DEPARTMENT OF THE ARMY TECHNICAL MANUAL

ORGANIZATIONAL, DS, GS, AND DEPOT MAINTENANCE MANUAL WITH REPAIR PARTS AND SPECIAL TOOL LISTS

TEST STAND, AIRCRAFT GENERATORS (FSN 4920-967-9969)

This copy is a reprint which includes current pages from Changes 2.

HEADQUARTERS, DEPARTMENT OF THE ARMY

DECEMBER 1964

SAFETY PRECAUTIONS

The operating voltage of this test stand is dangerous to persons coming in contact with any part of the electrical system. Severe, possible fatal shock may result. Disconnect the power source before performing any maintenance or inspection, other than operating tests of the unit.

Do not remove any equipment being tested from the HIGH or LOW speed heads of the varidrive until the test stand has come to a complete stop. Serious injury could result to personnel and/or damage to the unit.

CHANGE
No. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC., 4 November 1980

Organizational, DS, GS, and Depot Maintenance Manual With
Repair Parts and Special Tool Lists

TEST STAND, AIRCRAFT GENERATORS
(NSN 4920-00-967-9969)

TM 55-4920-227-15, 1 December 1964, is changed as follows:

Cover. Title is changed as shown above.

Cover. Add the following to the Warning Page.

WARNING AND PRECAUTIONARY DATA

Personnel performing operations, procedures, and practices which are included or implied in this technical manual shall observe the following warnings. Disregard of these warnings and precautionary information can cause serious injury, death or destruction of material.

FUEL SYSTEM. Always provide a metal-to-metal contact between the container and fuel tank when filling the tank with fuel. This will prevent a spark from being generated as gasoline flows over the metal surfaces.

Never fill fuel tank while engine is in operation or hot, to avoid possibility of spilled fuel causing a fire.

CARBON MONOXIDE. Never operate engine in a closed building, unless the exhaust, which contains carbon monoxide, is piped outside. Inhalation of exhaust can cause serious illness or death.

FLUID BYPASS VALVE. Do not connect or disconnect any hoses with the fluid bypass valve closed and the test stand in operation.

BATTERY ACID. Battery electrolyte contains sulfuric acid and can cause severe skin burns. If the electrolyte comes in contact with the body, clothing or painted surfaces, rinse immediately with clean water.

ADJUSTMENTS ON CONNECTED EQUIPMENT. Never made adjustments on equipment while it in connected to the engine, unless ignition switch is turned to the OFF position. Turning over the equipment by hand during adjusting or cleaning might start the engine and equipment with it, causing serious injury to the operator.

NOISE HAZARD. Operation of this equipment presents a noise hazard to personnel in the area. The noise level exceeds the allowable limits for unprotected personnel; wear ear muffs or earplugs which are fitted by a trained professional.

Page i. Title is changed as shown above.

Page 2. Paragraph 1*c* is superseded as follows.

c. You can help improve this manual. If you find any mistake or if you know of a way to improve the procedure, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publication and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: Commander, US Army Troop Support and Aviation Materiel Readiness Command, ATTN: DRSTS-MTT, 4300 Goodfellow Blvd., St. Louis, MO 63120. A reply will be furnished to you.

Page 13, paragraph 20. Warning is added before subparagraph *a*.

Warning: Operation of this equipment presents a NOISE HAZARD to personnel in the area. The noise level exceeds the allowable limits for unprotected personnel; wear ear muffs or earplugs which are fitted by a trained professional.

By Order of the Secretary of the Army:

E. C. MEYER
General, United Sates Army
Chief of Staff

Official:

J. C. PENNINGTON
Major General, United States Army
The Adjutant General

DISTRIBUTION:
To be distributed in accordance with DA Form 12-31 Organizational Maintenance Requirements for All Fixed and Rotor Wing Aircraft.

CHANGE
No. 1

HEADQUARTERS
DEPARTMENT Of THE ARMY
WASHINGTO N, D.C., *2 February 1972*

Organizational, DS, GS, and Depot Maintenance Manual
With Repair Parts and Special Tool Lists

TEST STAND, AIRCRAFT GENERATORS

(FSN 4920-967-9969)

TM 55-4920-227-15, 1 December 1964, is changed as follows:

Pages 54 thru 56. Paragraphs 80 thru 84 are deleted in their entirety. The following sentence is added after "Section II. Demolition of Test Stand to Prevent Enemy Use": (Refer to TM 750-244-1-4 for demolition instructions).

Page 55. Figure 24 is deleted.

By Order of the Secretary of the Army:

W. C. WESTMORELAND,
General, United States Army,
Chief of Staff.

Official:

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

DISTRIBUTION:
To be distributed in accordance with DA Form 12-31 (qty rqr block no. 94) requirements for Organizational Maintenance Instructions for all Fixed and Rotor Wing Aircraft.

GPO 828-070

TECHNICAL MANUAL
No. 55-4920-227-15

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C. 1 December 1964

Organizational, DS, GS, and Depot Maintenance Manual
With Repair Parts and Special Tool Lists
TEST STAND, AIRCRAFT GENERATORS
(FSN 4920-967-9969)

TAGO 6729A-December

CHAPTER I
INTRODUCTION

Section I. GENERAL

I. Scope

a. These instructions are published for the information and guidance of operating and maintenance personnel to whom the test stand is assigned. They contain information on the operation, lubrication, detailed preventive maintenance services, and maintenance of the equipment, its accessories and auxiliaries; also packing, preservation, storing, and shipping procedures.

b. Appendix I contains a standard list of all publications applicable to this manual. Ap pendix II contains the maintenance allocation chart. Appendix III contains the repair parts required by direct support, general support, and depot maintenance to support this equipment.

c. The direct reporting by the individual user of errors, omissions, and recommendations for improving this manual is authorized and encouraged. DA Form 2028 (Recommended Changes to DA Publications) will be used for reporting these improvements. This form will be completed, using pencil, pen or typewriter and forwarded direct to Commanding General, U.S. Army Aviation Meteriel Command, P.O. Box 209, Main Office, St. Louis, Mo. 63166.

2. Operator and Organizational Maintenance Record and Report Forms

For a complete list of applicable record and report forms, refer to TM 38-750.

Section II. DESCRIPTION AND DATA

3. Description

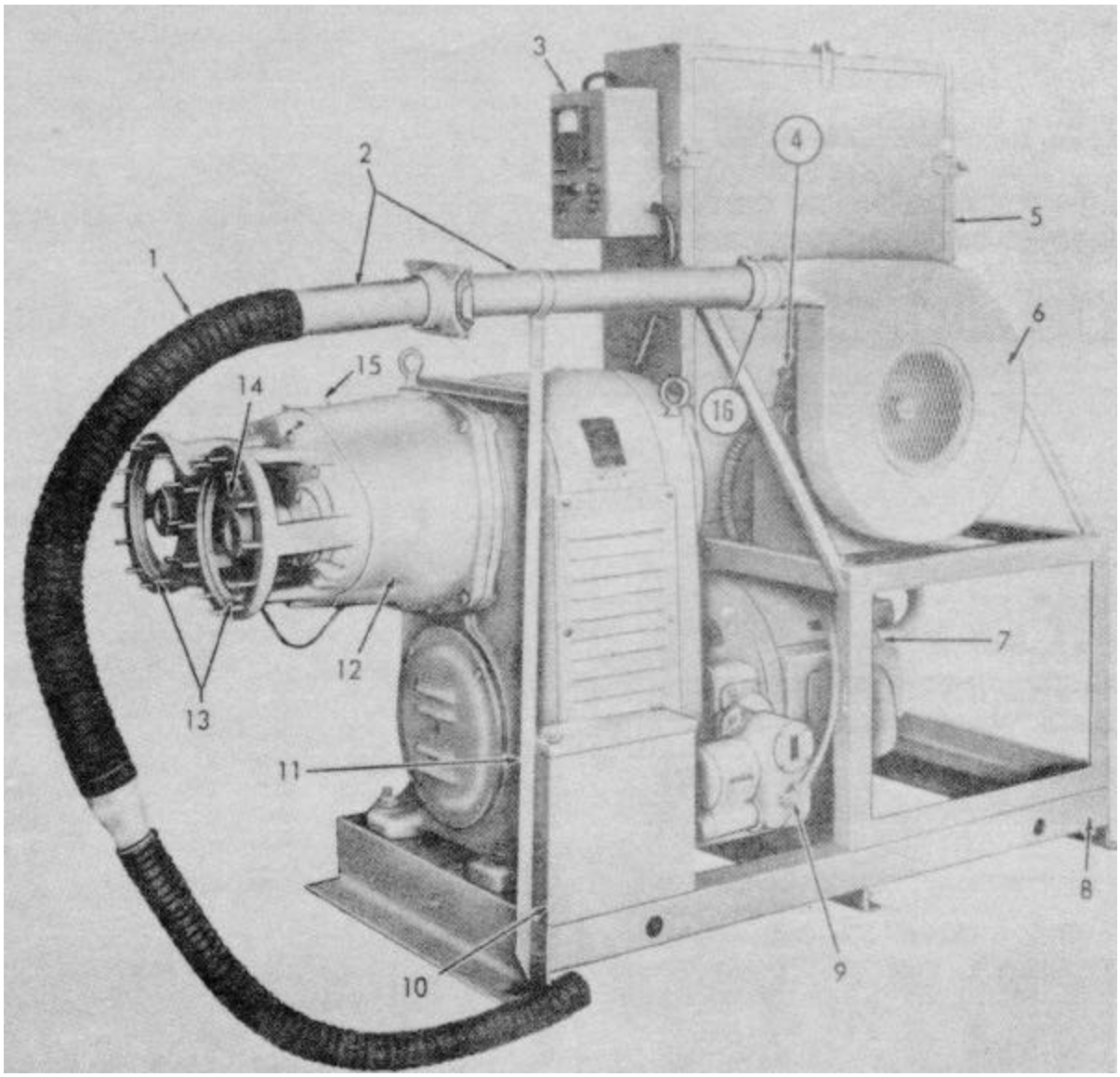
The Aircraft Generator Test Stand, P/N 7199 (fig. 1) is designed to simulate actual operating conditions required for accurate and rapid testing of direct-current and alternating-current aircraft generators. It supplies regulated testing speeds of from 1,006 to 11,000 rpm. The test stand consists of a base mounted varidrive synchrogear motor assembly which is made up of motor, varidrive, and dual-head gear case. A START-STOP pushbutton, RAISE-LOWER pushbutton, indicator light, and tachometer indicator are contained in a control box which is attached to the starter box assembly. The RAISE-LOWER pushbutton energizes a speed changing electric remote controll assembly which in turn varies the output speed of the test stand. A tachometer generator is located on the gear housing, and is electrically converted to the tachometer indicator. An air blower consisting of a fan and motor is mounted to the frame. The starter box, which is also frame mounted, contains all the electrical controls necessary for reduced voltage starting.

4. Identification

a. The aircraft generator test stand has three identification and instruction plates.

b. The manufacturer's identification plate (fig. 2) is mounted on the starter box directly below the control box and specifies the manufacturer's name, model, type, serial number, and part number.

c. The motor starter identification plate (fig. 3) is mounted on the control panel beneath



1 Flexible air hose
2 Tube assembly
3 Control box
4 Blower motor
5 Starter box
6 Blower housing
7 Varidrive motor
8 Frame
9 Electric remote control
10 Stowage box
11 Tube support
12 Gear case
13 Generator mounting bracket
14 Generator tachometer
15 Oil filler plug
16 Hose clamp

Figure 1. Aircraft generator test stand, three-quarter right front view.

starter box cover and specifies the manufacturer's name and rating of the unit.

d. The varidrive motor identification plate (fig 4) is located on the varidrive motor stator housing and specifies the horsepower, phase, volts, type, rpm, frame, code, and gear ratio.

Figure 2. Manufacturer's identification plate.

Figure 3. Motor starter identification plate.

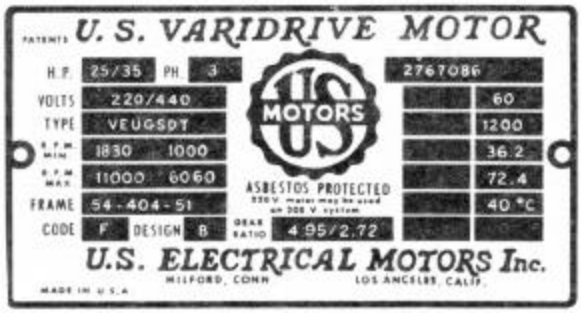


Figure 4. Varidrive motor identification plate.

5. Difference in Models

This manual covers only the United Manufacturing Company, P/N 7199. No known unit differences exist for the model covered by this manual.

6. Tabulated Data

a. General.

Manufacturer----------United Manufacturing Co.
Part No.----------7199

b. Varidrive Motor.

Manufacturer----------U.S. Electrical Motors, Inc.
Type----------VEUGSDT
HP (Continuous)----------25
HP (intermittent)----------35
Volts----------220/440
Cycle----------60
Phase----------3 phase
Pole----------6
Frame----------54-404-51
Code----------F
Gear ratio:
Low speed head----------2.72:1
High speed head---------4.95:1
Revolutions per minute (rpm):
Low speed head----------6050/1000
High speed head---------11000/1830

c. Blower.

Manufacturer----------Clarage Fan Company
Type----------0
Size----------308
Rpm----------3500
CFM (cubic feet per minute)-230
Rotation----------Clockwise, from drive side

d. Blower Motor.

Manufacturer----------U.S. Electrical Motors, Inc.
Type (uninclosed) - ----------SC Tropical
Design----------B
Frame----------66
HP----------1
Phase----------3
Cycle----------60
Volt----------220/440
Rpm----------3600
Rating----------40.C

e. Motor Starter.

Manufacturer----------Federal Pacific Electric Co.
Bulletin----------F 3300
Type----------D
Volts----------220/440
Form----------1
Cycle----------60
Wiring Diagram----------C-F 3300-21
Maximum horsepower---------30
Coil----------110V, 60 cy.
Phase----------3

f. Generator Tachometer

Manufacturer----------Weston Electrical Instrument Corp.
Model----------758
Type----------JB-2
Number----------19972
Maximum rpm----------5000
Generated volts at 1000 rpm.------10 volts
Instructions----------F-2270

g. Tachometer Indicator.

Manufacturer----------Weston Electrical Instrument Corp.
Model----------610-RD
Dual Scale----------0-12000 rpm. (for gear ratio 4.95:1)
0-7000 rpm. (for gear ratio 2.72:1)

h. Electric Remote Control Motor.

Manufacturer----------U.S. Electrical Motors, Inc.
Part Number----------XA 64524
Type----------ERC
Hp----------1/15
Volts----------220
Phase----------1.
Rpm----------1500-1800

i. Time Delay Relay.

Manufacturer----------Elastic Stop Nut Corporation of America
Type----------NEH-13
Number----------C79446-R
Coil----------110 V
Cycle----------60

j. Control Circuit Transformer.

Manufacturer----------Hevi Duty Electric Company
Type----------S20
Number----------D 48318
Cycle----------60
Phase----------1
Centigrade rise----------55°
KVA----------.25

k. The overall wiring diagram for the generator test stand is illustrated as figure 5.

l. Dimensions and Weight.

Overall length----------76 1/2 in. (inch)
Overall width----------33 in.
Overall height----------68 in.
Weight----------2000 lbs (pound)

m. Base Plan. The test stand can be installed on any suitable base, such as concrete, wood or steel. The necessary dimensions for locating the bolt hole centers are shown in figure 7.

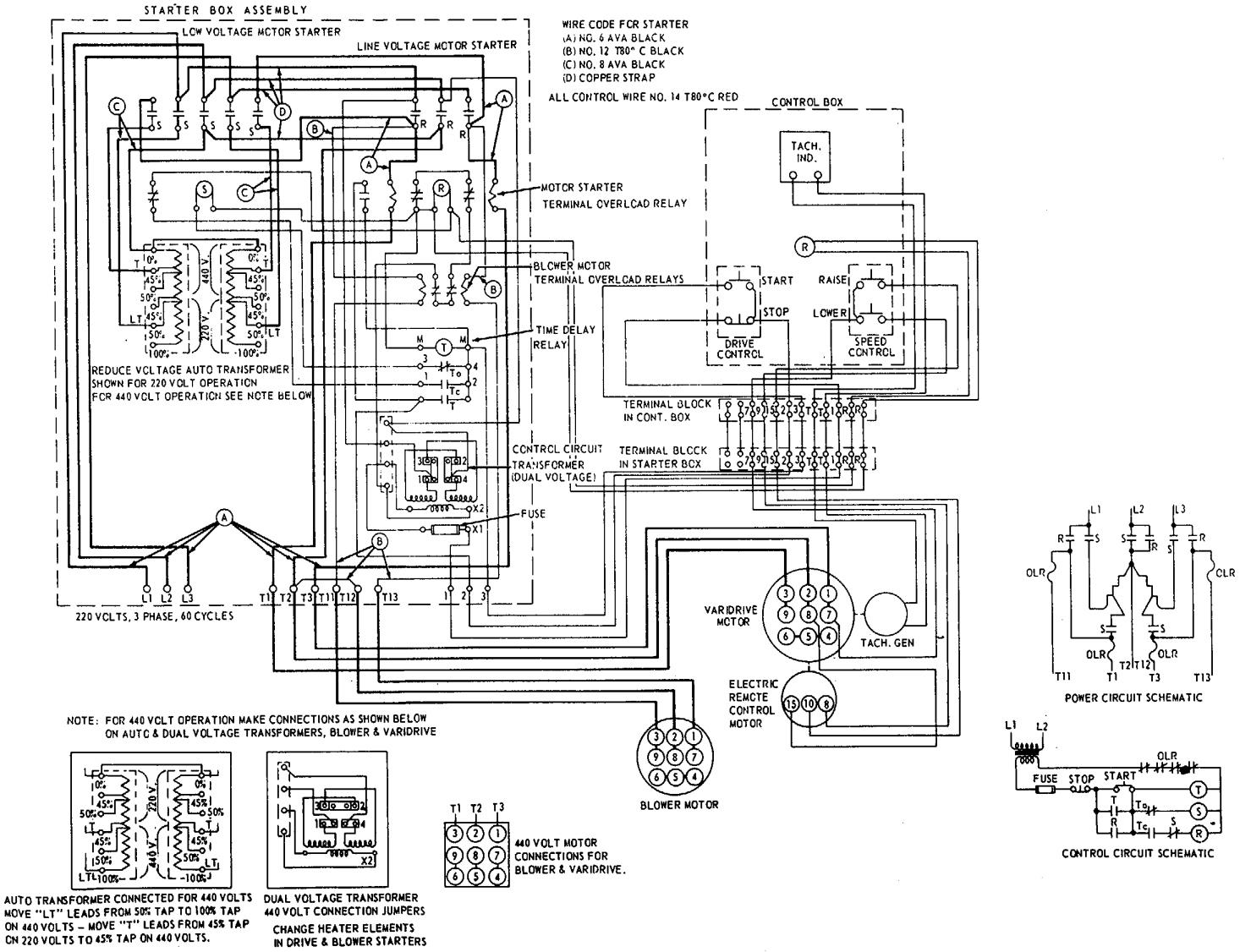


Figure 5. Overall wiring diagram.

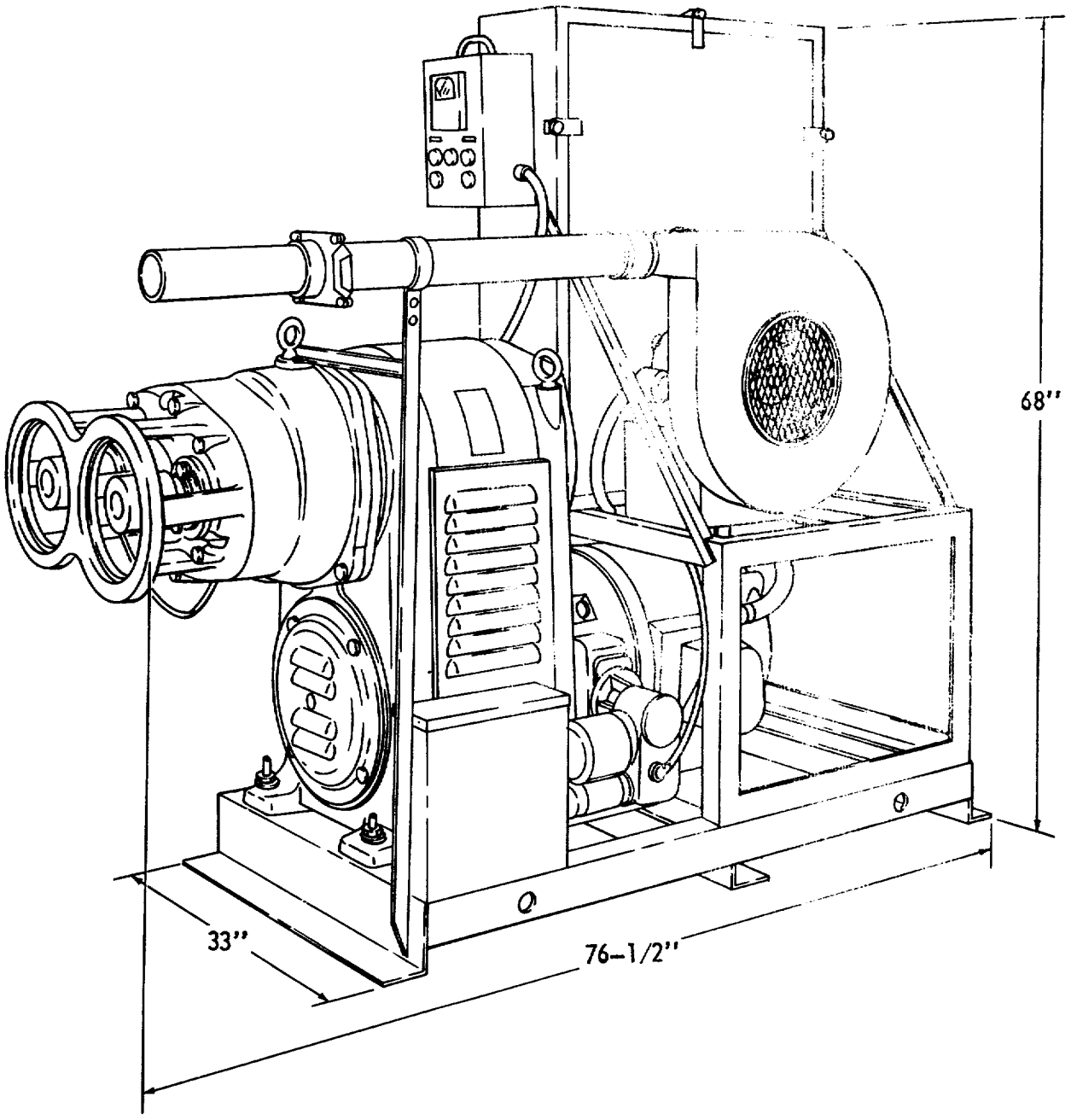


Figure 6. Shipping dimensions.

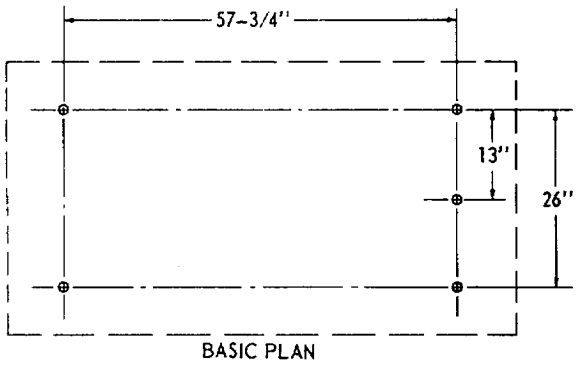


Figure 7. Base plan.

CHAPTER 2

INSTALLATION AND OPERATING INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

7. Unpacking Equipment

a. Cut and remove the metal straps from the crate containing the test stand. Pry off the top, and dismantle the sides of the crate to gain access to the unit. Remove the bolts securing the test stand to the crate base, and use a suitable lifting device to raise the test stand straight up, clear of the base.

b. Remove the protective barrier material and clean all preservatives from the test stand with cleaning solvent PP-S-661.

8. Inspection of New Equipment

a. Perform the before-operation services described in paragraph 32.

b. Perform a complete visual inspection of the equipment for any dents, cracks, breaks, and loose or missing parts.

c. Perform a general inspection of the test stand to assure that all parts and assemblies are properly and securely installed and in good condition.

d. Correct all deficiencies or report them to organizational maintenance.

9. Installation or Setting Up Instructions

a. Install the test stand in a cool well ventilated area not subject to heat or dripping moisture and never in a location where hazardous processes are in use.

b. Locate and drill the base mounting holes in accordance with (fig. 7).

c. Level, and secure the test stand to the base with four holddown bolts.

d. Remove the knock-out plug located on the right side of the tarter box (5, fig. 1) and connect an input power cable to the terminal block connecting lugs L1, L2, and L3 in accordance with the wiring diagram (fig. 5).

e. Attach one end of a grounding strap to the frame and secure the opposite end of the strap to any suitable grounding source.

f. Tighten all electrical connections and check-the wiring in accordance with wiring diagram (fig. 5).

Caution: **The test stand is shipped without oil in the gear case. Do not operate the test stand until the gear case has been filled with the proper lubricating oil.**

10. Servicing New Equipment

a. Perform the before-operation services (para. 32).

b. Remove the oil filler plug (15, fig. 1) and the oil level plug on the side of the gear case (12). Fill the gear case with the proper lubricant (para. 29) until the oil begins to flow from the oil level hole. Replace the oil level plug and the oil filer plug (15).

c. Install the blower and varidrive motor heater elements (para. 11).

Note. **The test stand is shipped and connected for 220-volt operation. For 440-volt operation perform operations prescribed in paragraph 11.**

d. Start the test stand (para. 19). Check the drive head shafts for a clockwise rotation, and the blower for a counterclockwise rotation. If either are reversed, refer to the wiring diagram (fig. 5) for proper connections.

e. Vary the speed of the test stand (para. 19). Observe the operation of the varidrive for overheating, and for any unusual or harsh noises before, during, or after any speed changes. Reduce the speed to a minimum and stop the test stand, the varidrive should

decelerate to a stop smoothly, with no vibration or harsh noise.

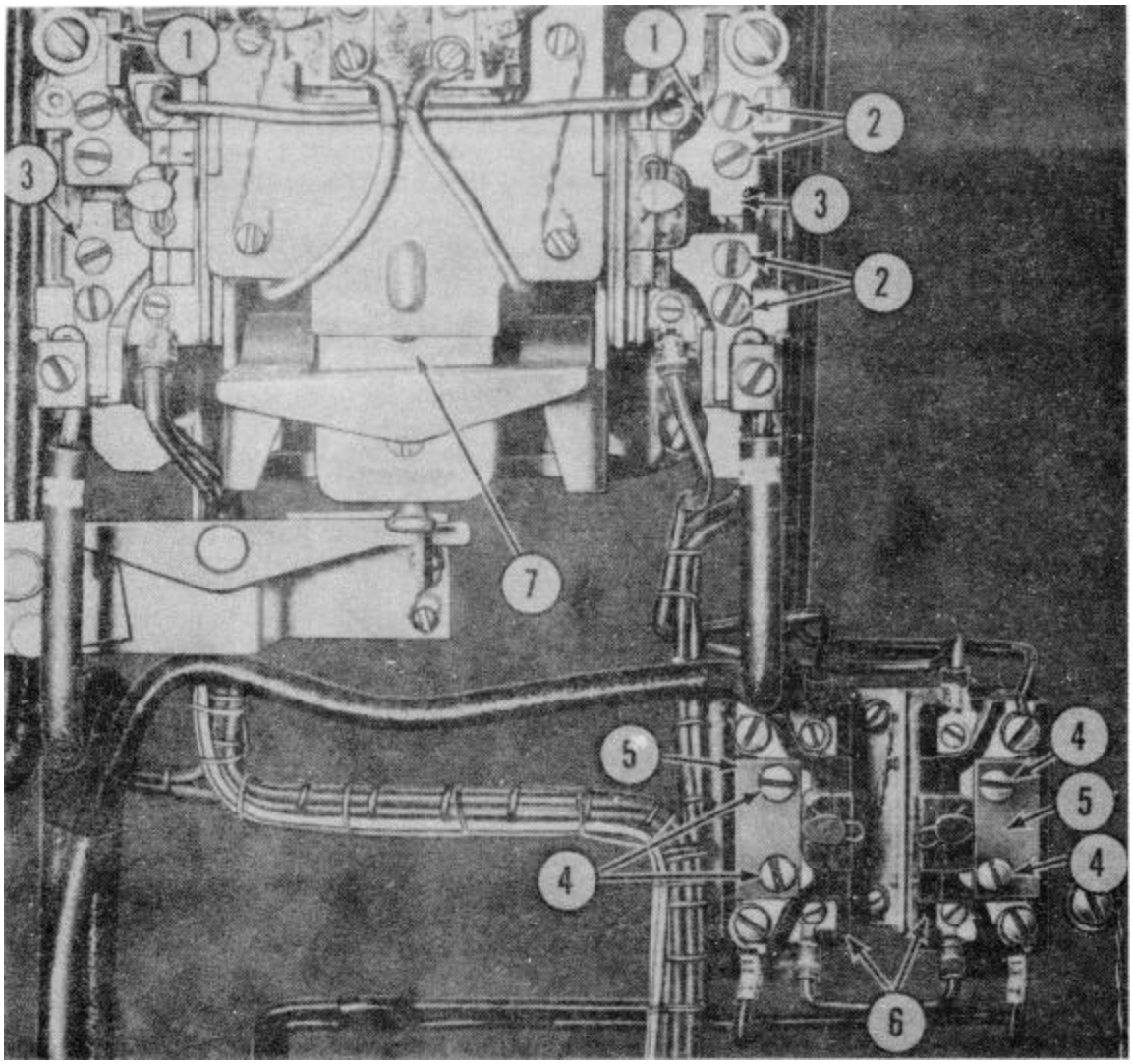
11. Equipment Conversion

a. 220-Volt Conversion.

(1) Install the 5 ampere blower motor heater (5, fig. 8) in each of the two thermal overload relays (6) and secure each heater with two screws (4).

(2) Install the 100 ampere varidrive motor heater (3) in each of the 2 thermal overload relays (1) on the line-voltage motor starter (7) and secure each heater with 4 screws (2).

(3) Connect the blower motor, varidrive motor, autotransformer and the dual voltage transformer in accordance with the wiring diagram (fig. 5).



1 Thermal overload relay, type F, bulletin 925 (1 rqr)
2 Screw, machine, pan-hd. No. 10-32 x in. (8 rqr)
3 Heater (for 220 volt-Type F, 100 Ampere; for 440 volt-Type F, 50 Ampere)
4 Screw, machine, pan-hd, No. 10-32 x in. (4 rqr)
5 Heater (for 220 volt-type F, 5 Ampere; for 440 volt-Type F, 3.15 Ampere)
6 Thermal overload relay, Type F, bulletin 925 (2 rqr)
7 Motor starter

Figure 8. Blower and varidrive motor heaters, installed view.

b. 440-Volt Conversion

(1) Remove the screws (4) that secure each of the 5 ampere blower motor heaters (5) in the thermal overload relays (6) and remove the heaters from the relays. Remove the 100 ampere varidrive motor heaters (3) from the motor darter thermal overload relays (1) in a similar manner.

(2) Install the 3.15 ampere blower motor heater as prescribed in a(1) above.

(3) Install the 50 ampere varidrive motor heaters as prescribed in a(2) above.

(4) Connect the blower motor, varidrive motor, autotransformer and the dual voltage transformer in accordance with the wiring diagram (fig. 5).

12. Inspection of Used Equipment

Inspect a used test stand as outlined in paragraph 8. Pay particular attention to the parts which might be worn or damaged through se, such as the air duct. Correct all deficiencies or report them to organizational maintenance.

13. Servicing Used Equipment

Service a used test stand in a manner similar to that prescribed in paragraph 10. Correct all deficiencies or report them to organizational maintenance.

Section II. CONTROLS AND INSTRUMENTS

14. General

The section describes, locates, illustrates, and furnishes the operator with sufficient information pertaining to the various controls and instruments provided for in the proper operation of the test stand.

15. Star-Stop Buttons

The START-STOP buttons (6 and 7, fig. 9) located on the left front section of the control box (2) are manually operated pushbuttons which are used to start and stop the generator drive stand.

16. Tachometer Indicator

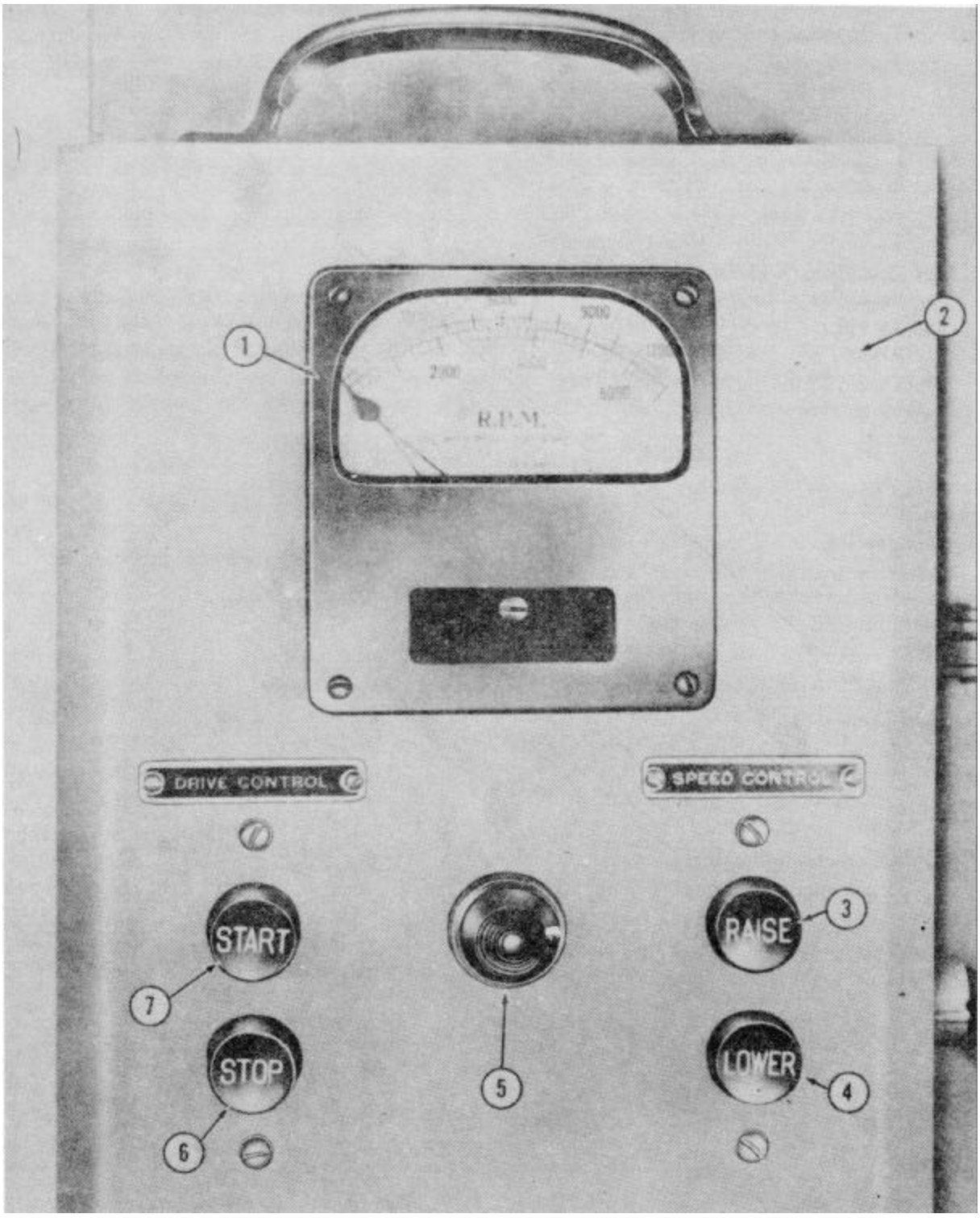
The tachometer indicator (1, fig. 9) is located on the control box (2). The needle indicating instrument has a dual scale graduated from 0-7,000 rpm and 0-12,000 rpm. The tachometer indicator registers the speed (rpm) of the high- and low-speed driving shafts.

17. Raise-Lower Buttons

The RAISE-LOWER buttons (3 and 4, fig. 9), located on the control box (2), are manually operated pushbuttons which are used to raise or lower the speed of the driving shafts and generators under test.

18. Indicator Light

The indicator light (5, fig. 9) is located on the control box (2) directly below the tachometer indicator. It is an incandescent bulb with a red lens. The indicator light will come on approximately 20 seconds after the unit is started and full line voltage is applied to the test stand.



1 Tachometer indicator
2 Control box
3 RAISE button
4 LOWER button
5 Indicator light
6 STOP button
7 START button

Figure 9. Controls and instruments.

Section III. OPERATION UNDER USUAL CONDITIONS

19. General

Instructions in this section are published for the information and guidance of personnel responsible for the operation of this equipment. It is essential that the operator knows how to perform every operation for which the equipment is capable.

20. Operating Procedure

a. Perform the before-operation services as described in paragraph 33.

b. Press the START button (7, fig. 9) and run the test stand approximately 1 minute before increasing the varidrive speed.

c. Depress the RAISE button (3) and observe the varidrive speed increase from 1000 to 11,000 rpm on the tachometer indicator (1).

d. Press the LOWER button (4) until the varidrive Speed is reduced to a minimum. Stop the test stand by depressing the STOP button (6).

21. Generator Mounting Details

a. Direct Mounting (10 inch diameter bolt circle).

(1) Check the unit to be tested to determine whether to use the high- or low- speed head of the varidrive.

(2) Install the machine key (2, fig. 10) in the keyway of the desired driveshaft (8). Aline the keyway in the coupling (3) with the key in the driveshaft, and slide the coupling onto the shaft. Secure the coupling to the drive shaft with the setscrew (7).

(3) Slip the correct splined bushing adapter (4) over the end of the rotor shaft (5). Position the generator (6) on the generator mounting bracket (1), and simultaneously insert the splined adapter into the coupling (3). Secure the generator to the generator mounting bracket with 12 hex nuts.

(4) Connect the flexible air hose (1, fig. 1) to the air inlet on the generator cover.

(5) Start the test stand (para. 20). Depress the RAISE button (3, fig. 9) until the desired rpm for the generator under test is indicated on the tachometer indicator (1). When the test is completed, press the LOWER button (4) reducing the varidrive speed to a minimum and stop the test stand.

(6) Remove the generator from the test stand and place the coupling, adapters, and mounting flanges in the storage box.

Caution: **Do not remove any unit from the test stand until the varidrive has come to a complete stop.**

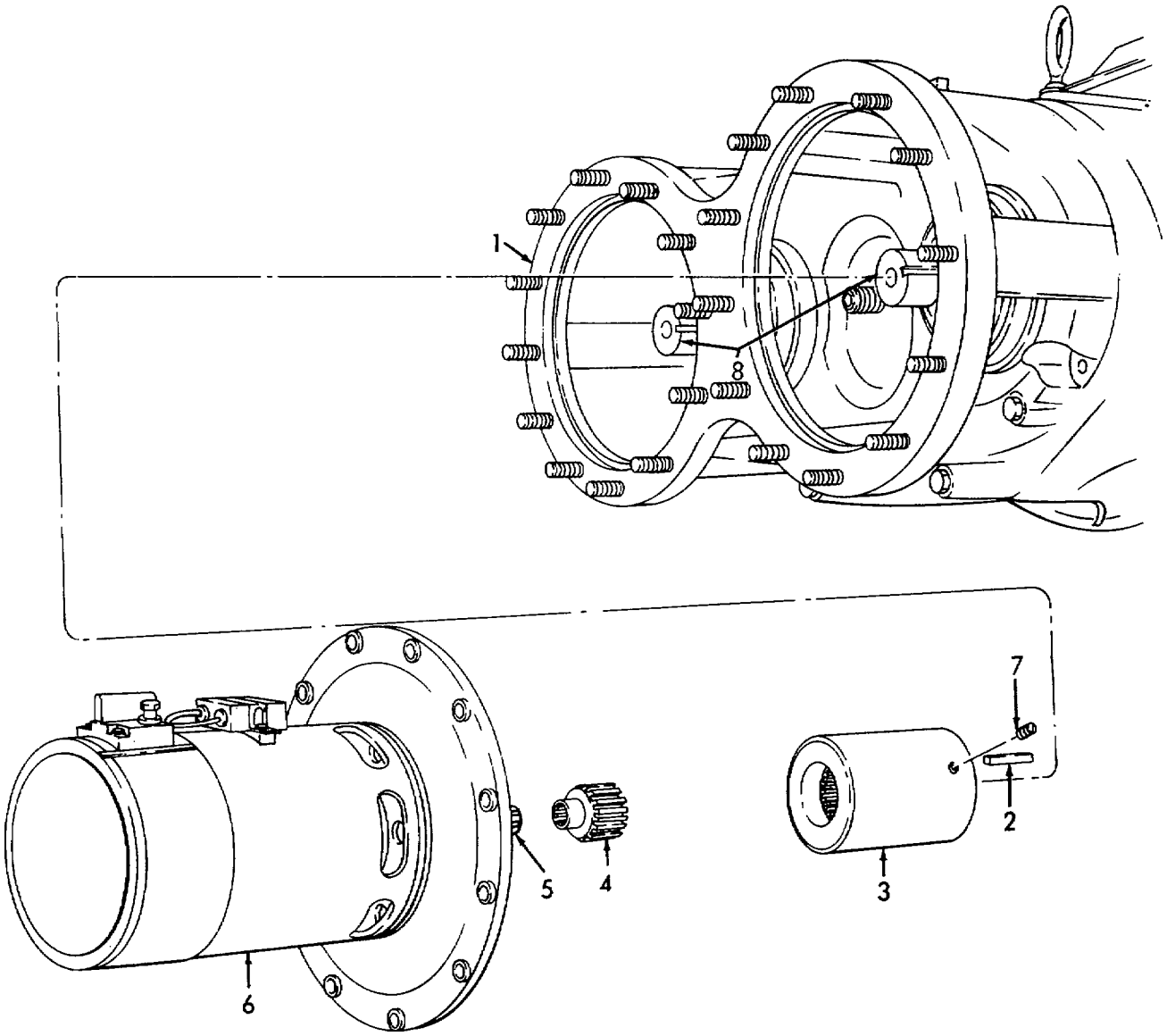
b. Adapter Mounting (5 inch diameter bolt circle).

(1) Check the unit to be tested to determine whether to use the high- or low- speed head of the varidrive.

(2) Install the coupling (4, fig. 11) as described in a above.

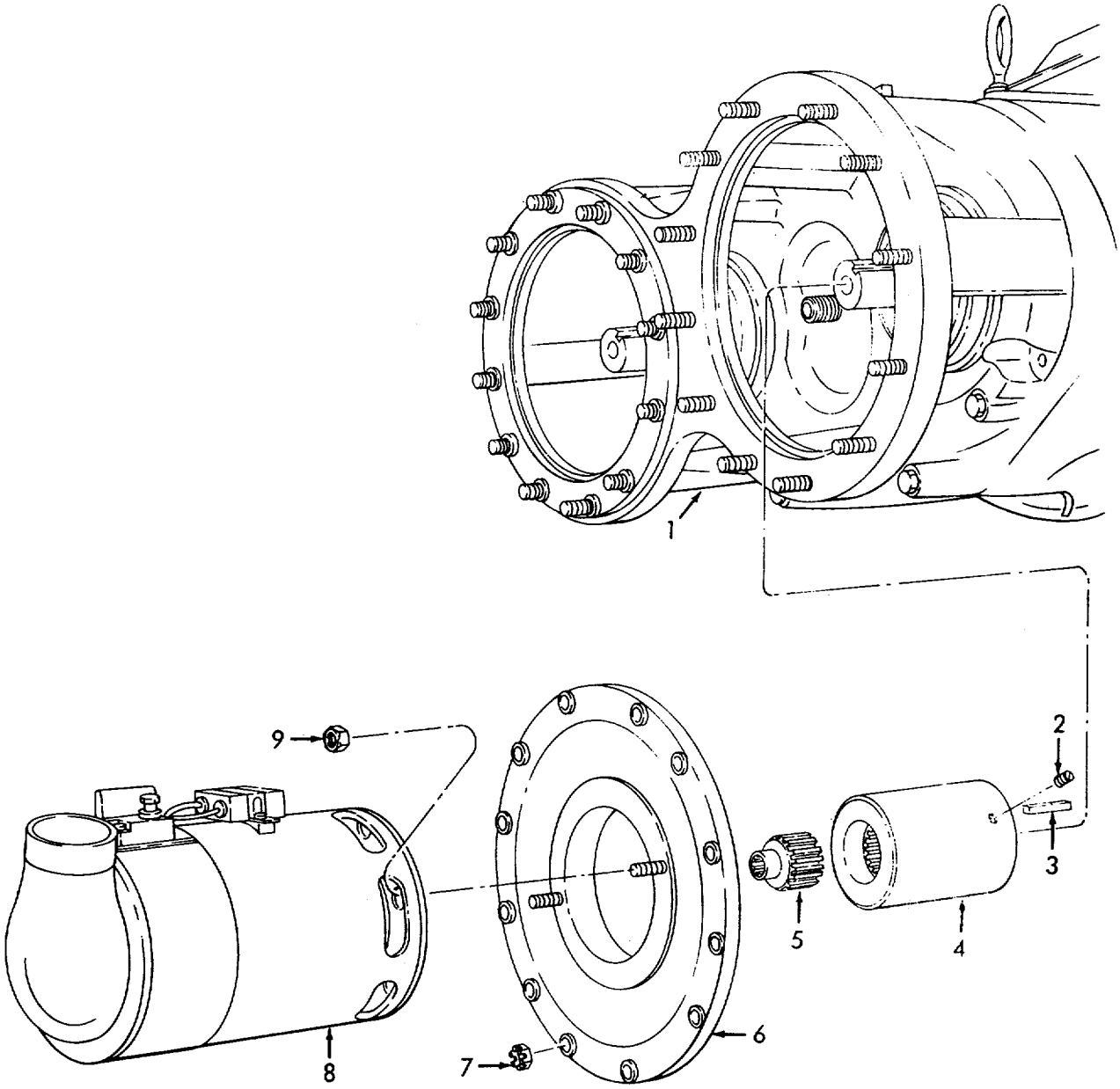
(3) Install the adapter plate (6) on the generator mounting bracket (1) and secure with 12 nuts (7).

(4) Slip the correct splined bushing adapter (5) over the end of the rotor shaft. Position the generator (8) on the adapter plate (6), simultaneously insert the splined adapter (5) into the coupling (4). Secure the generator to the adapter plate with 2 nuts (9). Connect the flexible air hose, and operate as prescribed in paragraph 21.



1 Generator mounting bracket
2 Machine key
3 Coupling
4 Splined bushing adapter
5 Rotor shaft
6 Generator
7 Setscrew
8 Drive shaft

Figure 10. Direct generator mounting, exploded view.



1 Generator mounting bracket
2 Setscrew
3 Machine key
4 Coupling
5 Drive spline adapter
6 Drive flange adapter
7 Castellated nut
8 Test generator
9 Plain hexagon nut

Figure 11. Adapter generator mounting.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

22. Operation in Extreme Cold

a. Lubricate the test stand in accordance with prevailing temperatures and lubrication instructions contained in paragraph 30.

b. Start the test stand and run at low speed, allowing ample warmup period before testing any equipment.

23. Operation in Extreme Heat

a. Lubricate the test stand in accordance with prevailing temperatures and lubrication instructions contained in paragraph 30.

b. Install in a well ventilated area with sufficient room around the test stand for air circulation. During operation, be alert for unusual odors, smoke, peculiar noises, or other indications of overheating.

24. Operation in Dusty or Sandy Areas

a. Shield the test stand with a tarpaulin or other suitable material to keep the unit as free as possible from dust, dirt, and sand.

b. Clean the unit as often as necessary to maintain a clean, dirt-free condition, paying particular attention to the blower and varibelts.

c. Cover the unit with a tarpaulin when not in use.

25. Operation in Salt Water Area

a. Protect all exposed metal surfaces from the corrosive action of salt water air with a thin film of oil or rustproofing material.

b. Retouch or repaint the test stand as required to protect painted areas from corrosion.

c. Cover the unit with a tarpaulin when not in use.

26. Operation Under Rainy or High Humidity Conditions

a. Wipe all exposed areas frequently and apply a thin film of oil to exposed metal surfaces.

b. Keep the air hose clean and dry. Inspect frequently for cracks and deterioration.

c. Keep electrical components clean and dry. Watch closely for evidence of fungus growth and remove promptly.

Section V. MOVEMENT TO NEW WORKSITE

27. Dismantling for Movement

a. Movement Within Immediate Area.
- (1) Disconnect the power input cable.
- (2) Secure the storage and starter box doors.
- (3) Remove the four base mounting bolts.
- (4) Move the test stand to a new location with a forklift or other suitable means.

b. Movement From Immediate Area.
- (1) Lift the test stand onto the bed of a carrier.
- (2) Securely block the test stand on the carrier. Use tiedowns or other suitable means. If the carrier has a wooden floor, spike the test stand base to the carrier bed. Transport the test stand td the new location.

28. Reinstallation After Movement to New Worksite

On arrival at the new work site, unload and install the test stand, following applicable instructions in paragraphs 9 and 10.

CHAPTER 3

OPERATIONAL AND ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. SPECIAL TOOLS AND EQUIPMENT

There are no special tools or equipment required for the maintenance of the test stand.

Section II. LUBRICATION

29. General

This section contains a lubrication chart (fig. 12) which is supplemented by the detailed lubrication information contained in paragraph 30.

30. Detailed Lubrication Information'

a. Care of Lubricants and Lubricating Equipment. Keep all lubricants in closed containers and store in a clean, dry area away from heat. Do not allow dust, dirt, water, or other foreign material to come in contact with the lubricants. Keep all lubricating equipment clean and ready for use.

b. Cleaning. Use a cloth dampened with an approved cleaning solvent, and wipe all fittings and surfaces surrounding the point of application, before applying the lubricant.

c. Points of Application. Location of the lubrication fittings, oil plugs, and the recommended lubricants are-given beneath each illustrated lubrication point (fig. 12).

d. Operation .After Lubrication. Operate the unit for 5 minutes immediately after lubrication. Inspect the movable varidiscs for any surplus grease forced out around the shafts, and remove all surplus lubricant. Inspect the gear case for leaks and correct as necessary. Stop the unit, wait 5 minutes and check the oil level. Add oil if necessary.

e. Lubriflushing:

(1) Remove the drain plug from each of the blower and varidrive motor bearings which indicate lubriflushing (fig. 12).

(2) Inject new grease into each of the bearings as shown in figure 13 until all evidence of the old grease 'has been forced out of the bearing drain plug holes.

(3) Run unit for approximately 5 minutes to relieve bearings of any excess grease, and replace drain plugs.

Note. **Lubriflush bearings yearly or at 1000 hour intervals whichever occurs first.**

f. Gearcase.

(1) Refer to figure 12 and remove the oil drain plug. Drain the gearcase and install the plug.

(2) Refer to figure 12 and remove the oil filler plug and the oil level plug. Fill the gearcase with the proper lubricant until it begins to flow from the oil level hole. Replace the plugs.

(3) Operate unit immediately after lubricating as described in *d* above.

Note. **Change oil after the first week of service and at 500 hour intervals thereafter.**

LUBRICATION CHART

TEST STAND, AIRCRAFT GENERATORS, UNITED MANUFACTURING COMPANY, PART NO. 7199 FSN 4920-967-9969

Intervals are based on normal operation. Reduce to compensate for abnormal operations. During inactive periods sufficient lubrication must be performed for adequate preservation.

Clean fittings before lubricating.

Drain gear case only when hot after operation; refill and check level when cool.

—KEY—

LUBRICANTS	CAPACITY	EXPECTED TEMPERATURES		INTERVALS
		+50° to 120°F	+35° to 65°F	
OE—OIL, ENGINE, Heavy Duty		OE 30	OE 20	Intervals given are in hours of normal operation.
Gear Case				
GAA—GREASE, Automotive and Artillery		All Temperatures		

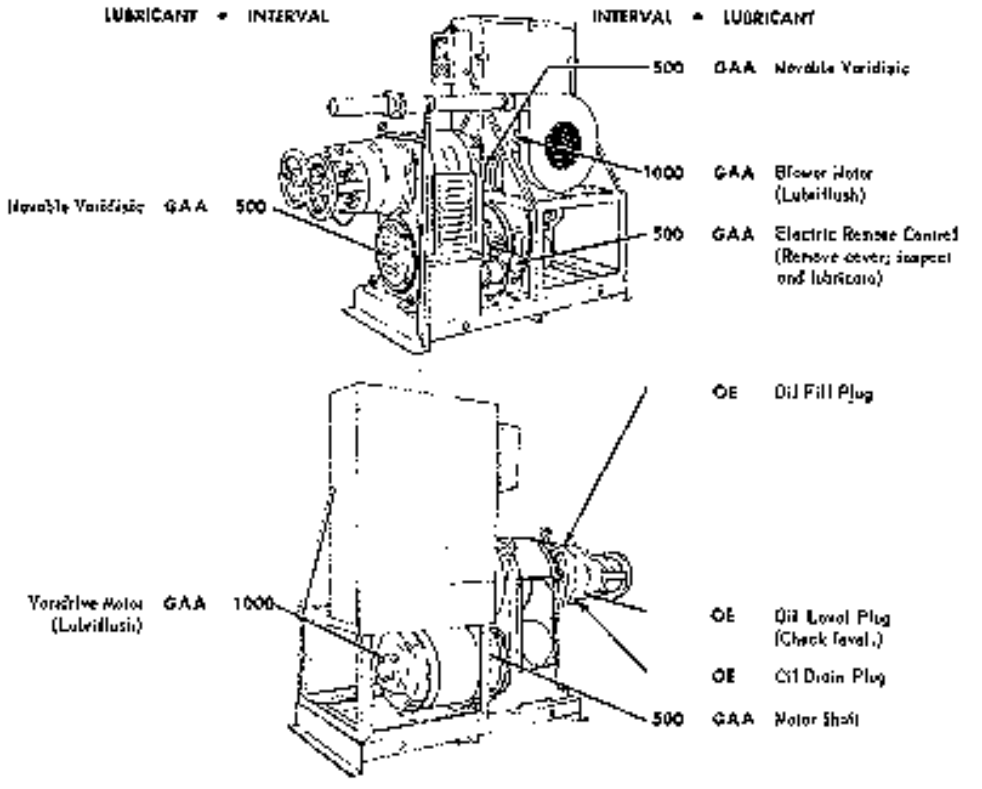


Figure 12. Lubrication chart.

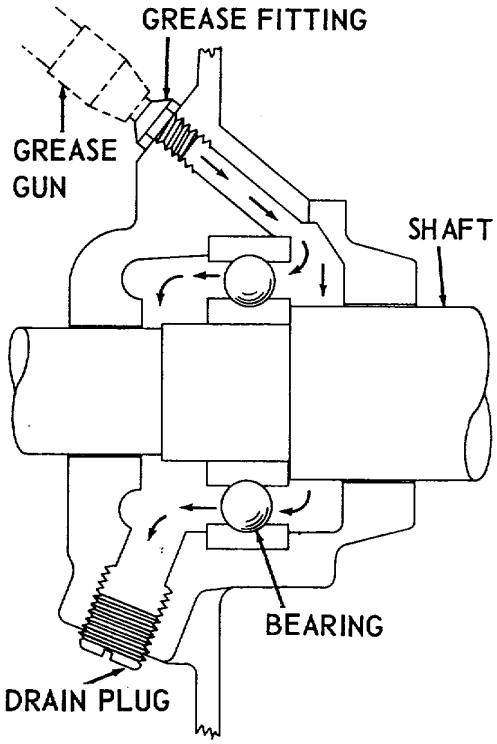


Figure 13. Lubriflushing bearings.

31. Lubrication Under Unusual Conditions

a. Unusual Conditions. Reduce lubrication intervals specified on the lubrication chart to compensate for abnormal operation and extreme conditions, such as high or low temperatures, prolonged periods of high speed operation, and in dust or sand, any one of which may quickly destroy the protective qualities of the lubricant. Lubrication intervals may be extended during inactive periods.

b. Changing Grade of Lubricants. Lubricants are prescribed in the key (fig. 12) in accordance with two temperature ranges: from 25° to 65° F., and from 50° to 110° F. When to change grade of lubricants is determined on operation of the test stand in accordance with weather forecast data.

Section III. PREVENTIVE MAINTENANCE SERVICES

32. General

To insure that the test stand is ready for operation at all times, it must be inspected systematically before operation, during operation, and after operation, so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance services will be performed before operation. Defects discovered during operation of the unit will be noted for future correction, to be made as soon as operation has ceased. Stop operation immediately if a deficiency is noticed during operation which would damage the equipment if operation were continued. After operation services will be performed by the operator after every operating period. After operation services will be performed at intervals based on the normal operations of the equipment. Reduce interval to compensate for abnormal conditions. Defects or unsatisfactory operating characteristics beyond the scope of the operator to correct must be reported at the earliest opportunity to organizational maintenance. Responsibility for performance of preventive maintenance services rests not only with the operator, but with the entire chain of command from section chief to commanding officer (AR 750-5).

33. Operator's Daily Services

Intervals			Procedure
Before operation	During operation	After operation	
X	X	X	*Visual inspection.* Make a general inspection of the entire unit for obvious deficiencies, such as broken instrument glass, loose or missing bolts, screws, nuts, loose electrical connections, or other damage that may have occurred since the equipment was last operated. Correct or report any deficiencies to

Intervals			Procedure
Before operation	During operation	After operation	
			organizational personnel for correction.
X	X	X	*Leaks, general.* Inspect for any signs of oil leaks, paying particular attention to the gearcase. Report any deficiency to organizational personnel for correction.
X	X	X	*Blower.* Inspect the flexible air hose for cracks, breaks or deteriorated condition. Check for adequate air supply, and clean ventilating air passages as required to keep a dirt free condition.
	X	--	*Tachometer indicator.* Check rpm. reading for any fluctuation. Report any deficiencies to organization personnel for correction.
	X	--	*Varidrive.* Observe any indication of overheating, unusual odors, or noise. Report any deficiencies to organizational personnel for correction.

34. Organizational Preventive Maintenance

Inspection	Monthly	
X	X	*Lubrication.* Inspect for missing or damaged lubricator fittings and inspect for indications of. improper Inspection Monthly lubrication. Inspect the lubricant level in the gearcase.
		Inspect for oil and grease leaks. Correct or report to direct and general support maintenance any deficiencies noted
X	X	*Appearance.* Inspect the general appearance of the equipment, paying particular attention to cleanness, legibility of markings, and condition of the paint.
X	X	*Frame.* Inspect the frame for bent members, cracks, breaks, and loose or missing bolts Report other deficiencies to direct and general support maintenance.
X	X	*Motors.* Inspect the motors for loose or missing mounting bolts. Tighten or replace loose or missing bolts.
X	X	*Meter.* See that the tachometer indicator is securely mounted and operating properly and that the glass is not cracked or the indicator bent or broken. Tighten loose mounting screws and connections. Replace a damaged or defective meter.
X	X	*Light.* Check for proper operation of indicator light (para. 18). Inspect for cracked lens, defective lamp, and missing or loose mounting hardware. Tighten loose, or replace missing mounting hardware. Replace defective lamp, cracked or broken lens.

Section IV. TROUBLESHOOTING

35. General

This section provides information useful in diagnosis and correction, inspection, operation, or failure of the test stand, or any of its components. Each trouble symptom stated is followed by a list of probable causes of the trouble. The possible remedy recommended is described opposite the probable cause.

36. Tachometer Fluctuates

Probable use	*Possible remedy*
Varibelt oily or greasy	Clean varibelt.
Discs oily or greasy	Clean discs.

37. Starter Trips

Probable cause	*Possible remedy*
Excessive load on test stand.	Decrease load.
Power supply-line voltage improper.	Use new source.

38. Gears Noisy

Probable cause	*Possible remedy*
Generator mounting bracket loose.	Tighten screws securing bracket to the gear case
Oil in gear case low	Add oil to proper level.

39. Blower Noisy

Probable cause	*Possible remedy*
Fan motor mounting loose	Tighten motor securely to support (para. 43).
Blower housing bent	Straighten housing or replace (para. 43).
Fan lose on motor shaft	Tighten fan (para. 43).

Section V. BLOWER ASSEMBLY

40. General

The blower assembly of the test stand is comprised of the blower housing, motor, fan, tube assembly, and air hose. The volume of air is controlled by a blast gate in the tube assembly, and is forced through the air hose to the generator under test.

41. Air Hose

a. Removal and Disassembly.

(1) Remove the air hose assembly (1, fig. 1) from the tube assembly (2).

(2) Disassemble the air hose assembly by removing the two air hoses (16 and 18, fig. 14) from the hose reducer (17).

b. Cleaning and Inspection.

(1) Clean the air hoses and hose reducer with a cloth dampened with an approved cleaning solvent.

(2) Inspect the air hoses for cuts, breaks, and deterioration. Replace a defective air hose.

(3) Inspect the hose reducer for cracks, breaks, and distorted condition. Replace if defective.

c. Reassembly and Installation.

(1) Install the air hoses (16 and 18) on the hose reducer (17).

(2) Install the air hose assembly (1, fig. 1) on the tube assembly (2).

42. Tube Assembly

a. Removal.

(1) Remove the air hose (para. 41).

(2) Loosen the host clamp (16, fig. 1) and remove the tube assembly (2) from the blower housing (6). Remove two screws and nuts and remove the tube assembly from the tube support (11).

b. Disassembly.

(1) Remove the four screws (19, fig. 14) that secure the pitot tube (20) and remove the pitot tube from the tube (21).

(2) Remove the six screws (28) and nuts (23) that secure the valve (22) to the tubes (21 and 24). Separate the tubes and remove the valve (22).

(3) Remove the two hose clamps (27) and remove the hose (26), and tube mounting clamp (25) from the tube (24).

c. Cleaning and Inspection.

(1) Wash the parts in an approved cleaning solvent and dry.

(2) Inspect the pitot tube assembly for a broken connector. Inspect the valve for sticking or binding. Inspect the valve for cracks or bends.

(3) Inspect the tube assembly for cracks or breaks.

(4) Replace all defective parts.

d. Reassembly.

(1) Position the valve (22) between the tubes (21 and 24) and secure with six screws (28) and nut (23).

(2) Position the pitot tube (20) on the tube (21) and secure with four screws (19).

(3) Position the tube mounting clamp (25) and hose (26) on the tube (24), and secure the hose to tube with hose clamp (27).

e. Installation.

(1) Position the tube assembly (2, fig. 1) on the tube support (11) and secure with two screws and nuts.

(2) Position the tube assembly (2) on the blower housing (6) and secure with hose clamp (16).

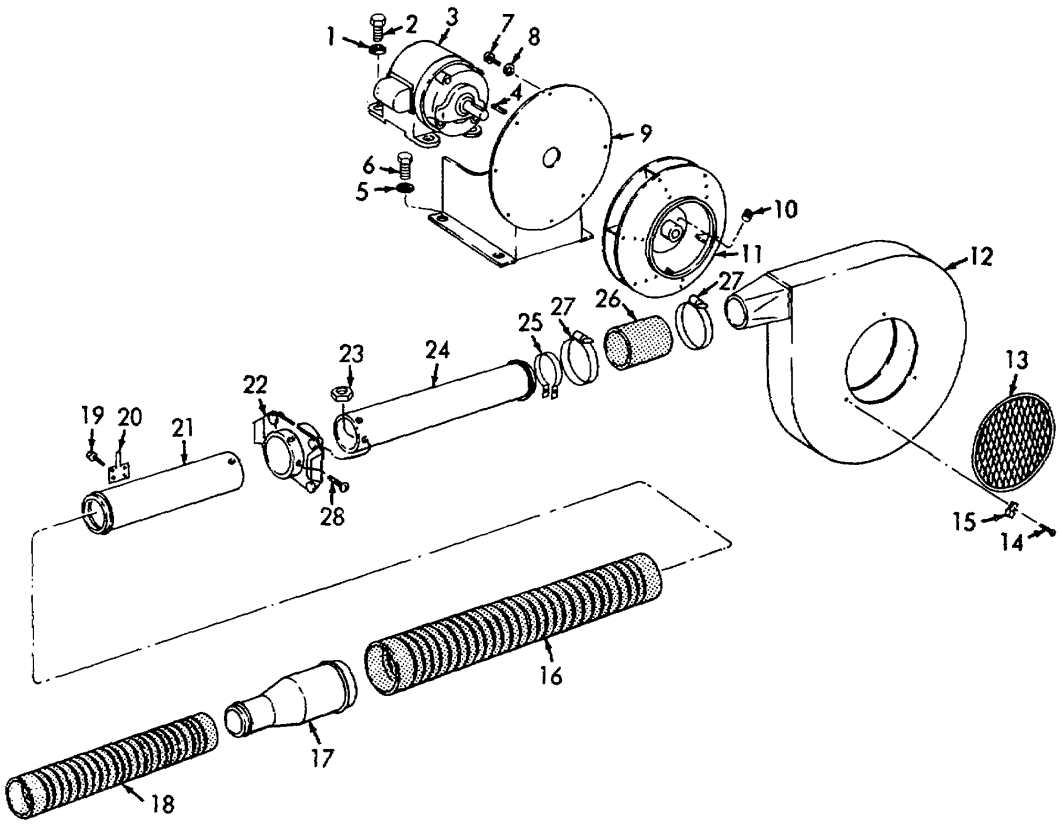
(3) Attach air hose (para. 40).

43. Blower Housing and Fan

a. Removal and Disassembly.

(1) Remove the tube assembly (para. 42).

(2) Remove eight screws (7, fig. 14) and washers (8) that secure the blower housing (12) to the motor support (9) and remove the blower housing.



1 Washer, flat, 3/8 in. (4 rqr)
2 Screw, cap, hex-hd, 3/8-16 x 1 1/2 in. (4 rqr)
3 Motor
4 Machine key
5 Washer, flat, 3/8 in (4 rqr)
6 Screw, cap, hex-hd, 3/8-16 x 1 3/4 in. (4 rqr)
7 Screw, cap hex-hd, 3/8-16 x 1 in. (8 rqr)
8 Washer, flat 3/8 in.
9 Motor support
10 Screw (2 rqr)
11 Fan
12 Blower housing
13 Screen
14 Screw, thread forming, No 7 x 3/8 in. (3 rqr)
15 Cleat (3 rqr)
16 Air hose, flexible rubber, 3 in. I.D. x 36 in. lg w/1 in. soft ends
17 Hose reduce, 3 in. to 2 in.
18 Air hose, flexible rubber, 2 in. I.D. x 36 in. lg w/1 in. soft ends
19 Screw, thread forming No. 7 x 3/8 in. (4 rqr)
20 Pitot tube
21 Tube
22 Valve, 3 in round blast gate
23 Nut, plain, hex. No. 10-32 (6 rqr)
24 Tube
25 Tube mounting damp
26 Hose, radiator. 3 in. I.D. x 3 in. lg
27 Hose clamp (2 rqr)
28 Screw, machine, rd-hd, No. 10-32 x 3/8 in. (6 rqr)

Figure 14. Air hose, tube, and blower, exploded view.

(3) Remove three screws (14), cleats (15) and remove the screen (13) from the blower housing (12).
(4) Remove two screws (10) that secure the fan (11) to the shaft of the motor (3) and remove the fan.

b. Cleaning and Inspection.
(1) Clean all parts with an approved cleaning solvent and dry thoroughly.
(2) Inspect the blower housing for cracks and breaks. Weld any cracks or

breaks. Replace the housing if damaged beyond repair.

(3) Inspect the fan for cracks, breaks, and for bent or broken blades. Straighten bent blades and weld any cracks.

(4) Replace any defective parts.

c. Reassembly and Installation.

(1) Install the fan (11) on the shaft of the motor (3) and secure with two screws (10).

(2) Position the screen (13) on the blower housing (12) and secure with three cleats (15) and screws (14).

(3) Position the blower housing (12) on the motor support (9) and secure with eight screws (7) and washers (8).

(4) Install the tube assembly (para. 42).

CHAPTER 4

DG, GS, AND DEPOT MAINTENANCE INSTRUCTIONS

Section I. SPECIAL DS AND GS MAINTENANCE TOOLS AND EQUIPMENT

There are no special tools and equipment required to perform direct support or general support maintenance on the test stand.

Section II. TROUBLESHOOTING

44. General

This section provides information useful in diagnosis and correction, inspection, operation, or failure of the test stand. Each trouble symptom stated is followed by a list of probable causes of the trouble. The possible remedy recommended is described opposite the probable cause.

45. Tachometer Fluctuates

Probable use	*Possible remedy*
Varibelt worn	Replace the varibelt (para. 54).
Discs worn	Replace discs(paras. 56 and 58).
Disc set improperly	Reset disc properly (para. 54).
Tachometer generator defective.	Replace tachometer generator (para. 51).

46. Starter Trips

Probable use	*Possible remedy*
Starter electrical connections loose or corroded.	Clean and tighten electrical connections.
Starter coil defective	Replace coil (para. 65).
Starter contactors defective.	Replace stationary and movable contactors (para. 64).

47. Gears Noisy

Probable use	*Possible remedy*
Gear teeth chipped or worn.	Replace gears (para. 58).
Roller bearings defective	Replace bearings (para. 58).

48. Varibelt Wear Abnormal or Uneven

Probable use	*Possible remedy*
Varidiscs scored or grooved.	Replace varidiscs (paras. 56 and 58).
Stationary varidiscs not alined.	Aline varidiscs (para. 54).

49. Electric Remote Control Fails To Operate

Probable use	*Possible remedy*
Remote control power supply faulty.	Repair or replace wiring.
Raise or lower control buttons defective.	Replace raise, lower buttons (para. 61).
Remote control microswitches defective.	Replace microswitches (para. 55).
Remote control motor defective.	Replace remote control (para. 55).

Section III. BLOWER MOTOR AND MOTOR SUPPORT

50. Bower Motor and Motor Support

a. Removal

(1) Remove the blower housing (para. 43)

(2) Tag and disconnect the blower motor electrical leads.

(3) Remove four screws (6, fig. 14), flat washer (8), nuts and lockwashers.

that secure the motor support (9) to the starter box and blower support and remove the motor support and motor.

(4) Remove four screws (2), flat washers (1), nuts and lockwashers that secure the motor (3) to the motor support (9) and remove the motor.

b. Disassembly.

(1) Scribe a locating line across the stator assembly (24, fig. 15) and both the motor brackets (11) to facilitate assembly.

(2) Remove the eight screws (12) and lockwashers (13), four screws (20) and lockwashers (21), and two screws (19) that secure the end brackets (11) to the stator assembly (24) and remove the brackets. Remove the bracket plug (10) and two pipe plugs (9) from the front bracket.

(3) Remove the two bracket screens (15) from the air deflectors (14), if defective, by removing the rivets (16).

(4) Press the two ball bearings (22) from the shaft of the rotor assembly (23). Remove the bearing caps (17 and 18) and air deflectors (14).

Note. **The bearing caps (17 and 18) are not interchangeable. Tag each bearing cap for proper location on reassembly.**

(5) Remove the four screws (3) and lockwashers (4) and remove the outlet box (1) and gasket (2) from the stator assembly.

(6) Remove the four screws (7) and lockwashers (8) that secure the cover (6) to the stator assembly and remove the cover. Remove the grommet (5) from the cover.

c. Cleaning, Inspection, and Repair.

(1) Wipe all parts with a cloth moistened with an approved cleaning solvent.

(2) Inspect the motor brackets for stripped threads and cracks.

(3) Inspect the cover for cracks and broken louvers.

(4) Inspect the air deflectors for damage caused by the blades of the rotor assembly.

(5) Inspect the bearing caps for stripped threads and alinement.

(6) Inspect the ball bearings for noise when rotated, loose or pitted balls, and scored marks on inside surface.

(7) Inspect the rotor assembly for damaged keyway, bent fan blades, wear marks on the rotor, and a damaged shaft. Straighten bent fan blades. Sand down high places on the surface of the stator assembly if wear marks are on the rotor.

(8) Inspect the stator assembly for broken leads, frayed insulation, and stripped threads. Replace broken leads.

(9) Replace any defective parts of the blower motor.

(10) Inspect the motor support for cracks and breaks. Inspect the weldment. Reweld a broken weldment, and weld any cracks in the support.

d. Reassembly.

(1) Install the bracket screens (15) on the air defectors (14) and secure each with three rivets (16) if they were removed.

(2) Place the rotor assembly (23) inside the stator assembly (24) and install the air deflectors (14), bearing caps (17 and 18), and bearings (22) on the rotor.

(3) Aline the scribed locating line and position the motor brackets (11) on their respective ends of the stator assembly (24) and secure with eight screws (12) and lockwashers (13), four screws (20) and lockwashers (21), and two screws (19) and lockwashers (21). Install the pipe plugs (9) in the brackets and install the bracket plug (10) in the rear bracket.

(4) Place the grommet (5) in the cover (6) and secure the cover to the stator assembly with four screws (7) and lockwashers (8).

(5) Place the gasket (2) and outlet box (1) on the stator assembly and secure with four lockwashers (4) and screws (3).

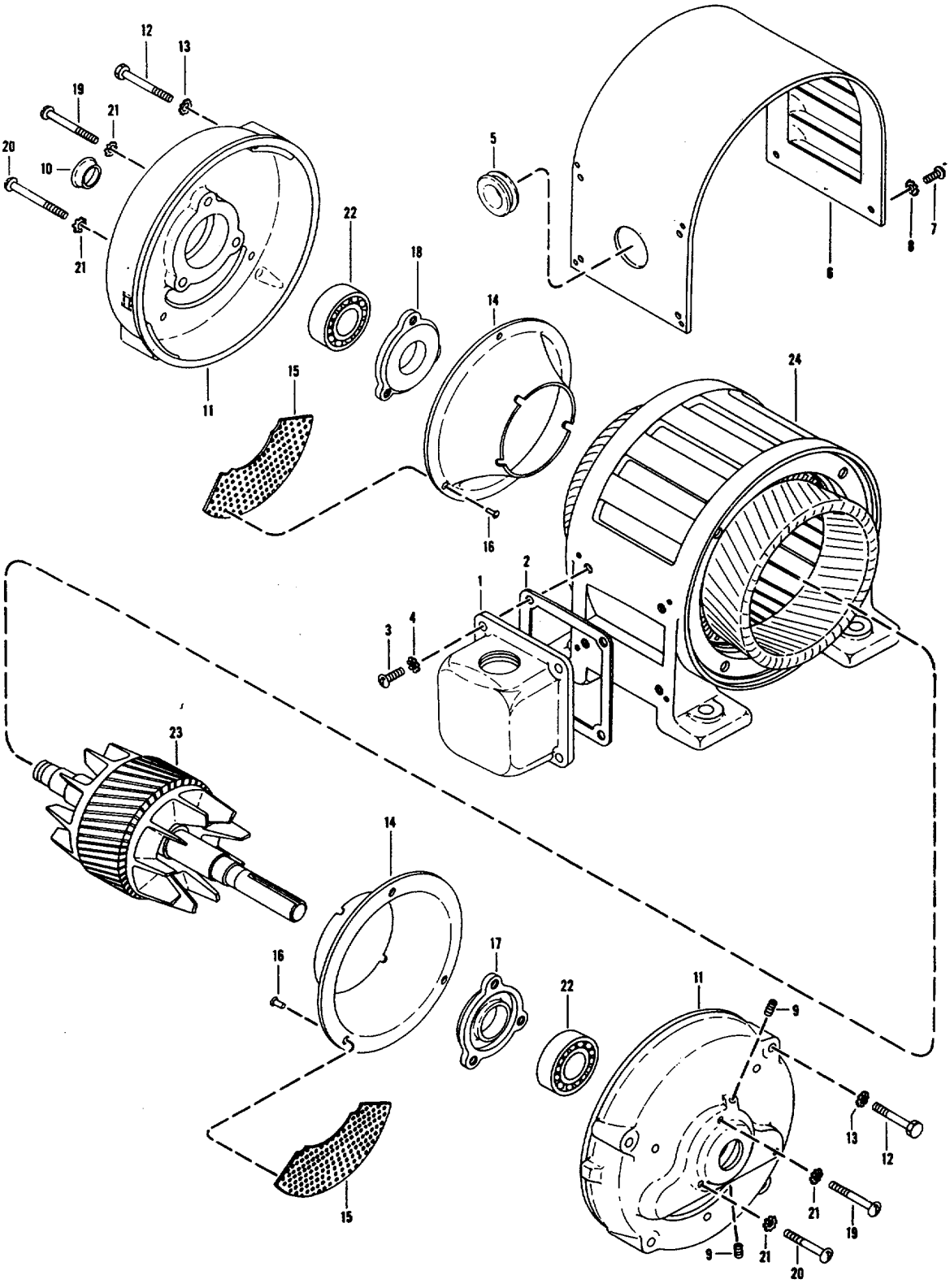


Figure 15. Blower motor, exploded view.

1 Outlet box
2 Gasket
3 Screw, machine, rd-hd, No. 12-24x 1/2 in. (4 rqr)
4 Lockwasher, ET (4 rqr)
5 Grommet, 11 in. OD x 3/4 in. ID x 15/32 in.
6 Cover
7 Screw, machine, rd-hd, No. 12-24 x 3/8 in. (4 rqr)
8 Lockwasher, ET (6 rqr)
9 Pipe plug, slotted headlines, 1/8-27 (4 rqr)
10 Bracket plug
11 Motor bracket (2 rqr)
12 Screw, cap, hex-hd, 1/4-20 x 2 1/2 in (8 rqr)
13 Lockwasher, ET (8 rqr)
14 Air deflector (2 rqr)
15 Bracket screen (2 rqr)
16 Rivet, rd-hd, 1/8 x 5/16 in. (6 rqr)
17 Bearing cap
18 Bearing cap
19 Screw, machine, rd-hd, No. 12-24 x 1 1/2 in. (2 rqr)
20 Screw, machine, rd-hd, No. 12-24 x 1 3/4 in. (4 rqr)
21 Lockwasher, ET (6 rqr)
22 Ball bearing (2 rqr)
23 Rotor assembly
24 Stator assembly

Figure 15 -- Continued.

e. Installation.
(1) Place the motor (3, fig. 14) on the motor support (9) and secure with four screws (2), flat washers (1), nuts, and lockwashers.
(2) Position the assembled motor support (9) onto the starter box and blower support and secure with four screws (6), flat washers (5), nuts, and lockwashers.
(3) Connect the tagged blower motor electrical loads.
(4) Install the blower housing (para. 43).

Section IV. GENERATOR TACHOMETER

51. General

The generator tachometer connected to the driven shaft indicates the speed of the driving heads on the tachometer indicator.

52. Generator Tachometer

a. Removal.
(1) Tag and disconnect the electrical leads of the generator tachometer (14, fig. 1) from the terminal block in the bottom of the starter box (5) and remove the electrical lead from the opening in the side of the starter box.
(2) Loosen the special hex nut that secures the generator tachometer to the extension bushing and remove the tachometer from the generator mounting bracket (13).

b. Cleaning and Inspection.
(1) Clean all parts with a cloth moistened with an approved cleaning solvent and dry thoroughly.
(2) Inspect the special hex nut for distortion and damaged threads.
(3) Inspect the tachometer housing for cracks or other damage, and check the electrical lead for cracked, brittle, spongy, or oil soaked insulation. Replace a defective generator tachometer.

c. Installation.
(1) Position the generator tachometer on the extension bushing between the driving heads of the generator mounting bracket and secure the tachometer to the bushing with the special hex nut.
(2) Insert the tachometer electrical lead through the opening in the side of the starter box and connect the terminals to the terminal block on the bottom of the starter box.

Section V. VARIDRIVE ASSEMBLY

53. General

The varidrive is a self-contained unit, embodying a motor and built-in speed transmission all mounted on one base. Different speeds can be attained by depressing the RAISE or LOWER pushbuttons on the control box which control the 1/15 hp, 1800 rpm reversible electric remote control. The electric remote control is

connected to a shaft that actuates the control nut and pivoted strut, which slides the movable varidisc on the main motor shaft toward its companion disc thus causing the varibelt to climb upward on the tapered vaidiscs to a larger diameter. Simultaneously, the varibelt causes the movable varidisc on the driven shaft to retract, permitting the varibelt to assume a smaller diameter increasing the driven shaft speed, while the main motor speed remains constant.

54. Varibelt Removal and Installation

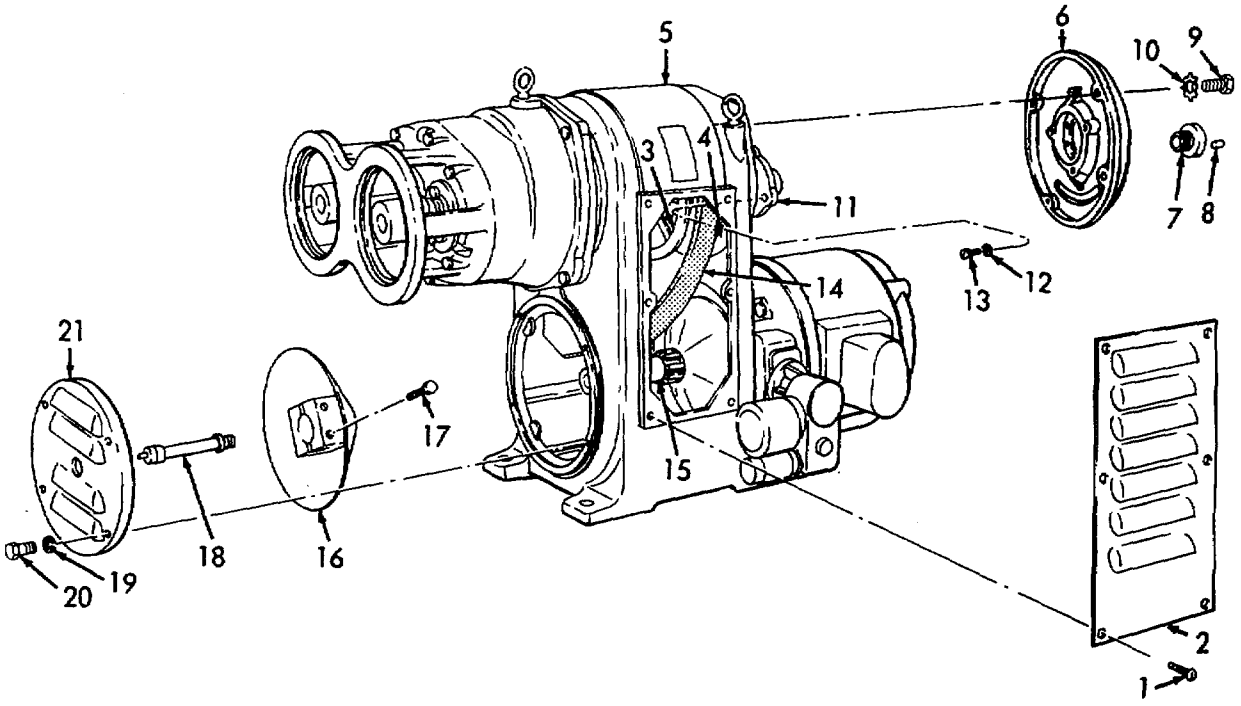
a. Removal,

(1) Start the test stand and reduce the varidrive speed to a minimum, stop the unit and disconnect the power source.

(2) Remove six screws (1, fig. 16) and remove the louvered cover (2) from each side of the case frame (5).

(3) Remove four screws (20) and lockwashers (19) from the end cover (21) and remove the end cover from the case frame.

(4) Remove the lubrication extension (18) from the end of the motor shaft (15).



1 Screw (12 rqr)
2 Louvered cover (2 rqr)
3 Varidisc (Movable)
4 Varidisc (Stationary)
5 Case frame
6 End cover
7 Busing retainer nut
8 Screw (2 rqr)
9 Screw (4 rqr)
10 Washer (4 rqr)
11 Bearing cap
12 Washer
13 Screw (3 rqr)
14 Varibelt
15 Motor shaft
16 Varidisc (Stationary)
17 Screw, cap, hex-hd, 1/2-13 x 2 1/4 in. (4 rqr)
18 Lubrication extension
19 Washer
20 Screw (4 rqr)
21 End cover

Figure 16. Varibelt removal and installation.

(5) Scribe a locating line on the motor shaft (15) adjacent to the hub of the varidisc (16).
(6) Loosen four capscrews (17) on the hub of the varidisc (16) and remove the varidisc from the motor shaft (15).
(7) Remove two screws (8) from the bushing retainer nut (7) and remove the nut from the end of the driven shaft.
(8) Reach inside the case frame and remove three screws (13) and washers (12) that secure the bearing cap (11) to the end cover (6). Remove four screws (9), and washers (10) and remove the end cover.
(9) Slip the varibelt (14) over the end of the motor shaft (15) and remove the varibelt through the driven shaft opening as shown in figure 16.

Note. **It is imperative that the varidiscs and varibelt be free of any lubricant. Clean the discs and belt with a clean cloth dampened with an approved cleaning solvent.**

b. Installation.
(1) Insert the varibelt (14) through the driven shaft opening in the case frame (5). Place the belt between the varidiscs (3 and 4) and use a pinch bar to spread the discs until the varibelt will pass over the end of the motor shaft (15).
(2) Position the end cover (6) on the case frame (5). Secure the bearing cap (11) to the end cover with three screws (13) and washers (12).
(3) Install the bushing retainer nut (7) in the end of the driven shaft and secure with two screws (8).
(4) Secure the end cover (6) to the case frame (5) with the four screws (9) and lockwashers (10).
(5) Position the varidisc (16) on the motor shaft (15), making certain the varidisc hub is alined with the scribe mark on the motor shaft. Secure the varidisc to the shaft by tightening the four capscrews (17).
(6) Install the lubrication extension (18) in the end of the motor shaft (15).
(7) Position the end cover (21) on the case frame and secure with four screws (20) and washers (19).
(8) Install the louvered covers (2) and secure each with four screws (1).

Note. **At no time should the varibelt have more than 1/16 inch runout between the motor shaft and driven shaft varidiscs. Aline belt, by shifting the stationary varidisc (4) to obtain proper belt alignment.**

55. Electric Remote Control
a. Removal.
(1) Remove three screws (3, fig. 17), lockwashers (4) and remove the cover (1) and gasket (2) from the gearcase (68).
(2) Tag and disconnect all wiring in the gearcase.
(3) Remove four screws (38, fig. 18), lockwashers (39) and remove the assembled electric remote control (37) from the adapter bracket (56).
b. Disassembly.
(1) Remove four screws (7, fig. 17), lockwashers (8) and remove the cover (5) and gasket (6) from the gearcase.
(2) Remove the support arm (15) and shim (14) by removing two screws (10), lockwashers (11), retaining ring (9), nut (13), bushing (12), and nut (13).
(3) Remove the two screws (27) and lockwashers (28) and remove the auxiliary actuator (25) and microswitch (26) from the mounting plate (29). Remove the other auxiliary actuator (20) and microswitch (21) in the same manner.
(4) Loosen two screws (17 and 18) and remove the two stop assemblies (16) from the shaft (37).
(5) Remove three screws (30) and lockwashers (31) that secure the plate (29) to the gearcase and slide the oil seal (32), bearing clamp (33), and self-alining bearing (34) from the shaft (37).
(6) Loosen screw (36) and remove shaft (37) from the worm gear (35). Remote the worm gear from the gearcase.
(7) Remove four nuts (51), lockwashers (52) and unscrew four studs (53)

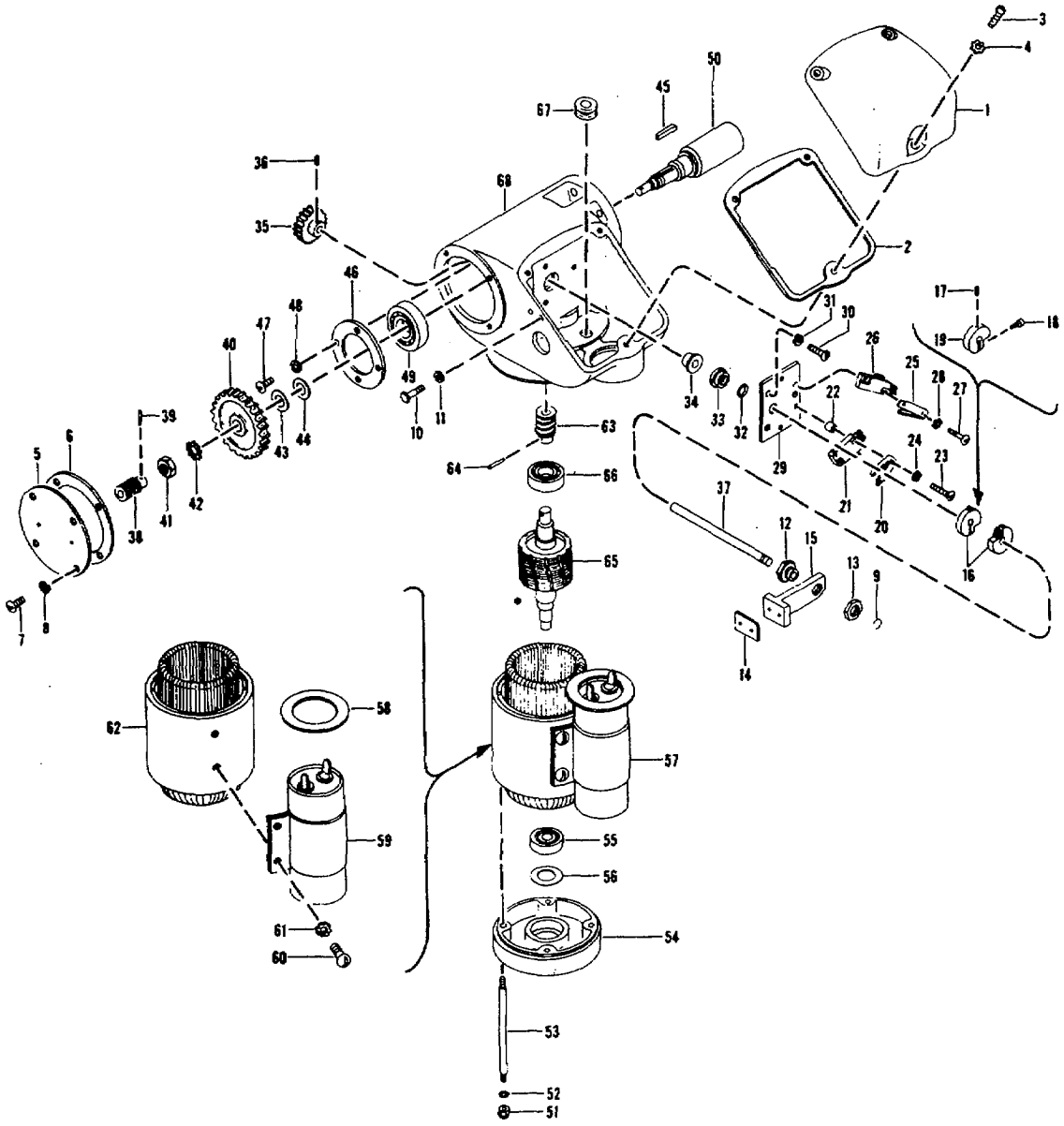


Figure 17. Electric remote control, exploded view.

and remove the wound stator assembly (57) from the gearcase.

(8) Maneuver the rotor assembly (65) and remove the rotor assembly from the worm gear (40). Remove the taper pin (64) and press the worm (63) from the rotor. Remove the ball bearings (66 and 55) and shim (56) from the rotor assembly.

(9) Remove the nut (41), lockwasher (42), key (45), and pull the worm gear (40), over worm (38). Remove the gear (40) and shims (43 and 44) from the shaft (50).

(10) Remove the four screws (47) and washers (48) and remove the bearing clamp (46), ball bearing (49), and shaft (50) from the gearcase (68). Remove the taper pin (39) and press the worm (38) from the shaft (50).

(11) Remove the two screws (60) and lockwashers (61) and remove the

1 Cover
2 Gasket
3 Screw (3 rqr)
4 Lockwasher, ET (3 rqr)
5 Housing cover
6 Gasket
7 Screw (4 rqr)
8 Washer (4 rqr)
9 Retaining ring
10 Screw, cap, socket-hd, No. 10-32 x 1/2 in (2 rqr)
11 Lockwasher, ET (2 rqr)
12 Bushing
13 Nut
14 Shim
15 Support arm
16 Speed stop (2 rqr)
17 Screw (2 rqr)
18 Screw, cap, socket-hd, No. 6-32 x 3/8 in.
19 Speed stop (2 rqr)
20 Auxiliary actuator
21 Microswitch
22 Spacer
23 Screw (2 rqr)
24 Washer (2 rqr)
25 Auxiliary actuator
26 Microswitch
27 Screw (2 rqr)
28 Washer (2 rqr)
29 Mounting plate
30 Screw (3 rqr)
31 Washer (3 rqr)
32 Oil seal
33 Bearing clamp
34 Self-aligning bearing
35 Worm gear
36 Screw
37 Shaft
38 Worm
39 Taper pin
40 Worm gear
41 Nut, hex, 7/16-20
42 Washer
43 Shim, 0.010 in. thk
44 Shim, 0.0299 in. thk
45 Key
46 Bearing clamp
47 Screw (4 rqr)
48 Washer (4 rqr)
49 Ball bearing
50 Shaft
51 Nut, hex, No. 8-32 (4 rqr)
52 Washer (4 rqr)
53 Stud (4 rqr)
54 Bracket
55 Ball bearing
56 Shims, 0.005, 0.010, 0.020, 0.025 in. thk
57 Stator assembly
58 Gasket
59 Capacitor assembly
60 Screw (2 rqr)
61 Washer (2 rqr)
62 Stator assembly
63 Worm
64 Taper pin
65 Rotor assembly
66 Ball bearing
67 Grommet
68 Gearcase

Figure 17 - Continued.

capacitor assembly (59) and gasket (58) from the stator assembly (62).

(12) Remove the grommet (61) from the gearcase (68).

c. Cleaning, Inspection, and Repair.

(1) Wash all hardware in an approved cleaning solvent and dry. Clean all bearings with cleaning solvent and blow dry with compressed air. Cover the cleaned ball bearings with a film of light oil.

(2) Clean nonelectrical components in an approved cleaning solvent and blow dry with compressed air.

(3) Inspect the covers for cracks or damage. Inspect the support arm, speed stop, and auxiliary actuators for burrs, cracks, and stripped threads. Remove any burrs with a fine stone.

(4) Inspect the microswitches for cracked case, sticking plunger, and broken terminals.

(5) Inspect the worm gear for stripped threads, cracked, chipped, broken or excessively worn teeth. Check the fit of the bore with the shaft. The gear bore should measure **0252** / **0.251** inch. Replace if unserviceable.

(6) Inspect the worms for chipped, cracked, broken, or worn teeth. Check the fit of the worm bores with their respective shafts. Replace if unserviceable.

(7) Inspect the ball bearings for noise when rotated, loose bearings, pitted bearings, and scored marks on inside surface. Check the fit of the bearings to their respective shafts, and housing bores. Replace if unserviceable.

(8) Inspect the shafts for stripped threads, square shoulders, and worn keyways. Check the fit of the shaft bearing sections to their respective bearing bores. Replace if unserviceable.

(9) Inspect the stator assembly for cracks or damaged frame, broken leads, and frayed insulation. Replace broken leads and tape frayed insulation.

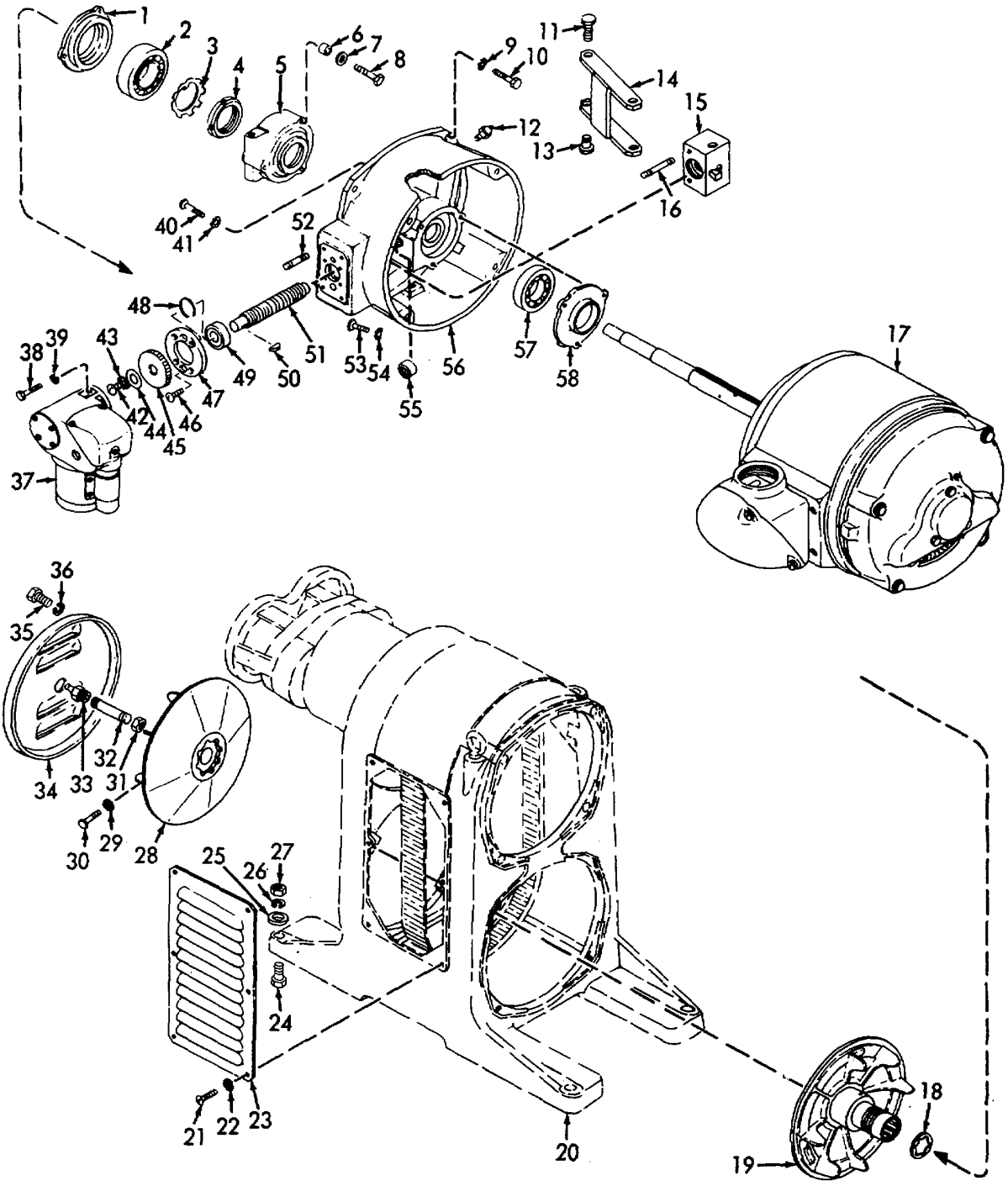


Figure 18. Adapter bracket, electric remote control, and varidrive motor partially exploded view.

(10) Inspect the rotor assembly for square shoulders, alinement and cracks. Repair minor cracks with solder. Check the bearing sections of the rotor with the bores of their respective bearings. Replace if defective.

1 Bearing cap
2 Ball bearing
3 Lockwasher
4 Locknut
5 Shifting bearing housing
6 Washer (3 rqr)
7 Flat washer (3 rqr)
8 Screw, cap, hex-hd, 3/8-16x 3 1/4 in. (3 rqr)
9 Washer (4 rqr)
10 Screw
11 Screw cap, socket-hd, 5/8-11 x 1 in. (2 rqr)
12 Grease fitting
13 Screw, cap, socket-hd, 5/8-11 x 1 in. (2 rqr)
14 Shifting lever
15 Control nut
16 Adjusting stud, 3/8-16 x 4 in. lg
17 Motor assembly
18 Splined seal
19 Varidisc (adjustable motor)
20 Case frame
21 Screw (12 rqr)
22 Washer (12 rqr)
23 Louvered cover
24 Screw, cap, hex-hd, 5/8-11 x 3 1/2 in. (4 rqr)
25 Flat washer (4 rqr)
26 Lockwasher (4 rqr)
27 Nut (4 rqr)
28 Varidisc (Stationary motor)
29 Lockwasher, ET (4 rqr)
30 Screw, cap, hex-hd, 1/2-13 x 2 1/4 in. (4 rqr)
31 Bushing
32 Extension
33 Grease fitting
34 End cover
35 Screw
36 Washer
37 Electric remote control assembly
38 Screw (4 rqr)
39 Lockwasher (4 rqr)
40 Screw (3 rqr)
41 Washer (3 rqr)
42 Screw, machine, rd-hd, 1/4-20 x 1/2 in.
43 Washer
44 Washer
45 Gear
46 Screw, machine, fl-hd, 1/4-20 x 5/8 in. (4 rqr)
47 Bearing collar
48 Retainer ring
49 Ball bearing
50 Woodruff key
51 Control shaft
52 Adjusting stud, 3/8-16 x 1 in.
53 Screw (4 rqr)
54 Lockwasher (4 rqr)
55 Needle bearing
56 Adapter bracket
57 Ball bearing
58 Bearing cap

Figure 18 - Continued.

(11) Inspect the gearcase for stripped threads, cracks or damage, and burrs on the cover bearing surfaces. Remove the burrs with a fine stone.
(12) Inspect all other parts for wear, cracks, breaks, and damaged threads.
(13) Replace any of the above parts that are defective.

d. Reassembly.

(1) Install the grommet (67) in the gearcase (68).
(2) Position the capacitor assembly (59) and gasket (58) on the stator assembly (62) and secure with two screws (60) and lockwashers (61).
(3) Press the worm (38) on the shaft (50) and secure with the taper pin (39). Position the shaft and ball bearing (49) in the gearcase (68) and secure with the bearing clamp (46) and four screws (47) and washers (48).
(4) Slide the shims (43 and 44) and worm gear (40) on the shaft (50) and secure with the key (45), lockwasher (42), and nut (41).
(5) Install the ball bearing (66) on the rotor assembly (65). Press the worm (63) on the rotor and secure with the taper pin (64). Maneuver the rotor and worm gear until it is meshed with gear (40).
(6) Slide the wound stator assembly (57), roller bearing (55), shim (56), and bracket (54) on the rotor assembly and secure with four studs (53), nuts (51), and lockwashers (52).
(7) Place the shaft (37) in the gear case. Install the worm gear (35) on the shaft and secure with the screw (36).
(8) Place the self-alining bearing (34), bearing clamp (33), oil seal (32), and mounting plate (29) on the shaft. Secure the plate to the gear case with three lockwashers (31) and screws (30).
(9) Position the two stop assemblies (16) on the shaft (37) and tighten the screws (17 and 18).
(10) Position the spacer (22), microswitch (21), and auxiliary actuator (20) on the mounting plate (29) and secure with two screws (23) and lockwashers (24). Install the other auxiliary actuator and microswitch in a similar manner.

(11) Install the bushing (12) and support arm (15) on the shaft (37) and secure with the nut (13) and retaining ring (9). Secure the support arm (15) and shim (14) to the gearcase with two screws (10) and lockwashers (11).

(12) Position the cover (5) and gaskets (6) on the gear case and secure with four screws (7) and lockwashers (8).

e. Installation and Adjustment.

(1) Position the electric remote control (37, fig. 18) on the adapter bracket (56) and secure with four screws (38) and lockwashers (39).

(2) Connect tagged electrical leads to proper terminals points.

(3) Start the test stand (para. 20) and operate at 11000 rpm. Center the high speed stop (16, fig. 17) with the microswitch (26) and adjust the high speed stop with the screws (17 and 18), until the stop contacts and trips the microswitch (26).

(4) Decrease the speed to 1000 rpm, and adjust the low speed stop and microswitch (21) in a similar manner. Stop the test stand.

(5) Position the gasket (2) and cover (1) on the gearcase (68) and secure with three screws (3) and lockwashers (4).

56. Adapter Bracket Assembly

a. Removal.

(1) Remove the tube assembly (para. 42).

(2) Tag and disconnect the tachometer generator leads (para. 52).

(3) Remove the stationary motor varidisc (para. 54).

(4) Tag and disconnect the varidrive motor electrical leads (para. 57).

(5) Remove four screws (38, fig. 18), lockwashers (39) and remove the electric remote control assembly (37) from the assembled adapter bracket (56).

(6) Remove four nuts (27), lockwashers (26), flat washers (25) and capscrews (24) that secure the assembled varidrive to the frame of the test stand.

(7) Attach a sling to the three eyebolts and use a suitable lifting device to remove the assembled varidrive from the frame.

(8) Remove four screws (10), lockwashers (9) and remove the assembled adapter bracket (56) and motor assembly (17) as a unit from the case frame (20).

(9) Remove three screws (40) and lockwashers (41) that secure the bearing cap (58) to a bearing boss inside the adapter bracket (56).

(10) Remove four screws (53) and lockwashers (54) that secure the motor assembly (17) to the adapter bracket (56). Remove the motor assembly from the adapter bracket and simultaneously remove the assembled movable varidisc (19) from the shaft of the motor.

(11) Remove the ball bearing (57) and bearing cap (58) from the shaft of the motor assembly.

b. Disassembly.

(1) Remove screw (42), washers (43 and 44) and pull the gear (45) from the control shaft (51). Remove the woodruff key (50) from the shaft keyway.

(2) Remove four screws (46) that secure the bearing collar (47) to the adapter bracket (56). Rotate the control shaft (51) counterclockwise until free of the control nut (15). Remove the assembled varidisc (19) and control shaft (51) from the adapter bracket (56).

(3) Press the bearing collar (47) from the ball bearing (49). Remove the retainer ring (48), and press the ball bearing (49) from the control shaft (51).

(4) Remove screws (11 and 13) that secure the shifting lever (14) to the shifting bearing housing (5) and remove the shifting lever from the housing.

(5) Remove the control nut (15) from the shifting lever in a similar manner. Remove the adjusting stud (19) from the control nut.
(6) Remove three screws (8) and washers (6 and 7) from the shifting bearing housing (5) and remove the housing from the bearing cap (1).
(7) Straighten the tangs on the lockwasher (3) and remove the locknut (4), lockwasher (3), ball bearing (2), bearing cap (1), and splined seal (18) from the hub of varidisc (19).
(8) Remove the needle bearing (55) from the adapter bracket (56), if unserviceable.
(9) Remove the adjusting stud (52) and the grease fitting (12) from the adapter bracket.

c. Cleaning, Inspection and Repair.

(1) Clean all parts, except the ball and needle bearings, in an approved cleaning solvent and dry thoroughly.
(2) Clean the ball and needle bearings in an approved cleaning solvent and drip dry. Do not use compressed air for drying.
(3) Inspect the ball bearings for pitted, scored, overheated, or worn condition. Check the fit of the bearings to their respective bores and shafts. Replace if unserviceable.
(4) Inspect the needle bearing for pitted, worn, or out of round rollers. Check the fit of the bearing to the shaft. Replace if unserviceable.
(5) Inspect the adapter bracket, shifting bearing housing, and bearing caps for cracks, breaks, and damaged threads. Check the bearing bores with their respective bearings. Repair cracks by welding, and chase damaged threads, if practicable. Replace if unserviceable.
(6) Inspect the control shaft and the control nut for cracks, breaks, worn or damaged threads. Check thread backlash through out the entire travel. Replace if unserviceable.
(7) Check the bore of the control shaft bearing collar with its respective bearing. Replace if unserviceable.
(8) Inspect the shifting lever for cracks, breaks, and distortion. Check alinement and parallelism of the four mounting holes. Inside diameter of holes should measure **0.892** inch.
0.890
(9) Inspect the stationary varidisc for cracks, breaks, and for a scored belt surface. Check the fit of the bore with the motor shaft. The inside diameter should measure **1.751** inch. Replace if unserviceable.
1.750
(10) Inspect the movable varidisc for cracks, breaks, worn or damaged splines, and for a scored belt surface. Replace if unserviceable.
(11) Inspect all other parts for cracks, breaks, worn or damaged threads. Replace any unserviceable part.

d. Reassembly.

(1) Install the adjusting stud (52), and the grease fitting (12) in the adapter bracket (56).
(2) Pack the needle bearing (55) with grease and install the bearing in the adapter bracket (56).
(3) Pack the ball bearing (2) with grease and install the splined seal (18), bearing cap (1), ball bearing (2), lockwasher (3), and locknut (4) on the hub of the movable varidisc (19). Tighten the locknut, and bend one of the locknut tangs into a groove in the nut.
(4) Install the shifting bearing housing (5) over the hub of the varidisc (19) and secure to the bearing cap (1) with three screws (8) and washers (6 and 7).
(5) Install the adjusting stud (16) in the control nut (15). Position the control nut between the arms of the shifting lever (14) and secure with screws (11 and 13).
(6) Install the shifting bearing housing (5) in a similar manner.
(7) Pack the ball bearing (49) with grease. Press the bearing on the control

shaft (51) and secure with the retainer ring (48). Install the bearing collar (47) on the ball bearing (49).

(8) Install the assembled varidisc (19) and control shaft (51) in the adapter bracket (56). Aline the control nut (15) with the control shaft (51), and thread the shaft into the control nut, seating the end of the shaft in the needle bearing (55). Lubricate the control shaft threads.

(9) Aline the mounting holes in the bearing collar (47) with the holes in the adapter bracket (56) and secure with four screws (46).

(10) Install the woodruff key (50) and gear (45) on the control shaft (51) and secure with two washers (43 and 44) and screw (42).

e. Installation and Adjustment.

(1) Pack the ball bearing (57) with grease and install the bearing cap (58), and ball bearing (57) on the shaft of the motor assembly (17).

(2) Insert the shaft of the motor assembly (17) in the adapter bracket (56). Aline the ball bearing (57) on the motor shaft with the bearing bore in the adapter bracket (56) and seat the bearing in the bore. Simultaneously, aline the splines in the movable varidisc (19) with the motor shaft splines and slide the varidisc onto the motor shaft. Secure the motor assembly (17) to the adapter bracket (56) with four screws (53) and lockwashers (54).

(3) Aline the holes in the bearing cap (58) with the holes in the adapter bracket (56) and secure the bearing cap to the adapter bracket with three screws (40) and lockwashers (41).

(4) Use a suitable lifting device and position the assembled adapter bracket (56) and motor assembly (17), as a unit, on the case frame (20). Secure the adapter bracket to the case frame with four screws (10) and washers (9).

(5) Attach a sling to the three eyebolts and use a suitable lifting device to position the assembled varidrive on the frame of the test stand. Secure the varidrive housing to the frame with four screws (24), flat washers (25), lockwashers (26), and nuts (27).

(6) Install the stationary motor varidisc (para. 54).

(7) Connect the tagged varidrive motor electrical leads (para. 57).

(8) Connect the tagged tachometer generator leads (para. 52).

(9) Install tube assembly (para, 42).

(10) Start the test stand (para. 20). Rotate the control shaft (51) clockwise, until the tachometer indicates 11,000 rpm. Turn the stud (16) in the control nut (15) in a clockwise direction until the protruding end of the stud contacts a boss in the adapter bracket which limits the travel of the control nut and varidrive speed.

(11) Rotate the control shaft in a counter-clockwise direction until the tachometer indicates 2,000 rpm. Turn the adjusting stud (52) in the adapter bracket (56) until the protruding end of the stud contacts the control nut which limits the control nut travel and decrease of varidrive speed.

(12) Secure the mechanical stops in position by applying a paste of litharge, Specification MIL-L-1147, and glycerine, Federal Specification O-G-491, on the threads of the studs (16 and 52).

(13) Start the test stand (para. 20) and depress the lower button (4, fig. 9) making certain the electric remote control assembly (37, fig. 18) is in the 2,000 rpm position.

(14) Position the electric remote control on the adapter bracket and secure with four screws (38) and lockwashers (39).

57. Varidrive Motor

a. Removal.

(1) Remove four screws (6, fig. 19), lockwashers (7), and flat washer (8) from the cover (3) and remove the

cover and gasket (4) from the base (5).

(2) Tag and disconnect the electrical leads from the motor.

(3) Remove the varidrive motor from the adapter bracket assembly (para. 56).

b. Disassembly.

(1) Remove the four screws (6), lockwashers (7), and flat washers (8) and remove the base (5) from the stator assembly (25).

(2) Remove the 4 screws (10), lockwashers (11), flat washers (12), two screws (20), screw (19), three lockwashers (21), and three flatwashers (22) that secure the bracket assembly (9) to the stator assembly. Tap rim of the bracket assembly with a mallet and remove from the stator assembly.

(3) Remove the grease fitting (1) and pipe plug (2) from the bracket assembly.

(4) Remove the six screws (15) and lockwashers (16) and remove the air deflector (13) and bracket guard (14) from the bracket (17).

(5) Remove the rotor assembly (24) from the stator assembly (25).

(6) Remove the ball bearing (23) and bearing cap (18) from the rotor assembly.

(7) Remove the four screws (27) and lockwashers (28) and remove the terminal plate (26) from the stator assembly.

(8) Remove the two bolts (30) and lockwashers (31) and the cover (29) from the stator assembly.

c. Cleaning, Inspection, and Repair.

(1) Clean all metal parts in an approved cleaning solvent and dry thoroughly.

(2) Clean all electrical parts with a dry lint-free cloth or blow clean with low pressure compressed air.

(3) Wash all ball bearings thoroughly with an approved cleaning solvent and dry with compressed air. Cover bearings with a film of light oil after cleansing

(4) Inspect the base for stripped threads and cracks or damage. Inspect the air deflector for cracks or damage ant alinement. If misalined, repair with a mallet using a heavy backing.

(5) Inspect the bracket for stripled threads, cracks, or damage, and burrs on the bearing surface. Remove the burrs with a fine stone.

(6) Inspect the ball bearing for noise when rotated, loose bearings, and scored marks on inside surface.

(7) Inspect the rotor assembly for broken fins, alinement of shaft, and broken teeth on the spline.

(8) Inspect the stator assembly for ripped winding, frayed insulation, and broken leads. Replace broken leads and tape the splice. Retape frayed insulation.

(9) Inspect the cover for alinement and cracks or damage.

(10) Replace any of the above parts if they are defective.

d. Reassembly.

(1) Position the cover (29) around the stator assembly and secure with two bolts (30) and lockwashers (31).

(2) Install the terminal plate (26) on the stator assembly (25) and secure with four screws (27) and lockwashers (28).

(3) Position the bracket guard (14) and air deflector (13) on the bracket (17) and secure with six screws (15) and lockwashers (16).

(4) Press the ball bearing (23) in the bearing cap (18), and press the assembled ball bearing and cap onto the rotor assembly (24).

(5) Insert the hub of the bearing cap (18), attached to the rotor assembly (24), into the bore of the bracket assembly (9). Aline the mounting holes and secure the bearing cap to the bracket assembly with screws (19 and 20) flat washers (22), and lockwashers (21).

(6) Insert the rotor through the stator and secure the bracket assembly (9) to the stator assembly (25) with four

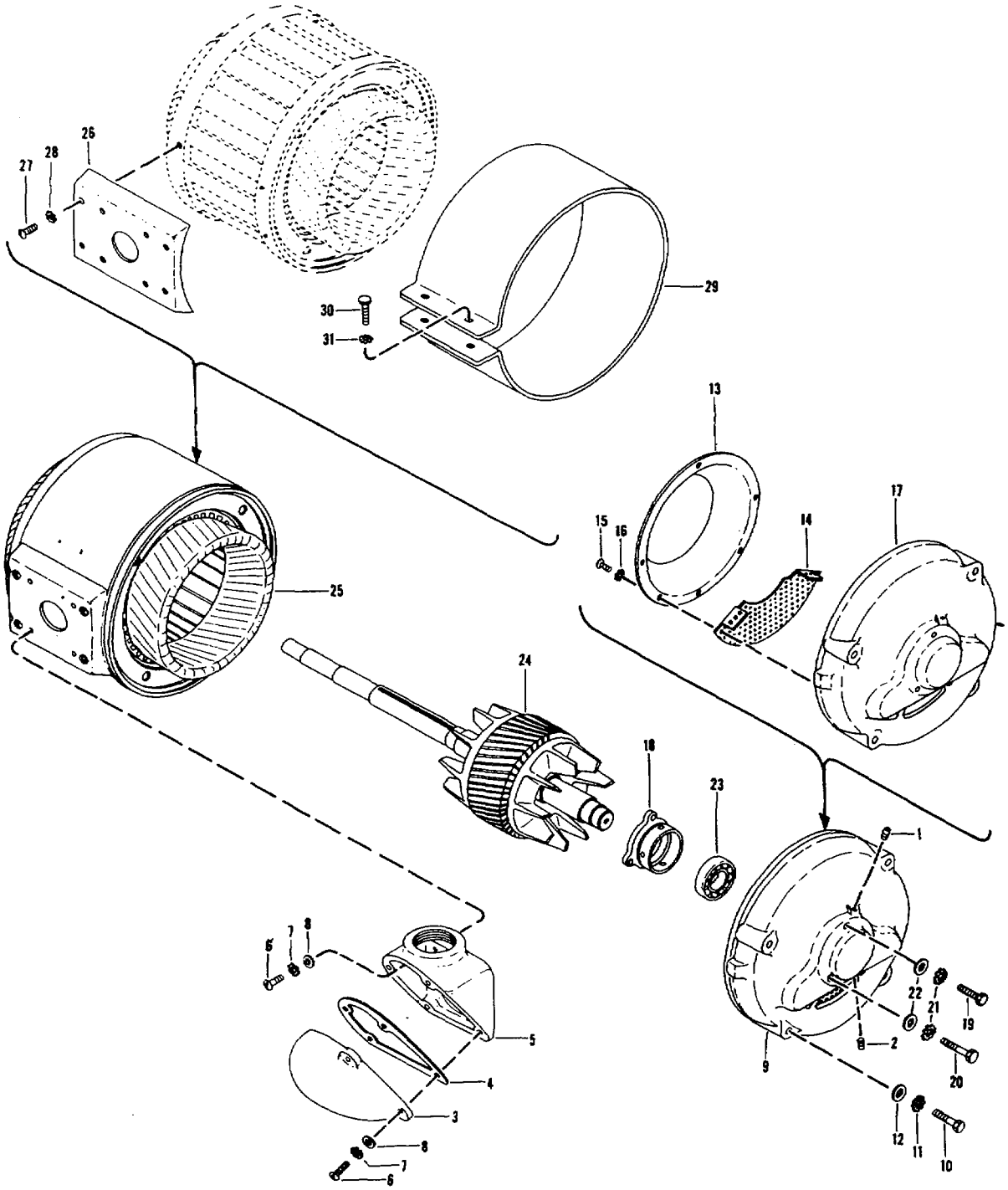


Figure 19. Varidrive motor, exploded view.

screws (10), lockwashers (11), and flatwashers (12).

(7) Install the base (5) on the terminal plate (26), making sure there is a minimum of 2 inches of stator assembly leads in the base, and secure with

1 Grease fitting
2 Pipe plug
3 Cover
4 Gasket
5 Base
6 Screw, machine, rd-hd, No 12-24 x 3/4 in. (8 rqr)
7 Lockwasher (8 rqr)
8 Flat washer, No. 12 (8 rqr)
9 Bracket assembly
10 Screw, cap, hex-hd, 1/2-13 x 3/4 in. (4 rqr)
11 Washer (4 rqr)
12 Washer (4 rqr)
13 Air deflector
14 Bracket guard
15 Screw, machine, rd-hd, No. 12-24 x 3/8 in. (6 rqr)
16 Lockwasher (6 rqr)
17 Bracket
18 Bearing cap
19 Screw, cap, hex-hd, 5/16-18 x 2 3/4 in.
20 Screw (2 rqr)
21 Washer (3 rqr)
22 Washer (3 rqr)
23 Ball bearing
24 Rotor assembly
25 Stator assembly
26 Terminal plate
27 Screw (4 rqr)
28 Washer (4 rqr)
29 Cover
30 Bolt, sq-hd, 1/4-20 x 6 1/2 in (2 rqr)
31 Washer (2 rqr)

Figure 19 - Continued.

four screws (6), flat washers (8), and lockwashers (7).

e. Installation.

(1) Install the varidrive motor on the adapter bracket assembly (para. 56).
(2) Connect the tagged electrical leads to the proper terminal points.
(3) Install the gasket (4), and cover (3) on the base (5) and secure with four screws (6), lockwashers (7), and flat washers (8).

58. Gearcase and Driven Shaft

a. Removal and Disassembly.

(1) Remove the varibelt (para. 54).
(2) Remove the pipe plug (32, fig. 20) from the gearcase (40) and drain the lubricant into a suitable container.
(3) Use a suitable bearing puller and remove the shaft bushing (7) from the end of the driven shaft (58). Slide the bearing cap (8) off the shaft, and press the ball bearing (6) from the shaft bushing (7). Remove the key (59) from the keyway in the driven shaft.
(4) Remove two screws (27), and washers (28) from the bearing cap (26) and remove the cap from the pinion shaft (42). Remove the other bearing cap (26) from the pinion shaft (43) in a similar manner.
(5) Straighten the tangs on the lockwasher (30) and remove the locknut (29) and lockwasher (30) from the pinion shaft (42). Remove the locknut (29) and lockwasher (30) from the shaft (43) in a similar manner.
(6) Remove 10 screws (37) and washers (38) from the generator mounting bracket (36) and remove the bracket from the gearcase (40), and shafts (42 and 43).
(7) Remove 24 studs (35), 2 dowel pins (39), 2 ball bearings (31) and the extension bushing (45) from the generator mounting bracket (36). Remove extension shaft (48), two felt washers (47) and oil seal (46) from the extension bushing.

Note. **To facilitate assembly, measure and note the distance the extension bushing protrudes from the mounting bracket.**

(8) Remove the bearing cap (44) from the shaft (42) and remove the shaft from the ball bearing (41) in the gearcase (40).
(9) Remove the other bearing cap (44) and shaft (43) in a similar manner.
(10) Remove two locknuts (50) from the driven shaft (58) and use a suitable gear puller to remove the gear (49) from the shaft. Remove the machine key (51) from the shaft keyway.
(11) Attach a rope sling to the gearcase (40). Remove four screws (33), and washers (34) from the gearcase and with a lifting device remove the gearcase with assembled driven shaft from the case frame (63).
(12) Straighten the tabs on the lockwasher (56) and remove the locknut (55) and lockwasher (56), from the driven shaft (58).

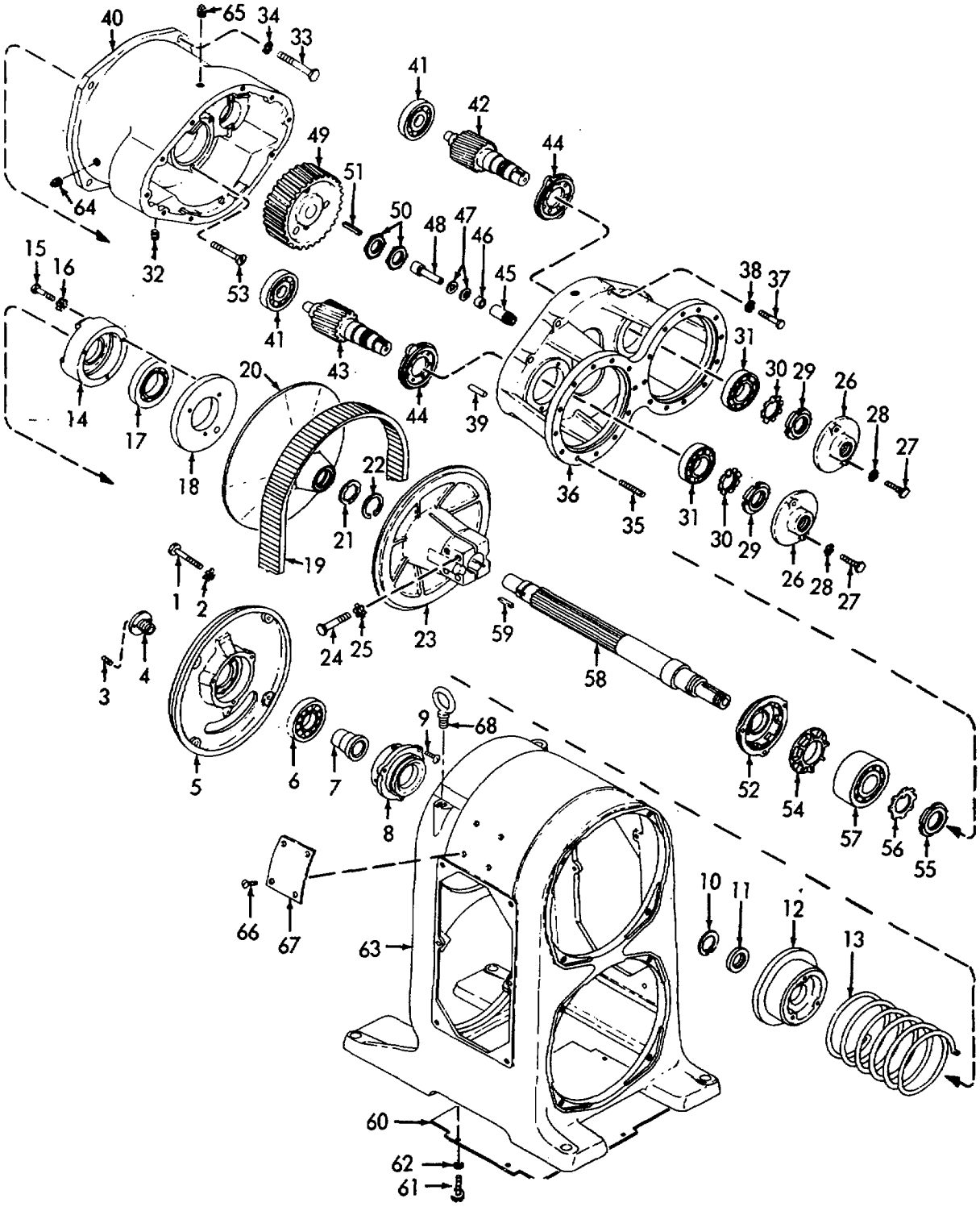


Figure 20. Gearcase, driven shaft, and case frame, exploded view.

1 Screw (4 rqr)
2 Washer (4 rqr)
3 Screw (2 rqr)
4 Bushing retainer nut
5 End cover
6 Ball bearing
7 Shaft bushing
8 Bearing cap
9 Screw (3 rqr)
10 Retaining ring
11 Spring collar retaining ring
12 Spring collar
13 Spring
14 Spring, collar
15 Screw, cap, hex-hd 5/16-8 x 2 1/2 in. (3 rqr)
16 Washer (3 rqr)
17 Ball bearing
18 Bearing cap
19 Varibelt
20 Varidisc (movable assembly)
21 Spline seal
22 Retaining ring
23 Stationary varidisc
24 Screw (4 rqr)
25 Washer (4 rqr)
26 Bearing cap (2 rqr)
27 Screw, cap, hex-hd, 5/8-18 x 2 1/2 in. (4 rqr)
28 Washer (4 rqr)
29 Locknut (2 rqr)
30 Lockwasher (2 rqr)
31 Ball bearing (2 rqr)
32 Pipe plug, slotted headless, 1/4-18
33 Screw (4 rqr)
34 Washer (4 rqr)
35 Stud (24 rqr)
36 Generator mounting bracket
37 Screw, cap, he-hd, 3/8-16 x 2 3/4 in. (10 rqr)
38 Washer (10 rqr)
39 Dowel pin (2 rqr)
40 Gearcase
41 Ball bearing (2 rqr)
42 Pinion shaft
43 Pinion shaft
44 Bearing cap (2 rqr)
45 Extension bushing
46 Oil seal
47 Washer, felt, 3/8 in. id x 1.0 in. od x 1.8 in. thk
48 Extension shaft
49 Gear, increaser
50 Locknut
51 Key, machine
52 Bearing cap
53 Screw (3 rqr)
54 Oil slinger
55 Locknut (special)
56 Lockwasher
57 Ball bearing
58 Driven shaft
59 Key, machine
60 Bottom cover
61 Screw, self-tap, rd-hd, No. 12 x 1.2 in. (8 rqr)
62 Washer (8 rqr)
63 Case frame
64 Pipe plug
65 Pipe plug, sq-hd
66 Screw (4 rqr)
67 Instruction plate
68 Eyebolt (5 rqr)

Figure 20 - Continued.

(13) Support the varidisc end of the driven shaft (58) and remove three screws (53) that secure the boss. Drive the shaft from the ball bearing (57) and remove the shaft from the rear of the gearcase (40). Remove the bearing cap (52) and oil slinger (54) from the threaded end of the shaft.
(14) Remove the ball bearing (57) and the two ball bearings (41) from the gearcase.
(15) Compress the spring (13) and remove the retaining ring (10) and the spring collar retaining ring (11) from the driven shaft (58).
(16) Slowly release pressure on the spring collar (12) until the spring (13) is fully extended and remove the spring collar, spring, and movable varidisc (20) from the driven shaft (58).

Caution: **Use extreme care when releasing spring (13) as the spring tension exceeds 500 pounds.**

(17) Remove three screws (15), washers (16), and remove the spring collar (14), and bearing cap (18) from the hub of the movable varidisc (20). Remove the ball bearing (17) from the spring collar (14).
(18) Remove the spline seal (21), and retainer ring (22) from the driven shaft (58). Remove the four screws (24) and washers (25) from the hub of the stationary varidisc (23 and remove the varidisc from the splined end of the driven shaft.

Note. **To facilitate assembly measure and note the exact distance from the end of the varidisc hub to the end of the driven shaft.**

b. Cleaning, Inspection and Repair.
(1) Clean all parts, except the ball bearings, in an approved cleaning solvent and dry thoroughly.
(2) Clean the ball bearings in an approved cleaning solvent and drip dry. Do not use compressed air for drying.
(3) Inspect the ball bearings for pitted, scored, overheated or worn condition. Check the fit of the bearings to their respective shafts and housing bores. Replace if unserviceable.

(4) Inspect the two pinion shafts for cracked, chipped, broken, or excessively worn teeth. Check the fit of the shaft roller bearing sections to their respective roller bearings and for a galled, grooved, or worn condition. Replace if unserviceable.

(5) Inspect the gear for cracked, chipped, broken, or excessively worn teeth. Check the fit of the bore to the driven shaft, and for an oversize or rounded keyway. Replace if unserviceable.

(6) Inspect the driven shaft for straightness, oversize or rounded keyways, and damaged splines and threads. Check the fit of bearing sections to their respective bearings, and for a galled, grooved, or worn condition. Replace if unserviceable.

(7) Inspect the varidiscs for cracks, breaks, or scored belt surfaces, and damaged splines. Check fit or bore to driven shaft. Replace if unserviceable.

(8) Inspect the spring for cracks, breaks, or distortion.

(9) Inspect the gearcase and the generator mounting bracket for cracks, breaks, and damaged threads. Check the bores with their respective bearings. Weld or braze minor cracks or breaks. Replace if unserviceable.

(10) Inspect all other parts for wear or damaged condition. Replace all defective parts.

c. Reassembly and Installation.

(1) Slide the stationary varidisc (23) onto the splined end of the driven shaft (58). Place in the exact position as noted in a (18) above, and secure with four screws (24), and washers (25). Install the retainer ring (22) and spline seal (21).

(2) Slide the bearing cap (18) onto the hub of the movable varidisc (20). Press the ball bearing (17) in the spring collar (14) and press the assembled spring collar onto the varidisc hub. Secure the spring collar (14) to the bearing cap (18) with three screws (15), and washers (16).

(3) Install the movable varidisc (20), spring (13) and spring collar (12) on the splined end of the driven shaft (58). Apply pressure on the spring collar (12) compressing the spring (13) and install the spring collar retaining ring (11) and the retainer ring (10) on the driven shaft (58).

Caution: **Use extreme care when compressing spring (13) as the spring tension exceeds 500 pounds.**

(4) Press the ball bearing (57) and the two ball bearings (41) into their respective bore of the gearcase (40).

(5) Place the bearing cap (52) and oil slinger (54) onto the threaded end of the driven shaft (58) and insert the shaft through the rear of the gearcase (40). Seat the bearing section of the shaft in the bore of the ball bearing (57). Aline the holes in the bearing cap (52) with the holes in the bearing boss and secure with three screws (53).

(6) Install the lockwasher (56) and locknut (55) on the driven shaft (58). Tighten the locknut, and bend one of the tabs of the lockwasher into a groove in the nut.

(7) Install the machine key (51) in the shaft keyway. Aline the keyway in the gear (49) with the key in the shaft and install the gear on the shaft. Secure with two locknuts (50).

(8) Attach a rope sling to the gearcase (40) and use a suitable lifting device to position the assembled gearcase on the case frame (63). Secure the gearcase to the case frame with four screws (33) and washers (34).

(9) Press the 2 ball bearings (31) into their respective bores in the generator mounting bracket (36) and install the 2 dowel pins (39) and 24 studs (35).

(10) Thread the extension bushing (45) in the rear of the generator mounting bracket making sure the bushing protrudes from the bracket as noted in a above. Install the oil seal (46), two felt washers (47), and extension shaft (48) in the extension bushing.

(11) Place the bearing cap (44) on the threaded end of the pinion shaft (42). Insert the threaded end of the shaft through the rear of the generator mounting bracket, seating the bearing section of the pinion shaft in the bore of the ball bearing (31).
(12) Install the lockwasher (30) and locknut (29) on the pinion shaft (42). Tighten the locknut, and bend one of the tangs of the lockwasher in the groove of the locknut (29).
(13) Position the bearing cap (26) on the generator mounting bracket (36). Aline the mounting holes of the two bearing caps (26 and 44) with the bracket holes, and secure with two screws (27) and washers (28).
(14) Install the shaft (43) as prescribed in (11, 12, and 13) above.
(15) Position the assembled generator mounting bracket (36) on the gearcase (40), seating the bearing sections of the pinion shafts (42 and 43) bracket to the gearcase with 10 screws (37), and washers (38).
(16) Install the bearing cap (8), and the machine key (59) on the driven shaft (58).
(17) Pack the ball bearing (6) with grease and press the ball bearing on the shaft bushing (7). Aline the keyway in the shaft bushing with the key in the driven shaft and install the shaft bushing on the driven shaft.
(18) Install the pipe plug (32) in the gearcase (40). Fill the gearcase with the proper lubricant (para. 29) and install the pipe plugs (64 and 65).
(19) Install the varibelt (para. 54).

Note. **At no time should the varibelt have more than a 1/16 inch runout between the motor shaft and driven shaft varidiscs. Aline belt, by shifting the stationary varidisc (23) on the driven shaft (58) to obtain the proper belt alinement.**

59. Case Housing

a. Removal and Disassembly.
(1) Remove the adapter bracket assembly (para. 56).
(2) Remove the gearcase (para. 58).
(3) Remove eight screws (61, fig. 20) and washers (62) that secure the bottom cover (60) to the bottom of the case frame (63) and remove the bottom cover.
(4) Remove four screws (66), instruction plate (67) and three eyebolts (68) from the case frame.

b. Cleaning, Inspection, and Repair.
(1) Clean all parts in an approved cleaning solvent and dry thoroughly.
(2) Inspect the housing for cracks, breaks, and damaged threads. Chase damaged threads and weld or braze any minor cracks or breaks. Replace if unserviceable.
(3) Inspect all other parts for wear or damaged condition. Replace all defective parts.

c. Reassembly and Installation.
(1) Position the bottom cover (60) on the case frame (63), and secure with eight screws (61) and washers (62).
(2) Position the instruction plate (67) on the case frame (63) and secure with four screws (66). Install the three eyebolts (68).
(3) Install the gear case (para. 58).
(4) Install the adapter bracket assembly (para. 56).

Section VI. CONTROL BOX

60. General

The control box is mounted in two channels on the starter box and contains a tachometer indicator, START-STOP pushbuttons for drive control and RAISE-LOWER pushbuttons for speed control. The control box may be lifted from the channel mounting for operation of controls from remote position.

61. Control Box

a. Removal.
(1) Remove the eight screws that secure

the back cover plate to the control box and remove the cover plate.

(2) Tag and disconnect the leads of the cable (12, fig. 21) from the terminal block (11). Remove the special nut inside the control box from the connector (13) and remove cable (12) from the control box (1).

(3) Tag and disconnect the electrical leads from the tachometer indicator (2), START-STOP switch (7), RAISE-LOWER switch (14) and the indicator light (17).

(4) Remove the two screws (9) and nuts (10) and remove the terminal block (11) from the control box.

(5) Remove the four screws (4) and nuts (3), and remove the tachometer indicator (2) from the front of the control box.

(6) Remove the two screws (5) from the front of the control box, and remove the bracket (6) with the START-STOP switch (7) from the rear of the box. Remove two screws (8) and separate the switch and bracket. Remove the RAISE-LOWER switch (14) in the same manner.

(7) Remove the hex nut (18) and washer (19) from the indicator light (17) and remove the indicator light from the front of the control panel.

(8) Remove two nuts (16) and screws (15) and remove the speed control nameplate from the front of the control box. Remove the drive control nameplate in a similar manner.

b. Cleaning and Inspection.

(1) Wipe the parts and the control box with a cloth dampened with an approved cleaning solvent.

(2) Inspect the tachometer indicator for a cracked or broken case or lens, damaged pointer, and illegible dial. Replace if defective.

(3) Inspect the indicator light for broken lens, damaged body threads, and for loose or corroded terminals. Replace if defective.

(4) Inspect the pushbutton switches for cracked or broken case, catching or binding button action, and for damaged terminals. Replace if defective.

c. Installation.

(1) Position the indicator light (17) on the front of the control box (1) and secure the light to the rear of the box with the washer (19), and nut (18).

(2) Place the START-STOP switch (7) on the bracket (6) and secure with two screws (8). Position the switch and bracket in the control box and secure with two screws (5). Install the RAISE-LOWER switch (14) in a similar manner.

(3) Position the tachometer indicator (2) on the front of the control box and secure with four screws (4) and nuts (3).

(4) Place the terminal block (11) inside the control box and secure with two screws (9) and nuts (10).

(5) Connect the electrical leads to the tachometer indicator (2), START-STOP switch (7), RAISE-LOWER switch (14), and indicator light (17).

(6) Insert the leads of the cable (12) through the opening in the side of the control box, install the special nut on the connector (13) securing the cable (12) to the box.

---

1 Control box
2 Tachometer indicator
3 Nut
4 Screw
5 Screw
7 START-STOP switch
8 Screw
9 Screw
10 Nut
11 Terminal block
12 Cable
13 Connector
14 RAISE-LOWER switch
15 Screw
16 Nut
17 Indicator light
18 Nut
19 Washer

Figure 21. Control box, rear view.

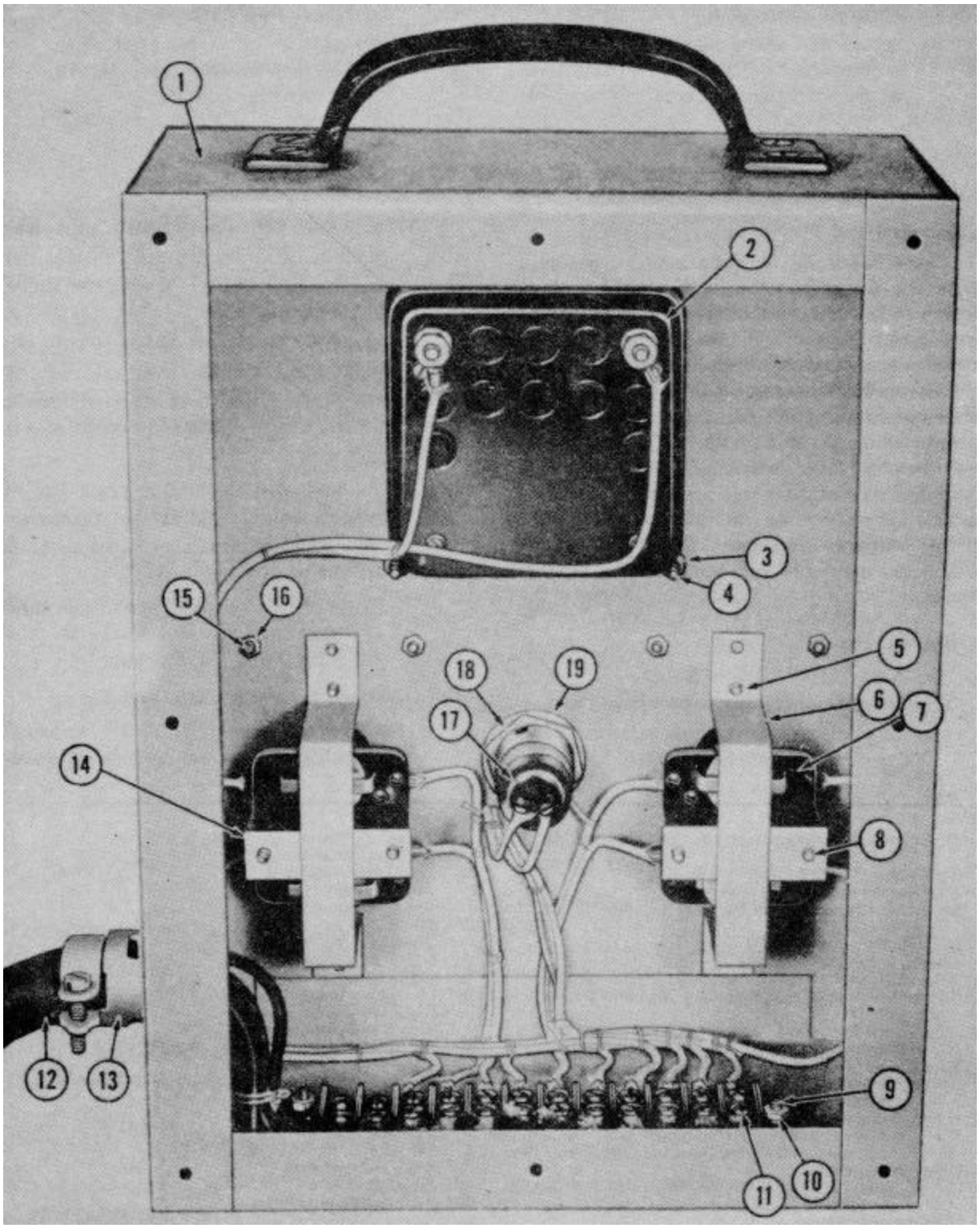


Figure 21 - Continued.

(7) Connect the cable leads (12) to the terminal block (11).
(8) Install the speed control name plate on the front of the control box, and secure with two screws (15) and nuts (16). Install the drive control name plate in a similar manner.
(9) Install the back cover plate on the rear of the control box and secure with eight screws.

Section VII. STARTER BOX ASSEMBLY

62. General

The starter box of the test stand is comprised of the low-voltage moor starter, line-voltage motor starter, thermal overload relays, auto-transformer, dual-voltage transformer; time delay relay, fuse, and terminal blocks. The magnetic motor starters connect and disconnect the power supply and load in response to the opening and closing of the START-STOP buttons on the control box. The time delay relay is adjusted to maintain low-voltage until sufficient acceleration is acquired by the varidrive motor before full line voltage is applied. The dual voltage transformer supplies 110 volts to the control circuit.

63. Starter Box

a. Removal and Disassembly.
(1) Disconnect the input power source.
(2) Tag and disconnect, all external leads from the starter box (5, fig. 22).
(3) Remove the screw, nut, and lockwasher that secure the starter box braces (11) to each side of the starter box (5).
(4) Remove five screws (19), nuts (20), and lockwashers that secure the starter box (5) to the starter box and blower support and remove the starter box.
(5) Remove the lock wires from the six screws (4). Remove the screws and lift the assembled control panel (6) from the starter box (5).
(6) Remove two screws, nuts, and washers and remove the terminal block (25) from the starter box.

b. Cleaning, Inspection, and Repair.
(1) Clean all parts with an approved cleaning solvent and dry thoroughly.

---

1 Screw, machine, fil-hd (drilled) No. 10-32 x 1 1/4 in. (16 rqr)
2 Flash shield
3 Stationary contact (16 rqr)
4 Screw, machine, fi-hd (drilled) 5/16-18 x 3/4 in. (6 rqr)
5 Starter box
6 Control panel
7 Thermal overload relay, type F-Bul. 925 (2 rqr)
8 Screw, machine, fil-hd, (drilled) No. 10-2 x 3/8 in. (2 rqr)
9 Relay bracket
10 Thermal overload relay
11 Starter box braces (2 rqr)
12 Screw, machine, fil-hd (drilled) No. 10-32 x 1 in. (4 rqr)
13 Time delay relay
14 Terminal block
15 Screw, machine, fil-hd (drilled) No. 10-32 x 1 in.
16 Transformer
17 Screw, machine, fi-hd, (drilled) No. 10-32 x 9/16 in. (2 rqr)
18 Fuse block
19 Screw, cap, hex-hd, 3/8 x 1 in. (5 rqr)
20 Nut, plain, hex, 3/8-16 (5 rqr)
21 Fuse, 3-amp, 250 w
22 Terminal block
23 Screw
24 Terminal block
25 Terminal block
26 Terminal block
27 Transformer
28 Terminal board
29 Stud
30 Nut
31 Plate
32 Plate
33 Screw, machine, rd-hd, 4-20 x 2 in. (8 rqr)
34 Low-voltage motor starter
35 Screw, machine, rd-hd, 1/4-20 x 2 in. (8 rqr)
36 Movable contact assembly (8 rqr)
37 Armature plate
38 Screw, machine, pan-hd, No. 6-32 x 1/4 (4 rqr)
39 Terminal block
40 Coil leads
41 Bracket
42 Coil 110 v 6-cycle, No. C6 301
43 Coil retainer clip
44 Bracket
45 Lower armature
46 Screw, machine, fil-hd, (drilled) 5/16-18 x 3/4 in. (8 rqr)
47 Interlock
48 Screw, machine, fil-hd (drilled) No. 10-32 x 1 in.
49 Line-voltage motor starter

Figure 22. Starter box and control panel, installed view.

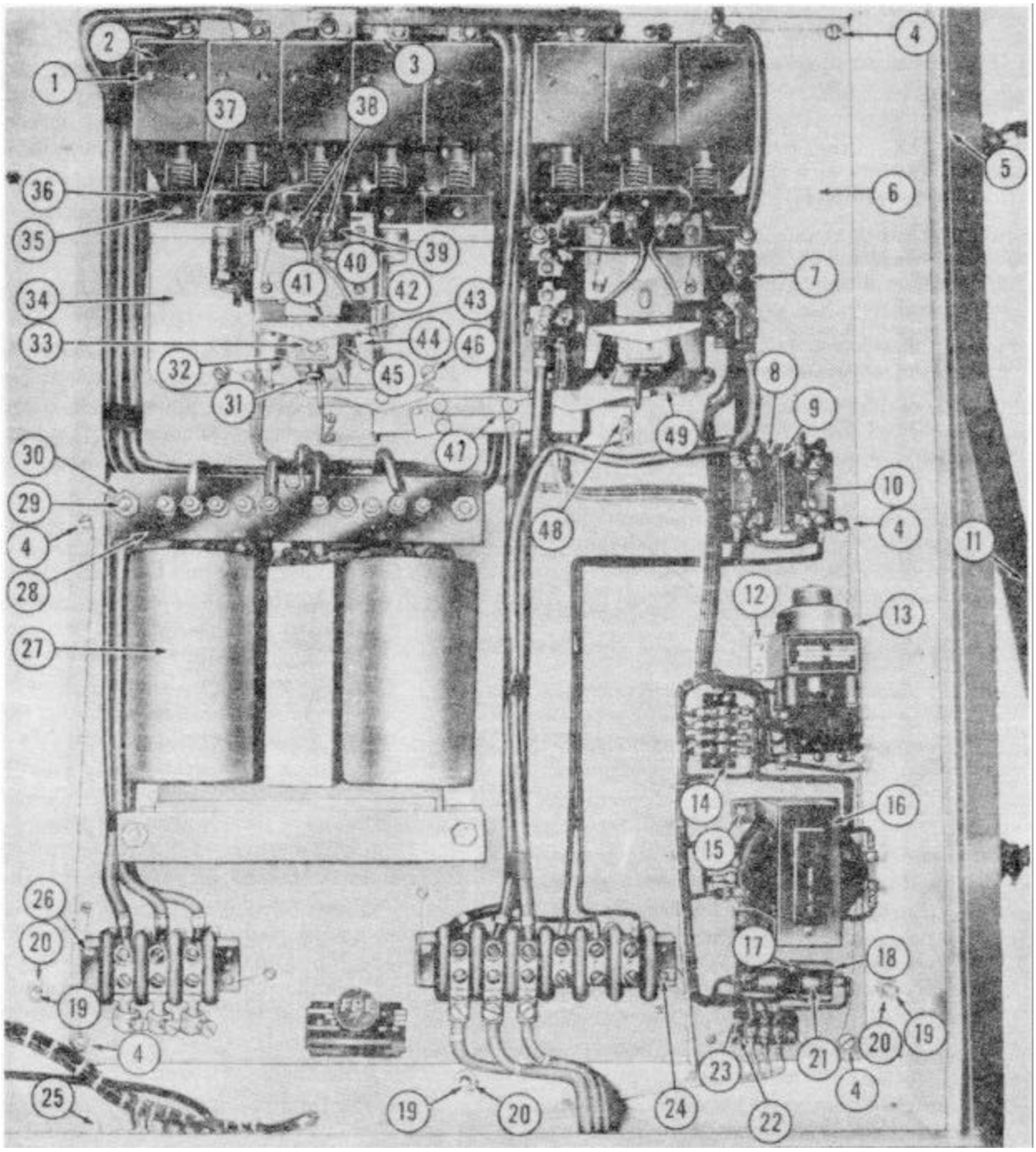


Figure 2 - Continued.

(2) Inspect the starter box and door for dents, tears, and for cracked or broken weldments. Weld tears and any defective weldments. Straighten any dents, and repaint in accordance with TM 9-213.

(3) Inspect the terminal block for cracks, breaks, and damaged terminals. Replace if defective.

(4) Inspect all hardware for cracks, breaks, or damaged threads. Replace all defective hardware.

c. Reassembly and Installation.

(1) Position the terminal block (25) in the starter box (5) and secure with two screws and nuts.

(2) Install the assembled control panel (6) in the starter box and secure with six screws (4). Install the screw lock wires.

(3) Position the starter box (5) on the starter box and blower support and secure with five screws (19), nuts (20), and lockwashers.

(4) Position the starter box braces (11) on each side of the starter box (5) and secure with a screw, lockwasher, and nut

(5) Reconnect all electrical leads to the starter box.

(6) Connect the input power source.

64. Stationary and Movable Contact Replacement

a. Removal.

(1) Disconnect the input power source.

(2) Tag and disconnect the electrical leads from the stationary contacts (3, fig. 22) of the low-voltage motor starter (34).

(3) Remove the lock wire from the two screws (1). Remove the screws and remove the flash shield (2) covering the movable and stationary contacts.

(4) Remove the screw (35) and remove tile movable contact assembly (36) from the armature plate (37). Remove the contact from the movable contact assembly.

(5) Remove the screw that secures each of the stationary contacts (3) in the arc block and remove the contacts.

(6) Remove the other movable and stationary contacts in the low-voltage and line-voltage motor starters (34 and 49) in the same manner.

b. Installation.

(1) Position two stationary contacts (3) in the arc block of the low-voltage motor starter (34) and secure each with a screw.

(2) Install the contact in the movable contact assembly (36), and position the movable contact assembly on the armature plate (37). Aline the contacts, and secure the movable contact assembly (36) to the armature plate (37) with the screws (35).

(3) Install the flash shield (2) and secure with two screws (1). Install the screw lock wires.

(4) Connect the tagged electrical leads to their respective stationary contacts (3).

(5) Install the other movable and stationary contactors in the low-voltage and line-voltage motor starters (34 and 49) in the same manner.

(6) Connect the power input source.

65. Motor Starter Coil Replacement

a. Removal.

(1) Disconnect the input power source.

(2) Remove two screws (38, fig. 22) and remove the coil leads (40) from the terminal block (39) on the low-voltage motor starter (34).

(3) Raise up on the coil retainer clip (43) until the ears on the clip are free of the ear on the bracket (44). Pull outward and remove the coil retainer from the bracket.

(4) Remove screw (33) that secures the plate (32) to the bracket (41) and remove the plate.

(5) Slip the plate (31) from a slot in the rear side of the bracket (41), and remove the plate (31), lower armature (45), and coil (42) from the motor starter (34).

(6) Remove the coil from the line-voltage motor starter (49) in the same manner.

b. Installation.

(1) Install the plate (31), lower armature (45), and coil (42) in the low-voltage motor starter (34), and position the plate (31) in the slot in the rear side of the bracket (41).

(2) Place the slot in the plate. (32) over the end of the bracket (41) and secure

the plate (32) to the bracket (41) with the screw'(33).
(3) Install the coil retainer clip (43), seating the retainer clip in the bracket (44).
(4) Secure the coil leads (40) to the terminal block (39) with two screws (38).
(5) Install the coil in the line-voltage motor starter (49) in the same manner.
(6) Connect the power input source.

66. Motor Starter

a. Removal.
(1) Disconnect the power input source.
(2) Tag and disconnect the motor starter electrical leads.
(3) Remove the lock wires from the four screws (46, fig. 22). Remove the screws and remove the low-voltage motor starter (34) from the control panel (6).
(4) Remove the line-voltage motor starter (49) in the same manner.

b. Disassembly.
(1) Remove the stationary and movable contacts (para. 63).
(2) Remove starter coil (para. 64).
(3) Tag and disconnect the leads on the thermal overload relay (7).
(4) Remove two screws from the side of the thermal overload relay (7), and remove the relay from the line-voltage motor starter (49). Remove the other relay in a similar manner.
(5) Remove the heaters (para. 11).

c. Cleaning, Inspection and Repair.
(1) Clean all parts with a cloth dampened with an approved cleaning solvent and dry thoroughly.
(2) Inspect the movable and stationary contacts for burned, pitted, or corroded condition. Replace if defective.
(3) Inspect coil for burned, brittle, and frayed insulation. Check with a multimeter for continuity. Replace if defective.
(4) Inspect the flash shields and are box for cracks or breaks.
(5) Inspect all other parts for cracks, breaks, corrosion, or other damage.

d. Reassembly.
(1) Position the two thermal overload relays (7) on the line-voltage motor starter (49) and secure each relay with two screws. Install the heaters (para. 11).
(2) Connect the tagged leads to the thermal overload relay.
(3) Install the starter coil (para. 64).
(4) Install the stationary and movable contacts (para. 63).

e. Installation.
(1) Position the low-voltage motor starter (34) on the control panel (6) and secure with four screws (46). Install the screw lock wires.
(2) Connect the tagged electrical leads to their respective terminals.
(3) Install the line-voltage motor starter (49) in a similar manner.
(4) Connect the input power source.

67. Starter Interlock

a. Removal.
(1) Remove the lock wires from the four screws (48, fig. 22), and remove the screws from interlock (47).
(2) Slide the arms of the interlock (47) from the flange on the plate (31) and remove the interlock from the control panel (6).

b. Cleaning and Inspection.
(1) Clean all parts with an approved cleaning solvent and dry thoroughly.
(2) Inspect the interlock for worn, bent, or distorted condition, and for free operation of the interlock arms. Replace if defective.

c. Installation.
(1) Insert the arms of the interlock (47) in the flanges of the plates (31). Position the interlock on the control

panel (6) and secure with four screws (48).
(2) Install the screw lock wires.

68. Blower Motor Overload Relay

a. Removal.
(1) Disconnect the input power source.
(2) Tag and disconnect the leads on the thermal overload relay (10, fig. 22).
(3) Remove the lock wires from the two screws (8). Remove the two screws (8) that secure the relay bracket (9) to the control panel (6) and remove the assembled relay bracket.
(4) Remove two screws from each of the thermal overload relays (10) and remove the relays from the relay bracket (9).
(5) Remove the heaters (para. 11).

b. Cleaning and Inspection.
(1) Clean all parts with a cloth dampened with an approved cleaning solvent.
(2) Inspect the thermal overload relays for a cracked or broken case, corrosion, damaged terminals, and for a sticking or binding reset button. Replace if defective.
(3) Inspect all other parts for cracks, breaks, corrosion, or other damage. Replace any defective part.

c. Installation.
(1) Install the heaters (para. 11).
(2) Install the two thermal overload relays (10) on the relay bracket (9) and secure each with two screws.
(3) Position the assembled relay bracket (9) on the control panel (6) and secure with two screws (8). Install screw lock wires.
(4) Connect the tagged electrical leads to the terminals of the thermal overload relays (10).
(5) Connect the input power source.

69. Time Delay Relay

a. Removal.
(1) Disconnect the power input source.
(2) Tag and disconnect the leads from the terminals on the time delay relay (13, fig. 22).
(3) Remove the lock wires from the four screws (12). Remove the screws and remove the time delay relay (13) from the control panel (6).

b. Cleaning and Inspection.
(1) Clean the time relay with a cloth dampened with an approved cleaning solvent.
(2) Inspect the relay for cracks, damaged terminals, corrosion, and for a sticking or binding armature. Replace if defective.
(3) Inspect the hardware for cracks, breaks, or damaged threads. Replace if defective.

c. Installation.
(1) Position the time delay relay (13) on the control panel (6) and secure with four screws (12). Install the screw lock wires.
(2) Connect the tagged leads to the terminals of the time delay relay (13).
(3) Connect the power input source.

70. Control Circuit Transformer (Dual Voltage)

a. Removal.
(1) Disconnect the power input source.
(2) Tag and disconnect the leads from the terminals on the transformer (16, fig. 22).
(3) Remove the lock wires from the four screws (15). Remove the screws and remove the transformer (16) from the control panel (6).

b. Cleaning and Inspection.
(1) Clean the transformer with a cloth dampened with an approved cleaning solvent.
(2) Inspect the transformer for damaged terminals and laminations, and for burned, brittle, or frayed insulation. Check the transformer for continuity. Replace if defective.

c. Installation.

(1) Position the transformer (16) on the control panel (6) and secure with four screws (15). Install the screw lock wires.

(2) Connect the tagged electrical leads to the terminals of the transformer (16).

(3) Connect the power input source.

71. Fuse and Fuse Block

a. Removal.

(1) Disconnect the input power source.

(2) Tag and disconnect the leads from the terminals of the fuse block (18, fig. 22).

(3) Remove two screws (17) and remove the fuse block (18) from the control panel (6).

(4) Remove the fuse (21) from the fuse block (18).

b. Installation. Reverse the procedures in *a* above.

72. Auto Transformer

a. Removal.

(1) Disconnect the input power source.

(2) Tag and disconnect the leads from the terminal-board (28, fig. 22).

(3) Remove two nuts (30) from studs (29), and remove the terminal board (28) from the transformer (27).

(4) Remove the lock wires and remove the six screws (4). Tilt the control panel (6) forward until the four nuts that secure the transformer (27) to the rear of the control panel are accessible. Remove the four nuts, and remove the transformer (27) from the control panel (6).

b. Cleaning and Inspection.

(1) Clean all parts with an approved cleaning solvent.

(2) Inspect the transformer for burned, brittle, or frayed insulation. Check the transformer for continuity. Replace if defective.

(3) Inspect the terminal board and hardware for cracks, breaks, and damaged threads. Replace if defective.

c. Installation.

(1) Install the transformer (27) on the front of the control panel (6) and secure to the rear of the panel with four nuts.

(2) Aline the control panel (6) in the starter box (5) and secure with six screws (4). Install the lock wires.

(3) Position the terminal board (28) on the studs (29) and secure with two nuts (30).

(4) Connect the tagged leads to their respective terminals on the terminal board (28).

(5) Connect the power input source.

73. Terminal Blocks

a. Removal.

(1) Disconnect the input power source.

(2) Tag and disconnect leads from the terminal block (22, fig. 22).

(3) Remove lock wires and remove the two screws (23) that secure the terminal block (22) to the control pan (6). Remove the terminal block.

(4) Remove the terminal blocks (14, 24, and 26) in the same manner.

b. Cleaning and Inspection.

(1) Clean all parts with an approved cleaning solvent.

(2) Inspect the terminal blocks for cracks, breaks, damaged terminals, and corrosion. Replace if defective.

(3) Inspect all hardware for cracks, breaks, and damaged threads. Replace if defective.

c. Installation.

(1) Position the terminal block (22) on the control panel (6) and secure with two screws (23). Install lock wires.

(2) Connect the tagged leads to their respective terminals of the terminal block (22).

(3) Install the terminal blocks (14, 24, and 26) in a similar manner.

(4) Connect the power input source.

74. Wiring

a. Removal. Tag and disconnect the particular wire, cable, or wiring harness to be removed, as determined upon inspection.

b. Inspection. Visually inspect all wiring. When any of the following conditions exist, wiring is unserviceable:

(1) Insulation is hard, brittle, or spongy.
(2) Insulation has cracks, worn spots, or other indications of deterioration.
(3) Terminals are loose on the conductors or are corroded to the extent that the resistance between the conductor and its terminal is noticeable when checked with a multimeter.
(4) Replace any defective wire or cable.

c. Installation. Connect leads to their respective terminals and apply fungus proofing to all electrical connections in accordance with Specifications MIL-V-173 and JAN-T-152.

Section VIII. FRAME

75. General

The frame is of welded steel construction, formed of two I-beams and three cross members. The frame provides compact mounting for the varidrive, starter box, and blower assembly.

76. Frame

a. Removal and Disassembly.

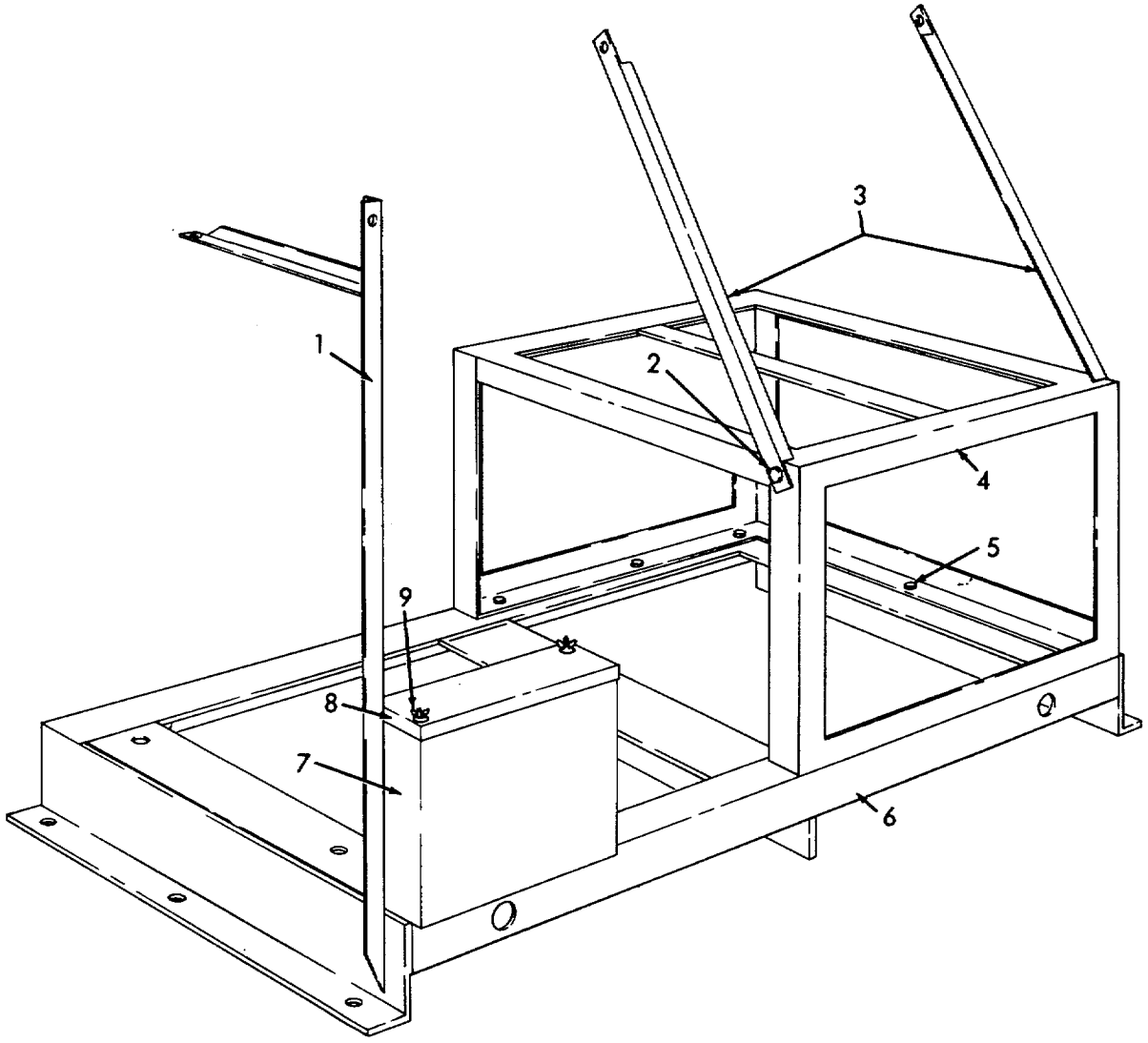
(1) Remove the blower motor and motor support (para. 50).
(2) Remove the starter box (para. 63).
(3) Remove the assembled varidrive (para. 56).
(4) Remove two wingnuts (9, fig. 23) and remove the cover (8) from the stowage box (7). Remove two screws, nuts, and lockwashers, that secure the stowage box to the frame (6) and remove the stowage box.
(5) Remove two screws, nuts, and lockwashers that secure the tube support (1) to the frame (6) and remove the tube support
(6) Remove screw (2), nuts, and lockwashers from each of the starter box braces (3) and remove the braces.
(7) Remove nine screws (5), nuts, and lockwashers and remove the starter box and blower support (4) from the frame (6).

b. Cleaning, Inspection, and Repair.

(1) Clean all parts with an approved cleaning solvent and dry thoroughly.
(2) Inspect the frame for cracks, breaks, broken welds, or other damage. Reweld any broken weldments, and weld any cracks or breaks. Repaint in accordance with TM 9-213.
(3) Inspect the stowage box for breaks, dents, tears or other damage. Weld cracks, breaks, or tears and straighten all dents and bends. Repaint in accordance with TM 9-213.
(4) Replace frame and stowage box if damage is extensive.

c. Reassembly and Installation.

(1) Position the starter box and blower support (4) on the frame (6) and secure with nine screws (5), nuts, and lockwashers.
(2) Install the starter box braces (3) on the starter box and blower support (4) and secure each brace with the screw (2), nut, and lockwasher.
(3) Position the tube support (1) on the frame (6) and secure with two screws, nuts, and lockwashers.
(4) Position the stowage box (7) on the frame (6) and secure with two screws, nuts, and lockwashers.
(5) Install the cover (8) on the stowage box (7) and secure with two wingnuts (9).
(6) Install the assembled varidrive (para. 56).
(7) Install the starter box (para. 63).
(8) Install the blower motor and motor support (para. 50).



1 Tube support
2 Screw, cap, hex-hd, 1/4-20 x 5/8 in (2 rqr)
3 Starter box brace (2 rqr)
4 Starter box and blower support
5 Screw, cap, hex-hd, 3/8-16 x 1 1/4 in. (9 rqr)
6 Frame
7 Stowage box
8 Cover
9 Wingnuts (2 rqr)

Figure 23. Frame assembly.

CHAPTER 5

SHIPMENT AND LIMITED STORAGE AND DEMOLITION OF MATERIAL TO PREVENT ENEMY USE

Section I. SHIPMENT AND LIMITED STORAGE

77. Preparation of Equipment for Shipment

a. Perform operators daily services (para. 33).

b. Drain the oil from the gear case. Refill with a suitable preservative oil, and attach a warning tag to the filler plug.

c. Disconnect power source, remove mounting bolts, and secure stowage and starter box doors.

d. Wrap a protective covering around the control and starter box and seal with pressure sensitive tape.

e. Construct a suitable crate as to shipping instructions (fig. 6) and secure the test stand in the crate.

78. Limited Storage

a. Preparation of Equipment for Storage.

(1) Make a complete inspection of the test stand as outlined in paragraph 8. Correct any deficiencies noted.

(2) Clean the test stand as necessary. Remove all rust or other forms of corrosion. Exercise extreme care to prevent damage to the electrical equipment during the cleaning operation. Paint all surfaces when the paint film has been damaged (TM 9-213).

b. Protection. When the test stand is placed in limited storage it should be covered to prevent the entrance of dust or water into the assembly.

79. Inspection and Maintenance of Equipment in Storage

a. Inspection. Perform a monthly inspection while the equipment is in storage and inspect for evidence of physical damage, such as rusting, accumulation of water, and pilferage.

b. Maintenance. Every 30 days, service the test stand and perform the necessary maintenance prescribed in paragraph 33.

Section II. DEMOLITION OF TEST STAND TO PREVENT ENEMY USE

80. General

When capture or abandonment of the test stand to an enemy is imminent, the responsible unit commander must make the decision either to destroy the equipment or to render it inoperative. Based on this decision, orders are issued which cover the desired extent of destruction. Whatever method of demolition is employed, it is essential to destroy the same vital parts of all test stands and all corresponding repair parts.

81. Demolition To Render Equipment Inoperative

a. Mechanical Means. Use sledge hammers, crowbars, picks, axes, or any other heavy tools available to destroy the following:

(1) Generator mounting bracket, gearcase and shafts, and housing.

(2) Electric remote control, adapter bracket, and varidrive motor.

(3) Blower housing, motor, air tube, and hose.

(4) Control and starter box, including integral parts within the boxes.
(5) Destroy the wiring and varibelt by cutting them in short lengths.

Note. **The above a minimum requirements for this method.**

b. Misuse. Perform the following to render the test stand inoperative:

(1) Drain the oil from the gearcase. Place sand, gravel, or other foreign material in the gearcase, and operate at full speed.
(2) Cut varibelt, remove varidrive motor and bracket mounting screws and operate at full speed.

Note **The above a minimum requirements for this method.**

82. Demolition by Explosive or Weapons Fire

a. Explosives. Place as many of the following charges (fig. 24) as the situation permits and detonate them simultaneously with detonating cord and a suitable detonator.

(1) Two 1/2-pound charges inside the starter box.
(2) One 1/2-pound charge on the blower motor.
(3) One 1/2-pound charge on the varidrive motor.
(4) One 1/2-pound charge on the electric remote control.
(5) One 1/2-pound charge inside the varidrive housing.
(6) Two 1/2-pound charges on the gearcase.

b. Weapons' Fire. Fire on the test stand with the heaviest practical weapons available.

83. Demolition by Other Methods

a. Burning. Pack rags, clothing, or canvas under and around the unit, and inside the housing

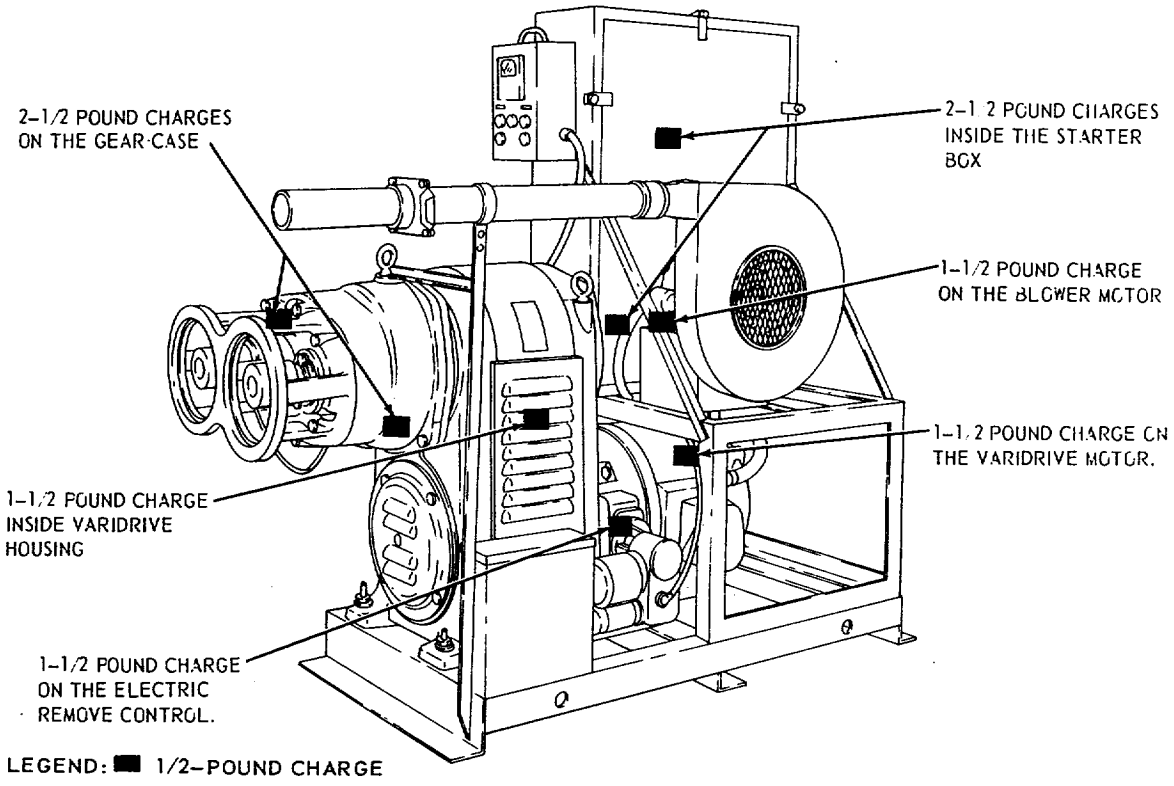


Figure 24. Placement of charges.

and starter box. Saturate this packing with gasoline, oil, or diesel fuel, and ignite.

b. Submersion. Totally submerge the unit in a body of water to provide water damage and concealment Submersion in salt water will do greater damage to metal parts.

84. Training

All operators should receive thorough training in the destruction of the test stand. Refer to FM 5-25. Simulated destruction, using all of the methods listed above, should be included in the operator training program. It must be emphasized in training, that demolition operations are usually necessitated by critical situations when time available for carrying out destruction is limited. For this reason, it is necessary that operators be thoroughly familiar with all methods of destruction of equipment, and be able to carry out demolition instructions without reference to this or any other manual.

APPENDIX I

REFERENCES

1. Dictionaries of Terms and Abbreviations

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

2. Fire Protection

TM 5-687	Repairs and Utilities; Fire Protection Equipment and Appliances; Inspections, Operations, and Preventive Maintenance.
TM 9-1799	Ordnance Maintenance: Fire Extinguishers.

3. Preventive Maintenance

AR 750-5	Organization, Policies, and Responsibilities for Maintenance Operations.

4. Painting

TM 9-213	Painting Instructions for Field Use.

5. Publication Indexes

DA Pam 108-1	Index of Army Motion Pictures, Film Strips, Slides and Phonorecordings.
DA Pam 310-1	Index of Administrative Publications.
DA Pam 310-2	Index of Blank Forms.
DA Pam 3103	Index of Doctrinal, Training, and Organizational Publications.
DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals, Supply Bulletins, Lubrication Orders, and Modification Work Orders.
DA Pam 310-5	Index of Graphic Training Aids and Devices.

6. Training Aids

FM 5-25	Explosives and Demolition.
FM 21-5	Military Training.
FM 21-6	Techniques of Military Instruction.
FM 21-30	Military Symbols.

APPENDIX II

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

1. General

This maintenance allocation chart lists all maintenance and repair operations authorized for the various levels.

2. Maintenance

Maintenance is any action taken to keep material in a serviceable condition or to restore it to serviceability when it is unserviceable. Maintenance of materiel includes the following:

a. Service. To clean, to preserve, and to replenish fuel and lubricants.

b. Adjust. To regulate periodically to prevent malfunction.

c. Inspect. To verify serviceability and to detect incipient mechanical failure by scrutiny.

d. Test. To verify serviceability and to detect incipient mechanical failure by use of special equipment such as gages, meters, and other test devices.

e. Replace. To substitute serviceable assemblies, subassemblies, and parts for unserviceable components.

f. Repair. To restore to a serviceable condition by replacing unserviceable parts or by any other action required utilizing tools, equipment, and skills available, to include welding, grinding, riveting, straightening, and adjusting.

g. Overhaul. To restore an item to a completely serviceable condition by inspecting, disassembling its assemblies and subassemblies as necessary, replacing parts, and performing necessary boring, grinding, or machining operations, followed by reassembly and final inspection.

3. Explanation of Columns

a. Components and Related Operation. This column contains the functional index grouping heading, subgroup heading, and a brief description of the part starting with the noun name. It also designates the operation to be performed such as service, adjust, inspect, test, replace, repair, and overhaul.

b. Level of Maintenance.

(1) *Operator or crew.* Operator or crew maintenance performed by the user or operator of the equipment, such as servicing, cleaning, lubricating, and limited adjustments. It also includes removal and replacement of items to accomplish servicing and lubrication.

(2) *Organizational.* Organizational maintenance is that maintenance performed by trained personnel provided for that purpose in the using organization, such as replacement of all items in the organizational column, limited parts fabrication from bulk material, adjustments, and repair of assemblies, components, and end items that can be accomplished without extensive disassembly.

(3) *Direct support.* Direct support maintenance is that maintenance performed by specially trained units in direct support of the using organization, such as replacement of all items in the organizational and direct support columns; repair of assemblies, components, and end items; and fabrication of parts from bulk material.

(4) *General support.* General support maintenance is that maintenance performed by units organized as semi-fixed or permanent shops to serve lower level maintenance within a geographical area, such as replacement of

items in the organizational, direct support, and general support columns; repair of end items; overhaul of assemblies and components; and fabrication of general use common hardware and parts.

(5) *Depot.* Depot maintenance is that maintenance authorized to overhaul assemblies, components, end items, and replacement of all parts in the O, DS, GS, and D columns.

c. Symbol X. The symbol X indicates the lowest level responsible for performing that particular maintenance operation, but does not necessarily indicate repair parts will be stocked at that level.

d. Remarks. The remarks column is used to explain why maintenance, that normally would be done at a lower level, is moved to a higher level because of some peculiarity in the construction of the end item.

Section II. MAINTENANCE ALLOCATION CHART

Group No.	Component and related operations	OC	O	DS	GS	D	Tools required	Remarks
1.0	Stand, Test Aircraft Generators:							
	Service	.....	X					
	Adjust	.....	.....	X				
	Aline	.....	.....	.....	X			
	Calibrate	.....	.....	.....	X			
	Inspect	.....	.....	X				
	Test	.....	.....	X				
	Replace	.....	.....	X				
	Repair	.....	.....	.....	X			
	Overhaul	.....	.....	.....	.....	X		
2.0	Electrical:							
2.1	Blower motor:							
	Replace	.....	.....	X				
	Repair	.....	.....	.....	X			
	Overhaul	.....	.....	.....	.....	X		
	Inspect	.....	.....	X				
2.2	General tachometer:							
	Inspect	.....	.....	X				
	Test	.....	.....	X				
	Replace	.....	.....	X				
2.3	Control box:							
	Replace	.....	.....	X				
	Inspect	.....	.....	X				
2.4	START-STOP pushbutton:							
	Inspect	.....	.....	X				
	Replace	.....	.....	X				
2.5	RAISE-LOWER pushbutton:							
	Inspect	.....	.....	X				
	Replace	.....	.....	X				
2.6	Tachometer indicator:							
	Inspect	.....	.....	X				
	Replace	.....	.....	X				
	Calibrate	.....	.....	.....	X			
2.7	Varidrive motor:							
	Inspect	.....	.....	X				
	Replace	.....	.....	X				
	Repair	.....	.....	.....	X			
	Overhaul	.....	.....	.....	.....	X		
	Service	.....	X					

Group No.	Component and related operations	OC	O	DS	GS	D	Tools required	Remarks
2.8	Starters:							
	Repair	.....	.....	.....	X			
	Inspect	.....	.....	X				
	Overhaul	.....	.....	.....	.....	X		
3.0	Housing Assembly:							
3.1	Blower fan blade:							
	Inspect	.....	.....	X				
	Replace	.....	X					
3.2	Air hose:							
	Inspect	.....	.....	X				
	Replace	.....	X					
3.3	Pitot tube:							
	Inspect	.....	.....	X				
	Replace	.....	X					
3.4	Gearcase:							
	Service	.....	X					
	Inspect	.....	.....	X				
	Replace	.....	.....	X				
	Repair	.....	.....	.....	X			
3.5	Varibelt:							
	Inspect	.....	.....	X				
	Replace	.....	.....	X				
3.6	Blower housing:							
	Inspect	.....	.....	X				
	Repair	.....	X					
3.7	Frame:							
	Inspect	.....	.....	X				
	Repair	.....	.....	.....	X			
3.8	Gears:							
	Inspect	.....	.....	X				
	Replace	.....	.....	.....	X			
	Repair	.....	.....	.....	X			

APPENDIX III

REPAIR PARTS AND SPECIAL TOOL LISTS

Section I. PURPOSE AND USE OF PARTS LIST

1. General.

This appendix lists the repair parts and maintenance supplies authorized and required for organization through depot maintenance of Test Stand, Aircraft Generators, P/N 7199, FSN 4920-967-9969. This is the authority to requisition and issue.

2. Arrangement

a. Individual parts and major assemblies are listed alphabetically by item name within the numbered group.

b. Assembly components and subassemblies are indented and listed alphabetically by item name under major assemblies.

c. There are two indexes in this appendix.

(1) The manufacturer's reference number cross-referenced to the Federal stock number, item name, and group or section in which the item is located. A percent symbol (%) precedes the reference number to indicate e prime manufacture when an assembler's reference number is also listed.

(2) The Federal stock number cross-referenced to the item name, Federal supply code, manufacturer's reference number, and group or section in which the item is located.

3. Explanation of Columns

a. AMC Materiel Code (Formerly Technical Service Code). Items which are the logistic responsibility of a commodity command, other than the U.S. Army Aviation Materiel Command (USAAVCOM), are indicated by the basic number assigned to the commodity command. The basic numbers are-

3 —Chemical Materiel
5 —Engineer Materiel
8 —Medical Materiel
9 —Ordnance Materiel
10 —Quartermaster Materiel
11 —Signal Materiel

b. Source Codes. Source codes are shown in this column as assigned to items by USAAVCOM. The code symbols indicate the selection status and source of supply for each repair part as defined hereafter.

(1) Code P-applies to repair parts which are high mortality parts; procured by commodity command, stocked in and supplied from the commodity command depot system, and authorized for use at indicated maintenance categories.

(2) Code P1-applies to repair parts which are low mortality parts; procured by commodity command, stocked only in and supplied from commodity command key depots, and authorized for installation at indicated maintenance categories.

(3) Code M-applies to repair parts which are not procured or stocked but are to be manufactured by using units at indicated maintenance categories. MO, MF, MH, and MD combinations indicate the category responsible for manufacturing the item.

(4) Code A-applies to assemblies which are not procured or stocked as such but a made up of two or more units carrying individual stock numbers and descriptions. They are procured and stocked and may be assembled by units at indicated maintenance categories. AO, AF, AH, and AD combinations indicate the category

responsible for assembling the item.

(5) Code X—applies to parts and assemblies which are not procured or stocked, the mortality of which normally is below that of the applicable end item, and the failure of which should result in retirement of the end item from service.

(6) Code X1—applies to repair parts which are not procured or stocked, the requirement for which will be supplied by use of the next higher assembly.

(7) Code X2—applies to repair parts which are not stocked. Indicated maintenance category requiring such repair parts will attempt to obtain them through cannibalization. Such repair parts will be requisitioned with supporting justification through normal supply channels.

(8) Code C—applies to repair parts authorized for local procurement. If not obtainable from local procurement, such repair parts will be requisitioned through normal supply channels with a supporting statement of nonavailability from local procurement.

(9) Code G—applies to major assemblies that are procured with PEMA funds for initial sue only to be used as exchange assemblies at direct support maintenance activities. These assemblies will not be stocked above direct support maintenance level or returned to depot supply level.

(10) Code Z—applies to obsolete repair parts no longer stocked or procured.

c. Maintenance Level Code. The code symbol used in the maintenance level column indicates the lowest maintenance category authorized to install the repair parts. Capabilities of higher maintenance categories are considered equal or better.

(1) Code O—Organizational Maintenance Category.

(2) Code F—Direct Support Maintenance Category.

(3) Code H—General Support Maintenance Category.

(4) Code D—Depot Maintenance Category.

d. Recoverability Code. Recoverability codes reflect recoverability or reparability characteristics of repair parts upon removal from equipment at time of maintenance, repair, or overhaul.

(1) Code R—applies to repair parts and assemblies which are economically reparable at direct and-general support maintenance categories and normally are furnished by supply on an exchange basis.

(2) Code T—applies to high dollar value recoverable repair parts which are subject to special handling and are issued on an exchange basis. Such repair parts normally are repaired or overhauled at depot maintenance activities.

(3) Code U—applies to repair parts specifically selected for salvage by reclamation units because of precious metal content, critical materials, high dollar value, reusable casings or castings, etc.

(4) Repair parts and assemblies not assigned a recoverability code shall be considered "throwaway" items.

e. Federal Stock Number. The Federal stock number consists of applicable 4-digit FSC code number plus the 7-digit Federal item identification number which are to be utilized for requisitioning, storage, and accountability purposes.

f. Description.

(1) This column furnishes the item name, a brief description when necessary, and authorized abbreviations or dimensions when required to provide further identification. A comma will be used to separate the basic noun or noun phrase from its modifiers. This column also reflects IMO (in multiples of) or the standard unit pack quantity in which the item is issued. For those items with a unit of issue of each, pound, set, etc., that do not indicate an IMO, a quantity of one will be understood and not placed in this column.

(2) Oversize and undersize parts such as studs, bushings, etc., are listed immediately after the standard size part and in the same indent. The degree of oversize and

undersize is stated in the description. These parts are not index numbered nor is a required quantity shown.

(3) When details of an assembly are shown on another text page, the description of that assembly is followed by a notation stating where those details can be located. Example: "47-620-600-13 Transmission Assembly. See figure 24 for breakdown." The parts that make up the Transmission Assembly will be found on the text listing for figure 24.

(4) Attaching parts are listed immediately after the part(s) they attach and in the same indent. They are separated from the part(s) by the words "Attaching Parts." When they attach an assembly, which is broken down to show detail parts, the attaching parts are separated from the details of the assembly by the symbol ". . . * . . .". Details of the assembly are then indented one indent to the right of their next assembly, which appears above the attaching part.

(5) Part Numbers. Three basically different kinds of part numbers are found within this column.

(*a*) Identification of manufacturer, e.g., 27391.

(*b*) Government standard or Military part numbers which begin with the letters AN, AF, MS, NAF, NAS, etc. Miscellaneous vendor part numbers have no particular type.

(*c*) Commercial parts which have no manufacturer's part number, the symbol COML appears in the description column.

g. Unit of Issue. This column lists the standard or minimum basic quantity in which the item is issued (each, pound, set, etc.).

h. Expendability Code. When an item is nonexpendable it will be indicated by an N. This column will be left blank for all items which are expendable.

i. Quantity Authorized. An asterisk (*) code contained within the quantity authorized column indicates that the item is authorized for use at that level, but is not authorized to be stocked, assembled, or manufactured. When such an item is required, it must be requisitioned for immediate use only from the next higher maintenance category.

j. Figure and Index Numbers. When applicable, numbers which appear in the last right-hand column of each text page reference items contained in the text to the proper part on the appropriate illustration. This enables ready reference from illustration to text and from text to illustration. When a breakdown cover both left- and right-hand assemblies, only the left-hand parts are indexed and illustrated.

4. Abbreviations

The following abbreviations are used:

DEG.....Degrees(s)
DIA .....Diameter(s)
EA .....EACH
FT.....Foot (Feet)
HEX.....Hexagon(al)
HP .....Horsepower
ID.....Inside Diameter(s)
IN.....Inch(es)
LG .....Length (long)
MFG .....Manufacturing
MTG .....Mounting(s)
NC.....American National Coarse Thread
NEMA .....National Electrical Manufacturers Association
NF .....American National Fine Thread
NO.....Number(s)
OD.....Outside Diameter(s)
P/N.....Part Number
RD.....Round
RPM .....Revolutions per Minute
SQ.....Square
THK .....Thick(ness)
V .....Volt(s)

5. Explanation of Terminology

Requisition (Stock Number). When an item has been replaced by a modified or improved item, the replacing item will be requisitioned; the issuing agency will issue the replaced item until all stocks are exhausted before issuing the replacing item.

6. How to Find a Part

a. When Part Number Is Known. Locate the part number in the Alpha-Numerical Part Number Index,

section III. Note the figure and index number and group indicating where the part is shown in the Illustrated Group Assembly Parts List. Turn to the appropriate group indicated to obtain the desired information.

b. When Stock Number Is Known. Locate stock number in the Numerical Stock Number Index, section III. Note the figure and index number and group indicating when the part is shown in the Illustrated Group Assembly Parts List. Turn to the appropriate group to obtain the desired information.

c. *When Neither Part Number Nor Stock Number for an Item Is Known.* Refer to the table of contents and/or the exploded view of Test stand, aircraft generator, figure 1, and select the figure on which the required part is most likely to appear. Note the page number on which that figure will be found. Refer to maintenance portion of this manual for illustration. Note the index number of the part on the illustration and refer to the same index number on the appropriate text page for the figure. Opposite the index number will be shown the Federal stock number, part number, item name, and all other necessary information.

7. Federal Supply Code for Manufacturers

Code	*Manufacturer and location*
00000	Ordnance Materiel
00779	AMP, Inc., Harrisburg, Pa.
03743	Appleton Electric Co., Chicago, Ill.
12646	Clarage Fan Co., Kalamazoo, Mich.
14655	Cornell-Dubilier Electric Corp., Newark, N. J.
17600	Diamond T. Motor Car Co., Chicago, Ill.
21810	Federal Pacific Electric Co., Newark, N. J.
23382	FWD Corp, Clintonville, Wis.
24449	General Electric Co, Consumers Products Group, Bridgeport, Conn.
28455	Hevi Duty Electric C., Milwaukee, Wis.
36251	Lincoln Engineering Div of McNeil Machine and Engineering Co., St. Louis, Mo.
37942	Mallory, P. R., and Co., Inc., Indianapolis, Ind.
48334	New Departure Div of Genera Motors Corp., Bristol, Conn.
43991	Norma-Hoffmann Bearings Corp., Stamford, Conn.
50380	Reliance Electric and Engineering Co., Cleveland, Ohio
59730	Thomas and Betts Co, Elizabeth, N.J.
60380	Torrington Co., The, Torrington, Conn.
61311	U. S. Electrical Motors, Division of Emerson Electric, Los Angeles, Calif.
65092	Weston Instruments Div of Daystrom, Inc., Newark, N.J.
70485	Atlantic India Rubber Works, Inc., Chicago, Ill.
70615	Auto City Products Co., Detroit, Mich.
71294	Canfield, H. O., Co., Bridgeport, Conn.
72619	Dialight Corp., Brooklyn, N.Y.
72962	Elastic Stop Nut Corp. of America, Union, N.J.,
75382	Kulka Electric Corp., Mt. Vernon, N.Y.
76369	Minerallac Electric Co., Chicago, Ill.
76680	National Seal Div of Federal-Mogul Bower Bearings, Inc., Redwood City, Calif.
78189	Shakeproof Div of Illinois Tool Works, Elgin, Ill.
79136	Waldes Kohinoor, Inc., Long Island City, N.Y.
79938	U.S. Electrical Motors, Inc., Milford, Conn.
80201	Chicago Rawhide Mfg Co., Chicago, Ill.
83879	Gedney Electric Co., Inc., New York, N.Y.
88044	Aeronautical Standards Group, Departments of Navy and Air Force, Washington, D.C.
90005	Bendix Filter Div of BendiX Corp., Royal Oak, Mich.
91265	Goshen Rubber Co., Inc., Goshen, Ind.
91929	Minneapolis-Honeywell Regulator Co., Micro Switch Div, Freeport, Ill.
94172	Hevi Duty Electric Co., Jersey City, N.J.
96906	Military Standards. Promulgated by Standardization Division, Directorate of Logistic Services, Defense Supply Agency, Washington, D.C.
99664	United Mfg Co., Div of UMC Electronics Co., Hamden, Conn.

Section II. ILLUSTRATED GROUP ASSEMBLY PARTS LIST

(1) SOURCE MAINT. & RECOVER-ABILITY CODE				(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE	(5) EXPENDABILITY	(6) QUANTITY AUTHORIZED	(7) ILLUSTRATIONS	
MAT CODE	SOURCE	MAINT. LEVEL	RECOVER-ABILITY		FUNCTIONAL GROUP 1 TEST STAND ASSEMBLY				FIG. NO. (A)	ITEM NO. (B)
	P1	H	R	4920-626-9699	STAND TEST, AIRCRAFT GENERATORS: model GDS-25AA (P/N 7199)	EA	N	*		
	P1	H		6625-523-7744	.ADAPTER: drive spline (P/N AN4182-2)	EA	N	*	11	5
	P1	H		6625-332-6786	.ADAPTER: drive spline (P/N AN4182-1)	EA	N		11	5
	P1	H		4920-991-7001	.ADAPTER, DRIVE: spline (P/N 11071) (modified from P/N AN4182)	EA		*	11	5
					.ADAPTER, DRIVE: flange (P/N 11088) (modified from P/N AN4139)	EA			11	6
					.ADAPTER, FLANGE: drive (P/N 11072) (modified from P/N AN4139)	EA			11	6
					.COUPLING, SPLINE: 26 tooth (no number) (in accordance with AND20007, type XV11-D, No. XA33072, cadmium plated)	EA			11	4

(1) SOURCE MAINT. & RECOVER-ABILITY CODE				(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION FUNCTIONAL GROUP 2 BLOWER ASSEMBLY	(4) UNIT OF ISSUE	(5) EXPENDABILITY	(6) QUANTITY AUTHORIZED	(7) ILLUSTRATIONS	
MAT CODE	SOURCE	MAINT. LEVEL	RECOVER-ABILITY						FIG. NO. (A)	ITEM NO. (B)
					.BLOWER: type 0 fan, 3500 rpm (P/N 308)	EA				
					.HOSE, RUBBER: 2 in. id, 15 in. lg (no number)	EA			14	18
					.REDUCER TUBE (P/N 32253)	EA			14	17
					.HOSE, RUBBER: 3 in. id, 4 ft lg (no number)	EA			14	16
					.TUBE ASSEMBLY: pitot (P/N 8346)	EA				
					..TUBE & PLATE (P/N 8349)	EA			14	20
					..SCREW: sheet metal, type Z, No. 7 NC, 3/8 in. lg	EA			14	19
					..TUBE: outlet (P/N 22652)	EA			14	21
					.SCREW (P/N AN520-10-10)	EA			14	28
					.WASHER, LOCK (P/N AN935-10)	EA				
					.NUT: hex (P/N AN340-10)	EA			14	23
					.VALVE: blast gate, 3 in. rd (P/N 11T271)	EA			14	22
					.SCREW, MACHINE (P/N AN520-10-8)	EA				
					.NIPPLE, PIPE: 1/2 in. close	EA				
					.SCREEN ASSEMBLY: inlet (P/N 8006)	EA			14	13
					.SCREW: sheet metal, No. 8-32 NC, 3/8 in. lg	EA			14	14
					.CLAMP, WIRE (P/N 102)	EA			14	15
	P1	H	R	6105-992-7167	.MOTOR, ALTERNATING CURRENT: 1 hp, 3 phase, 60 cycle, 220w/440w, frame 66 (P/N H56-8)	EA	N	*	14	3
					.SCREW: hex head cap, 5/8 in.-11 NF, 1-1/4 in.	EA			14	2
					.WASHER, FLAT (P/N AN960-516)	EA				
					.WASHER, LOCK (P/N AN935-516)	EA			14	1
					.NUT: hex (P/N AN335-10)	EA				
					.SCREW: hex head cap, 3/8 in.-16 NC, 1-1/4 in. lg	EA				
					.WASHER, LOCK (P/N AN935-616)	EA				
					.NUT: hex (P/N AN335-6)	EA				
					.NAMEPLATE (P/N 52001)	EA				
					.SCREW (P/N AN515-4-6)	EA				
					.PIPE, AIR (P/N 41172)	EA			14	24
5	P1	E		4310-640-3774	.BREATHER (P/N 569020)	EA		*		
					.ADAPTER: filter (P/N 46565)	EA				
					.PLUG, PIPE: sq head, galvanized, 1/2 in. dia.	EA				
					.COUPLING, PIPE: 1/2 in. dia (P/N 1986)	EA				
					.NIPPLE, PIPE: 1/2 in. dia, 2-1/2 in. lg	EA				
					.GROMMET, RUBBER (P/N 1426)	EA				

(1) SOURCE MAINT. & RECOVER-ABILITY CODE				(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION FUNCTIONAL GROUP 3 MOTOR ASSEMBLY	(4) UNIT OF ISSUE	(5) EXPENDABILITY	(6) QUANTITY AUTHORIZED	(7) ILLUSTRATIONS	
MAT CODE	SOURCE	MAINT. LEVEL	RECOVER-ABILITY						FIG. NO. (A)	ITEM NO. (B)
					..BOX: outlet (P/N B7773)	EA			15	1
					..GASKET: box (P/N A7803)	EA			15	2
					..SCREW, MACHINE: rd head, No. 12-24 NC, 1/2 in. lg (P/N N60251J)	EA			15	3
					..WASHER, LOCK: external (P/N 1112)	EA			15	4
					..GROMMET, RUBBER (P/N 413)	EA			15	5
					..COVER: stator (P/N X59003)	EA			15	6
					..SCREW, MACHINE: rd head, No. 12-24 NC, 3/8 in. lg (P/N 132969)	EA			15	7
					..WASHER, LOCK: external (P/N 1112)	EA			15	8
					..PLUG, PIPE: slotted, 1/8 in.-27 NC (P/N 92015)	EA			15	9
					..PLUG: bracket (P/N B7793)	EA			15	10
					..BRACKET, MOTOR (P/N C2648)	EA			15	11
					..SCREW: hex head cap, 1/4 in.-20 NF, 2-1/2 in. lg (P/N BCVX2AZ1)	EA			15	12
					..WASHER, LOCK: external (P/N 1114)	EA			15	13
					..DEFLECTOR, AIR (P/N B16138)	EA			15	14
					..SCREEN-BRACKET (P/N X54826)	EA			15	15
					..RIVET: rd head, aluminum, 1/8 in. dia, 5/16 in. lg	EA			15	16
9	P1	H		3130-994-7623	..CAP, BEARING (P/N 30027)	EA		*	15	17
					..CAP, BEARING (P/N B3582)	EA			15	18
					..SCREW, MACHINE: rd head, No. 12-24 NC, 1-1/2 in. lg	EA			15	19
					..SCREW, MACHINE: rd head, No. 12-24 NC, 1-3/4 in. lg	EA			15	20
					..WASHER, LOCK: external (P/N 1112)	EA			15	21
9	P1	H		3110-144-8795	..BEARING, BALL (P/N 6204C3)	EA		*	15	22
	P1	H		6105-996-3981	..ROTOR ASSEMBLY (P/N 16156-5)	EA		*	15	23
	P1	H		6115-996-3980	..STATOR ASSEMBLY (P/N XA57221)	EA		*	15	24
					.CABLE ASSEMBLY, BLOWER: motor to starter (P/N 8433)	EA				
					..LOCKNUT: conduit, 1/2 in. id (P/N BL50)	EA				
					..WASHER: reducing, 3/4 in. to 1/2 in. (P/N 7336)	EA				
					..CONNECTOR: conduit, starter (P/N 7481V)	EA				
					..CONNECTOR: conduit, 90 deg, 1/2 in. (P/N 7381V)	EA				
					..CONDUIT: flexible, 1/2 in. dia, 6-1/2 in. lg	EA				
					..TERMINAL (P/N 41032)	EA				
					..TERMINAL (P/N 40094)	EA				

(1) SOURCE MAINT. & RECOVER-ABILITY CODE				(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION FUNCTIONAL GROUP 4 REMOTE CONTROL AND DRIVE	(4) UNIT OF ISSUE	(5) EXPENDABILITY	(6) QUANTITY AUTHORIZED	(7) ILLUS-TRATIONS	
MAT CODE	SOURCE	MAINT. LEVEL	RECOVER-ABILITY						FIG. NO. (A)	ITEM NO. (B)
9	P1	H		5330-996-0897	...COVER (P/N 41088)	EA			17	1
					...GASKET (P/N 41048)	EA		*	17	2
					...SCREW, MACHINE (P/N AN520-10-6)	EA			17	3
					...WASHER, LOCK (P/N AN936B10)	EA			17	4
					...COVER: housing (P/N 41086)	EA			17	5
	P1	H		5330-994-7634	...GASKET (P/N 41073)	EA		*	17	6
					..SCREW, MACHINE (P/N AN520-10-4)	EA			17	7
					..WASHER, LOCK (P/N AN935-10)	EA			17	8
					..RING, RETAINING (P/N 46538)	EA			17	9
					..SCREW: socket head cap, No. 10-32 NC, 1/2 in. lg (P/N MS35458-11)	EA			17	10
					..WASHER, LOCK (P/N AN936B10)	EA			17	11
					..BUSHING AND NUT (P/N UB241)	EA			17	12
					...NUT (P/N 232)	EA			17	13
					..SHIM: 0.005 in. stock	EA			17	14
					..ARM, SUPPORT (P/N 46536)	EA			17	15
					..STOP ASSEMBLY: speed (P/N 46531)	EA			17	16
					...STOP: speed (no number)	EA			17	19
					...SCREW: (P/N AN565A616H8)	EA			17	17
					...SCREW: socket head cap, No. 6-32 NC, 3/8 in. lg	EA			17	18
	P1	H		5930-241-8256	..ADAPTER, SWITCH ACTUATOR (P/N JV1)	EA		*	17	20
	P1	H		5930-683-2814	..SWITCH, SENSITIVE (P/N V31)	EA		*	17	21
					..SPACER (P/N 41200)	EA			17	22
					..SCREW, MACHINE (P/N AN515-4-12)	EA			17	23
					..WASHER, LOCK (P/N AN936B4)	EA			17	24
	P1	H		5930-241-8256	..ADAPTER, SWITCH ACTUATOR (P/N JV1)	EA		*	17	25
	P1	H		5930-683-2814	..SWITCH, SENSITIVE (P/N V31)	EA		*	17	26
					..SCREW, MACHINE (P/N AN515-4-8)	EA			17	27
					..WASHER, LOCK (P/N AN936B4)	EA			17	28
					..PLATE: mtg (P/N 41084)	EA			17	29
					..SCREW, MACHINE (P/N AN520-10-4)	EA			17	30
					..WASHER, LOCK (P/N AN936B10)	EA			17	31
	P1	H		5330-179-0896	..SEAL, OIL (P/N 50435)	EA		*	17	32
					..CLAMP, BEARING (P/N 41082)	EA			17	33
	P1	H		3110-994-7629	..BEARING: self-alining (P/N SA250F11)	EA		*	17	34
					..GEAR: worm (P/N 46546) (modified from P/N G1020 mfg by 71041)	EA			17	35
					..SETSCREW (P/N AN565D10H3)	EA			17	36
					..SHAFT (P/N 41064)	EA			17	37
					..WORM (P/N 46548) (modified from P/N LSH mfg by 71041)	EA			17	38
					..PIN, TAPER (P/N 41066)	EA			17	39
					..GEAR: worm (P/N 46544) (modified from P/N G1044 mfg by 71041)	EA			17	40
					..WASHER (P/N 1122)	EA			17	42
					..NUT: hex 7/16 in.-20 NF	EA			17	41
					..SHIM: 0.010 in. thk (P/N 46551)	EA			17	43
					..SHIM: 0.0299 in. thk (P/N 46553)	EA			17	44
					..KEY (P/N 41071)	EA			17	45
					..CLAMP, BEARING (P/N 41081)	EA			17	46
					..SCREW, MACHINE (P/N AN520-10-6)	EA			17	47
					..WASHER, LOCK (P/N AN936B10)	EA			17	48

(1) SOURCE MAINT. & RECOVER-ABILITY CODE				(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION FUNCTIONAL GROUP 4 REMOTE CONTROL AND DRIVE	(4) UNIT OF ISSUE	(5) EXPENDABILITY	(6) QUANTITY AUTHORIZED	(7) ILLUSTRATIONS	
MAT CODE	SOURCE	MAINT. LEVEL	RECOVER-ABILITY						FIG. NO. (A)	ITEM NO. (B)
9	P1	H		3110-994-7627	..BEARING, BALL (P/N 62042ZC3)	EA		*	17	49
					..SHAFT (P/N 46504)	EA			17	50
					..BRACKET (P/N 41089)	EA			17	54
					..STUD (P/N 41065)	EA			17	53
					..WASHER, LOCK (P/N AN936B8)	EA			17	52
					..NUT: hex, No. 8-32 NC (P/N 120622)	EA			17	51
9	P1	H		3110-994-7621	..BEARING, BALL (P/N 620122C3)	EA		*	17	55
					..SHIM: 0.005 in. thk (P/N 46522-1)	EA			17	56
					..SHIM: 0.010 in. thk (P/N 46522-2)	EA			17	56
					..SHIM: 0.020 in. thk (P/N 46522-3)	EA			17	56
					..SHIM: 0.025 in. thk (P/N 46522-4)	EA			17	56
					..STATOR ASSEMBLY, WOUND (P/N 41090)	EA			17	57
	P1	H		5330-994-7637	...GASKET (P/N 41186)	EA		*	17	58
11	P1	H		5910-996-3979	...CAPACITOR ASSEMBLY (P/N CRX3090)	EA		*	17	59
					...SCREW, MACHINE (P/N AN520-10-4)	EA			17	60
					...WASHER, LOCK (P/N AN936B10)	EA			17	61
	P1	H		6105-996-2181	...STATOR ASSEMBLY (P/N 46507)	EA		*	17	62
					..WORM (P/N 46526) (modified from P/N LVHB mfg by 71041)	EA			17	63
					..PIN, TAPER (P/N 41072)	EA			17	64
	P1	H		6105-996-2182	..ROTOR ASSEMBLY (P/N 46521)	EA		*	17	65
9	P1	H		3110-994-7620	..BEARING, BALL (P/N 62022RSC3)	EA		*	17	66
					..GROMMET (P/N 8928-1)	EA			17	67
					..CASE: gear (P/N 46555)	EA			17	68
	P1	H		4920-049-3833	..CONTROL ASSEMBLY, ELECTRIC REMOTE (P/N 41091)	EA		*		

(1) SOURCE MAINT. & RECOVER-ABILITY CODE				(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION FUNCTIONAL GROUP 5 VARIDRIVE ASSEMBLY	(4) UNIT OF ISSUE	(5) EXPENDABILITY	(6) QUANTITY AUTHORIZED	(7) ILLUSTRATIONS	
MAT CODE	SOURCE	MAINT. LEVEL	RECOVER-ABILITY						FIG. NO. (A)	ITEM NO. (B)
	P1	H	R	3010-992-2262	.MOTOR, TRANSMISSION, VARIDRIVE (P/N VEUGSDT54-364U51)	EA	N	*		
					..COVER: louvered plate (P/N 41115)	EA			18	23
					..SCREW (P/N AN515-416-8)	EA			18	21
					..WASHER (P/N AN936B416)	EA			18	22
					..BLOCK ASSEMBLY: spline (P/N 41189)	EA				
					...SCREW (P/N AN565D416H4)	EA				
					...KEY: square (P/N 41166)	EA				
					...INSERT, COLLAR (P/N 41196)	EA				
					...BLOCK, SPLINE (P/N 41192)	EA				
					..KEY: square (P/N 41194)	EA				
					..BRACKET ASSEMBLY, SUPPORT (P/N 41182)	EA			18	34
					...GUARD: support bracket (P/N 41185)	EA				
					...SCREW, MACHINE (P/N AN520-10-4)	EA				
					...WASHER, FLAT (P/N AN960D10L)	EA				
					...BRACKET: support (P/N 41184)	EA				
					..SCREW (P/N AN65-7-20)	EA			18	35
					..WASHER (P/N AN936B716)	EA			18	36
					..WASHER (P/N AN945-7P)	EA				
					..FITTING, GREASE (P/N 5000)	EA			18	33
					..CAP, BEARING (P/N 41116)	EA				
					..SCREW: socket head cap, 5/16 in.-18 NF, 2-1/2 in. lg	EA				
					..WASHER, LOCK (P/N AN936A516)	EA				
9	P1	H		3120-994-7638	..BUSHING, SLEEVE: shaft (P/N 41151)	EA		*		
9	P1	H		3110-994-7628	..BEARING, BALL (P/N 6211C3)	EA		*		
					..NUT, RETAINING (P/N 46532)	EA				
					..SCREW (P/N AN565D416H4)	EA				
	P1	H		4920-049-3833	..CONTROL ASSEMBLY, ELECTRIC REMOTE (P/N 41091)	EA	N	*	18	37
					.SCREW (P/N AN65-4-10)	EA			18	38
					.WASHER (P/N 1114)	EA			18	39
					.KEY, WOODRUFF: No. 61 (P/N 4413A)	EA			18	50
					.LEVER, SHIFTING (P/N 41175)	EA			18	14
					.SCREW: special (P/N 46560) (modified by electrolyzing to 0.002 in. thk)	EA			18	11
					.SCREW: hex head cap, stainless steel, 5/8 in.-18 NC, 1 in. lg (no number)	EA			18	13
					.SPRING, EXTENSION (P/N 41167)	EA				
					.EYEBOLT (P/N 41096)	EA				
					.VARIDISC, STATIONARY (no number)	EA			18	28
					.SCREW: hex head cap, 1/2 in.-13 NC, 2-1/4 in. lg	EA			18	30
					.WASHER, LOCK (P/N AN936B816)	EA			18	29
					.HOUSING: shifting bearing (P/N 41171)	EA			18	5
					.NUT, LOCK (P/N N14)	EA			18	4
					.WASHER, KEY (P/N W14)	EA			18	3
9	P1	H		3110-994-7625	.BEARING, BALL (P/N 5214)	EA		*	18	2
					.CAP, BEARING (P/N 41170)	EA			18	1
					.SCREW: hex head cap, 3/8 in.-16 NC, 3-1/4 in. lg	EA			18	8
					.WASHER, LOCK (P/N MS35337-46)	EA			18	7
					.WASHER (P/N AN945-6P)	EA			18	6
	P1	H		5330-994-7636	.SEAL, SPLINE (P/N 41145)	EA		*	18	18

(1) SOURCE MAINT. & RECOVER-ABILITY CODE				(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE	(5) EXPENDABILITY	(6) QUANTITY AUTHORIZED	(7) ILLUS-TRATIONS	
MAT CODE	SOURCE	MAINT. LEVEL	RECOVER-ABILITY						FIG. NO. (A)	ITEM NO. (B)
					.VARIDISC, ADJUSTABLE (P/N 46564)	EA			18	19
					.RING, LOCK (P/N 41097)	EA			18	48
9	P1	H		3110-994-7624	.BEARING, BALL (P/N 5504L1A)	EA		*	18	49
9	P1	H		3110-994-7630	.BEARING, NEEDLE (P/N B12B)	EA		*	18	55
	P1	H		4920-996-3887	.RACK, INNER (P/N 1R88)	EA		*		
					.RING, RETAINING (P/N 5000-206)	EA				
9	P1	H		3110-109-1152	.BEARING, BALL (P/N 6205-2RS)	EA		*		
					.SHAFT, CONTROL (P/N 41095)	EA				
					.SETSCREW: cup point, hex, 3/4 in.-10 NC, 3/4 in. lg	EA				
					.NUT ASSEMBLY, CONTROL (P/N 41113)	EA			18	15
	P1	H	R	3010-992-2262	.MOTOR, TRANSMISSION (P/N VEUGSDT54-364U51)	EA		*	18	17
					..FITTING, GREASE (P/N 5000)	EA			19	1
					..PLUG, PIPE (P/N 41131)	EA			19	2
					..COVER: outlet box (P/N 41135)	EA			19	3
9	P1	H		5330-994-7635	..GASKET: outlet box (P/N 41134)	EA		*	19	4
					..BASE: outlet box (P/N 41133)	EA			19	5
					..SCREW, MACHINE: No. 12-24 NC, 3/8 in. lg (P/N BCNX2BG1)	EA			19	6
					..WASHER, FLAT: No. 12	EA			19	8
					..WASHER, LOCK (P/N 1112-00)	EA			19	7
					..BRACKET ASSEMBLY, SCREENED (P/N 41121)	EA			19	9
					...DEFLECTOR, AIR (P/N 41130)	EA			19	13
					...GUARD (P/N 41129)	EA			19	14
					...SCREW, MACHINE: No. 12-24 NC, 3/8 in. lg (P/N 132969)	EA			19	15
					...WASHER, LOCK (P/N 1112-00)	EA			19	16
					...BRACKET (P/N 41128)	EA			19	17
					..SCREW: hex head cap, 1/2 in.-13 NC, 3/4 in. lg	EA			19	10
					..WASHER, LOCK (P/N AN936B816)	EA			19	11
					..WASHER (P/N 41191)	EA			19	12
					..CAP, BEARING (P/N 41132)	EA			19	18
					..SCREW: hex head cap, 5/16 in.-18 NC, 2-3/4 in. lg	EA			19	19
					..SCREW (P/N AN65-5-301)	EA			19	20
					..WASHER, LOCK (P/N AN936B516)	EA			19	21
					..WASHER, FLAT (P/N MS27183-13)	EA			19	22
9	P1	H		3110-994-7626	..BEARING, BALL (P/N 6311C3)	EA		*	19	23
	P1	H		6105-337-8035	..ROTOR ASSEMBLY (P/N 41136)	EA		*	19	24
	P1	H		6105-337-8034	..STATOR ASSEMBLY (P/N 41078)	EA		*	19	25
					...PLATE, TERMINAL (P/N 41074)	EA			19	26
					...SCREW (P/N AN515-416-20)	EA			19	27
					...WASHER (P/N AN936B416)	EA			19	28
					...COVER: stator band (P/N 40076)	EA			19	29
					...BOLT: sq head, 1/4 in.-20 NC, 6-1/2 in. lg, steel, cadmium plated (no number)	EA			19	30
					...WASHER (P/N AN936B416)	EA			19	31
					.SCREW (P/N AN65-8-14)	EA			18	53
					.WASHER, LOCK (P/N AN936B816)	EA			18	54
					.FITTING, LUBRICATION (P/N MS15003-4)	EA			18	12
					.HOSE, LUBRICATION (P/N 41119)	EA				
					.BUSHING: reducer (P/N 41190)	EA				
					.GUARD: hose (P/N 41035)	EA				

(1) SOURCE MAINT. & RECOVER-ABILITY CODE				(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE	(5) EXPENDABILITY	(6) QUANTITY AUTHORIZED	(7) ILLUS-TRATIONS	
MAT CODE	SOURCE	MAINT. LEVEL	RECOVER-ABILITY						FIG. NO. (A)	ITEM NO. (B)
					.WASHER, LOCK (P/N AN936B516)	EA				
					.NUT, PLATE: hex (P/N AN335-5)	EA				
					.CAP, BEARING (P/N 41051)	EA			18	58
					.SCREW (P/N AN65-5-30)	EA			18	40
					.SCREW (P/N AN65-5-24)	EA			18	40
					.WASHER, LOCK (P/N AN936B516)	EA			18	41
9	P1	H		3110-994-7626	.BUSHING, BALL (P/N 6311C3)	EA		*	18	57
					.BRACKET ASSEMBLY, ADAPTER (P/N 46559)	EA			18	56
					.SCREW (P/N AN65-8-20)	EA			18	10
					.WASHER, LOCK (P/N AN936B816)	EA			18	9
					.SCREW: hex head cap, 5/8 in.-11 NC, 3-1/2 in. lg.	EA			18	24
					.WASHER, FLAT (P/N AN960-1016)	EA			18	25
					.WASHER, LOCK (P/N MS35337-50)	EA			18	26
					.NUT: hex (P/N AN335-10)	EA			18	27

(1) SOURCE MAINT. & RECOVER-ABILITY CODE				(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION FUNCTIONAL GROUP 6 GEARCASE AND FRAME	(4) UNIT OF ISSUE	(5)	(6)	(7) ILLUS-TRATIONS	
MAT CODE	SOURCE	MAINT. LEVEL	RECOVER-ABILITY				EXPENDABILITY	QUANTITY AUTHORIZED	FIG. NO. (A)	ITEM NO. (B)
					.PLATE: instruction (P/N 41147)	EA		*	20	67
					.SCREW (P/N AN535-2-3)	EA			20	66
					.EYEBOLT (P/N 41181)	EA		*	20	68
					.PICKUP, SPEED (P/N 19750)	EA				
					.SCREW, MACHINE (P/N AN515-8-16)	EA				
					.WASHER, LOCK (P/N AN936B8)	EA				
					.BRACKET: mtg (P/N 41154)	EA				
					.SCREW, MACHINE: No. 12-24 NC, 1/2 in. lg (P/N N60251J)	EA				
					.WASHER, LOCK (P/N 1112-00)	EA				
					.COUPLING: flexible (P/N 41150) (modified from P/N A050 mfg by 75665)	EA				
					.PLUG, ADAPTER (P/N 46527)	EA				
					.PLUG, PIPE: 1/2 in. slotted	EA				
					.BRACKET ASSEMBLY, SUPPORT (P/N 41197)	EA			20	5
					..GUARD (P/N 41185)	EA				
					..SCREW, MACHINE (P/N AN520-10-4)	EA				
					..WASHER, FLAT (P/N AN960D10L)	EA				
					..BRACKET, SUPPORT (P/N 41104)	EA				
					.SCREW (P/N AN65-6-20)	EA			20	1
					.WASHER (P/N AN936B716)	EA			20	2
					.WASHER (P/N AN945-7P)	EA				
					.CAP, BEARING (P/N 41116)	EA			20	8
					.SCREW: socket head cap, 5/16 in.-18 NC, 2-1/2 in. lg	EA			20	9
					.WASHER, LOCK (P/N AN936A516)	EA				
					.NUT: bushing retainer (P/N 46532)	EA			20	4
					.SCREW (P/N AN565D416H4)	EA			20	3
9	P1	H		3110-994-7628	.BEARING, BALL (P/N 6211C3)	EA		*	20	6
9	P1	H		3120-994-7638	.BUSHING, SLEEVE: shaft (P/N 41151)	EA		*	20	7
					.RING, RETAINING (P/N 5108-215)	EA			20	10
					.RING: collar retaining (P/N 46557)	EA			20	11
					.COLLAR, SPRING (P/N 41177)	EA			20	12
	P1	H		4920-205-6633	.SPRING, HELICAL, TORSION (P/N 46515)	EA		*	20	13
					.COLLAR, SPRING (P/N 46506)	EA			20	14
					.SCREW: hex head cap, 5/16 in.-18 NC, 2-1/2 in. lg	EA			20	15
					.WASHER, LOCK (P/N AN936B516)	EA			20	16
	P1	H		3110-555-5210	.BEARING, BALL (P/N 6313)	EA		*	20	17
					.CAP, BEARING (P/N 46534)	EA			20	18
	P1	H		4920-049-3853	.VARIBELT (P/N 46509)	EA		*	20	19
					.VARIDISC, ADJUSTABLE DRIVER (P/N 46542)	EA			20	20
	P1	H		5330-994-7636	.SEAL, SPLINE (P/N 41145)	EA		*	20	21
					.RING, RETAINING (P/N 5100-175)	EA			20	22
					.VARIDISC, STATIONARY DRIVER (P/N 41144)	EA			20	23
					.SCREW (P/N AN65-8-24)	EA			20	24
					.WASHER, LOCK (P/N AN936B816)	EA			20	25
					.CAP, BEARING (P/N 41178)	EA			20	26
					.SCREW: hex head cap, 5/16 in.-18 NC, 2-1/2 in. lg	EA			20	27
					.WASHER, LOCK (P/N AN936B516)	EA			20	28
					.NUT, PLAIN: rd (P/N N09)	EA			20	29
9	P1	H		3110-186-0868	.WASHER, KEY (P/N W09)	EA		*	20	30

(1) SOURCE MAINT. & RECOVER-ABILITY CODE				(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE	(5)	(6)	(7) ILLUS-TRATIONS	
MAT CODE	SOURCE	MAINT. LEVEL	RECOVER-ABILITY				EXPENDABILITY	QUANTITY AUTHORIZED	FIG. NO. (A)	ITEM NO. (B)
9	P1	H		3110-155-6190	.BEARING, BALL (P/N 6309-2Z)	EA		*	20	31
					.PLUG, PIPE: 1/4 in. slotted	EA			20	32
					.GEAR CASE AND GENERATOR MOUNTING ASSEMBLY (P/N 41160)	EA				
					..STUD (P/N 41165)	EA			20	35
					..BRACKET: generator mtg (P/N 41162)	EA			20	36
					..SCREW: hex head cap, 3/8 in.-16 NC, 2-3/4 in. lg	EA			20	37
					..WASHER, LOCK (P/N 1120)	EA			20	38
					..PIN: dowel (P/N 41163)	EA			20	39
					..CASE, GEAR (P/N 41161)	EA			20	40
					.SCREW (P/N AN65-8-29)	EA			20	33
					.WASHER, LOCK (P/N AN936B816)	EA			20	34
9	P1	H		3110-994-7622	.BEARING, BALL (P/N 6045)	EA		*	20	41
	P1	H		4920-049-3848	.SHAFT, PINION: takeoff (P/N 41173)	EA		*	20	42
	P1	H		4920-019-3849	.SHAFT, PINION: takeoff (P/N 41176)	EA	N	*	20	43
					.CAP, BEARING (P/N 46508)	EA			20	44
					.BUSHING, EXTENSION (P/N 41195)	EA			20	45
9	P1	H		5330-994-7632	.SEAL, OIL: type P (P/N 07512)	EA		*	20	46
					.WASHER, FELT: 3/8 in. id, 1 in. od, 1/8 in. thk (Commercial)	EA			20	47
					.SHAFT, EXTENSION (P/N 41149)	EA			20	48
					.KEY, WOODRUFF: No. 6	EA				
					.GEAR, INCREASE (P/N 41179)	EA			20	49
					.NUT, LOCK (P/N 41050)	EA			20	50
					.KEY: square (P/N 41164)	EA			20	51
					.CAP, BEARING (P/N 41156)	EA			20	52
					.SCREW (P/N AN505-516-48)	EA			20	53
					.SLINGER, OIL (P/N 41158)	EA			20	54
					.NUT, LOCK (P/N 41159) (modified from P/N N11 mfg by 43334)	EA			20	55
					.WASHER, KEY (P/N W11)	EA			20	56
9	P1	H		3110-156-7928	.BEARING, BALL (P/N 5611)	EA		*	20	57
					.SHAFT: variable gear (P/N 41148)	EA			20	58
					.CASE ASSEMBLY (P/N 46535)	EA				
					..COVER: bottom (P/N 46556)	EA			20	60
					..SCREW: self-tapping, No. 12 NC, 1/2 in. lg	EA			20	61
					..WASHER, LOCK (P/N 1112-00)	EA			20	62
					..CASE: frame (P/N 41114)	EA			20	63

(1) SOURCE MAINT. & RECOVER-ABILITY CODE				(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION FUNCTIONAL GROUP 7 FRAME ASSEMBLY	(4) UNIT OF ISSUE	(5) EXPENDABILITY	(6) QUANTITY AUTHORIZED	(7) ILLUSTRATIONS	
MAT CODE	SOURCE	MAINT. LEVEL	RECOVER-ABILITY						FIG. NO. (A)	ITEM NO. (B)
					.BASE ASSEMBLY (P/N 18147)	EA			23	6
					.BASE ASSEMBLY STARTER (P/N 18142)	EA			23	4
					.BOX: stowage (P/N 18148)	EA			23	7
					.SCREW: hex head cap, 1/4 in.-20 NC, 1 in. lg.	EA				
					.WASHER, LOCK (P/N AN935-416)	EA				
					.NUT, PLAIN: hex (P/N AN335-4)	EA				
					.TOP: stowage box (P/N 39424)	EA			23	8
					.NUT, WING: 1/4 in.-20 NC	EA			23	9
					.WASHER, LOCK (P/N AN935-416)	EA				

(1) SOURCE MAINT. & RECOVER-ABILITY CODE				(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION FUNCTIONAL GROUP 8 MISCELLANEOUS ELECTRICAL ITEMS	(4) UNIT OF ISSUE	(5) EXPENDABILITY	(6) QUANTITY AUTHORIZED	(7) ILLUSTRATIONS	
MAT CODE	SOURCE	MAINT. LEVEL	RECOVER-ABILITY						FIG. NO. (A)	ITEM NO. (B)
	P1	H	R	6625-557-3392	.WATTMETER (P/N 610)	EA		*	9	1
					.SCREW, MACHINE (P/N AN515-8-8)	EA				
					.WASHER, LOCK (P/N AN935-8)	EA				
					.SPACER: meter mtg (P/N 19486)	EA				
					.BOX: meter mtg (P/N 19497)	EA				
					.CONTROL BOX ASSEMBLY (P/N 18146)	EA			9	2
					.DOOR KNOB (P/N 482JE)	EA				
					.CLAMP: hose (P/N 41220)	EA				
					.CLAMP: hose (P/N SK610)	EA		*		
	P1	H		4920-994-7561	.HOSE: preformed (P/N 49399)	EA				
					.TERMINAL BOARD (P/N 60112)	EA				
					.BUSHING, ELECTRICAL (P/N EB29323-1)	EA				
					.STRAP, MOUNTING (P/N SK489)	EA				
					.BUMPER, RUBBER (P/N 852)	EA				
					.DOOR, METAL (P/N 59552)	EA				
					.BRACKET, MOUNTING (P/N SK485)	EA				
					.COUPLING: electrical conduit (P/N 11236)	EA				
					.PLATE, SUPPORT (P/N SK607)	EA				
					.ANGLE: support (P/N SK606)	EA				
					.VALVE: gate (P/N 11T271)	EA				
					.ANGLE AND WASHER ASSEMBLY (P/N 18212)	EA				
					.ANGLE: steel (P/N SK609)	EA				
5	P1	H		6210-548-0666	.LIGHT, INDICATOR (P/N 80202531)	EA		*		
11	P1	H		5930-996-3977	.SWITCH, PUSHBUTTON (P/N 312069)	EA		*		
	P1	H		5930-996-3978	.SWITCH, PUSHBUTTON (P/N 312068)	EA		*		
					.CONDUIT: metal, flexible, 1/2 in. dia 18 in. lg	EA				
	P1	H		6145-996-2184	.CABLE: power, electrical (P/N 5158274)	EA		*		
					.BOX CONNECTOR: electrical (P/N 11234)	EA				
					.ADAPTER: electrical conduit (P/N 2-1 1-4)	EA				
					.BOX CONNECTOR: electrical (P/N 11231)	EA				
					.PLATE, IDENTIFICATION (P/N 132047)	EA				
					.PLATE, IDENTIFICATION (P/N 32043)	EA				
					.PLATE, IDENTIFICATION (P/N 32042)	EA				
	P1	H	R	6680-965-5171	.INDICATOR, ELECTRICAL TACHOMETER (P/N 758TYPEJB11)	EA	N	*		
					.CABLE ASSEMBLY: conduit box to starter (P/N 8442)	EA				
					..BUSHING: conduit, 1-1/4 in. id (P/N 2-125)	EA				
					..LOCKNUT: conduit, 1-1/4 in. id (P/N BL125)	EA				
					..NIPPLE: conduit, 1-1/4 id. id, 4-1/2 in. lg	EA				
					..COUPLING: conduit, 1-1/4 in. id	EA				
					..CONNECTOR: conduit, 90 deg, 1-1/4 in. id (P/N 7384)	EA				
					..CONDUIT, FLEXIBLE: 1-1/4 in. od, 13 in. lg	EA				
					..TERMINAL (P/N F72)	EA				
					..TERMINAL (P/N D72)	EA				
					..MARKER: code, No. 21 (no number)	EA				
					..MARKER: code No. 22 (no number)	EA				
					.BUSHING: reducing, 2 in. to 1-1/4 in.	EA				
					.CONDUIT ASSEMBLY: speed varitrol to starter (P/N 8443)	EA				

(1) SOURCE MAINT. & RECOVER-ABILITY CODE				(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE	(5) EXPENDABILITY	(6) QUANTITY AUTHORIZED	(7) ILLUSTRATIONS	
MAT CODE	SOURCE	MAINT. LEVEL	RECOVER-ABILITY						FIG. NO. (A)	ITEM NO. (B)
					..LOCKNUT: conduit, 1/2 in. id (P/N BL50)	EA				
					..NIPPLE: conduit, 1/2 in. id, close	EA				
					..COUPLING: conduit, 1/2 in. id (P/N 1986)	EA				
					..CONNECTOR: conduit, 90 deg, 1/2 in. id (P/N 7381V)	EA				
					..CONDUIT, FLEXIBLE: 1/2 in od, 14 in. lg	EA				
					.CABLE ASSEMBLY: pushbutton station to starter (P/N 8446)	EA				
					..LOCKNUT: conduit, 1/8 in. id (P/N BL38)	EA				
					..CONNECTOR: conduit, starter, 3/8 in. id (P/N 7480V)	EA				
					..CONDUIT, FLEXIBLE: 3/8 in. od, 8-1/2 in. lg	EA				
					..TERMINAL (P/N 40094)	EA				
					..MARKER: code, No. 1 (no number)	EA				
					..MARKER: code, No. 2 (no number)	EA				
					..MARKER: code, No. 3 (no number)	EA				
					.CABLE ASSEMBLY: speed control motor to varitrol (P/N 8447)	EA				
					..LOCKNUT: conduit, 3/8 in. id (P/N BL38)	EA				
					..CONNECTOR: conduit, starter, 3/8 in. id (P/N 7480V)	EA				
					..CONNECTOR: conduit, 90 deg, 3/8 in id (P/N 7380V)	EA				
					..CONDUIT, FLEXIBLE: 3/8 in. od, 26 in. lg	EA				
					..TERMINAL (P/N 40094)	EA				
					..MARKER: code, No. 8 (no number)	EA				
					..MARKER: code, No. 10 (no number)	EA				
					..MARKER: code, No. 15 (no number)	EA				
	P1	H	R	4920-991-7002	.STARTER, MOTOR: NEMA type 1A, size 3, 3 pole, form 1, 220v or 440v at 50 or 60 cycles (P/N 554TYPEB)	EA	N	*		
					.SCREW: hex head cap, 3/8 in.-16 NC, 1 in. lg	EA				
					.WASHER, LOCK (P/N AN935-616)	EA				
					.NUT: hex (P/N AN335-6)	EA				
					.SPACER: starter mtg (P/N 19944)	EA				
	P1	H		5950-553-3857	.HEAT CONTROL, THERMAL RELEASE (P/N F63)	EA		*		
	P1	H		4920-991-7000	.ELEMENT, HEATER (P/N F315)	EA		*		
	P1	H		4920-324-1761	.ELEMENT, HEATER (P/N F100)	EA		*		
	P1	H		4920-324-1762	.ELEMENT, HEATER (P/N F50)	EA		*		
					.GROMMET, HEATER (P/N AN931-3W10)	EA				
					.PLATE: mtg (P/N 19878)	EA				
					.SCREW: hex head cap, 3/8 in.-16 NC, 1 in. lg (P/N 120233)	EA				
					.WASHER, LOCK (P/N AN935-616)	EA				
					.NUT: hex (P/N AN335-6)	EA				
					.ANGLE: support (P/N 19880)	EA				
					.ANGLE: vertical, left (P/N 19899)	EA				
					.ANGLE: vertical, right (P/N 19898)	EA				
					.ANGLE: bottom (P/N 19897)	EA				
					.PLATE, GUSSET (P/N 19879)	EA				
					.SCREW: hex head cap, 3/8 in.-16 NC, 1 in. lg (P/N 120233)	EA				
					.WASHER, LOCK (P/N AN935-616)	EA				
					.PLATE: meter mtg (P/N 19943)	EA				
					.SCREW, MACHINE (P/N AN520-10-8)	EA				
					.WASHER, LOCK (P/N AN935-10)	EA				
					.STATION, PUSHBUTTON: No. 202A NEMA type 1 (no number)	EA				

(1) SOURCE MAINT. & RECOVER-ABILITY CODE				(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION	(4) UNIT OF ISSUE	(5) EXPENDABILITY	(6) QUANTITY AUTHORIZED	(7) ILLUS-TRATIONS	
MAT CODE	SOURCE	MAINT. LEVEL	RECOVER-ABILITY						FIG. NO. (A)	ITEM NO. (B)
					.SCREW, MACHINE (P/N AN520-10-8) .WASHER, LOCK (P/N AN935-10) .NUT: hex (P/N AN340-10) .NUT: hex (P/N AN335-6) .PLUG: conduit, 3/4 in. sq head .CLAMP (P/N 102) .WASHER, LOCK (P/N AN945-1016) .NUT, JAM: 5/8 in.-11 NC	EA EA EA EA EA EA EA EA				

Section III. CROSS-REFERENCE INDEXES

1. Alpha-Numerical Part Number Index

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AN565D416H4	20-3			88044	6
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EB29323-1				03843	8
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F315		4920-991-7000		21810	8
F50		4920-324-1762		21810	8
F63		5950-553-3857		21810	8
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MS35337-46	18-7			96906	5
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N60251J				17600	6
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SK489				99664	8
SK606				99664	8
SK607				99664	8
SK609				99664	8
SK610				99664	8
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18146	9-2			99664	8
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18212				99664	8
19486				99664	8
19497				99664	8
19750				50380	6
1986				23382	2
1986				23382	8
19878				99664	8
19879				99664	8
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19898				99664	8
19899				99664	8
19943				99664	8
19944				99664	8
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22652	14-21			99664	2
232	17-13			37942	4
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312068		5930-996-3678		21810	8
312069		5930-996-3977		21810	8
32042				99664	8
32043				99664	8
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39424	23-8			99664	7
40094				07799	3
40094				07799	8
41032				07799	3
41035				61311	5
41048	17-2	5330-996-0897		61311	4
41050	20-50			61311	6
41051	18-58			61311	5
41064	17-37			61311	4
41065	17-53			61311	4
41066	17-39			61311	4
41071	17-45			61311	4
41072	17-64			61311	4
41073	17-6	5330-994-7634		61311	4
41074	19-26			61311	5
41076	19-29			61311	5

PART NUMBER	FIGURE AND INDEX NUMBER	STOCK NUMBER	REFERENCE DESIGNATION	FEDERAL MFR CODE	MICROFILM INDEX NUMBER
41078	19-25	6105-337-8034		61311	5
41081	17-46			61311	4
41082	17-33			61311	4
41084	17-29			61311	4
41086	17-5			61311	4
41088	17-1			61311	4
41089	17-54			61311	4
41090	17-57			61311	4
41091		4920-049-3833		61311	4
41091	18-37	4920-049-3833		61311	5
41095				61311	5
41096				61311	5
41097	18-48			61311	5
41104				61311	6
41113	18-15			61311	5
41114	20-63			61311	6
41115	18-23			61311	5
41116				61311	5
41116	20-8			61311	6
41119				61311	5
41121	19-9			61311	5
41128				61311	5
41129	19-14			61311	5
41130	19-13			61311	5
41131	19-2			61311	5
41132	19-18			61311	5
41133	19-5			61311	5
41134		5330-994-7635		61311	5
41135	19-3			61311	5
41136	19-24	6105-337-6035		61311	5
41144	20-23			61311	6
41145	18-18	5330-994-7636		61311	5
41145	20-21	5330-994-7636		61311	6
41147	20-67			61311	6
41148	20-58			61311	6
41149	20-48			61311	6
41151		3120-994-7638		61311	5
41151	20-7	3120-994-7638		61311	6
41154				61311	6
41155				61311	6
41156	20-52			61311	6
41158	20-54			61311	6
41159	20-55			61311	6
41160				61311	6
41161	20-40			61311	6
41162	20-36			61311	6
41163	20-39			61311	6
41164	20-51			61311	6
41165	20-35			61311	6
41166				61311	5
41167				61311	5
41170	18-1			61311	5
41171	18-5			61311	5
41172	14-24			61311	2
41173	20-42	4920-049-3848		61311	6
41175	18-14			61311	5
41176	20-43	4920-049-3849		61311	6
41177	20-12			61311	6
41178	20-26			61311	6
41179	20-49			61311	6
41181	20-68			61311	6
41182	18-34			61311	5
41184				61311	5
41185				61311	5
41185				61311	6
41186	17-58	5330-994-7637		61311	4
41189				61311	5
41190				61311	5
41191	19-12			61311	5
41192				61311	5
41194				61311	5

PART NUMBER	FIGURE AND INDEX NUMBER	STOCK NUMBER	REFERENCE DESIGNATION	FEDERAL MFR CODE	MICROFILM INDEX NUMBER
41195	20-45			61311	6
41196				61311	5
41197	20-5			61311	6
41200	17-22			61311	4
41220				99664	8
413	15-5			91265	3
4413A				28265	5
46504	17-50			61311	4
46506	20-14			61311	6
46507	17-62	6105-996-2181		61311	4
46508	20-44			61311	6
46509	20-18	4920-049-3853		61311	6
46515	20-13	4920-205-6633		61311	6
46521	17-65	6105-996-2182		61311	4
46522-1	17-56			61311	4
46522-2	17-56			61311	4
46522-3	17-56			61311	4
46522-4	17-56			61311	4
46525	17-63			61311	4
46527				61311	6
46531	17-16	6150-996-2183		61311	4
46532				61311	5
46532	20-4			61311	6
46534	20-19			61311	6
46535				61311	6
46536	17-15			61311	4
46538	17-9			61311	4
46542	20-20			61311	6
46544	17-40			61311	4
46548	17-38			61311	4
46551	17-43			61311	4
46553	17-44			61311	4
46555	17-68			61311	4
46556	20-60			61311	6
46557	20-11			61311	6
46559	18-56			61311	5
46560	18-11			61311	5
46564	18-19			61311	5
46565				61311	2
482JE				99664	8
49399		4920-994-7561		99664	8
5000	18-33			36251	5
5000	19-1			36251	5
5000-206				79136	5
50435	17-32	5330-179-0896		76680	4
5100-175	20-22			79136	6
5108-215	20-10			79136	6
5158274		6145-996-2184		24449	8
52001				99664	2
5214	18-2	3110-994-7625		52676	5
554TYPEB		4920-991-7002		21810	8
55504L1A	18-49	3110-994-7624		43334	5
5611	20-57	3110-156-7928		43334	6
569020		4310-640-3774		90005	2
59552				99664	8
60112				75382	8
6045	20-41	3110-994-7622		52676	6
610	9-1	6625-557-3392		65092	8
620122C3	17-55			52676	4
62022RSC3	17-66	3110-994-7620		52676	4
6204C3	15-22	3110-144-8795		52676	3
62042ZC3	17-49	3110-994-7627		52676	4
6205-2RS		3110-109-1152		52676	5
6211C3		3110-994-7628		52676	5
6211C3	20-6	3110-994-7628		52676	6
6309-2Z	20-31	3110-155-6190		52676	6
6311C3	18-57	3110-994-7626		52676	5
6211C3	19-23	3110-994-7626		52676	5
6313	20-17	3110-555-5210		52676	6
7199		4920-626-9699		99664	1
7336				03743	3

PART NUMBER	FIGURE AND INDEX NUMBER	STOCK NUMBER	REFERENCE DESIGNATION	FEDERAL MFR CODE	MICROFILM INDEX NUMBER
7380V				03743	8
7381V				03743	3
7381V				03743	8
7384				03743	8
7480V				03743	8
7481V				03743	3
75TYPEJB11		6680-965-5171		65092	8
8006	14-13			99664	2
80202531		6210-548-0666		72619	8
8346				99664	2
8349	14-20			99664	2
8433				99664	3
8442				99664	8
8443				99664	8
8446				99664	8
8447				99664	8
852				70485	8
8928-1	17-67			71294	4
82015	15-9			08645	3

2.. Numerical Stock Number Index

STOCK NUMBER	FIGURE AND INDEX NUMBER	PART NUMBER	REFERENCE DESIGNATION	FEDERAL MFR CODE	MICROFILM INDEX NUMBER
3010-992-2262	18-17	VEUGSDT54-364U51		79338	5
3110-109-1152		6205-2RS		52676	5
3110-144-8795	15-22	6204C3		52676	3
3110-155-6190	20-31	6309-2Z		52676	6
3110-156-7928	20-57	5611		43334	6
3110-186-0968	20-30	W09		43991	6
3110-555-5210	20-17	6313		52676	6
3110-994-7620	17-66	62022RSC3		52676	4
3110-994-7622	20-41	6045		52676	6
3110-994-7624	18-49	55504L1A		43334	5
3110-994-7625	18-2	5214		52676	5
3110-994-7626	18-57	6311C3		52676	5
3110-994-7626	19-23	6311C3		52676	5
3110-994-7627	17-49	62042ZC3		52676	3
3110-994-7628		6211C3		52676	5
3110-994-7628	20-6	6211C3		52676	6
3110-994-7629	17-34	SA250F11		70651	4
3110-994-7630	18-55	B12B		60380	5
3120-994-7638		41151		61311	5
3120-994-7638	20-7	41151		61311	6
3130-994-7623	15-17	30027		61311	3
4310-640-3774		569020		90005	2
4920-049-3833		41091		61311	4
4920-049-3833	18-37	41091		61311	5
4920-049-3848	20-42	41173		61311	6
4920-049-3849	20-43	41176		61311	6
4920-049-3853	20-18	46509		61311	6
4920-205-6633	20-13	46515		61311	6
4920-324-1761		F100		21810	8
4920-324-1762		F50		21810	8
4920-626-9699		7199		99664	1
4920-991-7000		F315		21810	8
4920-991-7001	11-6	11071		99664	1
4920-991-7002		554TYPEB		21810	8
4920-994-7561		49399		99664	8
4920-996-3867		1R88		52676	5
5330-179-0896	17-32	50435		76680	4
5330-994-7631	15-2	A7803		61311	3
5330-994-7632	20-46	07512		80201	6
5330-994-7634	17-6	41073		61311	4
5330-994-7635		41134		61311	5
5330-994-7636	18-18	41145		61311	5
5330-994-7636	20-21	41145		61311	6
5330-994-7637	17-58	41186		61311	4
5330-996-0897	17-2	41048		61311	4
5910-996-3979	17-59	CRX3090		14655	4
5930-241-8256	17-20	JV1		91929	4
5930-241-8256	17-25	JV1		91929	4
5930-683-2814	17-21	V31		91929	4
5930-683-2814	17-26	V31		91929	4
5930-996-3977		312069		21810	8
5930-996-3978		312068		21810	8
5950-553-3857		F63		21810	8
6105-337-8034	19-25	41078		61311	5
6105-337-8035	19-24	41136		61311	5
6105-992-7167	14-3	H56-8		79938	2
6105-996-2181	17-62	46507		61311	4
6105-996-2182	17-65	46521		61311	4
6105-996-3981	15-23	16156-5		61311	3
6115-996-3980	15-24	XA57221		61311	3
6145-996-2184		5158274		24449	8
6150-996-2183	17-16	46531		61311	4
6210-548-0666		80202531		72619	8
6625-332-6786	11-5	AN4182-1		88044	1
6625-523-7744	11-5	AN4182-2		88044	1
6625-557-3392	9-1	610		65092	8
6680-965-5171		75TYPEJB11		65092	8

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DATE

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BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO.	PARAGRAPH	FIGURE NO.	TABLE NO.
6	2-1 a		
81		4-3	
125	line 20		

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

In line 6 of paragraph 2-1a the manual states the engine has 6 cylinders. The engine on my set only has 4 cylinders. Change the manual to show 4 cylinders.

Callout 16 on figure 4-3 is pointing at a bolt. In the key to fig. 4-3, item 16 is called a shim. Please correct one or the other.

I ordered a gasket, item 19 on figure B-16 by NSN 2910-00-762-3001. I got a gasket but it doesn't fit. Supply says I got what I ordered so the NSN is wrong. Please give me a good NSN.

SAMPLE

TYPED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
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