly (32) from negative brush bus (33) [stamped “E”].

ab. Remove two hex nuts (34) and brass flat washers (35) to disconnect positive field and equalizer leads (36) from terminals (37) of dual capacitor assembly (38). Remove four washer screws (39) to free filter housing (26) from generator housing (5). Remove filter housing with capacitors and ground lead assembly in place.

ac. Inspect generator housing for cracks and distortion. Replace housing if defective.

ad. Check bearing bore in housing. Replace housing if inside diameter of bearing bore does not conform to 2.4414 to 2.4419 inch limits. The fit of the bearing in housing shall be 0.0005 to 0.0012 inch loose fit. Field wear limit is 0.0013 inch.





DISASSEMBLY OF THE GENERATOR ASSEMBLY - CONTINUED 0008 00

ae. Inspect housing for scratches, burrs, and nicks on machined surfaces. Minor defects shall be repaired if the defects affect fit or function.

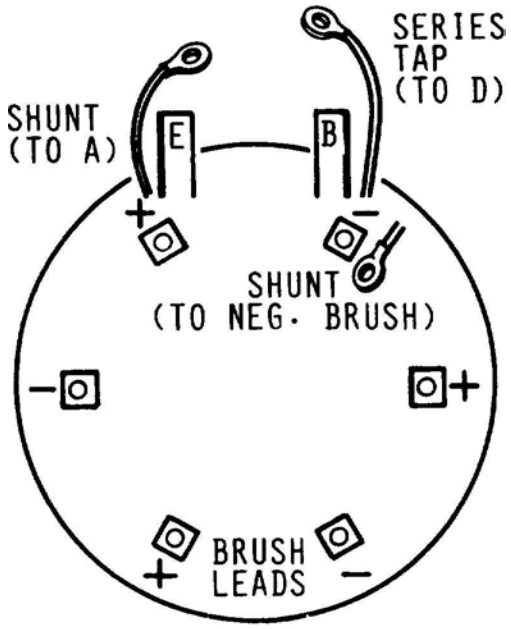
af. Inspect threads in tapped holes in housing for damaged threads. Replace housing if the threads are stripped.

ag. Check attaching screws for pole shoes to make sure each is tight and staked to housing.

ah. Inspect insulation and ties on field coils and leads in housing. If insulation appears burned or cracked, entire housing must be replaced.

ai. Make continuity/resistance measurements of housing using a multimeter (Simpson 260 or equivalent) set on Rx1 scale. Meter connections and readings shall be as follows. Replace housing if readings are not as shown.

Meter connection	Resistance reading (ohms)
E to B	Maximum
Series Tap to B	Maximum
Shunt (outside) to B	Maximum
Series Tap to E	Zero
Series Tap to Shunt (outside)	Maximum
Shunt (outside) to Shunt (inside)	2.2 to 2.4
Each (-) Brush Lead to E	Zero
Each (+) Brush Lead to B	Zero
Any (-) Brush Lead to Series Tap	Zero



Housing
(Viewed from Commutator End).

DISASSEMBLY OF THE GENERATOR ASSEMBLY - CONTINUED 0008 00

WARNING

Do not use a voltage greater than 220V, and use care when testing insulation resistance. Bodily injury can result from contact with test voltage.

NOTE

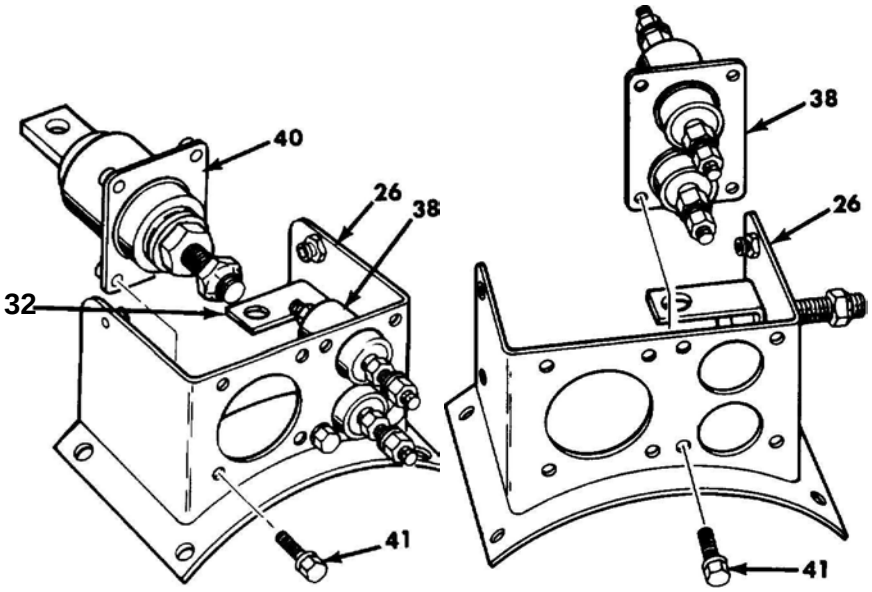
All or part of series winding will measure zero ohms on Rx1 meter scale due to low resistance of this winding.

aj. Check for grounded field windings using insulation test circuit (110 or 220 V in series with 50-watt lamp). Connect one lead of test circuit to bare metal of housing frame and touch other lead (in succession) to E terminal, B terminal, shunt lead, and series tap. Defective insulation will light test lamp, and housing must be replaced.

ak. Remove capacitor (40), capacitor assembly (38), and ground lead assembly (32) from filter housing (26) as follows.

al. Remove two washer screws (41) securing large capacitor (40) to filter housing (26), and remove capacitor.

am. Remove two washer screws (41) securing dual capacitor assembly (38) to filter housing (26), and remove capacitor.



DISASSEMBLY OF THE GENERATOR ASSEMBLY - CONTINUED 0008 00

an. Remove self-locking nut (42), flat washer (29), plain nut (43), lockwasher (44), flat washer (29), and ground lead assembly (32) from housing (26).

ao. Using capacitor test set and a multimeter, measure through circuit and capacitance of filter capacitors. Each capacitor has a through-circuit between end terminals, except the dual capacitor has two independent through circuits. In all components, measure capacitance between a terminal and the mounting foot. A terminal for each through circuit and common mounting foot for dual capacitor must be used.

ap. Large capacitor shall measure 1.75 mfd, and each circuit of the dual capacitor shall measure 0.25 mfd.

aq. Check dielectric strength of each capacitor with the test set. Replace any capacitor that breaks down under test.

NOTE

Brush springs (45) can be inspected and tested without removing them from brush holder assembly (46).

ar. If replacement is required, remove each brush spring (45) from spring-holding tab on brush holder assembly (46).

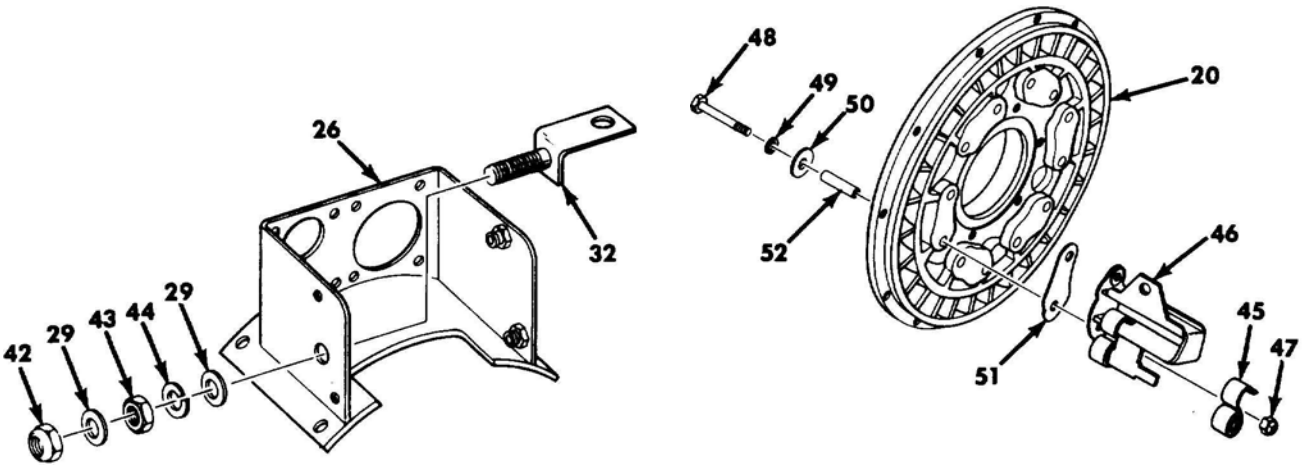
as. Remove two self-locking nuts (47) from screws (48) which secure one of brush holder assemblies (46) to bearing and brush holder support (20). Discard nuts.

at. Remove two screws (48), flat washers (49), and insulating washers (50) from brush holder assembly (46) and insulating plate (51). Using a soft-faced mallet, tap brush holder assembly or insulating plate from support.

au. Remove two insulating tubes (52) from this brush holder position.

av. Remove five remaining brush holder assemblies (46) as performed in steps at. and au.

aw. Check plate insulators, brush holder flat washers, tubes, and brush holders for distortion and cracks. Replace any defective parts.



DISASSEMBLY OF THE GENERATOR ASSEMBLY - CONTINUED 0008 00

NOTE

Spring tension must be checked at working deflection.

ax. Check brushes and springs for cracks or breaks. Check brushes and spring tension for conformity to dimension limits. New brush length shall be within 1.187 to 1.188 inch. Field wear limit is 0.688 inch. Spring tension shall be between 52 to 60 oz (at working deflection). If any brushes or springs are defective, replace entire set with brush kit.

ay. Inspect generator support assembly for cracks and distortion. Replace if defective.

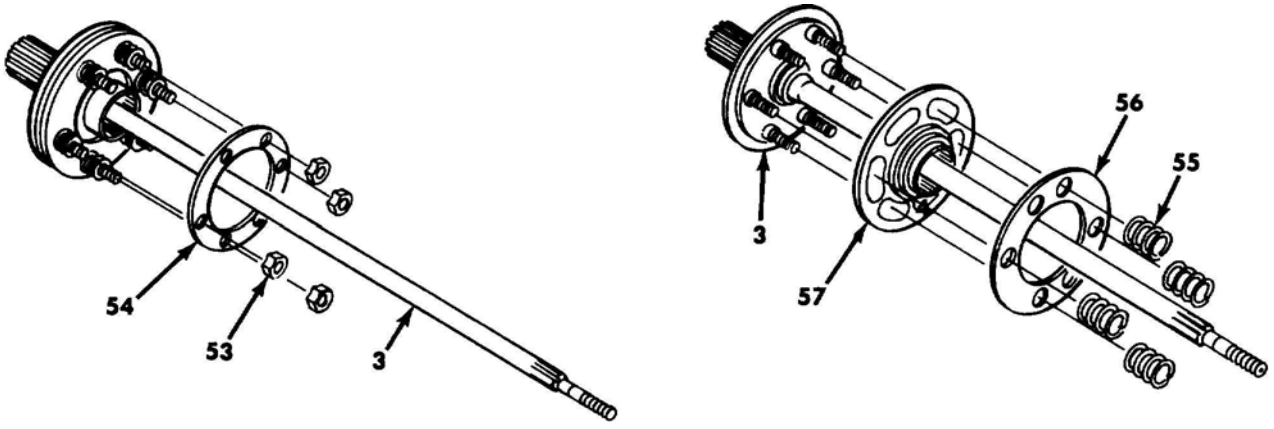
az. Check bearing bore in generator support assembly. Replace end plate if inside diameter of bearing bore does not conform to 2.4406 to 2.4409 inch limits.

ba. Inspect support assembly for scratches, burrs, and nicks on machined surfaces. Minor defects shall be repaired if the defect affects fit or function.

bb. Inspect threads in tapped holes in support assembly for damage. Replace generator support assembly if threads are stripped.

bc. Remove six self-locking nuts (53) from studs on flange of shaft assembly (3) and remove pressure damper plate retainer (54). Discard nuts.

bd. Remove six compression helical springs (55), pressure damper plates (56), and friction damper plate assembly (57) from shaft assembly (3).



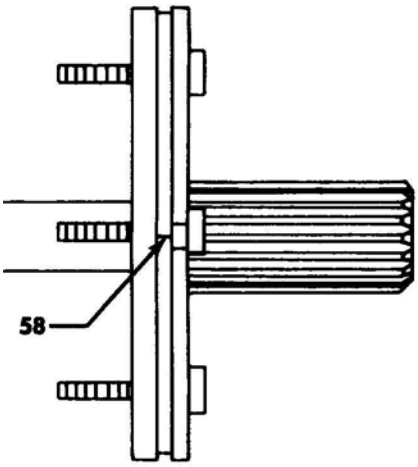
be. Visually check all parts of generator drive shaft for cracks, excessive wear, and distortion. Bronze friction surfaces must not be worn excessively; must be smooth and free of corrugations and score marks. Corresponding steel surfaces must also be free of score marks and wear patterns that can be detected by a straight edge placed on surface and viewed in front of a strong light. Replace worn, scored, or distorted parts.

bf. Check all six damper springs for cracks or distortion. Replace all six springs if one or more springs show signs of failure. The free length of compression helical spring shall be within 0.4800 to 0.5000 inch with a field wear limit of 0.4800 inch. The spring maximum solid height shall be within 0.3400 to 0.3500 inch with a field wear limit of 0.3400 inch. Spring load at 0.375 inch length shall conform to 68 to 80 lb with a field wear limit of 68 lb.

bg. Check damper plate for cracks or distortion. The thickness of the damper plate at wear surfaces shall conform to 0.1231 to 0.1463 inch limits with a field wear limit of 0.1100 inch. The thickness of the spring backup damper plate shall conform to 0.1563 to 0.2187 inch limits with a field wear limit of 0.1490 inch. Replace if defective.

DISASSEMBLY OF THE GENERATOR ASSEMBLY - CONTINUED 0008 00

bh. Assemble all parts except nuts, springs, and spring packing retainer with indicator marks alined. Put these parts temporarily into generator armature shaft bore so that internal and external splines of armature are engaged. Check relationship of indicating mark (58) on edge of dampener generator plate. The mark on plate should be approximately midway between the two marks on disc of shaft assembly. If marks do not assume this relationship, it indicates that shaft assembly is twisted and must be replaced.



bi. Inspect fan housing for cracks or warpage. Replace entire tube axial fan if defective.

bj. Inspect the fan housing for scratches, burrs, and nicks on machined surfaces, especially in the sealing areas. If minor defects cannot be removed with minor repair, entire tube axial fan must be replaced.

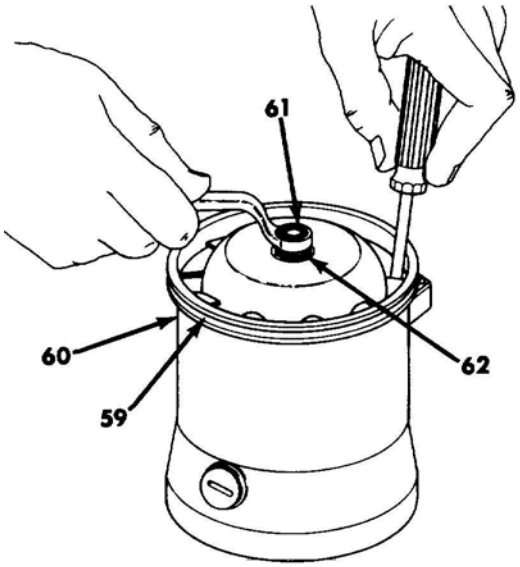
bk. Inspect threads in tapped holes in fan housing. Replace entire tube axial fan if threads are stripped.

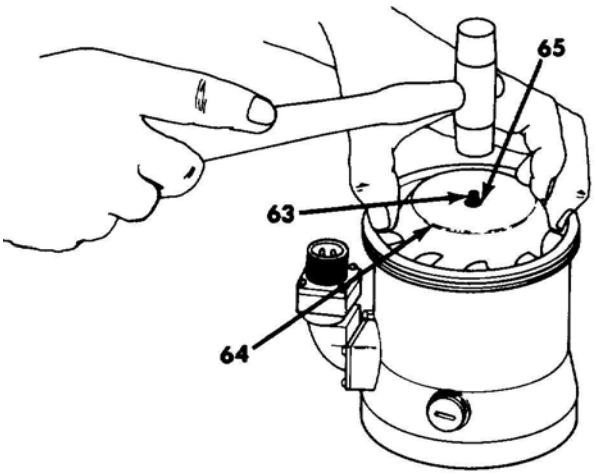
bl. Remove impeller from fan motor and unsolder electrical wires as follows.

bm. Remove and discard preformed packing (59) from fan housing (60). Insert a screwdriver between vanes of impeller and remove self-locking nut (61) and flat washer (62). Discard nut.

bn. Tap end of motor shaft (63) with a soft-faced mallet to free impeller (64) from shaft. Remove woodruff key (65).

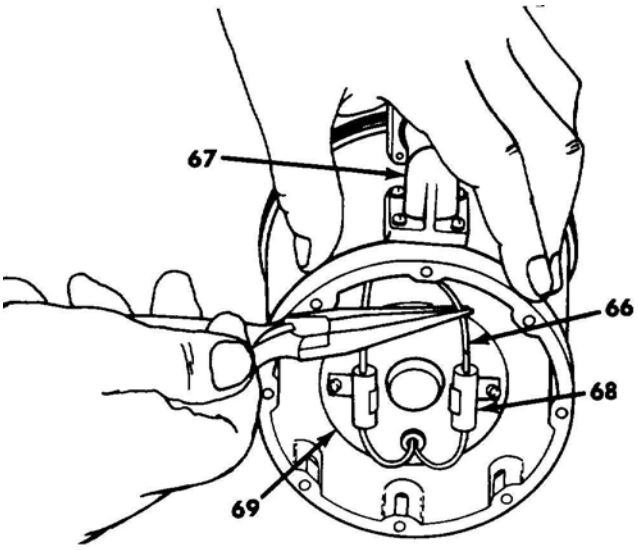
bo. Inspect impeller for cracks or corrosion. Replace if defective.



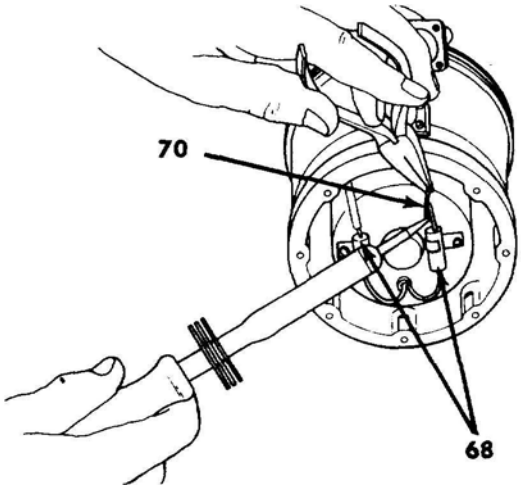


DISASSEMBLY OF THE GENERATOR ASSEMBLY - CONTINUED 0008 00

bp. Using needle-nose pliers, slide insulating sleeve (66) back on wires that lead to connector (67) from radio-noise suppression capacitors (68) mounted on end of fan motor (69). Note color coding of wires.



bq. Unsolder and remove wires (70) from radio-noise suppression capacitors (68).



DISASSEMBLY OF THE GENERATOR ASSEMBLY - CONTINUED 0008 00

br. Note location of indexing key (71) in receptacle assembly. Remove four screws (72) and lockwashers (73) from receptacle assembly (74). Remove receptacle assembly from connector shell (75) using care to avoid damage to wire leads. Discard lockwashers.

bs. Remove and discard receptacle assembly gasket (76).

bt. Remove four screws (72) and lockwashers (73) from connector shell (75) and separate shell from fan housing (60). Discard lockwashers.

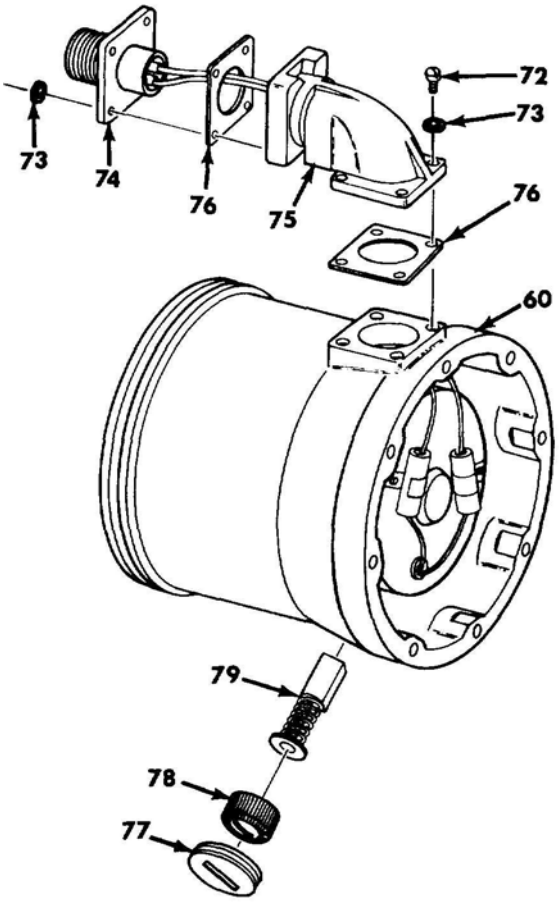
bu. Remove and discard shell gasket (76).

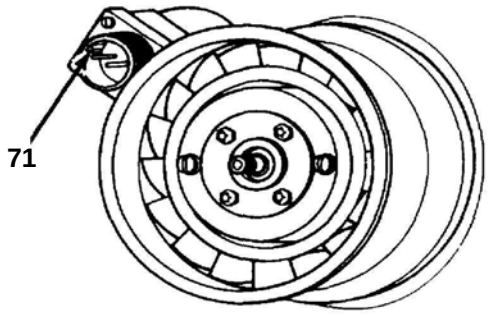
bv. Remove two plugs (77) from fan housing (60), two brush caps (78), and brush assemblies (79).

NOTE

Spring tension for brushes in fan motor is critical. Springs are integral with brushes for fan motor.

bw. Check brushes and springs for cracks or breaks. New brush length shall be within 0.812 to 0.813 inch dimension limits. Field wear limit is 0.250 inch. If any brushes or springs are defective, replace entire set.





CAUTION

Do not attempt removal of fan motor (69) from fan housing (60). High speed fan motor could become misaligned if removal is tried.

bx. Remove screw (80) and lockwasher (73) from each radio-noise suppression capacitor (68). Discard lockwasher.

by. Slide insulating sleeve (66) back on wires to expose soldered connections on both radio-noise suppression capacitors (68).

bz. Note color coding of wires (70) connected to capacitors (68), unsolder connections (81) and remove both capacitors.

ca. Using capacitor test set and a multimeter, measure through circuit and capacitance of fan motor capacitors, and capacitors of radio-interference filter. Each capacitor has a through circuit between end terminals. In all components, measure capacitance between a terminal and the mounting foot.

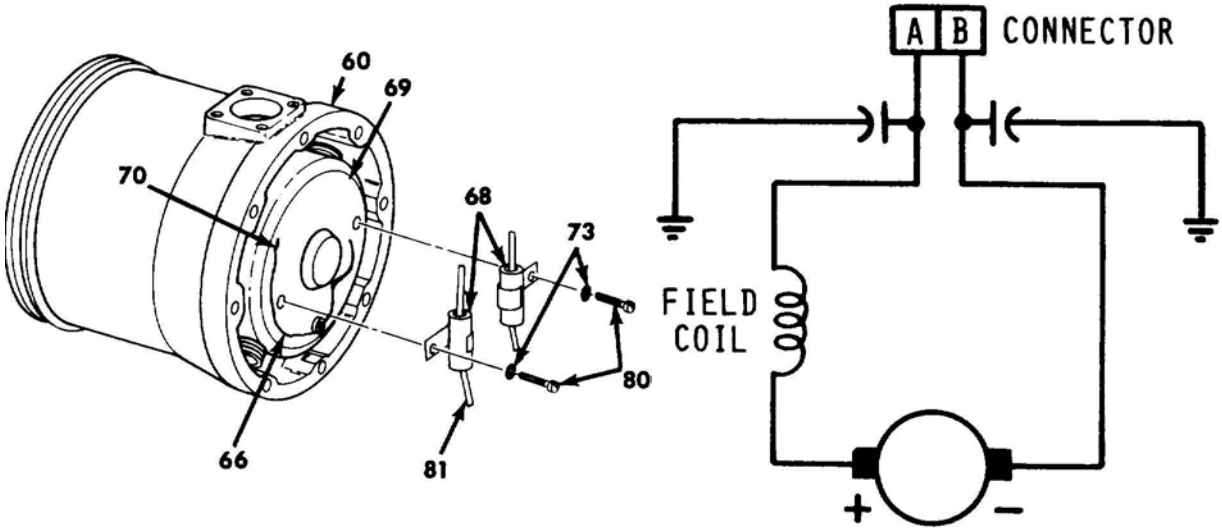
cb. Fan motor capacitors shall measure 0.25 mfd.

cc. Check dielectric strength of each capacitor with the test set. Replace any capacitor that breaks down under test.

cd. Perform limited inspection of fan motor commutator and armature bearings. Only the brush track on commutator can be seen by looking through the holes in fan housing and manually rotating armature. with no trace of binding. An acceptable commutator surface will be highly burnished and dark copper-colored. If armature is binding or commutator surface is rough, pitted, scored, burned, or coated with hardened varnish or carbon, the entire tube axial fan must be replaced.

ce. Using a multimeter set on Rx1 seal e, measure resistance between one motor lead and each brush holder (in sequence). Measure resistance between the other motor lead and each brush holder (in sequence). The series of measurements shall show, not necessarily in sequence, two readings of maximum resistance, one reading of minimum (zero) resistance, and a field resistance of 0.08 to 0.12 ohms with windings at room temperature.

cf. Inspect insulation of field windings in fan motor for grounds with a multimeter. Resistance measured between both fan motor leads and metal housing of motor shall be at least one megohm.



END OF TASK

REPAIR OF COMPONENT PARTS 0009 00

THIS WORK PACKAGE COVERS:
Repair

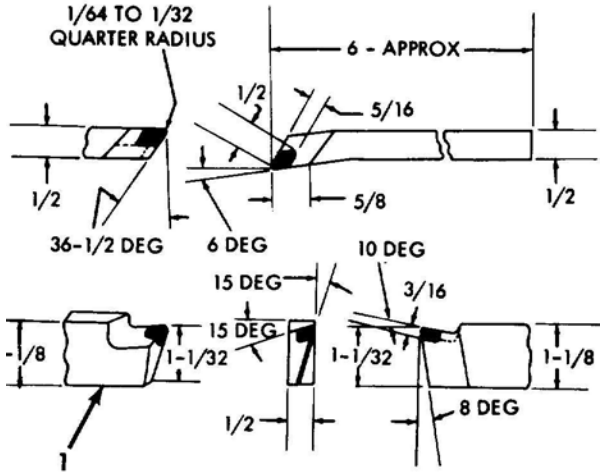
INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0017 00)
Caliper set, micrometer, outside (item 10, WP 0017 00)
Hacksaw blade (item 13, WP 0017 00)
Undercutting machine (item 15, WP 0017 00)
Threading set, screw (item 16, WP 0017 00)
Armature turning center tool (item 17, WP 0017 00)
Stone, sharpening (item 18, WP 0017 00)
Lathe, machinist

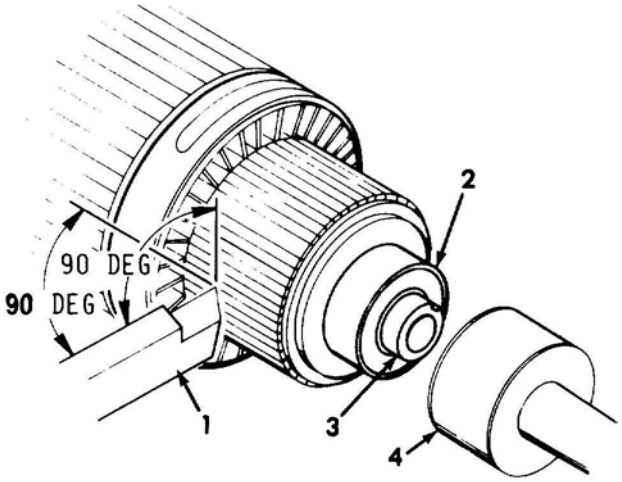
Materials/Parts
Sandpaper (item 4, WP 0016 00)
Goggles (item 7, WP 0016 00)
Rubber gloves (item 8, WP 0016 00)

Equipment Conditions
Generator components on workbench

1. Generator Support Assembly, Fan Adapter, and Air Intake Housing.
   a. Smooth minor scratches, burrs, and dents on machined mating surfaces using a fine mill file.
   b. Repair damaged threads in generator support assembly by chasing with correct size tap.
   c. Repair damaged threads in fan housing and stator housing by chasing with correct size tap.
2. Armature Commutator.
   a. Sharpen lathe cutting tool (1) to the dimensions shown. The tool must be extremely sharp. After grinding, hone the tool with a fine hard stone to ensure a smooth cut during the turning operations.
   b. Temporarily install a serviceable annular ball bearing (2) on commutator end of armature shaft (3). Install armature in lathe with armature turning center tool (4). Position sharpened cutting tool (1) as shown. Point of cutting tool should be 1/32 inch below centerline of armature shaft.



NOTE: ALL DIMENSIONS SHOWN ARE IN INCHES



c. Set lathe to turn armature (5) at 600 to 800 rpm.

d. Make only light cuts, no more than 0.005 inch on each pass, until entire surface of all commutator bars (6) is involved.

e. Make one final cut at no more than 0.002 inch deep.

f. Check diameter of commutator (6). The commutator diameter on armature should be within 3.3050 to 3.3190 inch. If less than minimum turned diameter of 3.2200 inch, armature (5) must be replaced.

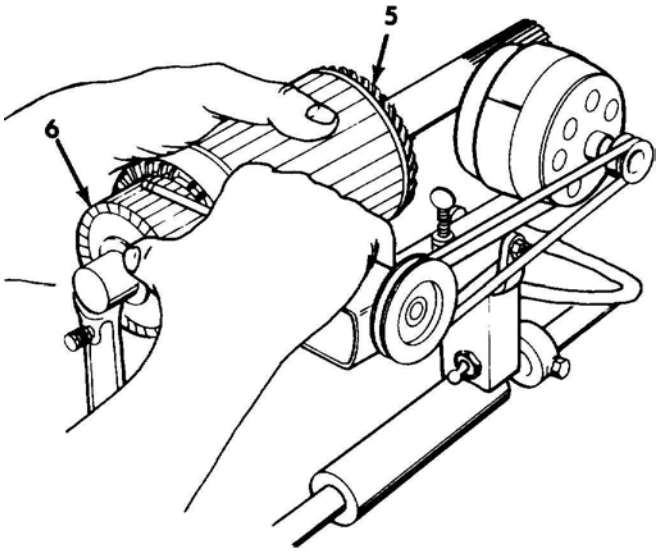
CAUTION

Use care when undercutting so that no metal is removed from sides of segments and no mica is left standing against side of a segment.

NOTE

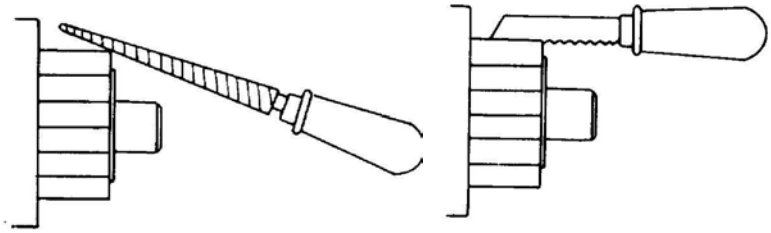
Mica may be undercut with a machine or hand tools.

g. If turned diameter of commutator (6) is no less than minimum limit, undercut mica 0.052 inch wide to a depth of 0.025 to 0.032 inch below commutator surface.



h. Start groove in mica with a 3-cornered file.

i. Undercut mica with a hacksaw blade.



j. Mica (7) must be cut away clean between segments (8).

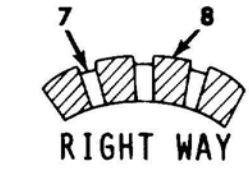
k. Mica (7) must not be left with a thin edge next to segments (8).

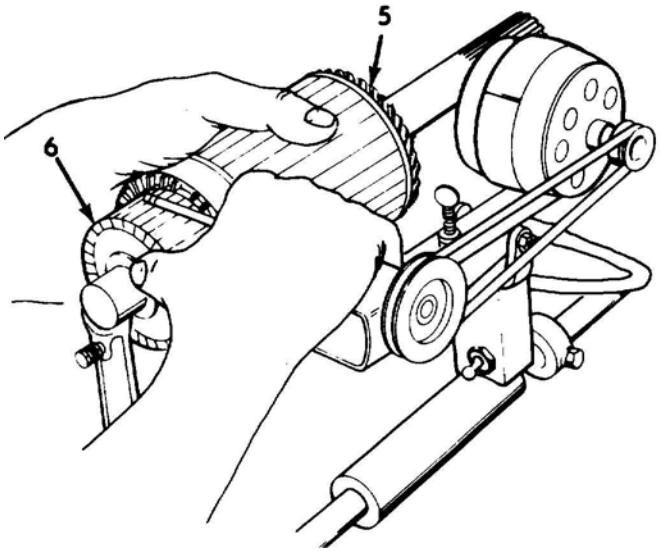
WARNING

Compressed air used for cleaning purposes will not exceed 30 psi. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).

l. After undercutting, remove all copper and mica particles with compressed air.

m. Put armature (5) back in lathe and set for 1500 to 2500 rpm. Use no. 3/0 sandpaper to polish commutator (3) while armature is rotating





ASSEMBLY OF THE GENERATOR 0010 00

THIS WORK PACKAGE COVERS:
Assembly and Adjustment

INITIAL SETUP:

Tools and Special Tools
General mechanic's tool kit (item 1, WP 0017 00)
Brush spring lifter (item 2, WP 0017 00)
Pliers set, retaining ring (item 4, WP 0017 00)
Soldering iron (item 8, WP 0017 00)
Spring tester (item 19, WP 0017 00)
Torque wrench, 0–600 lb–in (item 20, WP 0017 00)

Materials/Parts
Tape, adhesive (item 3, WP 0016 00)
Sandpaper (item 4, WP 0016 00)
Solder (item 10, WP 0016 00)
Grease (item 11, WP 0016 00)
Oil, lubricating (item 2, WP 0016 00)
Insulating compound (item 12, WP 0016 00)

Materials/Parts – Continued
Sealant (item 13, WP 0016 00)
Pipe stock (item 9, WP 0016 00)
Generator parts kits
Lockwire
Gaskets
Lockwashers
Self–locking nuts

Equipment Conditions
Generator components on workbench

NOTE

When inspection indicates that a component subassembly is serviceable, disassembly is not necessary. Skip procedure for parts that have not been disassembled.

ASSEMBLY OF THE GENERATOR - CONTINUED 0010 00

Assembly

1. Electrical End Bell.

   a. Install metal flat washer (2), insulating flat washer (3), and tube (4) on each of two machine bolts (1). Install these bolts through one brush holder pad on generator support assembly (5).

   b. Install one plate insulator (6) over ends of bolts (1), make sure contour of insulator (6) fits contour of brush holder pad on support assembly (5).

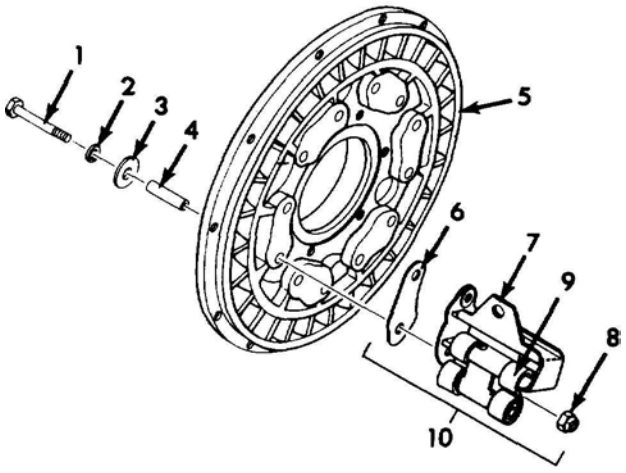
   c. Position one holder (7) over ends of bolts (1) and against plate insulator (6) on support assembly (5). Install and tighten two new self-locking nuts (8). Torque to 25-30 lb-in (2.8 to 3.4 N•m).

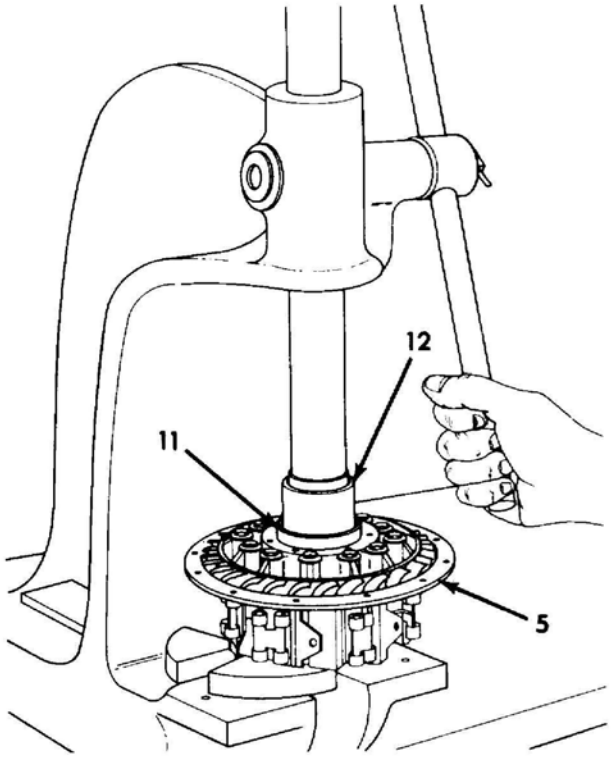
   d. Install each of remaining five electrical contact assemblies (10) by repeating steps a thru c. If torsion spiral springs (9) were removed for inspection or replacement during disassembly, install all springs (9) on their respective holders (7) in the position shown.

   e. Apply a coating of insulating compound to the head of each bolt (1), make sure that compound covers both flat washers (2) and (3). Apply compound around attaching flange of each holder (7) and mounting pad on support assembly (5). Allow compound to dry thoroughly before installing bearing in support assembly.

   f. Apply a film of light grease to bore of bearing liner in support assembly (5) and press annular ball bearing (11) into bore of support assembly (5) as shown. Use an arbor press and an arbor (12) slightly smaller in diameter than outside diameter of outer bearing race, as it must make contact with outer bearing race only.

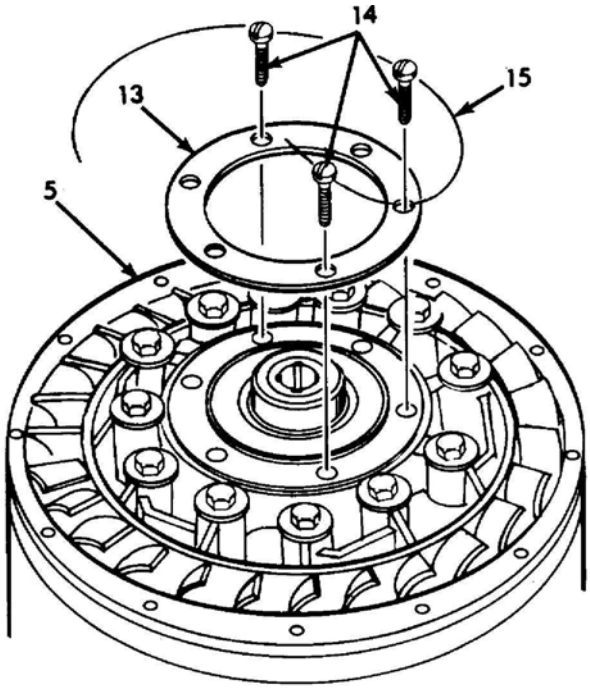
   g. Check insulation of electrical end bell. Using a multimeter, check continuity on each brush holder terminal. Multimeter should read 0 continuity between brush holder.





ASSEMBLY OF THE GENERATOR - CONTINUED 0010 00

h. Stand assembled parts upright (mounting flange of housing down) and install bearing retaining ring (13) on support assembly (5) with six machine screws (14). Use one 24-inch piece of nonelectrical wire (15) to tie these six screws.



ASSEMBLY OF THE GENERATOR - CONTINUED 0010 00

2. Radio Interference Filter.

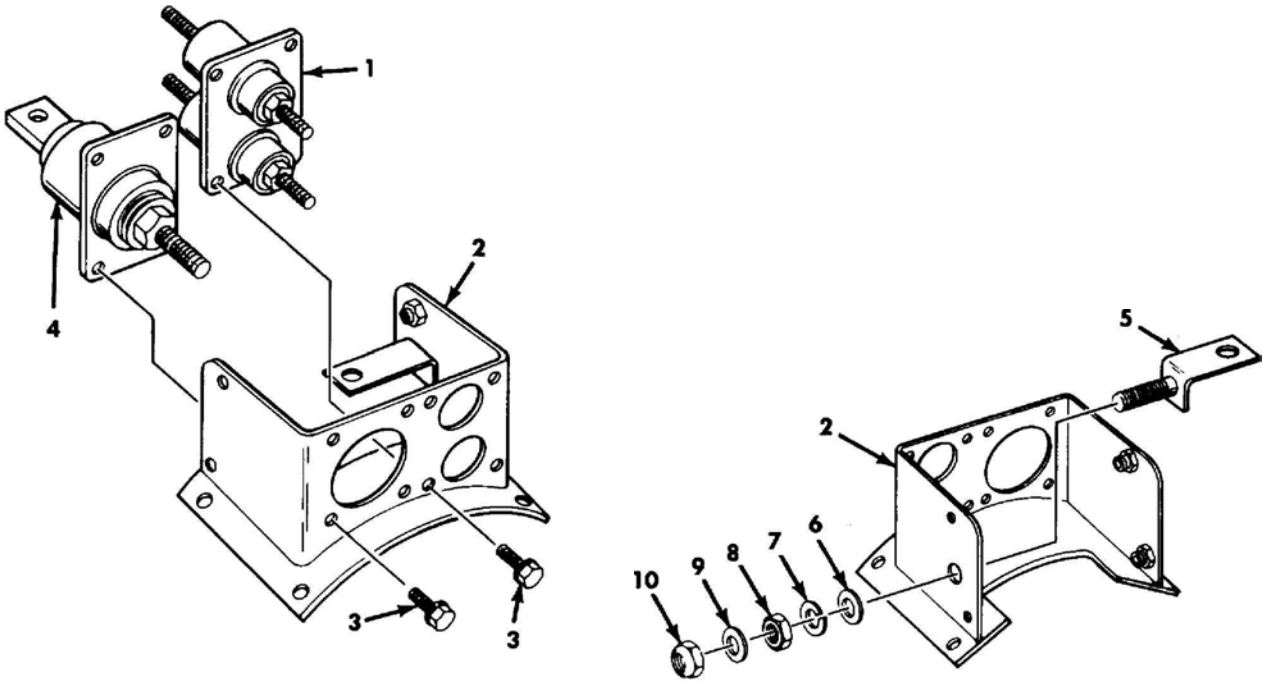
   a. Apply RTV sealer to mounting flange of capacitor assembly (1). Tilt capacitor assembly (1) as necessary to clear installed ground lead and move into position in junction box (2).

   b. Install two washer screws (3) into corners of capacitor assembly (1) mounting flange which are closest to curved side of junction box (2). Torque to 18-24 lb-in (2.0 to 2.7 N•m).

   c. Apply RTV sealer to mounting flange of capacitor (4). Install capacitor (4) in junction box (2) and secure with two washer screws (3) at corners of capacitor mounting flange which are closest to curved side of junction box (2). Torque to 18-24 lb-in (2.0 to 2.7 N•m).

   d. Place generator ground lead (5) in position in junction box (2) and secure it with flat washer (6), new lockwasher (7), and hexagon plain nut (8).

   e. Torque nut (8) to 5-10 lb-ft (6.8 to 13.6 N•m) while holding ground lead (5) to keep it from rotating out of correct position. Install flat washer (9) and new hexagon self-locking nut (10) finger tight.



ASSEMBLY OF THE GENERATOR - CONTINUED 0010 00

f. Ensure that both nonmetallic grommets (11) are installed on stator housing (12).

NOTE

Equivalent for washer bolts (14) will be installed on generator 10889713 when guard is installed.

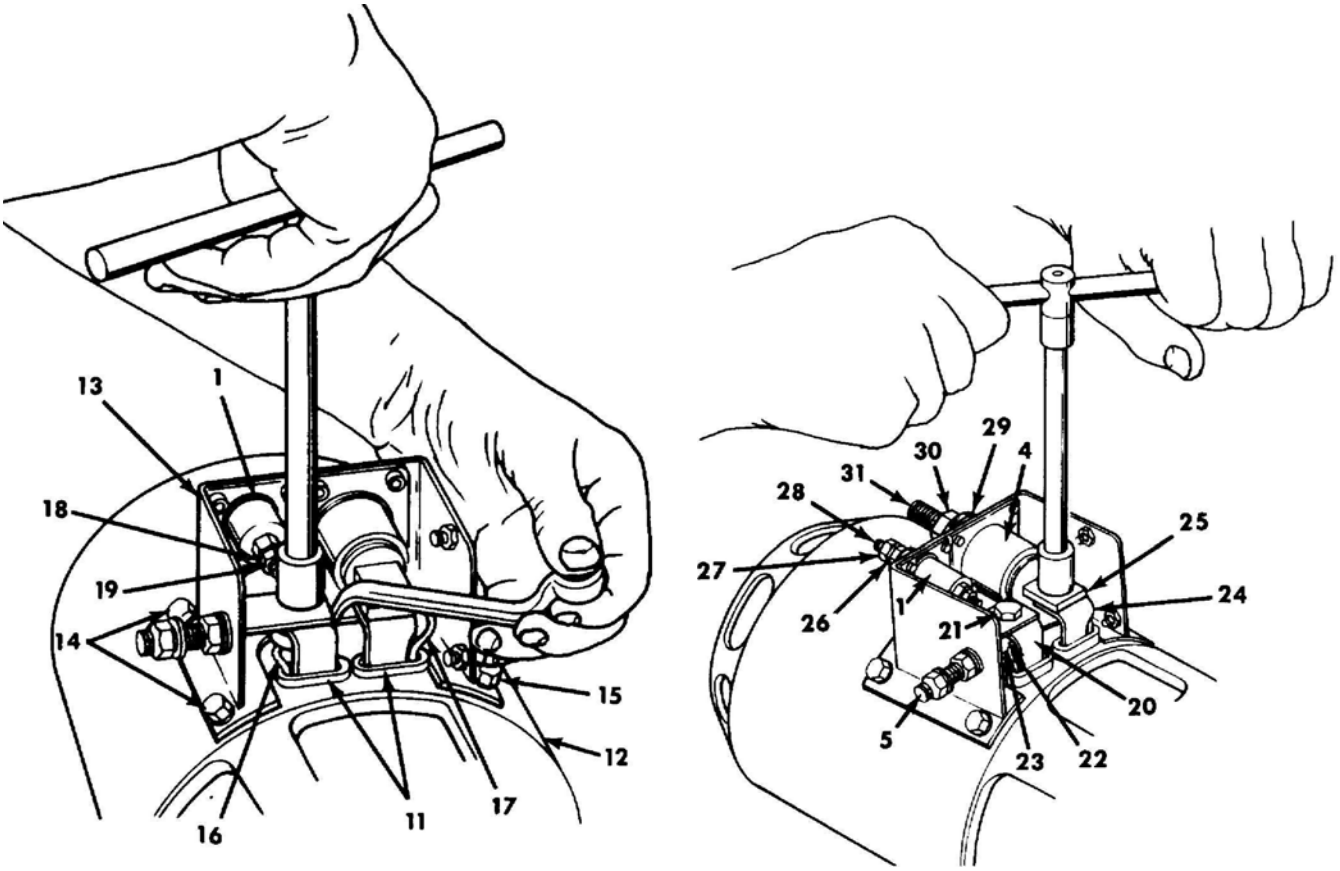
g. Apply sealer to mounting surface and position assembled parts of radio interference filter (13) on housing (12). Install two washer bolts (14) for generators 8717421 or 11642898 only. Install two washer bolts (15) to secure side of filter (13) opposite its ground terminal to housing (12) on all generators.

h. Connect terminal end of field lead (16) to lower terminal of capacitor assembly (1). Connect terminal end of equalizer lead (17) to upper terminal of capacitor assembly (1). Install one flat washer (18) and one new self-locking nut (19) on each terminal. Torque to 16-30 lb-in (1.8 to 3.4 N•m).

i. Connect the negative brush bus (20) (stamped "E") to ground lead (5) with machine bolt (21), one flat washer (22), and one new self-locking nut (23). Install machine bolt (21), flat washer (22), and new self-locking nut (23) to connect positive brush bus (24) (stamped "B") to flat terminal (25) of capacitor (4). Torque to 5-10 lb-ft (6.8 to 13.6 N•m).

j. Install flat washer (26) and new self-locking nut (27) on each external terminal (28) of capacitor assembly (1). Tighten nut finger tight.

k. Install flat washer (29) and new self-locking nut (30) on terminal stud (31) of capacitor (4). Tighten nut finger tight.



ASSEMBLY OF THE GENERATOR - CONTINUED 0010 00

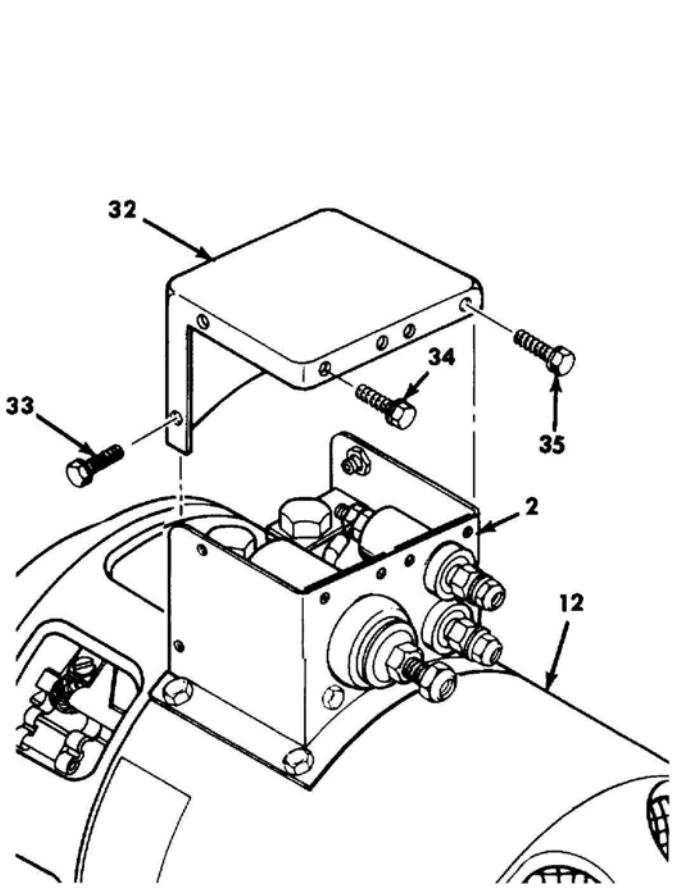
l. Generators 10889713 and 11642898 must be made as waterproof as possible by applying a sealant during assembly. Coat heads of bolts, terminal connections, all nuts, and areas around openings in junction box (2) with sealant before installing junction box cover plate (32). Seal all openings into generator, as well as the area between radio-noise capacitors and generator housing. Make sure sealant is applied generously. Allow sealant to evaporate (dry) for a short period of time before installing junction box cover plate (32).

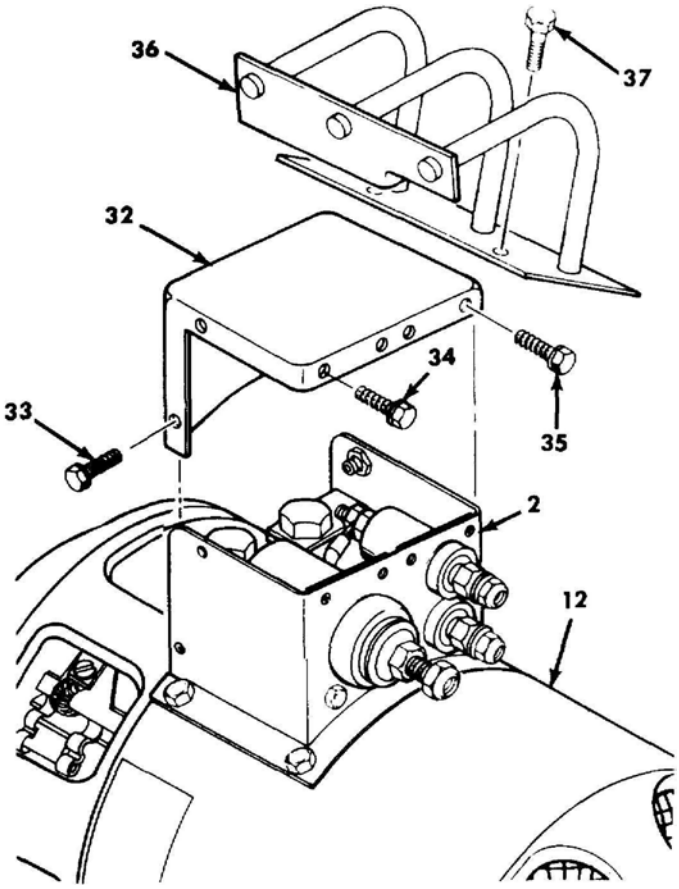
m. Install junction box cover plate (32) on junction box (2) as follows:

1) Generators 8717421 and 11642898: secure cover with eight washer screws (33). Torque to 18-24 lb-in (2.0 to 2.7 N•m).

2) Generator 10889713: attach engine ground terminal guard (36) with two washer screws (34) through mounting holes in guard (36), holes in cover (32), and into junction box (2). Use six washer screws (35) in remaining holes to complete attachment of cover. Torque to 18-24 lb-in (2.0 to 2.7 N•m).

3) Generator 10889713: attach guard (36) to generator housing (12) with two washer screws (37) through mounting holes in guard (36), mounting holes in junction box (2), and into generator housing (12). Torque to 18-24 lb-in (2.0 to 2.7 N•m).





3. Tube Axial Fan and Adapter Generator (10889713).

NOTE

Continuity of lead to negative brush holder can be checked with a multimeter on Rx1 scale.

a. Position fan motor leads for connection to respective capacitors so that lead (1) from negative brush holder (2) lays clockwise from exit hole grommet (3) in fan motor (4).

b. Ensure one-inch long insulating sleeves (5) are on each motor lead (1) and slid back against grommet (3) during soldering. Connect lead (1) from negative brush holder (2) to terminal (6) on capacitor (7) by soldering.

c. Connect remaining motor lead (1) to terminal (8) of remaining capacitor (7) by soldering.

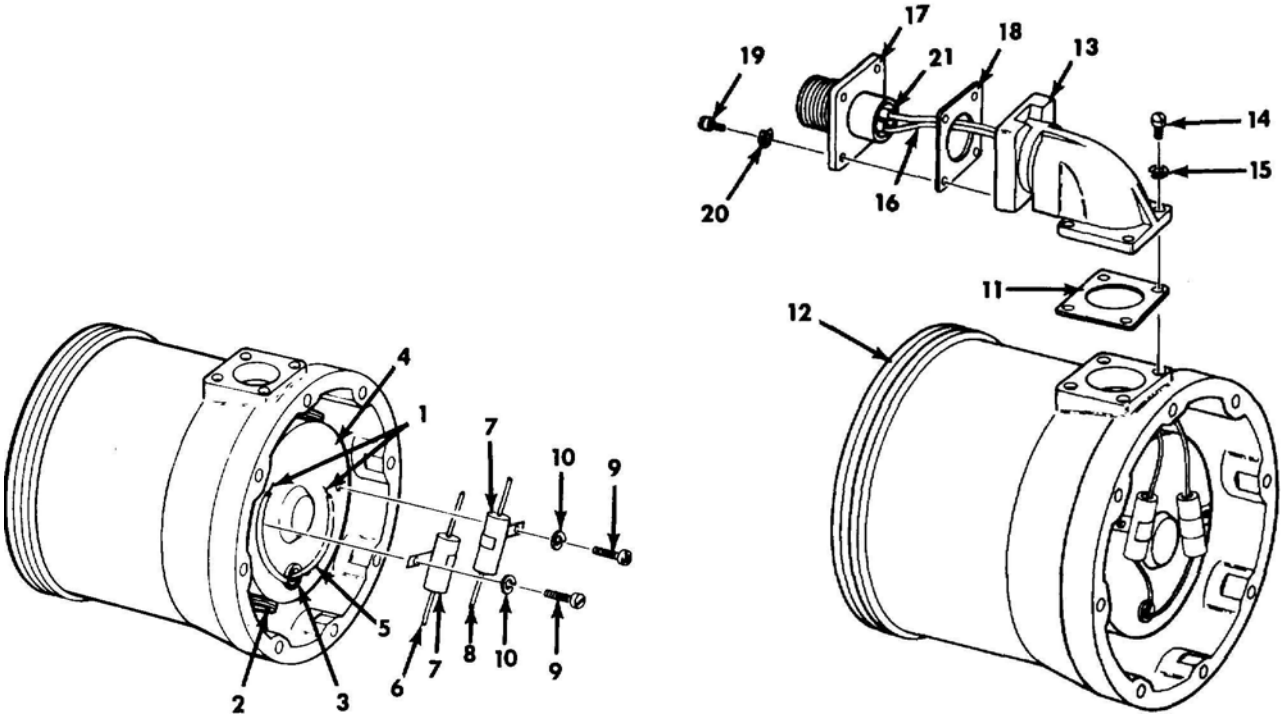
d. When solder has cooled, slide insulating sleeves (5) over soldered connections.

e. Install each capacitor (7) at its respective position on fan motor (4) with machine screw (9) and new lockwasher (10). Torque to 3.5-4.5 lb-in (0.4 to 0.5 N•m).

f. Place new gasket (11) in position on fan housing (12). Place contact electrical shell (13) in position and secure on fan housing with four machine screws (14) and new lockwashers (15). Torque to 3.5-4.5 lb-in (0.4 to 0.5 N•m).

g. Insert sleeved wire leads (16) attached to electrical receptacle connector (17) through new gasket (18) and shell (13). Position gasket (18) and connector (17) so indexing key in connector is on side farthest from fan housing and install four machine screws (19) and new lockwashers (20). Torque to 3.5-4.5 lb-in (0.4 to 0.5 N•m).

h. Ensure lead wires (16) from connector (17) are identified and routed to proper capacitors. Lead (16) from connector pin B (21) must be routed to capacitor (7) which is connected to negative brush holder (2) of fan motor (4).



ASSEMBLY OF THE GENERATOR - CONTINUED 0010 00

NOTE

Continuity can be checked with a multimeter on Rx1 scale.

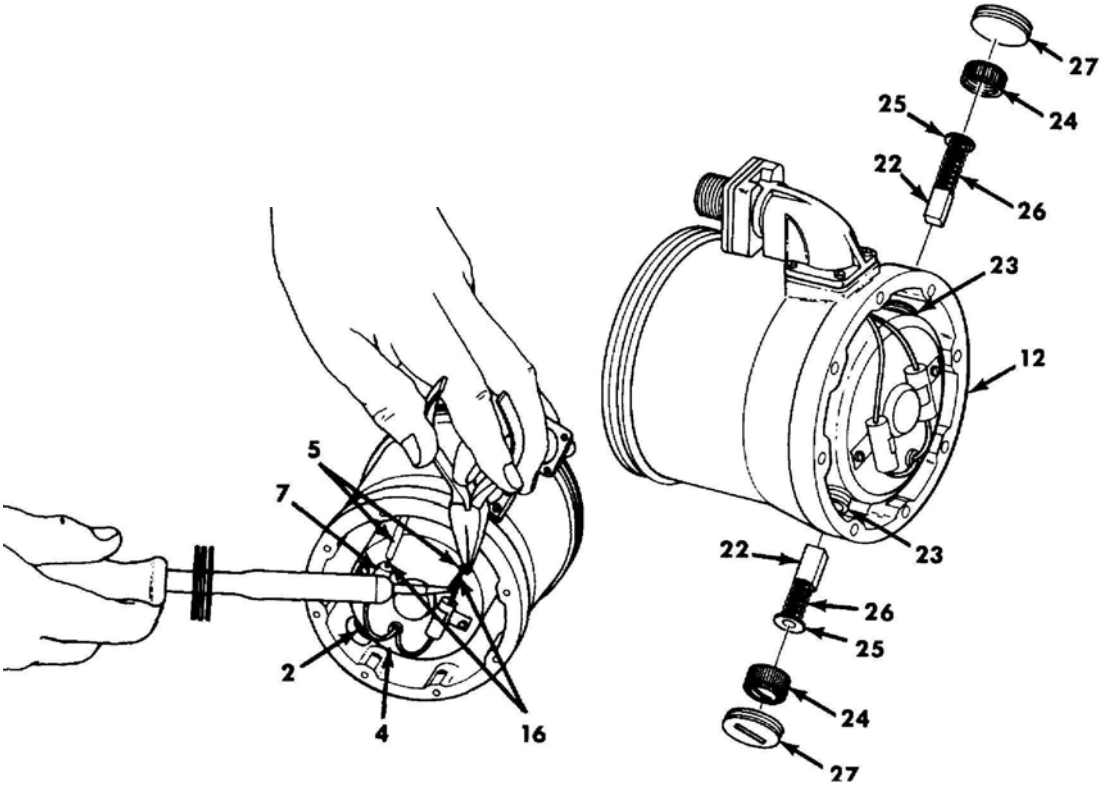
i. Using needle-nose pliers, slide insulation sleeve (5) back from end of lead and hold while soldering each lead (16) to its proper capacitor (7).

j. When soldered connections have cooled, use needle-nose pliers to slide insulation sleeve (5) over soldered connection at each capacitor (7).

k. Slide an electrical contact brush (22) into each fan motor brush holder (23). Position one cap (24) to cup spring disk (25) at outer end of brush spring (26) and carefully compress spring until the cap can be threaded onto its brush holder.

l. Install remaining cap (24) as in step k and tighten both caps onto their brush holders (23).

m. Apply sealant to threads of each electrical conduit end seal plug (27). Install these plugs in fan housing (12) before sealant sets.



ASSEMBLY OF THE GENERATOR - CONTINUED 0010 00

n. Apply a coating of sealant about 1/8 inch thick to mounting surface of fan housing (12). Avoid covering any tapped holes in this surface.

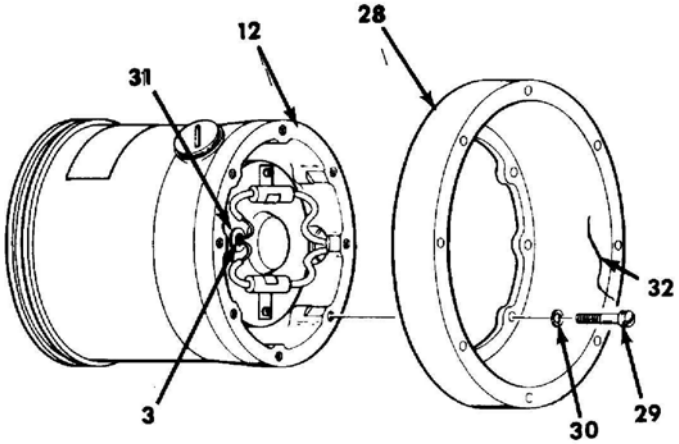
o. Before sealant sets, bring adapter (28) close to fan housing (12) mounting surface and start eight machine screws (29) with flat washers (30) so that sealant will not be forced into tapped holes.

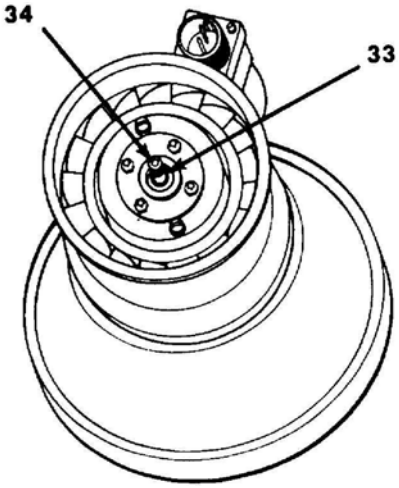
p. Torque machine screws (29) alternately and evenly to 16-25 lb-in (1.8 to 2.8 N•m), allowing sealant to be extruded from between fan housing (12) and adapter (28). Wipe excess sealant from outside surfaces of fan housing and adapter.

q. Apply sealant to seal opening (31) where fan motor leads enter grommet (3).

r. Install four pieces of nonelectrical wire (32) to tie machine screws (29) in pairs.

s. Install woodruff key (33) into slot in fan motor shaft (34).





t. Align keyway (35) in bore of fan impeller (36) with woodruff key (33) and install impeller (36) on fan motor shaft (34).

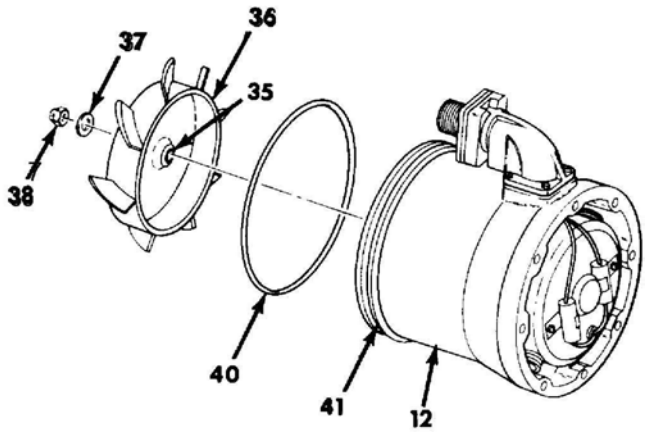
u. Install flat washer (37) and new hexagon self-locking nut (38).

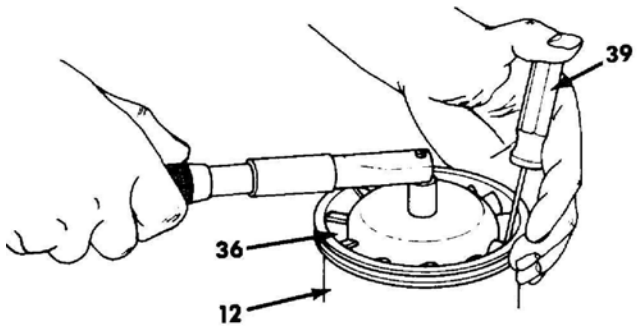
CAUTION

Make sure screwdriver is inclined so that it contacts surface of impeller fan blade rather than edge as a safety measure against breaking the blade while nut is being tightened.

v. Insert a screwdriver (39) between blades of fan impeller (36) far enough to anchor against air flow guide of fan housing (12). Hold fan impeller (36) against rotation while nut (38) is torqued to 140 to 150 lb-in (15.8 to 17.0 N•m).

w. Coat new preformed packing (40) with grease and install in ring groove (41) at end of fan housing (12).





ASSEMBLY OF THE GENERATOR - CONTINUED 0010 00

4. Armature and Brush Holders.

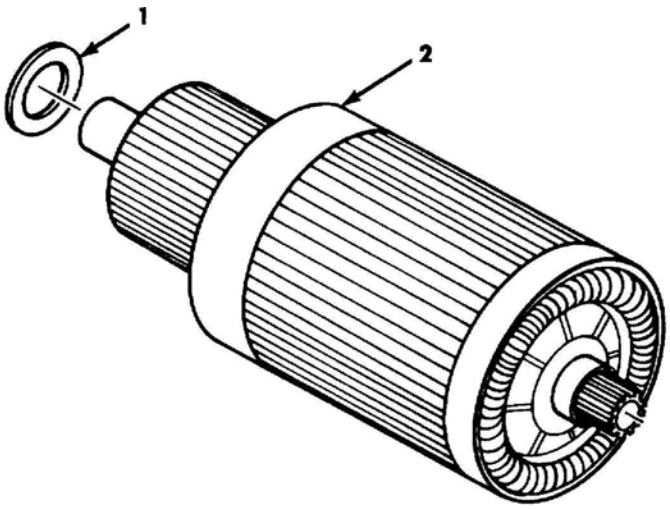
   a. Install shouldered and recessed washer (1) on commutator-end of generator armature (2) so offset on outer chamfer of washer is facing commutator.

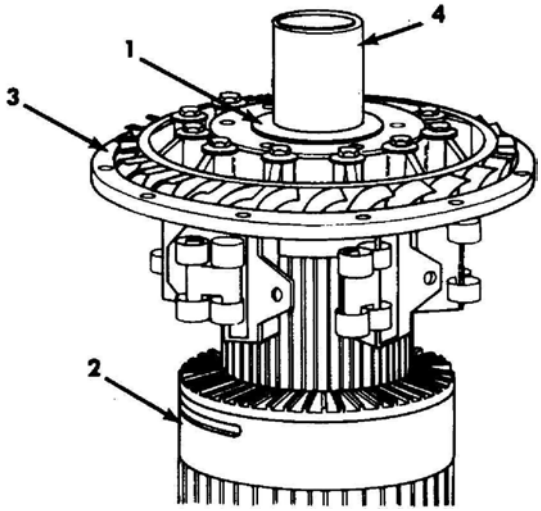
CAUTION

Armature shaft and ball bearings are designed for a light press fit. It will be necessary to use an arbor press or a hammer with a piece of soft metal, tubular pipe stock to assemble these parts. Tubular pipe stock must have a bore diameter slightly larger than that of armature shaft and an outside diameter slightly larger than that of bearing inner race.

   b. Press or drive annular ball bearing in assembled electrical end bell (3) onto commutator-end of armature (2) using arbor (4). Inner race of bearing must bottom against washer (1).

   c. Rotate end bell on armature to check for any binding in the ball bearing. There must be no evidence of binding.



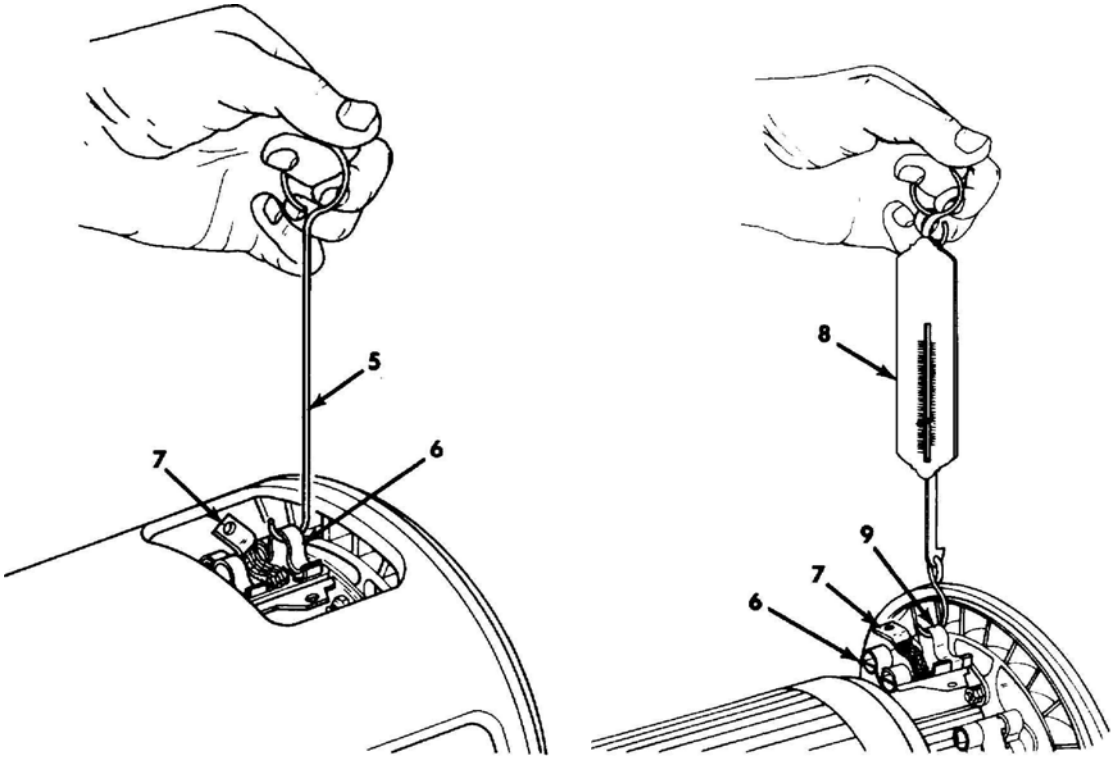


d. Check brush spring tension as follows:

NOTE

Side of brushes to which the flexible lead is attached must be away from spring coils.

1) Using brush spring lifter (5), to move torsion spiral springs (6) as necessary to install a new electrical contact brush (7).
2) Lift ends of springs (6) into position in metal shoes on brushes (7).
3) Hook spring tester (8) under spring loop and maintain a gradually increasing pull perpendicular to a radius from spring fulcrum (9) until end of spring just lifts off brush (7). Force necessary to lift each spring just off a new brush shall be 52 to 60 oz. If any springs are defective, replace entire set from kit.
4) Repeat spring force measurement procedure for other spring (6) at this location.
5) Move new brush (7) to each of five other brush positions and repeat procedure as necessary to measure tension of ten more springs (6).



e. Install an electrical contact brush (7) into each of six holders (10) as in step d.

f. Sand brushes for initial seating as follows:

1) Use a strip of sandpaper (11) cut to width of commutator and long enough to cover entire commutator surface with a slight overlap.

2) Use brush spring lifter hooked in brush lead (12) to raise a brush and slide one end of sandpaper strip between brush (7) and commutator (13) with grit side toward brush.

3) Fasten sandpaper (11) end to commutator (13) with a piece of tape (14). Rotate electrical end bell (3) clockwise until sandpaper strip completely covers commutator. Cut off trailing end of sandpaper so a gap of 1/16 to 1/8 inch will remain between ends of strip. Do not tape trailing end of strip to anything.

4) Rotate electrical end bell (3) clockwise five revolutions.

5) Remove brushes (7) one at a time and inspect brush seat areas of both brush elements for satisfactory seating. Put each brush back in its holder (10) before removing next brush.

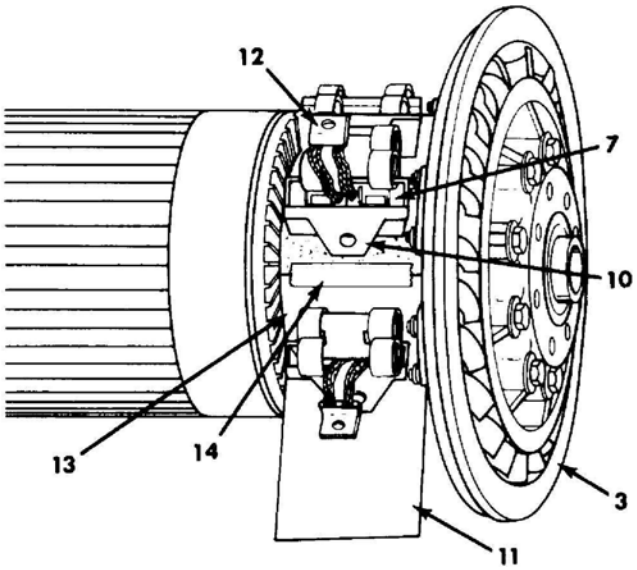
6) If additional seating is required, repeat step (4) with all brushes in place.

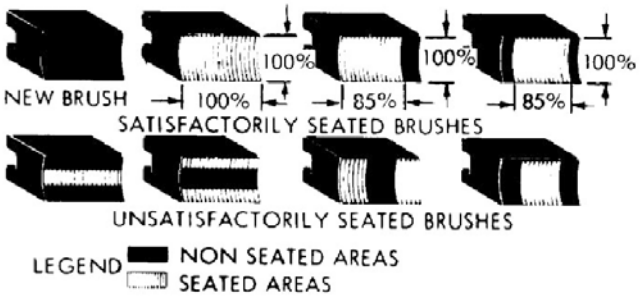
7) When all brushes show satisfactory seating, leave last brush (7) out of holder (10) while removing sandpaper strip. Rotate end bell assembly (3) counterclockwise and lift untaped end of sandpaper strip (11) away from commutator (13) just after it has passed beneath empty brush holder (10). This method of removal will prevent distortion of edges on newly formed brush seats.

WARNING

Compressed air used for cleaning purposes will not exceed 30 psi. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).

8) Install brush left out for removal of sandpaper. Remove all sanding dust from commutator and brushes with compressed air.





ASSEMBLY OF THE GENERATOR - CONTINUED 0010 00

5. Generator Assembly.

   a. Install dirt and liquid deflector (1) on drive end of armature shaft (2) with shoulder on deflector flaring outward toward bearing (3).

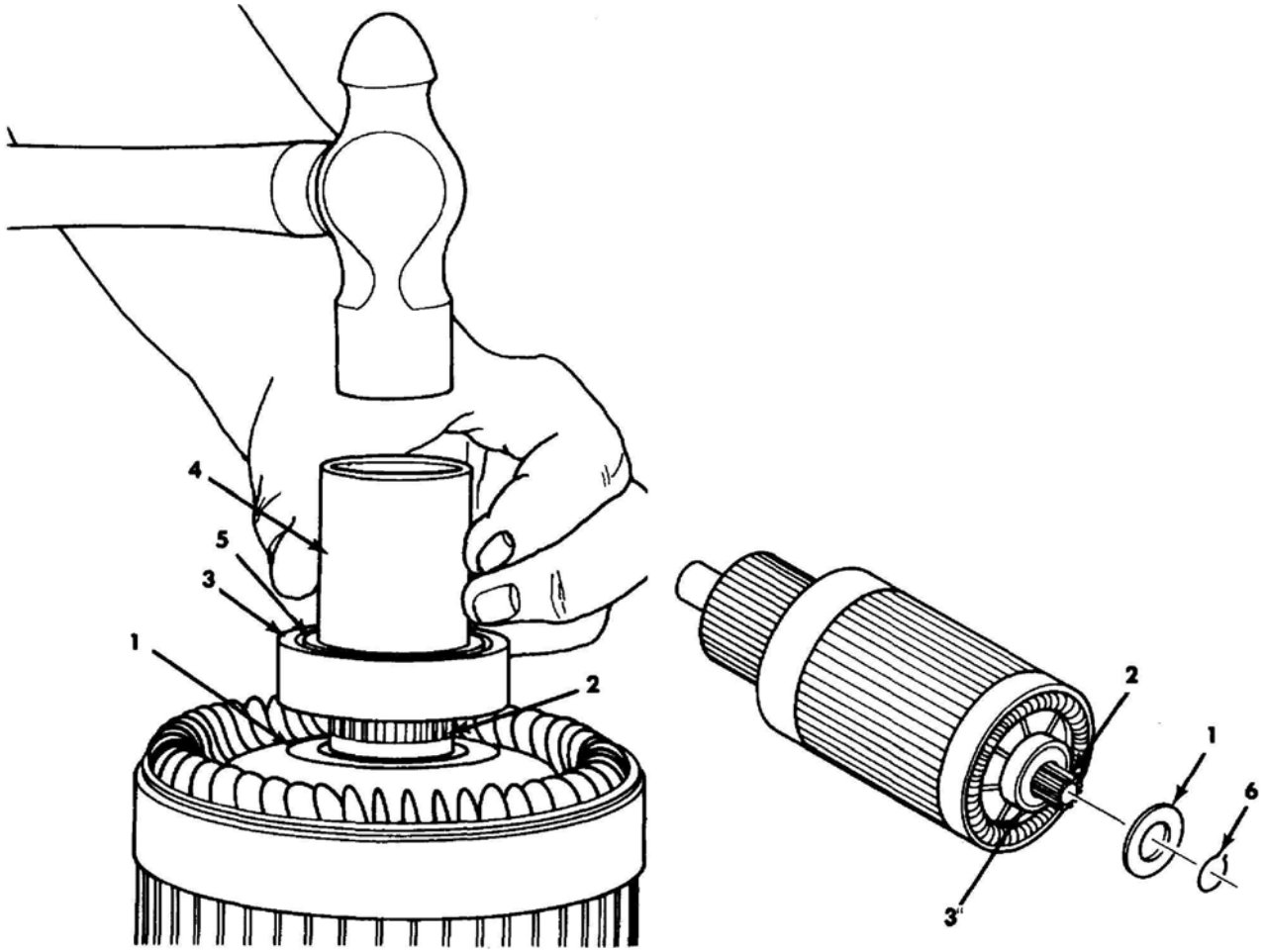
CAUTION

Use a hammer and an arbor made from a piece of soft metal, tubular pipe stock to install ball bearing. Tubular pipe stock must have a bore diameter slightly larger than that of armature shaft and an outside diameter slightly larger than that of bearing inner race.

   b. Support armature shaft (2) upright with commutator-end of shaft on a soft-wood block. Start annular ball bearing (3) onto drive end of armature shaft (2). Use arbor (4) to drive bearing inner race (5) onto shaft until bottomed with deflector (1) against shoulder on shaft.

   c. Install dirt and liquid deflector (1) on drive end of armature shaft (2) with shoulder on deflector flaring outward away from installed bearing (3).

   d. Use snapring pliers to install retaining ring (6) in groove around shaft (2).



ASSEMBLY OF THE GENERATOR - CONTINUED 0010 00

6. Generator Drive Shaft Subassembly and Adjustment.

   a. Apply a thin film of light grease to both sides of dampener generator plate (1), surfaces that contact plate on flange of inner shaft assembly (2), and spring backup dampener generator plate (3).

   b. Place dampener generator plate (1) on inner shaft assembly (2) studs with alignment mark on edge of plate between the two marks on edge of shaft assembly (2) flange.

   c. Place other dampener generator plate (3) on shaft assembly (2) studs with spring-pocket side (counterbored) away from plate (1).

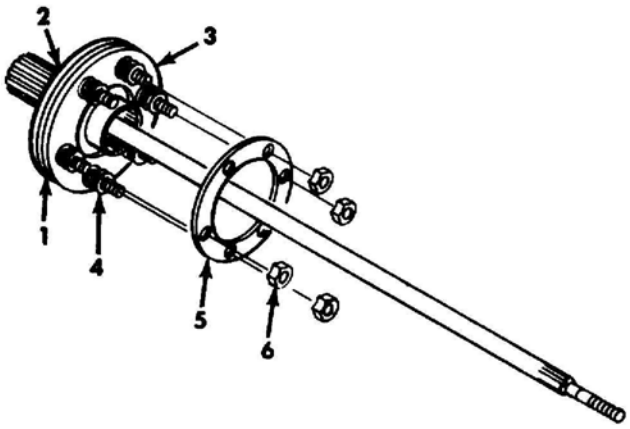
   d. Place one compression helical spring (4) on each stud. Install spring packing retainer (5) and six new self-locking nuts (6). Tighten each nut evenly until stud protrudes slightly through nut.

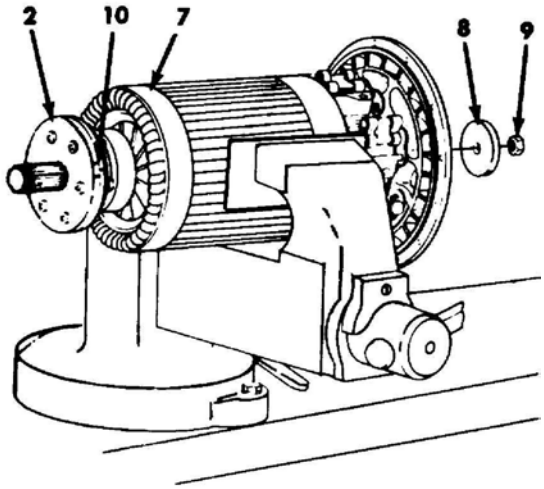
   e. Adjust drive shaft damper mechanism as follows:

CAUTION

Using excessive clamping pressure when armature is clamped in vise will damage armature core. Tighten vise jaws no more than necessary to hold armature against applied torque.

   f. Put armature (7) in a soft-jawed vise and clamp just tight enough to resist torque to be applied.





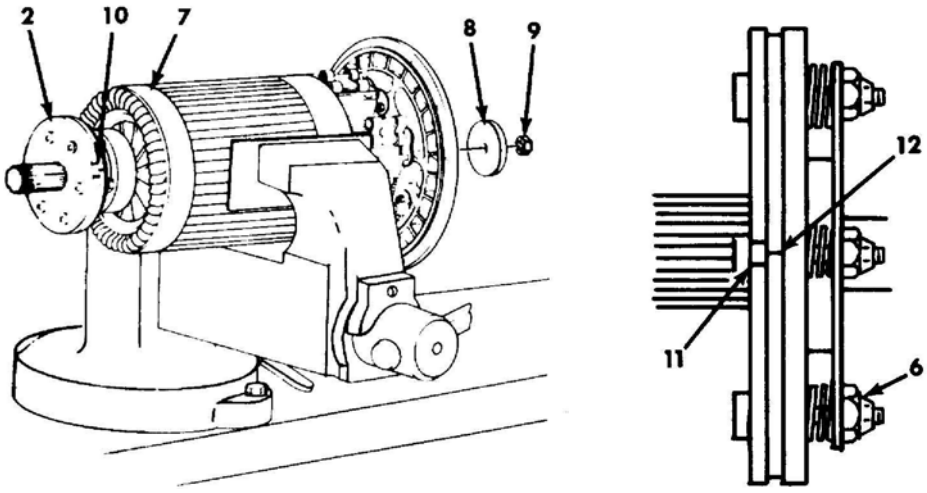
ASSEMBLY OF THE GENERATOR - CONTINUED 0010 00

g. Slide shaft of generator drive shaft (2) into armature bore from drive end until tapered splines engage at commutator-end of armature (7).

h. Temporarily install recessed washer (8), and secure with hexagon plain nut (9) tightened onto drive shaft (2) just enough to hold tapered splines engaged.

i. Using a torque wrench with standard spline socket, watch index marks (10) on edge of disks as torque is gradually applied. The double (bracketing) marks (11) will move with respect to single mark (12) when slippage of damper mechanism occurs. Slippage must occur at a torque of 18-22 lb-ft (24.4 to 29.8 N•m).

j. If slippage does not occur within allowable torque range, remove generator drive shaft (2) from armature (7). Loosen and/or tighten all six hexagon self-locking nuts (6). If slippage occurred at too high a value, all nuts must be loosened and torqued to a lesser value. If slippage occurred at too low a value, torque all nuts to a higher value. In either case, steps g, h, and i must be repeated to measure slip torque, after torque setting of nuts (6) is changed, until slippage occurs within correct range.



ASSEMBLY OF THE GENERATOR - CONTINUED 0010 00

NOTE

If slippage of damper mechanism cannot be set within proper range or if single mark does not return to near center of double marks, part(s) of generator drive shaft are distorted or excessively worn. Defective part(s) must be replaced and slip torque adjusted.

k. When damper mechanism (13) is properly adjusted, remove generator drive shaft (2) from armature (7).

1) Remove armature (7) with installed parts from vise.

7. Stator Assembly.

a. Ensure all terminal-ended field leads in stator assembly (1) are positioned to clear armature poles (2). Slide armature with installed parts carefully into stator assembly until a gap of about one inch remains between flange of support assembly (3) and mounting surface (4) of stator assembly housing.

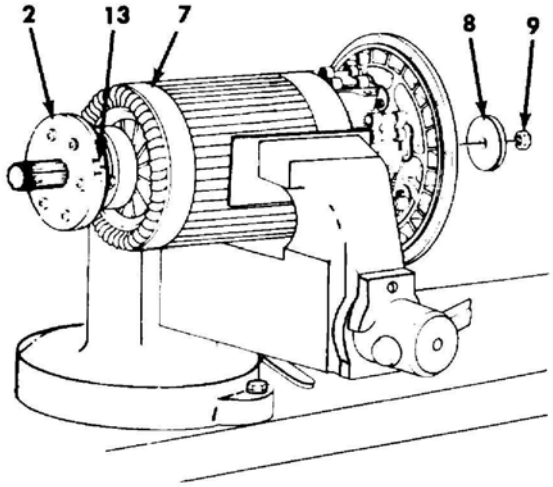
CAUTION

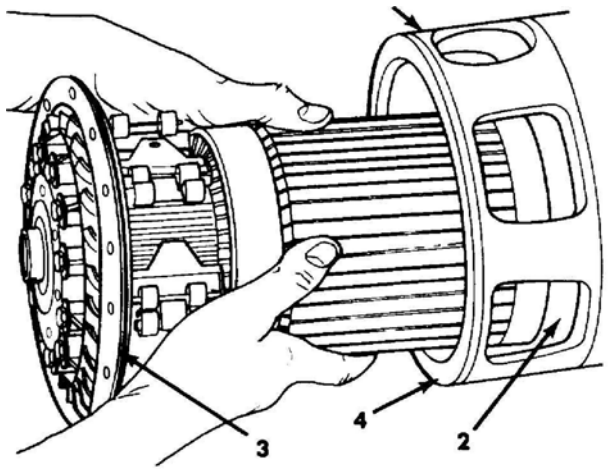
Use care to avoid getting sealant into or over tapped holes in this surface. Do not allow sealant to set before performing step c.

NOTE

Generator 8717421 does not require waterproofing sealant.

b. Generator 10889713 or 11642898, requires a coating of sealant about 1/16 inch thick to mounting surface (4) of stator housing.





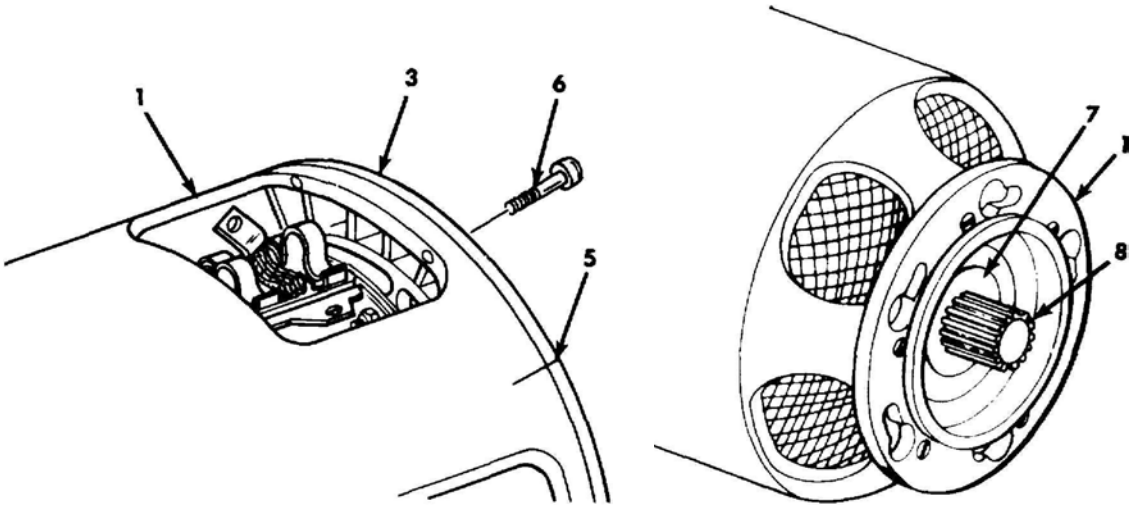
NOTE

Use of machine screws prevents bleed of sealant into tapped holes.

c. Rotate support assembly (3) as necessary to align marks (5) made during disassembly. For generators with wet sealant (step b) temporarily start machine screws (6) which will later attach air intake to stator assembly (1). Ensure bearing (7) at drive end of generator is aligned with bearing bore in housing (1), and move support assembly (3) into place against housing. Tap on support assembly and/or end of armature shaft (8) with a soft-faced mallet to bottom support assembly in stator assembly (1).

d. Wipe excess sealant from around housing (1) at housing-support assembly junction.

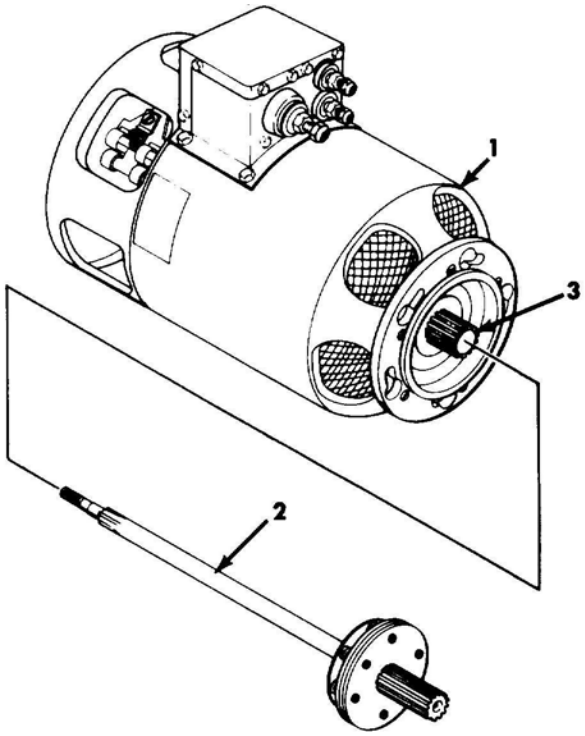
e. After sealant has set, remove machine screws (6).



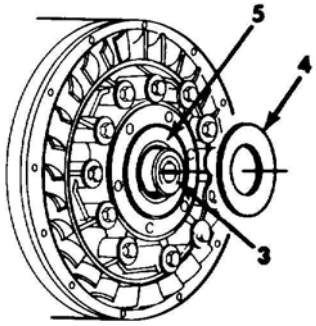
ASSEMBLY OF THE GENERATOR - CONTINUED 0010 00

8. Generator Drive Shaft.

   a. Lay generator housing (1) on its side, and slide generator drive shaft (2) through bore in armature shaft (3) until tapered splines engage at commutator-end of armature shaft.



   b. Install shouldered and recessed washer (4) on commutator-end of armature shaft (3) so offset outer portion of washer flares outward away from installed ball bearing (5).



ASSEMBLY OF THE GENERATOR - CONTINUED 0010 00

c. For generator (8717421), install centrifugal fan impeller (6) onto commutator-end of armature shaft (3).

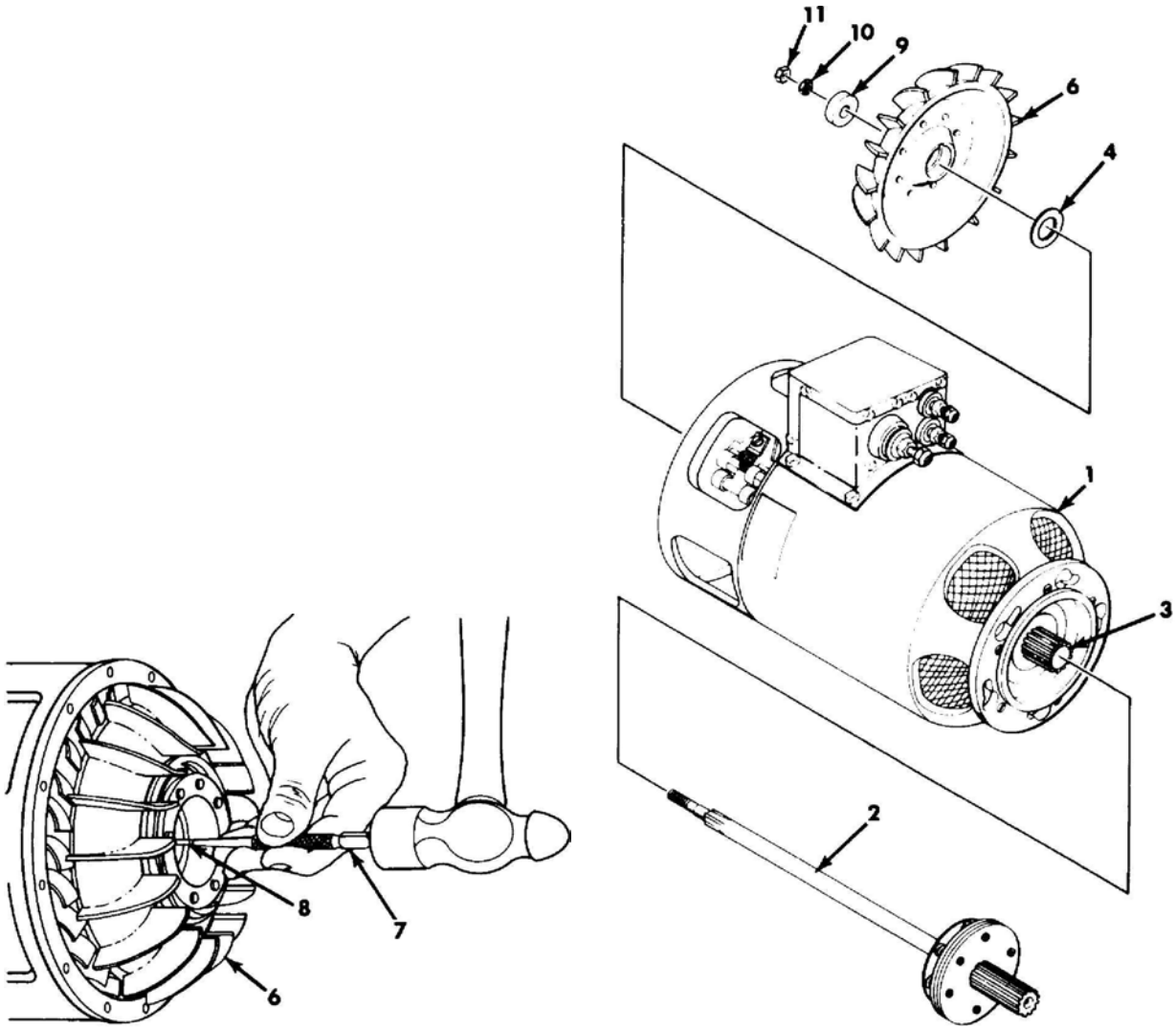
1) Align keyway in bore of impeller (6) with keyway in armature shaft (3).

2) Using a flat point punch (7) drive machine key (8) into aligned keyways of impeller (6) and armature shaft (3).

d. Install recessed washer (9) on exposed end of generator drive shaft (2).

e. Install sleeve nut (10) and torque against recessed washer (9) to 180-200 lb-in (20.3 to 22.6 N•m) while restraining generator drive shaft (2) with a standard spline adapter and wrench handle at drive end.

f. Install hexagon plain nut (11) and torque against sleeve nut (10) to 125-150 lb-in (14.1 to 16.9 N•m) while restraining generator drive shaft as in step e.



ASSEMBLY OF THE GENERATOR - CONTINUED 0010 00

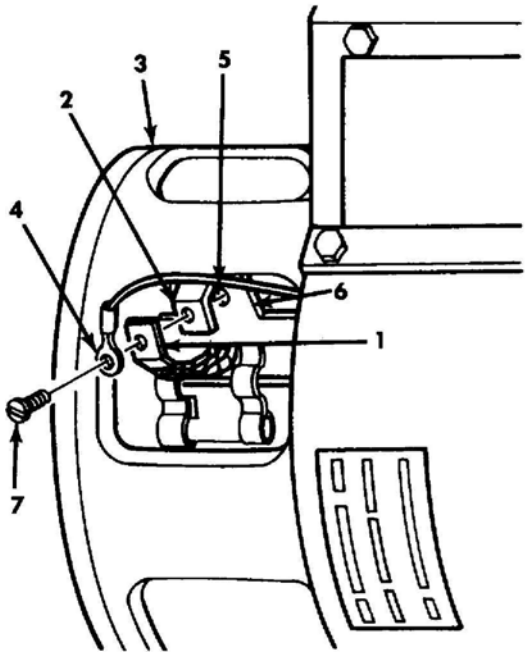
9. Lead Terminals.

NOTE

Previous alignment of mark on support assembly with mark on stator housing should put all stator leads in position to connect only to proper holders.

a. Align terminal ends of brush leads (1), of large leads (2) from field coils in stator assembly (3), and of single small lead (4) from interpole winding in stator assembly with tapped holes (5) in respective electrical contact holders (6).

b. Connect leads (1), (2), and (4) to respective holders (6) at six places with one machine screw (7) at each place. Hold terminals (1), (2), and (4) squarely positioned on each holder while tightening screw.

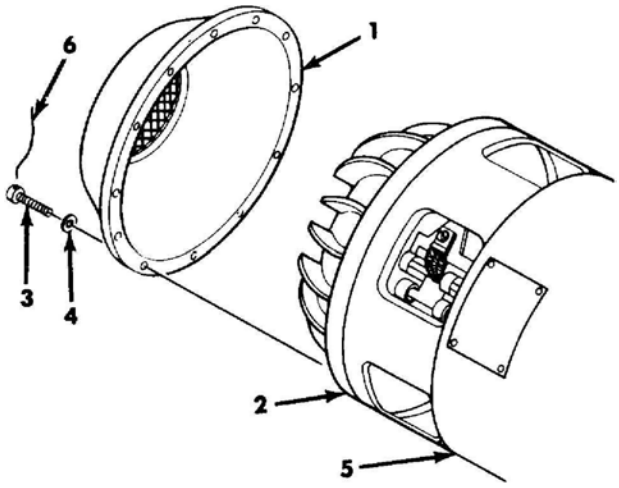


10. Access Cover - Generator (8717421).

a. On generator (8717421), position impeller access cover (1) on support assembly (2).

b. Install 12 machine screws (3) and 12 flat washers (4). Screw shanks will pass through holes in cover (1) flange, holes in support assembly (2), and thread into tapped holes in stator housing (5).

c. Torque all screws (3) to 37-42 lb-in (4.2 to 4.7 N•m). Install six pieces of nonelectrical wire (6) and tie screws in pairs.



ASSEMBLY OF THE GENERATOR - CONTINUED 0010 00

11. Fan and Adapter – Generator (10889713).

CAUTION

Avoid getting sealant in or over mounting holes in adapter surface.

a. On generator (10889713), apply a 1/16 inch thick coat of sealant to mounting surface of adapter (1). Perform step b before sealant sets.

NOTE

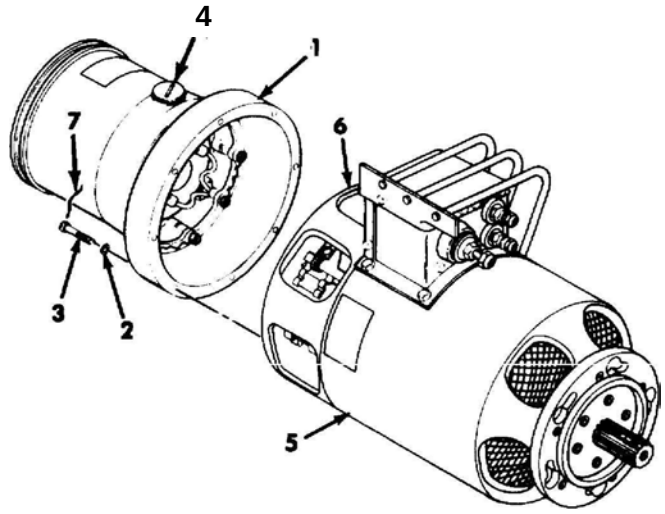
- Reference marks made during disassembly will be aligned when fan adapter is properly positioned on support assembly.
- Bring mounting surfaces together while sealant is still wet.

b. Install flat washer (2) on each of 12 machine screws (3), and put screws through mounting holes in adapter (1). Position adapter with installed fan (4), aligned with support assembly (5) and close enough for all screws (3) to be started in tapped holes of stator housing (6).

c. Torque machine screws (3) to 37–42 lb–in (4.2 to 4.7 N•m) alternately and evenly.

d. Wipe excess sealant from around adapter (1) and support assembly (5) junction.

e. Use six 12–inch pieces of nonelectrical wire (7) to tie screws (3) in pairs.



ASSEMBLY OF THE GENERATOR - CONTINUED 0010 00

12. Air Intake Generator Housing Generator (11642898).

CAUTION

Avoid getting sealant in or over mounting holes in air intake generator housing.

a. On generator (11642898), apply a 1/16 inch thick coat of sealant to mounting surface of air intake generator housing (1). Perform step b before sealant sets.

NOTE

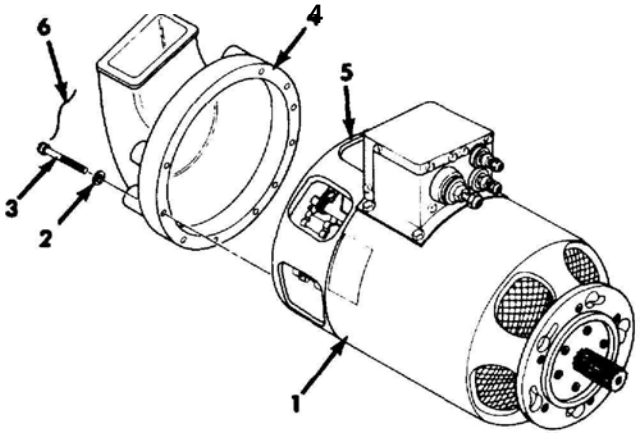
- Reference marks made during disassembly will be aligned when housing is properly positioned on support assembly.
- Bring mounting surfaces together while sealant is still wet.

b. Install flat washer (2) on each of ten machine screws (3), and put screws through mounting holes in housing (1). Position housing aligned with support assembly (4) and close enough for all screws (3) to be started in tapped holes of stator housing (5).

c. Torque machine screws (3) to 37-42 lb-in (4.2 to 4.7 N•m) alternately and evenly.

d. Wipe excess sealant from around housing (1) and support assembly (4) junction.

e. Use five 12-inch pieces of nonelectrical wire (6) to tie screws (3) in pairs.



13. Generator Band Assembly and Gasket.

a. The generator band assembly and band assembly gasket must be installed to complete assembly of generator, but these components must be off generator for run-in and operational testing.

b. Installation procedures for these parts are included in operational test procedure at location where installation should occur.

END OF TASK

OPERATIONAL TESTING OF THE GENERATOR 0011 00

THIS WORK PACKAGE COVERS:

Testing

INITIAL SETUP:

Tools and Special Tools

General mechanic's tool kit (item 1, WP 0017 00)
Test stand, 500A
Or
Test bench setup consisting of:
Suitable mount or holder for generator
28 V dc power source, regulated output
SPST switch, 300 A minimum
Battery, storage, 24V
Fixed resistor, 1.25 ohms 300 A
Fixed resistor, 0.1 ohm 400 A
RPM indicator

Tools and Special Tools - Continued

Relay, reverse current
Regulator, voltage
Test set, generator
Recorder, temperature

Materials/Parts

Sealant (item 13, WP 0016 00)
Goggles (item 7, WP 0016 00)
Rubber gloves (item 8, WP 0016 00)

Equipment Conditions

Generator assembled except for band assembly and gasket

Testing

1. Brush Run-In Procedure.
   a. Securely mount generator on test bench or stand and connect to brush run-in setup.

CAUTION

Ensure rheostat is never set to infinite resistance. Generator would reach excessive speed.

   b. Set rheostat at minimum resistance.
   c. Close switch; generator shall run as a motor with armature turning counterclockwise when viewed from drive end.

CAUTION

Unusual noise or vibration while generator brushes are being run in is an indication generator is not in serviceable condition. Operational testing should be halted until generator can be disassembled and repaired

   d. Increase resistance setting of rheostat until armature is rotating at about 4000 rpm.
   e. Allow generator to run at about 4000 rpm for three hours to polish brush seats, then open switch to stop generator.
   f. Remove any brush from generator and inspect commutator contact surface of brush; polished area shall meet minimum percentage of brush end surface of 85%.
   g. If brush seat polished area does not meet minimum requirements, install brush and repeat steps e and f except run time shall be one and one-half hours.
   h. When brush seat polished area meets minimum requirements, install brush.
   i. Remove, inspect, and install each of the other five brushes, one at a time. Repeat steps g and h, as applicable, until all brushes are properly polished.

WARNING

Compressed air used for cleaning purposes will not exceed 30 psi. Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.).

OPERATIONAL TESTING OF THE GENERATOR - CONTINUED 0011 00

j. Clean all polishing residue from brushes and commutator by blowing with compressed air.

k. Disconnect generator brush run-in setup.

2. Operational Test Procedure.

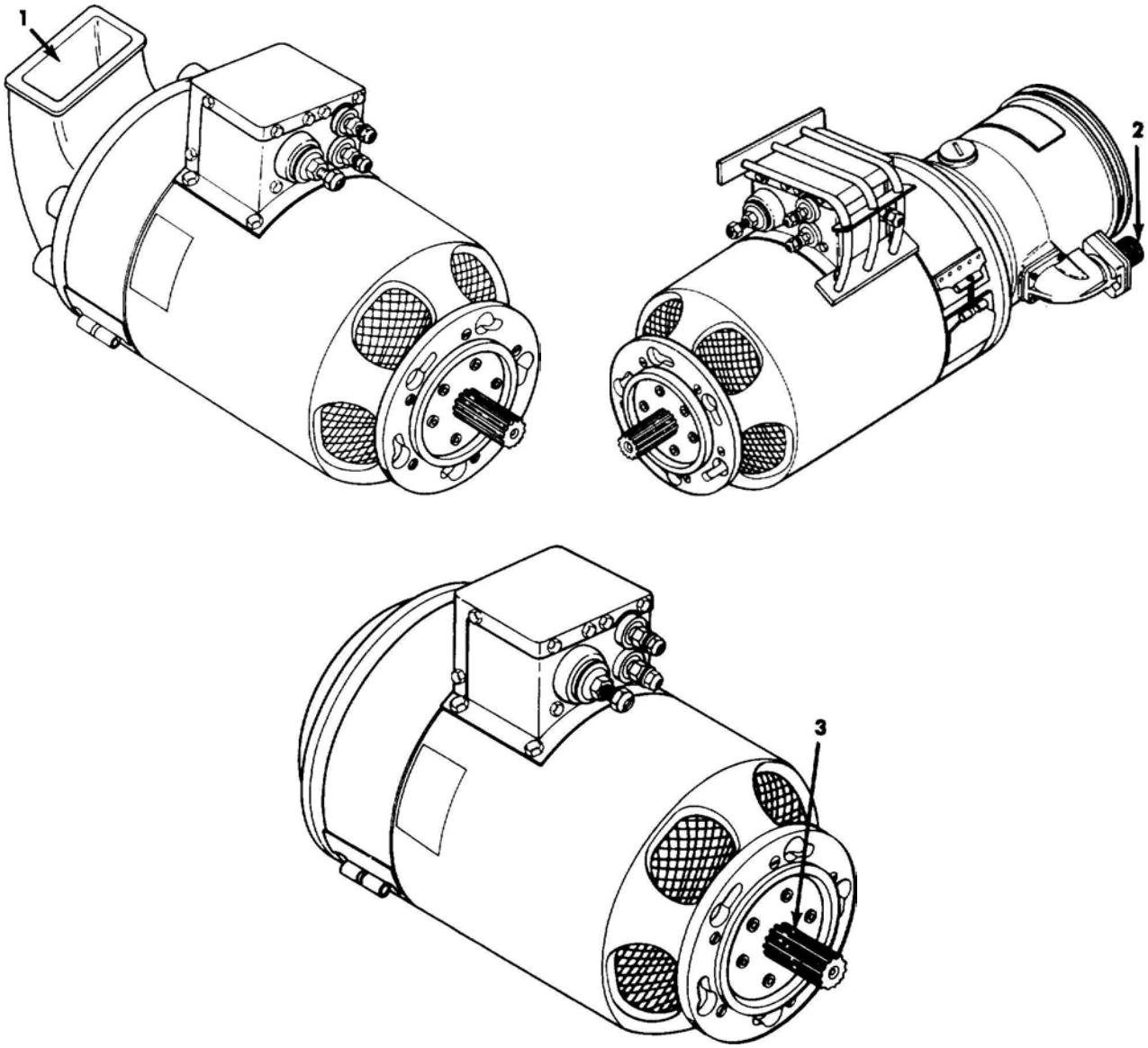
NOTE

Operational test results specified are for testing at room ambient temperature (about 800 F).

a. Generator (11642898) must have a forced-air supply ducted to air inlet housing (1) for cooling throughout operational testing. Air supply should deliver about 150 cu. ft. per minute.

b. Generator (10889713) must have connector (2) on its cooling fan motor electrically connected to test setup power supply (A pos, B neg). Fan motor will draw about 11 A at 24 V dc.

c. Mechanical connection to generator drive shaft (3) must couple generator to drive mechanism (as in test stand) capable of turning generator armature at 6500 rpm (counterclockwise) with generator producing 300 A at 30 V dc.



OPERATIONAL TESTING OF THE GENERATOR - CONTINUED 0011 00

d. Before making test connections, flash generator field to ensure proper residual polarity at pole shoes as follows:

1) Connect a temporary jumper lead to A terminal (4) on generator (5) and to positive (+) terminal (6) of a 24-volt battery (7).

2) Connect a temporary jumper lead to negative (-) terminal (8) of 24-volt battery (7). Hold other end of this lead against E terminal (9) of generator for 4 to 6 seconds.

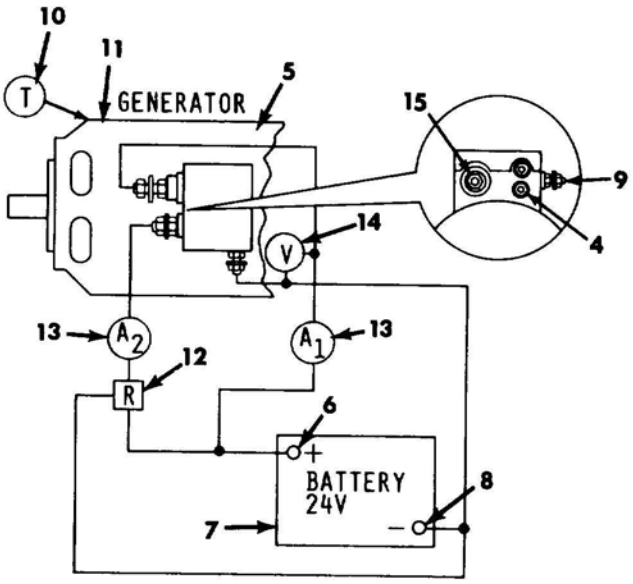
3) Remove temporary jumper leads from battery (7) and generator terminals (4) and (9).

e. Mount sensor of thermal recorder (10) on stator housing (11) of generator (5).

f. Connect generator (5) to a 24-volt battery (7), with a voltage regulator (12) [containing a reverse-current relay] and ammeter (13) in circuit.

g. Connect voltmeter (14) to generator terminals B (15) and E (9) [E is negative].

h. Connect ammeter in series circuit from battery positive terminal (6) to generator B (15) terminal.



A_1,=AMMETER - 0-300 A

A_2=AMMETER - 0-1, 0-10 SCALES

R=VOLTAGE REGULATOR
T = THERMAL RECORDER
V=VOLTMETER

(Operational Test Setup)

i. Perform following test routine in the sequence given. If generator fails to meet any test requirement, stop testing and repair generator as necessary before resuming test routine.

CAUTION

Remote air supply for generator (11642898) or electrical power to fan motor for generator (10889713) must be on during operational testing.

1) Start generator test stand and allow generator to run until it shows no more than a 2° F temperature rise in five minutes.

2) With generator hot, operate for five minutes at 8000 rpm with field circuit open. During this period the temperature should rise to a minimum of 150°F.

3) With voltage regulator connected to generator, operate it self-excited at 6500 rpm, 30 volts and no load. Record field current, condition of commutation, and frame temperature. The shunt field current must not be less than 0.81 amperes and commutation shall be between what is commonly known as “black” (no spark) and “pin-point” (slight sparking along trailing edges of brushes).

NOTE

If at any time during these tests it is discovered that sparking is in excess of conditions described, disconnect generator from test stand and connect it for additional run-in operations. Perform run-in operations for an additional two to three hours to properly seat all brushes.

4) Operate generator (with voltage regulator connected) at 6500 rpm, 30 volts, and 300 amperes until frame temperature shows no more than 2° F temperature rise in five minutes. Measure and record voltage between field terminal "D" and main (negative) terminal "E". Also record condition of commutation and total field current. Commutations should not exceed "pin-point" sparking with pin-points along trailing edges of brushes only. Paralleling voltage (between terminals "D" and ME) must be between 1.2 and 1.4 volts dc, provided air inlet temperature is approximately 80° F. Higher or lower temperatures will affect paralleling voltages.

5) Operate generator at 6500 rpm, 30 volts, and check for compounding at 0 (zero) amperes, 150 amperes, and 300 amperes. Record field current and condition of commutation. If generator is properly compounded, shunt field current (at terminal "A") will not exceed 3.0 amperes and field current will increase with an increase in load. Conversely, field current will decrease with a decrease in load. Commutation (sparking) must not exceed pin-points along trailing edge of brushes.

6) Reduce generator speed slightly below 1850 rpm, but not below 1600 rpm. Substitute a 1.25 ohm resistor for voltage regulator in field circuit and stabilize generator output at 26 volts, 250 amperes until frame temperature shows no more than a 2° F temperature rise in five minutes. Adjust generator speed to hold voltage and current constant at these values. Record field current, speed, frame temperature, and condition of commutation. The "come-in" speed of generator must not exceed 1850 rpm. Come-in should occur at between 1600 and 1800 rpm, at 250 amperes.

7) Remove generator from test stand and blowout all dust from commutator area with compressed air.

CAUTION

Do not attempt any insulation strength test of tube axial fan on generator (10889713). Damage to tube axial fan would result.

8) Connect 250 volts, 60 cycle AC, for one minute between a ground on generator housing and terminals "A", "B", and "D" in succession. This is for determining strength of insulation in generator field coil. There must be no indication of breakdown during the test. If a breakdown should occur, which would be indicated by smoke or arcing inside generator, defective components must be replaced. If replacements are required, perform the entire test procedure after assembly.

9) Connect cooling-air tube axial fan motor to a 24-28 V dc power source, with an ammeter connected in series with input supply.

10) Allow tube axial fan motor to run until warm and take an ammeter reading. The amperage draw should not exceed 11.5 amperes at any time. If in excess of this value, it indicates a mechanical drag on motor armature, fan impeller, or an electrical defect. Remove motor from test circuit and check for trouble. Make necessary corrections and recheck as outlined in above instructions.

OPERATIONAL TESTING OF THE GENERATOR - CONTINUED 0011 00

j. When generator has satisfactorily met all requirements of test procedure, install generator band assembly (16) and gasket (17) as follows:

NOTE

While sealant is still wet, install gasket (17) in accordance with the following steps.

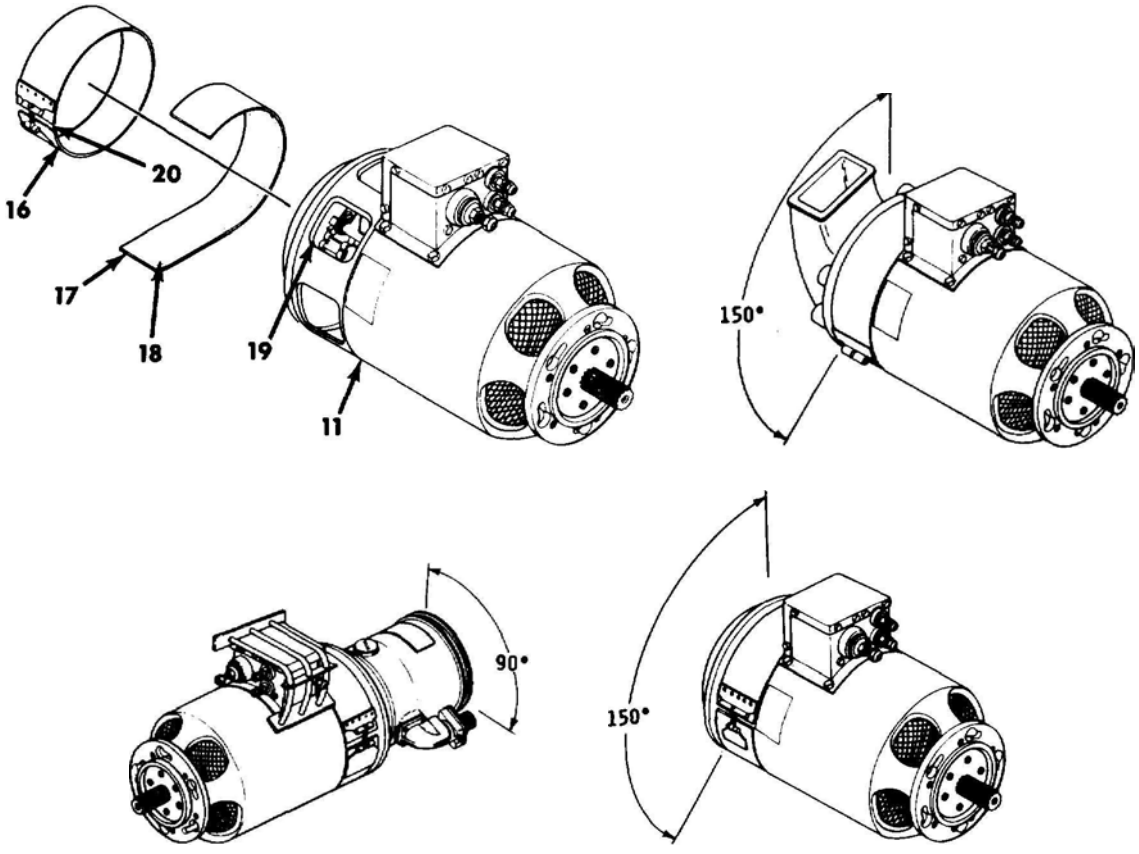
1) For generators, 10889713 or 11642898, apply a thin coat of sealant as a stripe about 1/2 inch wide along each edge (18) on one surface of band assembly (16) and gasket (17).

2) Install gasket (17), sealant side in, over brush access openings (19) of stator housing (11). Start wrapping around housing (11) and finish with slight overlap of gasket ends (do not stretch gasket).

   a) Gasket (17) must start and end-overlap on housing (11) between brush access openings (19).

   b) Overlap must be positioned where it will be in the gap of installed band.

3) Install band assembly (16) with gap (20) positioned.



END OF TASK

WATERPROOF TESTING OF THE GENERATOR 0012 00

THIS WORK PACKAGE COVERS:

Testing

INITIAL SETUP:

Tools and Special Tools

Air compressor 6 in. Hg (2.95 psi)
Air test setup:
Air pressure gage – 0–10 in. Hg (0–4.91 psi)
Tee
Shutoff valve
Air–tight closures. Inlet closures should fit without adding volume. Outlet closure can provide additional volume of one cubic foot.
Water dip tank

Materials/ Parts

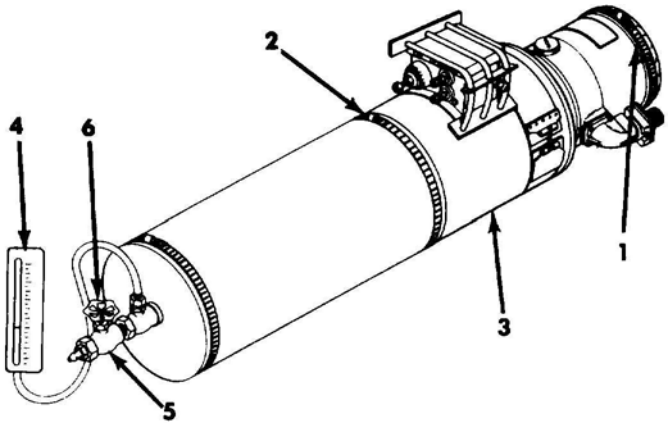
Soap (item 14, WP 0016 00) and water solution
Goggles (item 7, WP 0016 00)
Rubber gloves (item 8, WP 0016 00)
Sealant (item 13, WP 0016 00)

Equipment Conditions

Generator completely assembled, tested, and sealed

Testing

1. Generator Pressure Test Setup.
   a. Install air–tight inlet closure (1) on intake end of tube axial fan or open end of air intake on generator housing.
   b. Install air–tight outlet closure (2) on drive end of generator. Closure must be positioned far enough onto stator housing (3) to cover air discharge openings in housing.
   c. Connect air pressure gage (4) to outlet closure (2) with tee (5) and install shutoff valve (6) on tee.
   d. Connect air supply to shutoff valve (6).



WATERPROOF TESTING OF THE GENERATOR - CONTINUED 0012 00

2. Test Procedure.

   a. Open shutoff valve (6) to increase air pressure in outlet closure (2) (and in generator) to 6 in. Hg. (2.95 psi).

   b. Close shutoff valve (6) and start timing at an interval of 2 1/2 minutes.

   c. At end of timed interval, pressure indicated on gage (4) shall be at least 2 in. Hg. (0.98 psi). If pressure is less than 2 in. Hg (0.98 psi), excessive leakage is indicated.

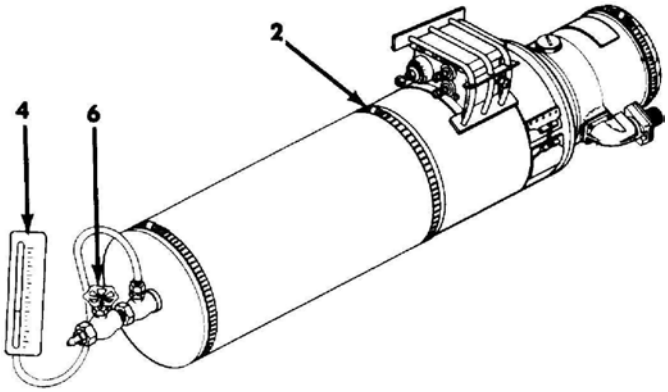
CAUTION

Do not allow water to enter generator. Maintain positive pressure to test setup whenever generator is lowered into water.

   d. If leakage is indicated, open valve (6) to restore 6 in. Hg (2.95 psi) and submerge generator with air-tight closures in water dip tank. Note source(s) of air bubbles.

   e. If source of leakage is at air-tight closures, this leakage must be stopped to obtain true leakage rate for generator. Repeat steps a through c after leakage at air-tight closure has been stopped.

   f. When only source(s) of bubbles are on generator, remove air pressure and apply sealant externally at source location(s). Allow sealant to set, then retest (steps a through c).



END OF TASK

ILLUSTRATED LIST OF MANUFACTURED ITEMS 0013 00

THIS WORK PACKAGE COVERS:

Scope, Explanation of Illustrations of Manufactured Items, Manufactured Items List

SCOPE

This work package includes complete instructions for making items authorized to be manufactured.

EXPLANATION OF THE ILLUSTRATIONS OF MANUFACTURED ITEMS

All instructions needed by maintenance personnel to manufacture the item are included on the illustrations.

MANUFACTURED ITEMS LIST

ITEM	REFERENCE
Brush Spring Lifter	Figure 1
Armature Turning Center	Figure 2

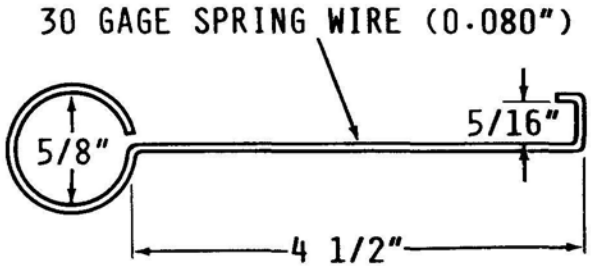


Figure 1. Brush Spring Lifter.

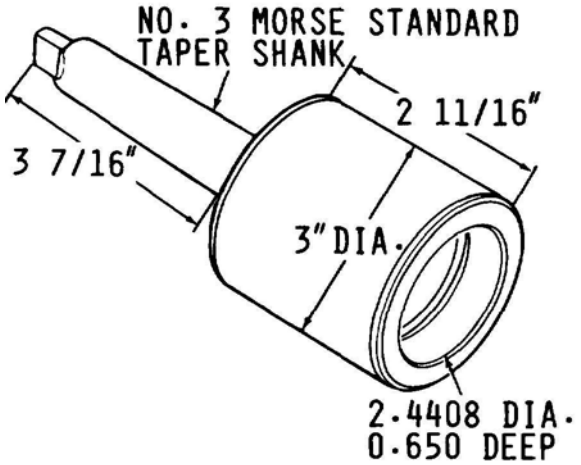


Figure 2. Armature Turning Center.

END OF TASK

CHAPTER 4

SUPPORTING INFORMATION

REFERENCE WORK PACKAGE 0014 00

THIS WORK PACKAGE COVERS:

Scope, Standard Forms, and Technical Manuals

SCOPE

This work package lists all field manuals, forms, technical manuals and miscellaneous publications referenced in this manual.

STANDARD FORMS

First Aid	FM 4-25.11
Product Quality Deficiency Report (NSN 7540-00-133-5541) (This Item is Included on EM 0001)	SF Form 368
Recommended Changes to Publications and Blank Forms (This item is included on EM 0001)	DA Form 2028

TECHNICAL MANUALS.

Direct Support and General Support Maintenance Manual for Engine, W/Container: Turbosupercharged, Diesel, Fuel Injection, 90 Degree, V-Type, Air Cooled, 12 Cylinder, Assembly (Models AVDS-1790-2c) (NSN 2815-00-410-1203), (Model AVDS-1790-2d) (2815-00-410-1204), (Model AVDS-1790-2dr) (2815-00-124-5387), (Model AVDS-1790-2ca) (2815-01-149-1353) and (Model AVDS 1790-2da) (2815-01-166-2051) (Reprinted W/Basic Incl C1-5) (This Item is Included on EM 0036, EM 0044 & EM 0063)	TM 9-2815-220-34
Direct Support and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) for Engine with Container; Turbosupercharged, Diesel, Fuel Injection, 90-Degree "V" Type, Air-Cooled, 12-Cylinder, Assembly; Models AVDS-1790-2dr, (NSN 2815-00-124-5387) AVDS-1790-2ca, (2815-01-149-1353) and AVDS-1790-2da, (2815-01-166-2051) (This Item is Included on EM 0036, EM 0044 & EM 0063)	TM 9-2815-220-34P
Inspection, Care and Maintenance of Antifriction Bearings	TM 9-214
Materials Used for Cleaning, Preserving, Abrading and Cementing Ordnance Materiel and Related Materials Including Chemicals	TM 9-247
Operator's Manual: Operator Controls and PMCS for Tank, Combat, Full Tracked: 105-mm Gun, M60A1 (NSN 2350-00-756-8497) and M60A1 (AOS) (2350-01-058-9487) (Reprinted W/Basic Incl C1-5)	TM 9-2350-215-10-1
Operator's Manual Operation Under Usual and Unusual Conditions for Tank, Combat, Full-Tracked: 105-mm Gun, M60A1 (NSN 2350-00-756-8497) Tank, Combat, Full-Tracked: 105-mm Gun, M60A1 (AOS) (2350-01-058-9487) (Reprinted W/Basic Incl C1)	TM 9-2350-215-10-2
Operator's Manual: Troubleshooting and Maintenance for Tank, Combat, Full-Tracked: 105-mm Gun, M60A1 (NSN 2350-00-756-8497) and Tank, Combat, Full-Tracked: 105-mm Gun, M60A1 (AOS) (2350-01-058-9487) (Reprinted W/Basic Incl C1-3)	TM 9-2350-215-10-3

REFERENCE WORK PACKAGE - CONTINUED 0014 00

Organizational Maintenance Manual for Tank, Combat, Full-Tracked: 105-mm Gun, M60A1 (NSN 2350-00-756-8497) (Hull) and M60A1/AOS (2350-01-058-9487) (Hull) (Reprinted W/Basic Incl C1) 105-mm Gun, M60A1 and M60A1/AOS (Hull)	TM 9-2350-215-20-1-2
Organizational Maintenance Manual for Tank, Combat, Full-Tracked: 105-mm Gun, M60A1 (NSN 2350-00-756-8497) (Hull) and M60A1 AOS (2350-01-058-9487) (Hull)	TM 9-2350-215-20-1-3
Organizational Maintenance Manual for Tank, Combat, Full-Tracked: 105-mm Gun, M60A1 (NSN 2350-00-756-8497) (Hull) and M60A1/AOS (2350-01-058-9487) (Hull) (Reprinted W/Basic Incl C1-3)	TM 9-2350-215-20-1-4

SUPPLY CATALOGS

Sets, Kits, and Outfits Shop Equipment, Automotive Maintenance and Repair: Field Maintenance, Basic, Less Power (NSN 4910-00-754-0705) (LIN T24660) (EIC: 2J2)	SC 4910-95-A31
Sets, Kits, Outfits, and Tools for Shop Equipment, Automotive Maintenance and Repair: Field Maintenance, Supplemental Set No. 2, Less Power (NSN 4910-00-754-0707) (Lin T25756) (EIC: 2J4) and Shop Equipment, Automotive Maintenance and Repair: Field Maintenance, Supplemental Set No.2 Map Only	SC 4910-95-A63
SC 9999-01-SKO, Consolidated Publication of Component Lists	EM 0074

PUBLICATION INDEXES

The following indexes should be consulted frequently for latest changes or revisions to references given in the appendix and for new publications relating to material covered in this Technical Manual.

Consolidated Index of Army Publications and Blank Forms (Issued Quarterly) (No Printed Copies Exist) (Formerly DA PAM 310-1)	PAM 25-30
Army Maintenance Management System (TAMMS) Users Manual	PAM 750-8

END OF TASK

REPAIR PARTS AND SPECIAL TOOLS LIST 0015 00

INTRODUCTION

SCOPE

This work package lists repair parts and special tools required for direct and general support maintenance of the Generator Assemblies, part numbers 8717421, 10889713, and 11642898. It authorizes the requisitioning and issue of repair parts as indicated by the source and maintenance codes.

Part Numbers	Engine Applications
8717421,	AVDS-1790-2D
10889713, and	AVDS-1790-2DA
11642898	AVDS-1790-2DR

GENERAL

In addition to the introduction, this work package is divided into the following areas.

1. Repair Parts List – A list of repair parts authorized for use in the performance of maintenance. This work package also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence.
2. Special Tools List – No special tools are required.
3. Cross-Reference Index – There are two cross-reference indexes in this work package: the National Stock Number (NSN) and the Part Number (P/N) index. The National Stock Number Index refers you to the figure and item number. The Part Number Index refers you to the figure and item number.

EXPLANATION OF COLUMNS IN THE REPAIR PARTS AND SPECIAL TOOLS LIST

ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.

SMR CODE (Column (2)). The SMR code containing supply/requisitioning information, maintenance level authorization criteria, and disposition instruction, as shown in the following breakout:

Source Code	Maintenance Code		Recoverability Code
XXxxx	xx**XX**x		xxxx**X**
1st two positions: How to get an item.	3rd position: Who can install, replace, or use the item.	4th position: Who can do complete repair* on the item.	5th position: Who determines disposition action on unserviceable items.

*Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

Source Code. The source code tells you how you get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

Source Code	Application/Explanation
PA PB PC PD PE PF PG	Stock items; use the applicable NSN to requisition/request items with these source codes. They are authorized to the level indicated by the code entered in the 3rd position of the SMR code. **NOTE** Items coded PC are subject to deterioration.

REPAIR PARTS AND SPECIAL TOOLS LIST - CONTINUED 0015 00

Source Code	Application/Explanation
KD KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance level indicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.
MO-Made at unit/ AVUM level MF-Made at DS/ AVILM level MH-Made at GS level ML-Made at SRA MD-Made at depot	Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which is identified by the P/N in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk material group work package of the RPSTL. If the item is authorized to you by the 3rd position code of the SMR code, but the source code indicates it is made at higher level, order the item from the higher level of maintenance.
AO-Assembled by unit/AVUM level AF-Assembled by DS/AVIM level AH-Assembled by GS level AL-Assembled by SRA AD-Assembled by depot	Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3rd position of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.
XA	Do not requisition an "XA" coded item. Order the next higher assembly. (Refer to NOTE below.)
XB	If an item is not available from salvage, order it using the CAGEC and P/N.
XC	Installation drawings, diagrams, instruction sheets, field service drawings; identified by manufacturer's P/N.
XD	Item is not stocked. Order an XD-coded item through normal supply channels using the CAGEC and P/N given, if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes except for those items source coded "XA" or those aircraft support items restricted by requirements of AR 750-1.

Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to use the repair support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

Third Position. The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to the following levels of maintenance:

REPAIR PARTS AND SPECIAL TOOLS LIST - CONTINUED 0015 00

Maintenance Code		Application/Explanation
C	-	Crew or operator maintenance done within unit/AVUM maintenance.
O	-	Unit level/AVUM maintenance can remove, replace, and use the item.
F	-	Direct support/AVIM maintenance can remove, replace, and use the item.

Maintenance Code		Application/Explanation
H	-	General support maintenance can remove, replace, and use the item.
L	-	Specialized repair activity can remove, replace, and use the item.
D	-	Depot can remove, replace, and use the item.

Fourth Position. The maintenance code entered in the fourth position tells you whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (perform all authorized repair functions).

NOTE

Some limited repair may be done on the item at the lower level of maintenance, if authorized by the SMR codes.

Maintenance Code		Application/Explanation
O	-	Unit/AVUM is the lowest level that can do complete repair of the item.
F	-	Direct support/AVIM is the lowest level that can do complete repair of the item.
H	-	General support is the lowest level that can do complete repair of the item.
L	-	Specialized repair activity is the lowest level that can do complete repair of the item.
D	-	Depot is the lowest level that can do complete repair of the item.
Z	-	Nonreparable. No repair is authorized.
B	-	No repair is authorized. No parts or special tools are authorized for maintenance of "B" coded item. However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is shown in the fifth position of the SMR code as follows:

Recoverability Code		Application/Explanation
Z	-	Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in the third position of the SMR code.
O	-	Reparable item. When uneconomically reparable, condemn and dispose of the item at the unit level.
F	-	Reparable item. When uneconomically reparable, condemn and dispose of the item at the direct support level.
H	-	Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level.
D	-	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item is not authorized below depot level.
L	-	Reparable item. Condemnation and disposal not authorized below Specialized Repair Activity (SRA).
A	-	Item requires special handling or condemnation procedures because of specific reasons (such as precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

NSN (Column (3)). The NSN for the item is listed in this column.

REPAIR PARTS AND SPECIAL TOOLS LIST - CONTINUED 0015 00

CAGEC (Column (4)). The Commercial and Government Entity Code (CAGEC) is a five-digit code which is used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

PART NUMBER (Column (5)). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different P/N from the number listed.

DESCRIPTION AND USABLE ON CODE (UOC) (Column (6)). This column includes the following information:

1. The federal item name, and when required, a minimum description to identify the item.
2. P/Ns of bulk materials are referenced in this column in the line entry to be manufactured or fabricated.
3. Hardness Critical Item (HCI). A support item that provides the equipment with special protection from Electromagnetic Pulse (EMP) damage during a nuclear attack.
4. The statement END OF FIGURE appears just below the last item description in column (6) for a given figure in both the repair parts list and special tools list.

QTY (Column (7)). The QTY (quantity per figure) column indicates the quantity of the item used in the breakout shown on the illustration/figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column instead of a quantity indicates that the quantity is variable and quantity may change from application to application.

EXPLANATION OF CROSS-REFERENCE INDEX FORMAT AND COLUMNS

1. National Stock Number (NSN) Index.

STOCK NUMBER Column. This column lists the NSN in National Item Identification Number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN.

NSN
(e.g., 5385-01-574-1476)
NIIN

When using this column to locate an item, ignore the first four digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

FIG. Column. This column lists the number of the figure where the item is identified/located. The figures are in numerical order in the repair parts list and special tools list.

ITEM Column. The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

2. Part Number (P/N) Index. P/Ns in this index are listed in ascending numeric-alpha sequence (vertical arrangement of number and letter combinations which places the first digit or letter of each group in order 0 through 9, followed by the letters A through Z and each following digit or letter in like order).

PART NUMBER Column. Indicates the P/N assigned to the item.

FIG. Column. This column lists the number of the figure where the item is identified/located in the repair parts list and special tools list.

ITEM Column. The item number is in the number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

REPAIR PARTS AND SPECIAL TOOLS LIST - CONTINUED 0015 00

SPECIAL INFORMATION

UOC. The UOC appears in the lower left corner of the Description Column heading. Usable on codes are shown as "UOC:…" in the Description Column (justified left) on the first line under the applicable item/nomenclature. Uncoded items are applicable to all models. Identification of the usable on codes in this publication are:

Code	Used ON
A	8717421
B	10889713
C	11642898

Fabrication Instructions. Detailed fabrication instructions for items source coded to be manufactured or fabricated are found in WP 0013 00.

Item Numbers. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the NSN / P/N index and the bulk material list in the repair parts list.

Repair Parts Kits. Repair parts kits appear as the last entries in the repair parts listing for the figure in which its parts are listed as repair parts.

Special Tool Sets. Special tool sets are stocked for initial issue. Tool set components are requisitioned as individual items. Stockage of tools that are duplicated in tool sets for other vehicles assigned or supported are not required beyond actual need.

HOW TO LOCATE REPAIR PARTS

1. When NSNs or P/Ns are not known.
   A. Using the table of contents, determine the assembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and lists are divided into the same groups.
   B. Find the figure covering the functional group or the subfunctional group to which the item belongs.
   C. Identify the item on the figure and note the number(s).
   D. Look in the repair parts list work packages for the figure and item numbers. The NSNs and part numbers are on the same line as the associated item numbers.
2. When NSN is known.
   A. If you have the NSN, look in the Stock Number column of the NSN index. The NSN is arranged in NIIN sequence. Note the figure and item number next to the NSN.
   B. Turn to the figure and locate the item number. Verify that the item is the one you are looking for.
3. When P/N is known.
   A. If you have the P/N and not the NSN, look in the Part Number column of the P/N index. Identify the figure and item number.
   B. Look up the item on the figure in the applicable repair parts list.

ABBREVIATIONS

Abbreviation	Explanation
FIG	Figure
NSN	National Stock Number
RPSTL	Repair Parts and Special Tools List
SMR	Source, Maintenance, and Recoverability
TMDE	Test, Measurement, and Diagnostic Equipment
UOC	Usable on Code

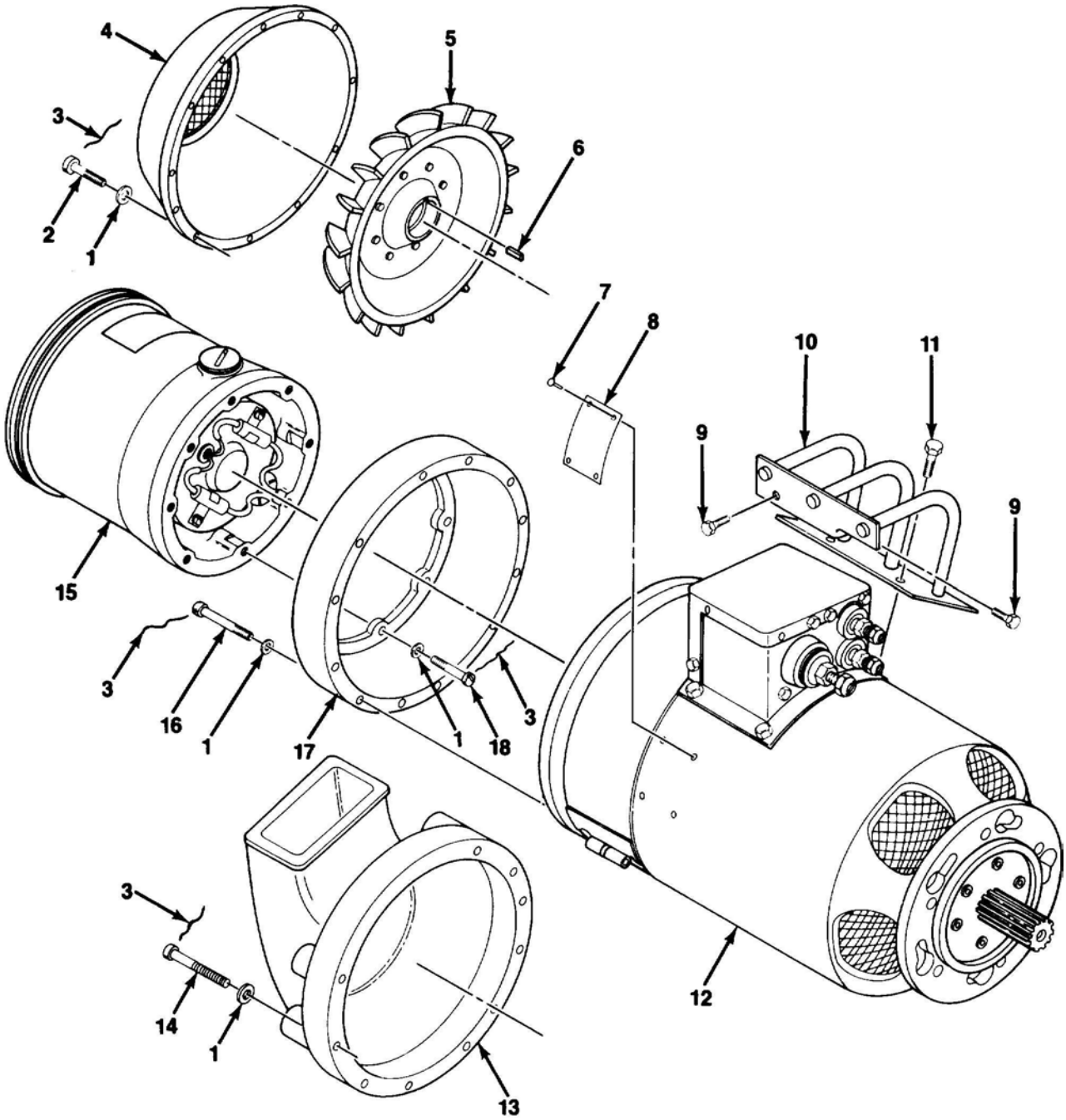


Figure 1. Generator Assemblies.

REPAIR PARTS AND SPECIAL TOOLS LIST - CONTINUED 0015 00

(1) ITEM NO	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0601 GENERATOR ASSEMBLY PART NOS 8717421,10889713,11642898	
					FIGURE 1 GENERATOR ASSEMBLIES	
1	PAFZZ	5310-00-809-8546	96906	MS27183-8	WASHER, FLAT: IMPELLER COVER TO A GENERATOR	12
1	PAFZZ	5310-00-809-8546	96906	MS27183-8	WASHER,FLAT: FAN ADAPTER TO B GENERATOR GENERATOR (12), FAN TO ADAPTER (8)	20
1	PAFZZ	5305-00-614-0248	96906	MS35266-66	WASHER,FLAT: AIR INTAKE HOUSING C TO GENERATOR	10
2	PAFZZ	5305-00-614-0248	96906	MS35266-66	SCREW, MACHINE: IMPELLER COVER TO A GENERATOR	12
3	MFFZZ		96906	MS20995NC32-12	WIRE, NONELECTRICAL: IMPELLER COVER A TO GENERATOR (12 IN. LG.) (MAKE FROM 9525-00-803-3044)	6
3	MFFZZ		96906	MS20995NC32-12	WIRE, NONELECTRICAL: FAN ADAPTER TO B GENERATOR (6) FAN TO ADAPTER (4) (12 IN. LG.) (MAKE FROM 9525-00-803-3044)	10
3	MFFZZ		96906	MS20995NC32-12	WIRE, NONELECTRICAL: AIR INTAKE C HOUSING TO GENERATOR (12 IN. LG.) (MAKE FROM 9525-00-803-3044)	5
4	PAFZZ	2920-00-040-0358	19207	7954236	COVER, ACCESS: IMPELLER A	1
5	PAFZZ	2920-00-918-4152	19207	8395473	IMPELLER, FAN, CENTRIFUGAL A	1
6	PAFZZ	5315-00-729-8570	19207	8344705	KEY, MACHINE: IMPELLER TO DRIVE SHAFT A	1
7	PAFZZ	5305-00-253-5614	96906	MS21318-20	SCREW, DRIVE: IDENTIFICATION PLATE	4
8	XAFZZ		50740	676247	PLATE, IDENTIFICATION	1
9	PAFZZ	5305-00-516-5466	21450	425303	SCREW, ASSEMBLED WASHER: GUARD TO B RADIO SUPRESSION BOX COVER	2
10	PFFZZ	2920-00-410-1118	19207	11682594	GUARD, TERMINAL, ENGINE GROUND B	1
11	PAFZZ	5306-00-042-5839	24617	425839	BOLT, ASSEMBLED WASHER: GUARD AND B RADIO SUPRESSION BOX TO GENERATOR	2
12	XAFFF		19207	10898795	GENERATOR ASSEMBLY: (SEE FIG 3 FOR PARTS BREAKOUT)	1
13	PFFZZ		19207	10956778	HOUSING, GENERATOR: AIR INTAKE C	1
14	PAFZZ	5305-00-655-6573	96906	MS35266-71	SCREW, MACHINE: AIR INTAKE HOUSING C TO GENERATOR	10
15	PAFFF	2920-00-895-3417	19207	10898759	FAN, TUBE AXIAL (SEE FIG. 2 FOR B PARTS BREAKOUT)	1
16	PAFZZ	5305-00-655-6556	96906	MS35266-70	SCREW, MACHINE: FAN ADAPTER TO B GENERATOR	12
17	XAFZZ		19207	10884044	ADAPTER: GENERATOR FAN B	1
18	PAFZZ	5305-00-614-0245	96906	MS35265-64	SCREW, MACHINE: FAN TO ADAPTER B	8

END OF FIGURE

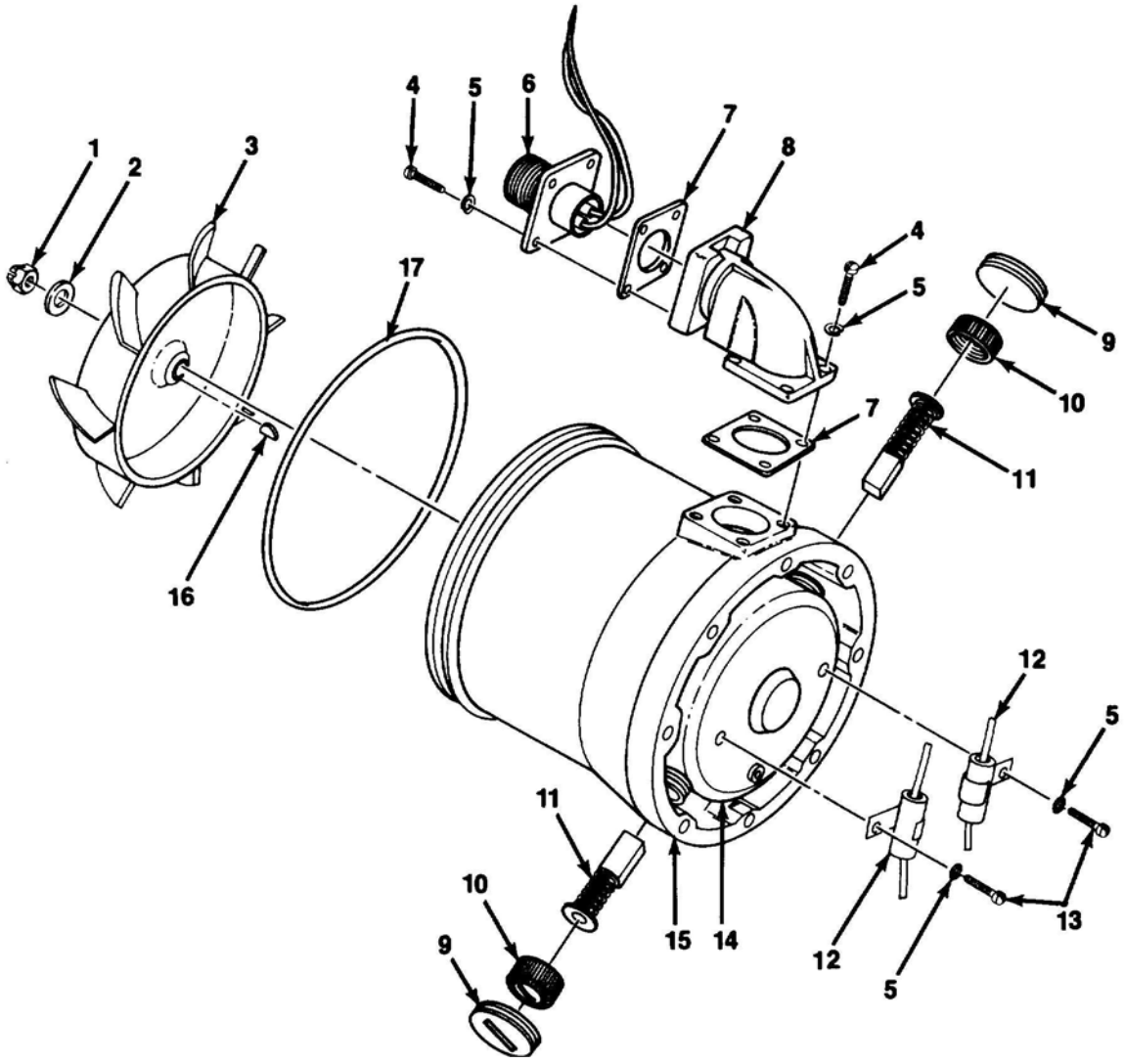


Figure 2. Tube Axial Fan.

(1) ITEM NO	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0601 GENERATOR ASSEMBLY PART NOS 8717421,10889713,11642898	
					FIGURE 2 TUBE AXIAL FAN	
1	PAFZZ	5310-00-660-3381	96906	MS21083N5	NUT, SELF-LOCKING, HEXAGON: B IMPELLER MOUNTING	1
2	PAFZZ	5310-00-167-0836	88044	AN960-516L	WASHER, FLAT: IMPELLER MOUNTING B	1
3	XAFZZ		50740	676121	IMPELLER: FAN B	1
4	PAFZZ	5305-00-543-5059	96906	MS35265-29	SCREW, MACHINE: CONNECTOR TO B SHELL (4), SHELL TO FAN HOUSING (4)	8
5	PAFZZ	5310-00-045-4007	96906	MS35338-41	WASHER, LOCK: CONNECTOR TO SHELL B (4), SHELL TO FAN HOUSING (4), FAN MOTOR CAPACITOR (2)	10
6	PAFZZ	5935-00-698-3713	19207	7720492	CONNECTOR,RECEPTACLE, ELECTRICAL B FAN MOTOR	1
7	PAFZZ	5330-00-946-8344	96906	MS52000-5	GASKET: RECEPTACLE MOUNTING (1), B SHELL MOUNTING (1)	2
8	PAFZZ	5935-00-772-2334	19207	7722334	SHELL, ELECTRICAL, CONTACT: FAN B HOUSING	1
9	PAFZZ	5975-00-902-3190	19207	10946955	PLUG, END SEAL, ELECTRICAL B CONDUIT: FAN MOTOR BRUSH	2
10	XAFZZ		50740	676125	CAP: FAN MOTOR BRUSH B	2
11	PAFZZ	5977-00-897-7482	19207	10898844	BRUSH, ELECTRICAL CONTACT: FAN B MOTOR	2
12	PAFZZ	5910-00-816-8898	19207	10884210	CAPACITOR, FIXED, PAPER, DIELECTRIC: FAN MOTOR	2
13	PAFZZ	5305-00-984-4983	96906	MS35206-226	SCREW, MACHINE: FAN MOTOR B CAPACITOR	2
14	XAFZZ		19207	10898760	MOTOR, FAN B	1
15	XAFZZ		50740	676165	HOUSING, FAN B	1
16	PAFZZ	5315-00-616-5519	96906	MS35756-1	KEY, WOODRUFF: FAN MOTOR B ARMATURE SHAFT	1
17	PAFZZ	5330-00-580-9765	96906	MS9021-248	PACKING, PREFORMED: FAN HOUSING B TO TUBE	1
					END OF FIGURE	

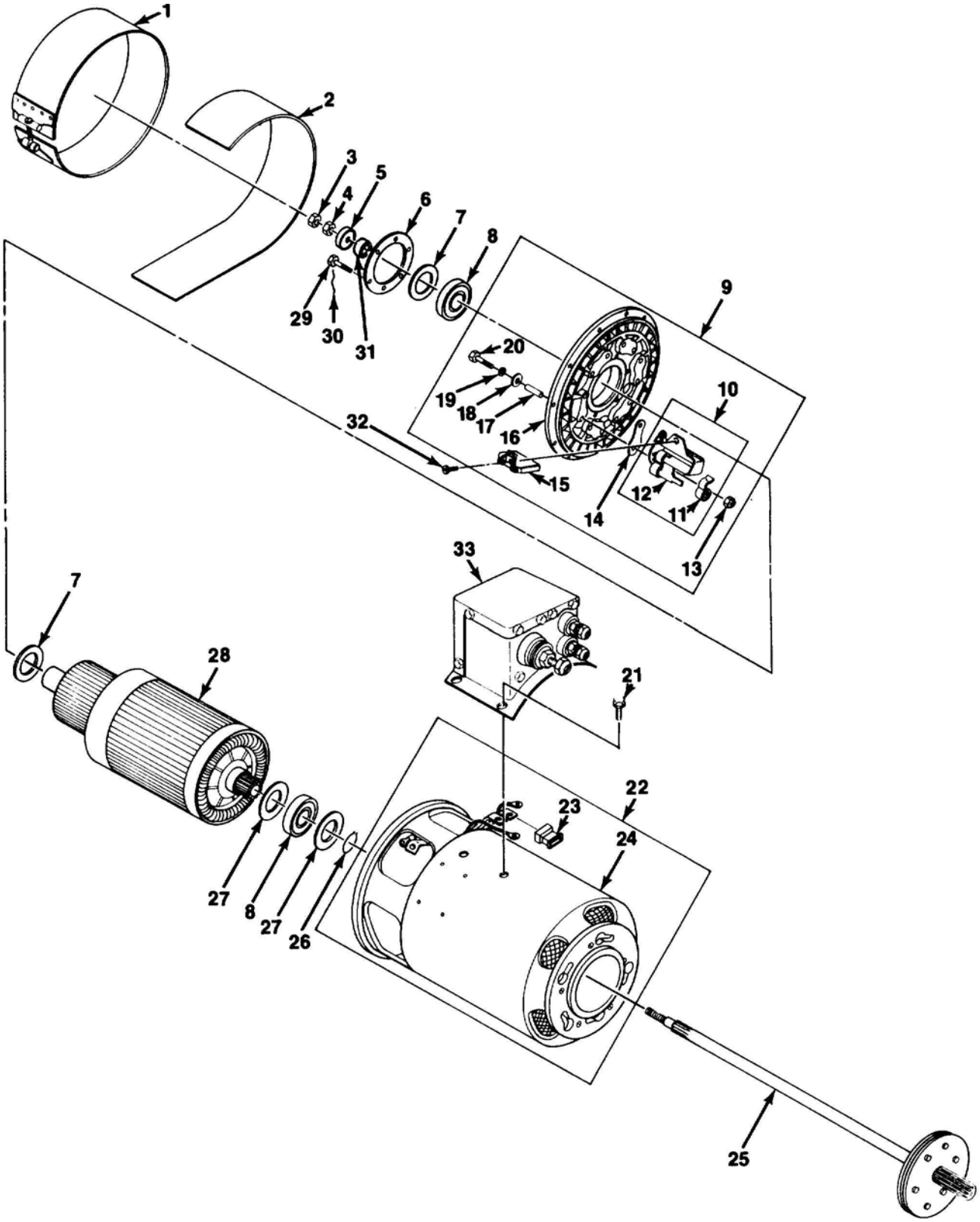


Figure 3. Generator Assembly.

(1) ITEM NO	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0601 GENERATOR ASSEMBLY PART NOS 8717421,10889713,11642898	
					FIGURE 3 GENERATOR ASSEMBLY	
1	PAFZZ	2920-00-335-4311	19207	7954233	BAND ASSEMBLY, GENERATOR	1
2	PAFZZ	5330-00-785-9086	19207	10883754	GASKET: BAND ASSEMBLY	1
3	PAFZZ	5310-00-429-1510	19207	8335646	NUT, PLAIN, HEXAGON: GENERATOR DRIVE SHAFT, FAN END	1
4	PAFZZ	5310-00-451-8852	19207	8335647	NUT, SLEEVE: GENERATOR DRIVE SHAFT, FAN END	1
5	PAFZZ	5310-00-834-4724	19207	8344724	WASHER, RECESSED: GENERATOR DRIVE SHAFT, FAN END	1
6	PAFZZ	5340-00-321-6095	19207	8344706	RING: BEARING RETAINING, FAN END	1
7	PAFZZ	5310-00-570-2757	19207	8344708	WASHER, SHOULDERED AND RECESSED: GENERATOR DRIVE SHAFT BEARING, FAN END	2
8	PAFZZ	3110-00-109-1180	19207	8691946	BEARING, BALL, ANNULAR: GENERATOR DRIVE SHAFT	2
9	PAFFF	2920-00-040-0439	19207	8344709	END BELL, ELECTRICAL: BEARING AND BRUSH HOLDER ASSEMBLY	1
10	PFFFF	5977-00-890-2600	19207	8357780	HOLDER, ELECTRICAL CONTACT: BRUSH	6
11	PAFZZ	5360-00-321-6096	19207	8344710	SPRING, SPIRAL, TORSION: PART OF KIT PART NO. 5702668	12
12	XAFZZ		50740	676038	HOLDER	6
13	PAFZZ	5310-00-061-7326	96906	MS21045-3	NUT, SELF-LOCKING, HEXAGON: BRUSH HOLDER	12
14	PAFZZ	5970-00-370-9411	31435	G300-199	INSULATOR, PLATE: BRUSH HOLDER	6
15	PAFZZ	5977-00-179-4895	19207	10912456	BRUSH, ELECTRICAL CONTACT: PART OF KIT PART NO. 5702668	6
16	PFFZZ	2920-00-068-6110	19207	7954234	SUPPORT ASSEMBLY, GENERATOR	1
17	XAFZZ		50740	676043	TUBE: BRUSH HOLDER	12
18	PAFZZ	5310-00-599-7037	31435	05-374036	WASHER, FLAT: BRUSH HOLDER	12
19	PAFZZ	5310-00-167-0818	88044	AN960-10	WASHER, FLAT: BRUSH HOLDER	12
20	PAFZZ	5306-00-151-0779	88044	AN3-15A	BOLT MACHINE: BRUSH HOLDER	12
21	PAFZZ	5306-00-042-5837	24617	425837	BOLT, ASSEMBLED WASHER: RADIO AC SUPPRESSION BOX TO GENERATOR	4
21	PAFZZ	5306-00-042-5837	24617	425837	BOLT ASSEMBLED WASHER: RADIO B SUPPRESSION BOX TO GENERATOR	2
22	XAFFF		50740	676045	STATOR ASSEMBLY	1
23	PAFZZ	5325-00-370-9416	31435	G300-256	GROMMET, NOMETALLIC: INSULATOR BETWEEN TERMINAL AND HOUSING	2
24	XAFZZ		50740	679049	HOUSING	1
25	PAFFF	2920-00-083-8277	19207	8335268	SHAFT, DRIVE, GENERATOR: (SEE FIG. 5 FOR PARTS BREAKOUT)	1
26	PAFZZ	5365-00-843-8606	21450	583503	RING, RETAINING: GENERATOR DRIVE SHAFT BEARING, DRIVE END	1
27	PAFZZ	2920-00-953-9332	19207	10919346	DEFLECTOR, DIRT AND LIQUID GENERATOR DRIVE SHAFT BEARING, DRIVE END	2
28	PAFZZ	2920-00-040-0440	19207	8344711	ARMATURE, GENERATOR	1
29	PAFZZ	5305-00-614-0245	96906	MS35265-64	SCREW, MACHINE: BEARING RETAINING RING	6

REPAIR PARTS AND SPECIAL TOOLS LIST - CONTINUED 0015 00

(1) ITEM NO	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
30	MFFZZ		96906	MS20995NC32-24	WIRE, NONELECTRICAL: BEARING RETAINING RING (24 IN. LG.) (MAKE FROM 9525-00-803-3044)	1
31	PAFZZ	5365-00-182-3857	31435	30022-1199	SPACER: GENERATOR DRIVE, FAN END BC	1
32	PAFZZ	5305-00-059-3659	96906	MS51958-63	SCREW, MACHINE: BRUSH	6
33	AFFFF		19207	8745469	FILTER, RADIO INTERFERENCE: (SEE FIG. 4 FOR PARTS BREAKOUT)	1
	PAFZZ	2920-00-986-0251	19207	5702668	PARTS KIT, ENGINE GENERATOR:	
					COMPOSED OF:	
11					SPRING, SPlRAL, TORSION	12
15					BRUSH, ELECTRICAL CONTACT	6
			END OF FIGURE			

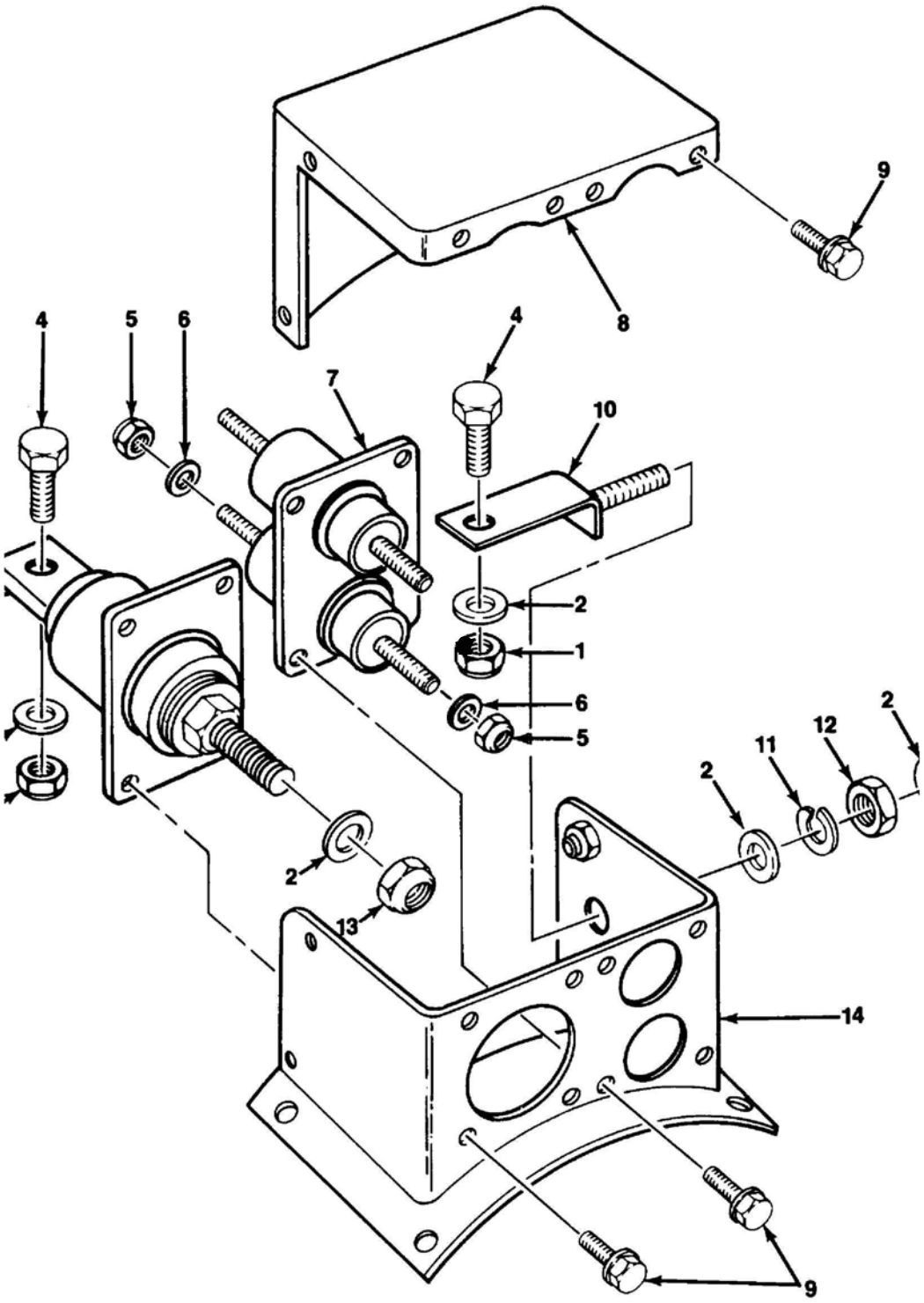


Figure 4. Radio Interference Filter.

REPAIR PARTS AND SPECIAL TOOLS LIST - CONTINUED 0015 00

(1) ITEM NO	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0601 GENERATOR ASSEMBLY PART NOS 8717421,10889713,11642898	
					FIGURE 4 RADIO INTERFERENCE FILTER	
1	PAFZZ	5310-00-926-5832	96906	MS21083B6	NUT, SELF-LOCKING, HEXAGON: CAPACITOR AND GROUND LEAD	2
2	PAFZZ	5310-00-331-3225	88044	AN960B616	WASHER, FLAT: RADIO SUPRESSION BOX LEAD(3), CAPACITOR GROUND LEAD (2)	5
3	PAFZZ	5910-00-567-3285	19207	7974158	CAPACITOR, FIXED, PAPER DIELECTRIC: RADIO SUPRESSION	1
4	PFFZZ	5306-00-459-3280	19207	8745462	BOLT, MACHINE: CAPACITOR AND GROUND LEAD	2
5	PAFZZ	5310-00-982-5064	96906	MS21044B3	NUT, SELF-LOCKING, HEXAGON: RADIO SUPRESSION CAPACITOR LEAD	4
6	PAFZZ	5310-00-264-1390	96906	MS45901-4	WASHER, FLAT: RADIO SUPPRESION CAPACITOR LEAD	4
7	PAFZZ	5910-00-649-3166	18876	7974157	CAPACITOR ASSEMBLY: RADIO SUPRESSION	1
8	PBFZZ		19207	8745464	COVER PLATE, JUNCTION BOX	1
9	PAFZZ	5305-00-042-5301	21450	425301	SCREW, ASSEMBLED WASHER: RADIO SUPRESSION BOX COVER (8), CAPACITORS (4)	12
10	PAFZZ	2920-00-290-9039	19207	11682576	LEAD, GROUND, GENERATOR: RADIO SUPRESSION BOX	1
11	PAFZZ	5310-00-637-9541	12603	23E06	WASHER, LOCK: RADIO SUPRESSION BOX LEAD	1
12	PAFZZ	5310-00-167-1300	19207	7767952	NUT, PLAIN, HEXAGON: RADIO SUPRESSION BOX LEAD	1
13	PAFZZ	5310-00-902-0183	96906	MS51922-23	NUT, SELF-LOCKING, HEXAGON: RADIO SUPRESSION BOX LEAD (1), GROUND LEAD (1)	2
14	PBFZZ		19207	10945044	JUNCTION BOX	1

END OF FIGURE

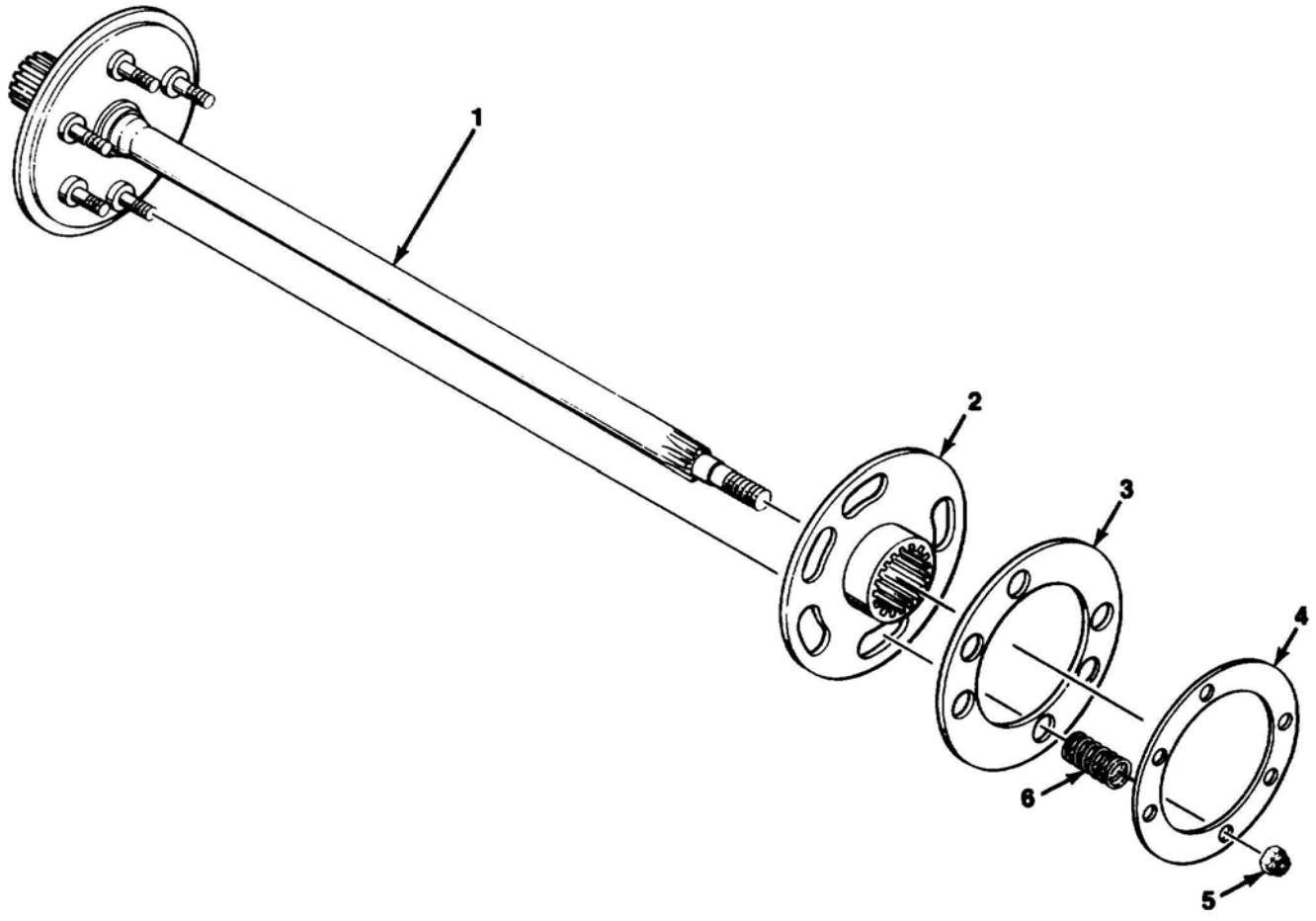


Figure 5. Generator Drive Shaft.

REPAIR PARTS AND SPECIAL TOOLS LIST - CONTINUED 0015 00

(1) ITEM NO	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 0601 GENERATOR ASSEMBLY PART NOS 8717421,10889713,11642898	
					FIGURE 5 GENERATOR DRIVE SHAFT	
1	XAFZZ		50740	676021	SHAFT ASSEMBLY: INNER	1
2	PFFZZ	6115-00-510-4427	19207	8344701	PLATE, DAMPENER GENERATOR	1
3	PFFZZ		19207	8344700	PLATE, DAMPENER GENERATOR: SPRING BACK-UP	1
4	PAFZZ	5330-00-202-2695	31435	G-26-137	RETAINER, PACKING: SPRING	1
5	PAFZZ	5310-00-061-7326	96906	MS21045-3	NUT, SELF-LOCKING, HEXAGON: GENERATOR DAMPENER PLATE TO DRIVE SHAFT ASSEMBLY	6
6	PAFZZ	5360-00-597-9280	19207	8344699	SPRING, HELICAL, COMPRESSION: GENERATOR, DAMPENER PLATE	6

END OF FIGURE

(1) ITEM NO	(2) SMR	(3) NSN	(4) CAGE	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE (UOC)	(7) QTY
					GROUP 99 GENERATOR ASSEMBLY PART NOS 8717421,10889713,11642898	
					BULK BULK MATERIALS	
BULK	PAOZZ	9525-00-803-3044	81348	QQN281	WIRE, NONELECTRICAL, 1 LB SPOOL (366 FT/LB) MS20995NC32 (96906)	V

END OF FIGURE

REPAIR PARTS AND SPECIAL TOOLS LIST - CONTINUED 0015 00

CROSS REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

NATIONAL STOCK NUMBER	FIGURE NO	ITEM NO
2920-00-040-0358	1	4
2920-00-040-0439	3	9
2920-00-040-0440	3	28
5305-00-042-5301	4	9
5306-00-042-5837	3	21
5306-00-042-5839	1	11
5310-00-045-4007	2	5
5305-00-059-3659	3	32
5310-00-061-7326	3	13
5310-00-061-7326	5	5
2920-00-068-6110	3	16
2920-00-083-8277	3	25
3110-00-109-1180	3	8
5306-00-151-0779	3	20
5310-00-167-0818	3	19
5310-00-167-0836	2	2
5310-00-167-1300	4	12
5977-00-179-4895	3	15
5365-00-182-3857	3	31
5330-00-202-2695	5	4
5305-00-253-5614	1	7
5310-00-264-1390	4	6
2920-00-290-9039	4	10
5340-00-321-6095	3	6
5360-00-321-6096	3	11
5310-00-331-3225	4	2
2920-00-335-4311	3	1
5970-00-370-9411	3	14
5325-00-370-9416	3	23
2920-00-410-1118	1	10
5310-00-429-1510	3	3
5310-00-451-8852	3	4
5306-00-459-3280	4	4
6115-00-510-4427	5	2
5305-00-516-5466	1	9
5305-00-543-5059	2	4
5910-00-567-3285	4	3
5310-00-570-2757	3	7
5330-00-580-9765	2	17
5360-00-597-9280	5	6
5310-00-599-7037	3	18
5305-00-614-0245	1	18
5305-00-614-0245	3	29
5305-00-614-0248	1	2
5315-00-616-5519	2	16
5310-00-637-9541	4	11
5910-00-649-3166	4	7
5305-00-655-6556	1	16
5305-00-655-6573	1	14
5310-00-660-3381	2	1
5935-00-698-3713	2	6
5315-00-729-8570	1	6
5935-00-772-2334	2	8
5330-00-785-9086	3	2
9525-00-806-3044	BULK	
5310-00-809-8546	1	1
5910-00-816-8898	2	12
5310-00-834-4724	3	5
5365-00-843-8606	3	26
5977-00-890-2600	3	10
2920-00-895-3417	1	15
5977-00-897-7482	2	11
5310-00-902-0183	4	13
5975-00-902-3190	2	9
2920-00-918-4152	1	5
5310-00-926-5832	4	1
5330-00-946-8344	2	7
2920-00-953-9332	3	27
5310-00-982-5064	4	5
5305-00-984-4983	2	13
2920-00-986-0251	3	KIT

REPAIR PARTS AND SPECIAL TOOLS LIST - CONTINUED 0015 00

CROSS REFERENCE INDEXES

PART NUMBER INDEX

PART NUMBER	CAGE	FIGURE NO	ITEM NO	PART NUMBER	CAGE	FIGURE NO	ITEM
AN3-15A	88044	3	20	11682594	19207	1	10
AN960-10	88044	3	19	23E06	12603	4	11
AN960-516L	88044	2	2	30022-1199	31435	3	31
AN960B616	88044	4	2	425301	21450	4	9
G-26-137	31435	5	4	425303	21450	1	9
G300-199	31435	3	14	425837	24617	3	21
G300-256	31435	3	23	425839	24617	1	11
MS20995NC32-12	96906	1	3	5702668	19207	3	KIT
MS20995NC32-24	96906	3	30	583503	21450	3	26
MS21044B3	96906	4	5	676021	50740	5	1
MS21045-3	96906	3	13	676038	50740	3	12
MS21045-3	96906	5	5	676043	50740	3	17
MS21083B6	96906	4	1	676045	50740	3	22
MS21083N5	96906	2	1	676121	50740	2	3
MS21318-20	96906	1	7	676125	50740	2	10
MS27183-8	96906	1	1	676165	50740	2	15
MS35206-226	96906	2	13	676247	50740	1	8
MS35265-29	96906	2	4	679049	50740	3	24
MS35265-64	96906	1	18	7720492	19207	2	6
MS35265-64	96906	3	29	7722334	19207	2	8
MS35266-66	96906	1	2	7767952	19207	4	12
MS35266-70	96906	1	16	7954233	19207	3	1
MS35266-71	96906	1	14	7954234	19207	3	16
MS35338-41	96906	2	5	7954236	19207	1	4
MS35756-1	96906	2	16	7974157	18876	4	7
MS45901-4	96906	4	6	7974158	19207	4	3
MS51922-23	96906	4	13	8335268	19207	3	25
MS51958-63	96906	3	32	8335646	19207	3	3
MS52000-5	96906	2	7	8335647	19207	3	4
MS9021-248	96906	2	17	8344699	19207	5	6
QQN281	81348	BULK		8344700	19207	5	3
05-374036	31435	3	18	8344701	19207	5	2
10883754	19207	3	2	8344705	19207	1	6
10884044	19207	1	17	8344706	19207	3	6
10884210	19207	2	12	8344708	19207	3	7
10898759	19207	1	15	8344709	19207	3	9
10898760	19207	2	14	8344710	19207	3	11
10898795	19207	1	12	8344711	19207	3	28
10898844	19207	2	11	8344724	19207	3	5
10912456	19207	3	15	8357780	19207	3	10
10919346	19207	3	27	8395473	19207	1	5
10945044	19207	4	14	8691946	19207	3	8
10946955	19207	2	9	8745462	19207	4	4
10956778	19207	1	13	8745464	19207	4	8
11682576	19207	4	10	8745469	19207	3	33

EXPENDABLE AND DURABLE ITEMS LIST 0016 00

THIS WORK PACKAGE COVERS:

Scope, Explanation of Columns, and Expendable Supplies and Durable Items List

SCOPE

This appendix lists the expendable supplies and materials you will need to operate and maintain the starter. This list is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50–970, Expendable/Durable Items (except Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8–100, Army Medical Department Expendable/Durable Items.

EXPLANATION OF COLUMNS

Column (1) – Item number. This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g. “Use lubricating oil (Item 25, WP 0016 00)

Column (2) – Level. This column identifies the lowest level of maintenance that requires the listed item (F = Direct Support/AVIM, H = General Support)

Column (3) – National Stock Number (NSN). This is the NSN assigned to the item which you can use to requisition it.

Column (4) – Item name, Description, Commercial and Government Entity Code (CAGEC), and Part Number (P/N). This column provides the other information you need to identify the item.

Column (5) – Unit of Measure (U/M). This code shows the physical measurement or count of an item as issued per the National Stock Number shown in column (3).

EXPENDABLE SUPPLIES AND DURABLE ITEMS LIST

Table 1. Expendable Supplies and Durable Items List

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGEC, PART NUMBER	(5) U/M
1		6850-00-281-1985	Dry-cleaning Solvent: 1 Gallon Can, (81348) P-D-680, Type II	GL
2		7920-00-205-1711	Rag, Wiping, Cotton, White: 50 lb bale, (80244) 7920-00-205-1711	LB
3		7510-00-852-8179	Tape, Adhesive: Type II, 36 Yard Roll, 1 Inch Wide, (81349) MIL-T-22085	RL
4		5350-00-186-8855	Sandpaper: No. 3/0, 100 sheets, (80204) ANSI B74.18	PK
5		8020-00-297-6657	Brush, Paint, (80204) PD8020-00-559-0389	EA
6		7920-00-205-2401	Brush, Cleaning, Tool And Parts, (80204) 7920-00-205-2401	EA
7		4240-00-816-3819	Goggles: Industrial, (80204) ANSI Z87.1	EA
8		8415-00-266-8677	Gloves: Rubber, Industrial (81349) MIL-DTL-32066	PR
9		4710-00-162-1022	Pipe, Metallic, 21 Foot lengths, (81346) ASTM A53	FT
10		3439-00-243-1882	Solder, Lead Alloy, 16 oz spool, 0.125 DIA wire, (81346) ASTM B32	SP
11		9150-00-985-7247	Grease, Aircraft and Instrument (Gl) Type I, 6 ½ lb can, (81349) MIL-G-23827	CN
12		5970-00-167-7422	Compound, Insulating	PT
13		8040-00-225-4548	Adhesive, 1 oz primer and 10.3 oz adhesive, (19200) 10542199	CT

EXPENDABLE AND DURABLE ITEMS LIST - CONTINUED 0016 00

Table 1. Expendable And Durable Items List - Continued

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGEC, PART NUMBER	(5) U/M
14		7930-00-282-9699	Detergent, General Purpose, 1 gallon: (81349) MIL-D-16791	GL
15		7520-00-043-3408	Marker, Tube Type, (58536) A-A-2778	EA
16		7530-00-285-5836	Paper, Writing, 500 sheets, (58536) A-A-2804	SH

END OF TASK

TOOL IDENTIFICATION LIST 0017 00

THIS WORK PACKAGE COVERS:
Scope, Explanation of Columns, and Tool Identification List

SCOPE

This work package lists all common tools and supplements and special tools/fixtures needed to maintain the starter.

EXPLANATION OF COLUMNS

Column (1) – Item number. This number is assigned to the entry in the list and is referenced in the initial setup to identify the item (e.g. “Extractor (Item 25, WP 0015 00)”)

Column (2) – Item Name. This column lists the item by noun nomenclature and other descriptive features (e.g., “Gage, belt tension”)

Column (3) – National Stock Number. This is the National Stock Number (NSN) assigned to the item; use it to requisition the item

Column (4) – Part Number/CAGEC. Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity) which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspections requirements to identify an item or range of items. The manufacturer’s Commercial and Government Entity Code (CAGEC) is also included.

Column (5) – Reference. This column identifies the authorizing supply catalog or RPSTL for items listed in this work package.

TOOL IDENTIFICATION LIST

Table 1. Tool Identification List

(1) ITEM NO.	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER/CAGEC	(5) REFERENCE
1	General Mechanic’s Tool Kit	5180-00-177-7033	SC 5180-90-CL-N26 (50980)	SC 5180-90-N26
2	Brush Spring Lifter			WP 0013 00
3	Metal Scriber	5120-00-224-9728	83 (73792)	
4	Retaining Ring Pliers	5120-00-789-0492	GGG-P-480 (81348)	
5	Holder, Inserted Hammer	5120-00-903-8555	GGG-H-33 (81348)	
6	Face, Hammer, Inserted	5120-00-596-1071	GGG-H-33 (81348)	
7	Face, Hammer, Inserted	5120-00-596-1075	5120-00-596-1075 (80204)	
8	Soldering Iron, Electric	3439-00-204-3858	W-S-570 (81349)	
9	Adapter, Spline Bush	4910-00-786-4118	11054 (22680)	
10	Shop Caliper Set, Micrometer	5210-00-267-3093	GGG-C-105 (81348)	
11	Telescope Gage Set	5120-00-473-9350		
12	Dial Indicator	5210-00-223-9648	A-A-2348 (58536)	
13	Hacksaw Blade	5110-00-277-4591	B94.52M (05047)	
14	Puller, Mechanical	5120-00-595-9305	GGG-P-781 (81348)	

TOOL IDENTIFICATION LIST - CONTINUED 0017 00

Table 1. Tool Identification List - Continued

(1) ITEM NO.	(2) ITEM NAME	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER/CAGEC	(5) REFERENCE
15	Undercutting Machine	4940-00-270-1594	MILU17148 (81349)	
16	Threading Set, Screw	5180-00-448-2362	GGG-T-330 (81348)	
17	Armature Turning Center Tool			WP 0013 00
18	Stone, Sharpening	5345-00-198-8050	SS-S-736 (81348)	
19	Spring Tester 0-10 lbs	6635-00-641-7346	SPT-850285 (64334)	
20	Wrench, Torque, 0-600 lb-in.	5120-00-221-7983	B107.14M (05047)	

END OF TASK

ALPHABETICAL INDEX

ALPHABETICAL INDEX - CONTINUED

ALPHABETICAL INDEX - CONTINUED

ALPHABETICAL INDEX - CONTINUED

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25–30; the proponent agency is ODISC4.	Use Part II (*reverse)* for Repair Parts and Special Tools Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	Date
TO: (*Forward to proponent of publication or form) (Include ZIP Code)*	FROM: *(Activity and location) (include ZIP code)*	

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9–2920–224–34&P	31 August 2005	Direct Support and General Support Maintenance Manual for Generator Assembly, Engine (300 AMP) including RPSTL

ITEM	PAGE	PARA	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON
	0003 00–1					In “INITIAL SETUP” change Torque wrench (6) (item 62, WP 0044 00) to Spanner wrench (item 61, WP 0044 00).

*Reference to line numbers within the paragraph or subparagraph.

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

DA FORM 2028 , FEB 74 REPLACES DA FORM 2028, 1 DEC 68, WHICH WILL BE USED. USAPPC V1.00

TO: *(Forward direct to addressee listed in publication)*	FROM: *(Activity and location) (Include Zip Code)*	DATE

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE
TM 9-2920-224-34&P	31 August 2005	Direct Support and General Support Maintenance Manual for Generator Assembly, Engine (300 AMP) including RPSTL

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25–30; the proponent agency is ODISC4.	Use Part II (*reverse)* for Repair Parts and Special Tools Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	Date
TO: (*Forward to proponent of publication or form) (Include ZIP Code)*	**FROM:** *(Activity and location) (include ZIP code)*	

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PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9–2920–224–34&P	31 August 2005	Direct Support and General Support Maintenance Manual for Generator Assembly, Engine (300 AMP) including RPSTL

ITEM	PAGE	PARA	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON

**Reference to line numbers within the paragraph or subparagraph.*

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ITEM	PAGE	PARA	LINE	FIGURE NO.	TABLE	RECOMMENDED CHANGES AND REASON

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TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

Official:

SANDRA R. RILEY
Administrative Assistant to the
Secretary of the Army
0530801

DISTRIBUTION: To be distributed in accordance with the Initial Distribution Number (IDN) 371464, requirements for TM 9-2920-224-34&P.

CONVERSION TABLE

inch	decimal	mm
1/64	0.015625	0.3969
1/32	0.031250	0.7938
3/64	0.046875	1.1906
1/16	0.062500	1.5875
5/64	0.078125	1.9844
3/32	0.093750	2.3812
7/64	0.109375	2.7781
1/8	0.125000	3.1750
9/64	0.140625	3.5719
5/32	0.156250	3.9688
11/64	0.171875	4.3656
3/16	0.187500	4.7625
13/64	0.203125	5.1594
7/32	0.218750	5.5562
15/64	0.234375	5.9531
1/4	0.250000	6.3500
17/64	0.265625	6.7469
9/32	0.281250	7.1438
19/64	0.296875	7.5406
5/16	0.312500	7.9375
21/64	0.328125	8.3344
11/32	0.343750	8.7312

inch	decimal	mm
23/64	0.359375	9.1281
3/8	0.375000	9.5250
25/64	0.390625	9.9219
13/32	0.406250	10.3188
27/64	0.421875	10.7156
7/16	0.437500	11.1125
29/64	0.453125	11.5094
15/32	0.468750	11.9062
31/64	0.484375	12.3031
1/2	0.500000	12.7000
33/64	0.515625	13.0969
17/32	0.531250	13.4938
35/64	0.546875	13.8906
9/16	0.562500	14.2875
37/64	0.578125	14.6844
19/32	0.593750	15.0812
39/64	0.609375	15.4781
5/8	0.625000	15.8750
41/64	0.640625	16.2719
21/32	0.656250	16.6688
43/64	0.671875	17.0656
11/16	0.687500	17.4625

inch	decimal	mm
45/64	0.703125	17.8594
23/32	0.718750	18.2562
47/64	0.734375	18.6531
3/4	0.750000	19.050
49/64	0.765625	19.4469
25/32	0.781250	19.8437
51/64	0.796875	20.2406
13/16	0.812500	20.6375
53/64	0.828125	21.0344
27/32	0.843750	21.4312
55/64	0.859375	21.8281
7/8	0.875000	22.2250
57/64	0.890625	22.6219
29/32	0.906250	23.0188
59/64	0.921875	23.4156
15/16	0.937500	23.8125
61/64	0.953125	24.2094
31/32	0.96750	24.6062
63/64	0.984375	25.0031
1	1.000000	25.4000

THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 Lb.
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
1 Sq. Kilometer = 1,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

TEMPERATURE

5/9 (°F − 32) = °C
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
(9/5 x °C) + 32 = °F

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Millimeters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound–Feet	Newton–Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton–Meters	Pound–Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621