TM 5-4320-249-14

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS FOR

JUMP, CENTRIFUGAL, WATER, 200 GPM (GORMAN-RUPP CO, MODEL 62-1/2E13-4A084) FSN 4320-935-161

HEADQUARTERS, DEPARTMENT OF THE ARMY

JUNE 1969

SAFETY PRECAUTIONS

BEFORE OPERATION

Do not operate the engine in an enclosed area. The exhaust contains carbon monoxide, a colorless, ordorless, deadly poisonous gas,

Do not smoke or use an open flame in the vicinity when servicing the batteries. Batteries generate hydrogen, a highly explosive gas.

When filling the fuel tank, always maintain metal-to-metal contact between filling apparatus and fuel tank to prevent a spark from being caused by static electricity.

DURING OPERATION

Do not fill tank while engine is running.

AFTER OPERATION

When filling the fuel tank, always maintain metal-to-metal contact between filling apparatus and fuel tank to prevent spark being caused by static electricity.

Before removing or disassembling pump or engine for maintenance, remove all spark plug wires to prevent accidental starting of engine.

CHANGE NO. 5

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 15 October 1990

Operator, Organizational, Direct Support and General Support Maintenance Manual Including Repair Parts and Special Tools List for

PUMP, CENTRIFUGAL, WATER; 200 GPM
(GORMAN-RUPP CO. MODEL 62-1/2E13-4A084)
FSN 4320-935-1618

Approved for public release; distribution is unlimited

TM 54320-249-14, 26 June 1969 is changed as follows:

Page 2–1, Paragraph 2-4 a., add NOTE:

NOTE: Use an electrolyte with a specific gravity of 1.280. Do NOT use a tropical electrolyte, which will reduce battery reserve capacity.

Page 2-6, Paragraph 2-15, add "f":

f. Increase battery PMCS frequency. Use distilled water or a good grade drinking water (excluding mineral water).

Page 3-7, Paragraph 3-14 b. (4), add NOTE:

NOTE: Use an electrolyte with a specific gravity of 1.280. Do NOT use a tropical electrolyte, which will reduce battery reserve capacity.

By Order of the Secretary of the Army:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

THOMAS F. SIKORA
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:

To be distributed in accordance with DA Form 12-25E, (qty rqr block no. 1405).

☆U.S. GOVERNMENT PRINTING OFFICE: 1990 554-123/20044

PIN: 008477-005

TM 5-4320-249-14

C 4

CHANGE
NO. 4

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *26 June 1974*

Operator, Organizational, Direct Support and General Support Maintenance Manual Including Repair Parts and Special Tools Lists for PUMP, CENTRIFUGAL, WATER; 200 GPM (GORMAN-RUPP CO. MODEL 62-1/2E13-4A084) FSN 4320-935-1618

TM 5-4320-249-14, 26 June 1969, is changed as follows:

Inside front cover. Add to safety precautions:

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 earmuffs or ear plugs which were fitted by a trained professional.

WARNING

Cleaning solvent, PD-680, is a POTENTIALLY DANGEROUS CHEMICAL. Do not use near open flame.

Page 2-4. Before paragraph 2-11*a* add:

WARNING

Operation of this equipment presents a NOISE HAZARD to personnel in the area. Wear earmuffs or ear plugs which were fitted by a trained perfessional. Signs conforming to provisions of AR 385-30 will be erected in the operating area to provide notification of a noise hazard accordance with TB MED 251. The sign should read:

WARNING

NOISE HAZARDOUS EQUIPMENT. (HEARNING PROTECTION REQUIRED.)

Page 3-1. Before paragraph 3-2a add:

WARNING

Drycleaning solvent, PD-680, used for cleaning is a POTENTIALLY HAZARDOUS CHEMICAL. Do not use near open flame. Flash point of solvent is 100° F - 138° F.

By Order of the Secretary of the Army:

CREIGHTON W. ABRAMS
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 12-25A (qty rqr block No. 242), Organizational Maintenance Requirements for Pumps, Fresh Water.

☆US GOVERNMENT PRINTING OFFICE: 1974-768119/1955

TM 5-4320-249-1[illegible]

C 4

CHANGE
NO. 4

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *26 June 1974*

Operator, Organizational, Direct Support and General Support Maintenance Manual Including Repair Parts and Special Tools Lists for PUMP, CENTRIFUGAL, WATER; 200 GPM (GORMAN-RUPP CO. MODEL 62-1/2E13-4A084) FSN 4320-935-1618

TM 5-4320-249-14, 26 June 1969, is changed as follows:

Inside front cover. Add to safety precautions:

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 earmuffs or ear plugs which were fitted by a trained professional.

WARNING

Cleaning solvent, PD-680, is a POTENTIALLY DANGEROUS CHEMICAL. Do not use near open flame.

Page 2-4. Before paragraph 2-11*a* add:

WARNING

Operation of this equipment presents a NOISE HAZARD to personnel in the area. Wear earmuffs or ear plugs which were fitted by a trained perfessional. Signs conforming to provisions of AR 385-30 will be erected in the operating area to provide notification of a noise hazard accordance with TB MED 251. The sign should read:

WARNING

NOISE HAZARDOUS EQUIPMENT. (HEARNING PROTECTION REQUIRED.)

Page 3-1. Before paragraph 3-2a add:

WARNING

Drycleaning solvent, PD-680, used for cleaning is a POTENTIALLY HAZARDOUS CHEMICAL. Do not use near open flame. Flash point of solvent is 100° F - 138° F.

By Order of the Secretary of the Army:

CREIGHTON W. ABRAMS
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 12-25A (qty rqr block No. 242), Organizational Maintenance Requirements for Pump, Fresh Water.

☆US GOVERNMENT PRINTING OFFICE: 1974-768119/1955

Changes in force: C 1, C 2, and C 3

TM 5-4320-249-14
C 3

Change No. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, *19 October 1973*

Operator, Organizational, Direct Support and General Support Maintenance Manual Including Repair Parts and Special Tools Lists PUMP, CENTRIFUGAL, WATER, 200 GPM (GORMAN-RUPP CO. MODEL 62-1/2E134A084) FSN 4320-935-1618

TM 5-4320-249-14, 26 June 1969, is changed as follows:

Page 3-6. Subparagraph 3-11*b* is superseded as follows:

b. Tachometer and Sender. Engine speed may be monitored at the electrical sending unit. The tachometer is not essential to the end item operation and will not be repaired or replaced when it fails.

Page C-9. All data pertaining to line 4, Sender, is deleted in its entirety.

Page C-11. All data pertaining to line 17, Sender, is deleted in its entirety.

Page C-15. All data pertaining to line 17, Sender, is deleted in its entirety.

All changes, additions, or deletions of Federal Stock Numbers or manufacturers code and part numbers should be appropriately reflected in the parts listing and index of the manual.

By Order of the Secretary of the Army:

CREIGHTON W. ABRAMS
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 12-25A, (qty rqr block No. 242) Organizational maintenance requirements for Pump, Fresh Water.

☆U.S. GOVERNMENT PRINTING OFFICE: 1973-768111/605

Changes in force: C 1 and C 2

TM 5-4320-249-14
C 2

Change
No. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., *18 April 1973*

Operator's, Organizational, Direct Support and General Support Maintenance Manual Including Repair Parts and Special Tools Lists for PUMP, CENTRIFUGAL, WATER, 200 GPM (GORMAN-RUPP CO. MODEL 62-1/2E13-4A084) FSN 4320-935-1618

TM 5-4320-249-14, 26 June 1969, is changed as follows:

Page 2-1. Paragraph 2-3*e* is added as follows:

e. Maintenance and operating supplies required for the initial 8 hours of operation for the pump are contained in table 2-1.

Table 2-1. Maintenance and Operating Supplies

Component application	*Federal stock number*	*Description*	*Quantity required for initial operation*	*Quantity required for 8 hrs operation*
0306 - FUEL TANK	9130-160-1818	GASOLINE, AUTOMOTIVE: Combat, bulk.	2 1/2 Gal	20 Gal

Page A-1. Appendix A is superseded as follows:

APPENDIX A
BASIC ISSUE ITEM LIST AND ITEMS TROOP INSTALLED OR AUTHORIZED

Section I. INTRODUCTION

A-1. Scope

This appendix lists basic issue items and items troop installed or authorized which accompany the centrifugal pump and are required by the crew/operator for operation, installation, or operator's maintenance.

A-2. General

This basic issue items, items troop installed or authorized list is divided into the following sections:

a. Basic Issue Items List - Section II. Not applicable.

b. Items Troop Installed or Authorized List - Section III. A list in alphabetical sequence of items which, at the discretion of the unit commander, may accompany the end item, but are not subject to be turned in with the end item.

A-3. Explanation of Columns

The following provides an explanation of columns in the tabular list of items troop installed or authorized, section III.

a. Source, Maintenance, and Recoverability Code(s) (SMR): Not applicable.

b. Federal Stock Number. This column indicates the Federal stock number assigned to the item which will be used for requisitioning purposes.

c. Description. This column indicates the Federal item name and any additional description of the item required.

d. Unit of Measure (U/M). A 2-character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based; e.g., ft, ea, pr, etc.

e. Quantity Authorized. This column indicates the quantity of the item authorized to be used with the equipment.

Section III. ITEMS TROOP INSTALLED OR AUTHORIZED LIST

(1) SMR code	(2) Federal stock number	(3) Description Ref No. & mfr code	(4) Unit of meas	(5) Qty auth
PC	7520-559-9618	CASE: Maintenance and operating equipment manuals.	ea	1
PC	4210-555-8837	EXTINGUISHER, FIRE: Hand, monobromotriflouromethane, with bracket	ea	1

By Order of the Secretary of the Army:

CREIGHTON W. ABRAMS
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 12-25A (qty rqr block No. 242), Organizational Maintenance Requirements for Pumps, Fresh Water.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1973-769750/482

CHANGE
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *15 June 1970*

Operator, Organizational, Direct Support and General Support Maintenance Manual Including Repair Parts and Special Tools List for

PUMP, CENTRIFUGAL, WATER, 200 GPM

(GORMAN-RUPP CO., MODEL 62-1/2E13-4A084)

FSN 4320-935-1618

Current as of 10 April 1970

TM 5-4320-249-14, June, 1969, is changed as follows:

Page iv. List of Illustrations is superseded as follows:

LIST OF ILLUSTRATIONS

Page v. Figure 1-1. After the figure caption add (serial numbers 392630 through 392765).

Figure 1-1.1 is added as follows:

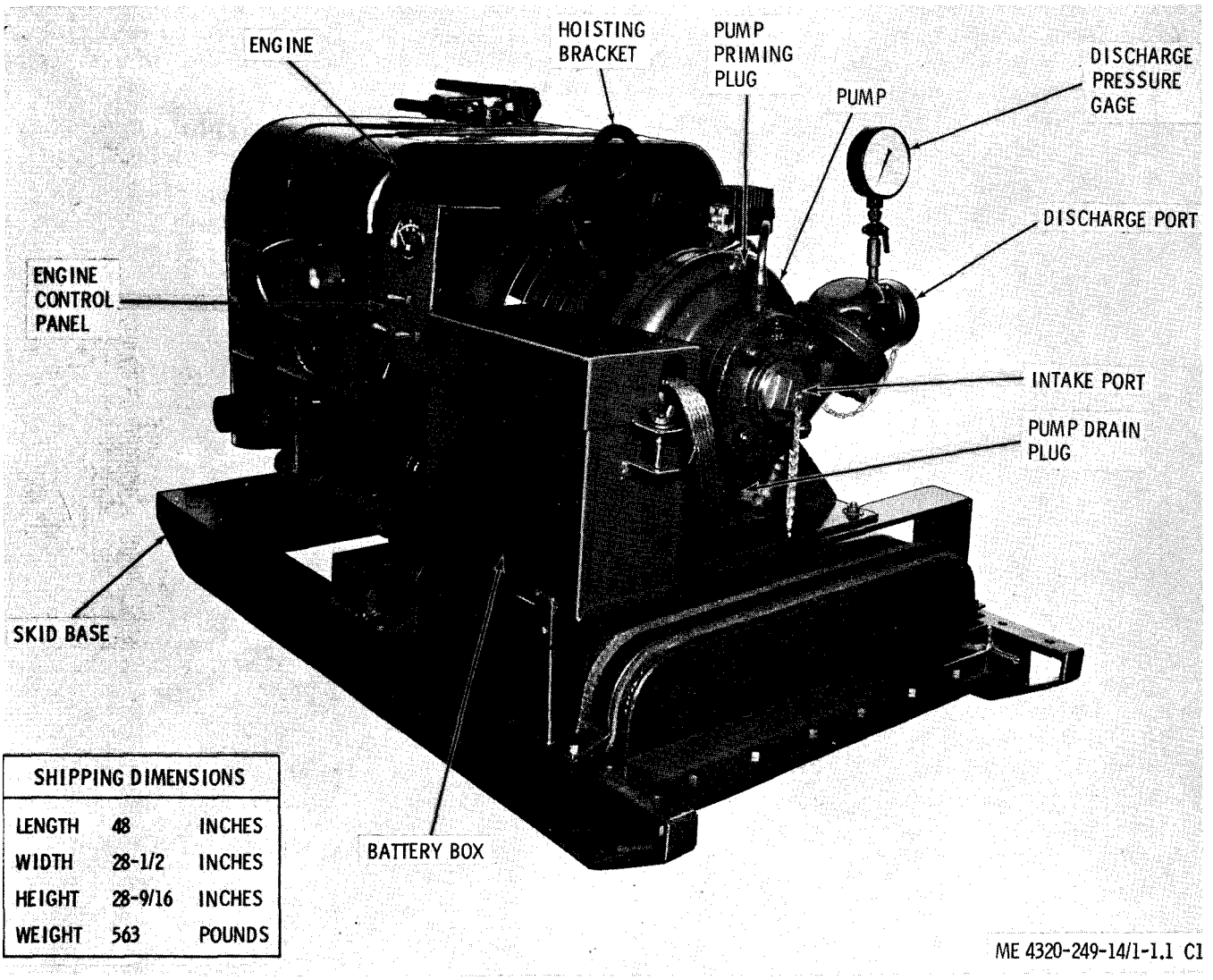


Figure 1-1.1 Centrifugal pump, Model 62-1/2E13-4A084, left-rear, three-quarter view.

Page 1-2. Paragraph 1-2*b* is superseded as follows:

b. A gage is mounted on the pump control panel for monitoring engine oil pressure. On pumps with serial numbers 392630 through 392765, a tachometer is also provided for monitoring engine speed.

Paragraph 1-3*b*(1). Item 4 is superseded as follows:

Serial number . . . . 392630 through 392765 and 449593 through 449657.

Paragraph 1-3*b*(4). In line 2, "Figure 1-3" is changed to read "Figure 1-3 or 1-4."

Paragraph 1-4 is superseded as follows:

1-4. Differences in Models

This manual covers centrifugal pump Model 62-1/2E13-4A084 which was supplied on separate procurements in two serial number ranges. Serial numbers 392630 through 392765 were supplied on the earlier procurement, while serial numbers 449593 through 449657 were supplied on a later procurement. Minor differences exist between pumps

supplied on the different procurements. Differences are as follows:

a. The earlier procurement has a tachometer mounted on the control panel and a tachometer sender mounted on the engine. These parts are electrically interconnected. The later procurement does not include these features, and therefore has a smaller control panel and different wiring arrangement.

b. A fuel sediment bowl is installed on the later procurement. This was not provided on the earlier units.

c. The suction primer line on the earlier units used a copper tube to connect the pump volute and the suction primer. The later units use a shorter copper tube and a short section of hose in place of the complete copper tube.

Figure 1-3. After the figure caption add (serial numbers 392630 through 392765).

Figure 1-4 is added as follows:

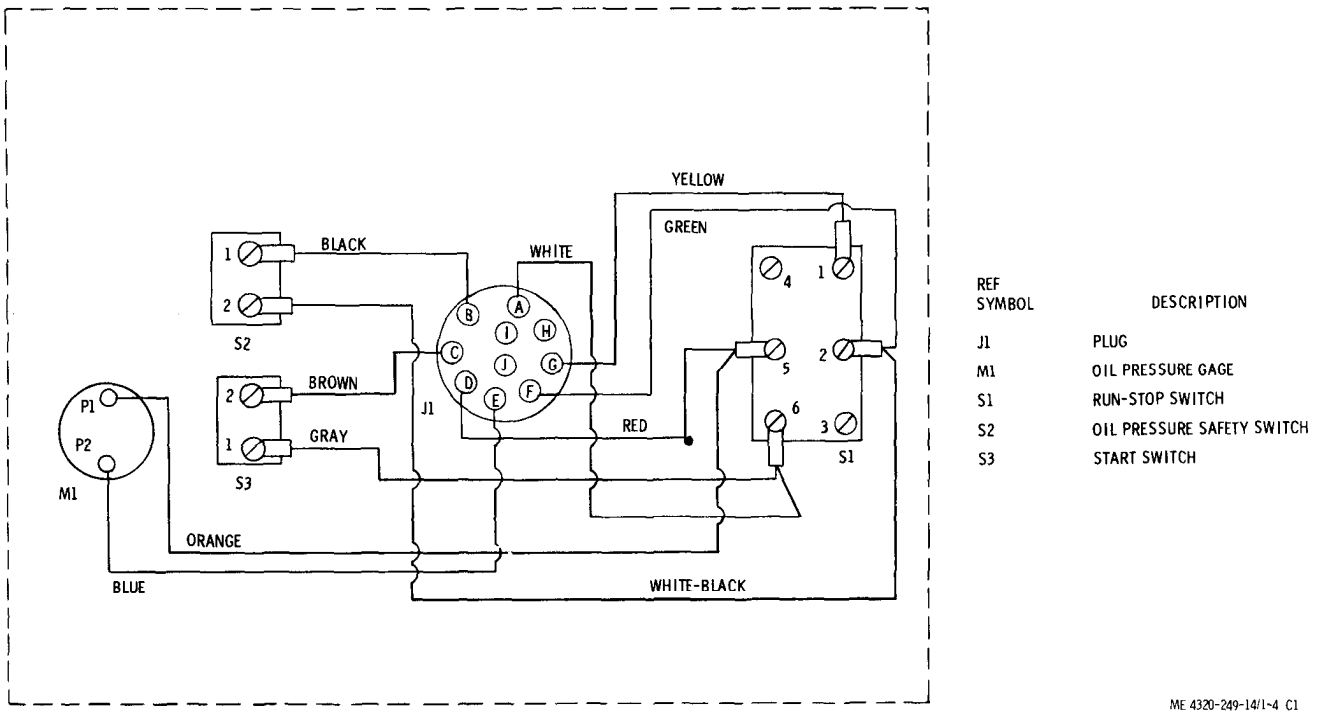


Figure 1-4. Control panel wiring diagram (serial numbers 499593 through 449657).

Page 2-2. Figure 2-2. The caption for part B is changed to read "B. ENGINE CONTROL PANEL (SERIAL NUMBERS 392630 THROUGH 392765)."

Part B.1 is added to figure 2-2.

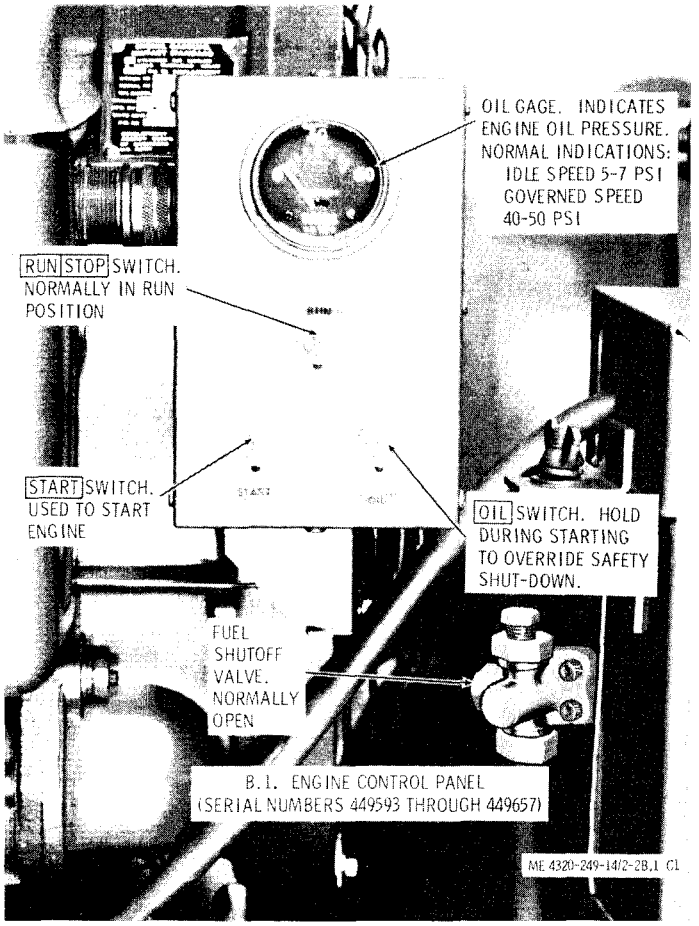


Figure 2-2 — Continued.

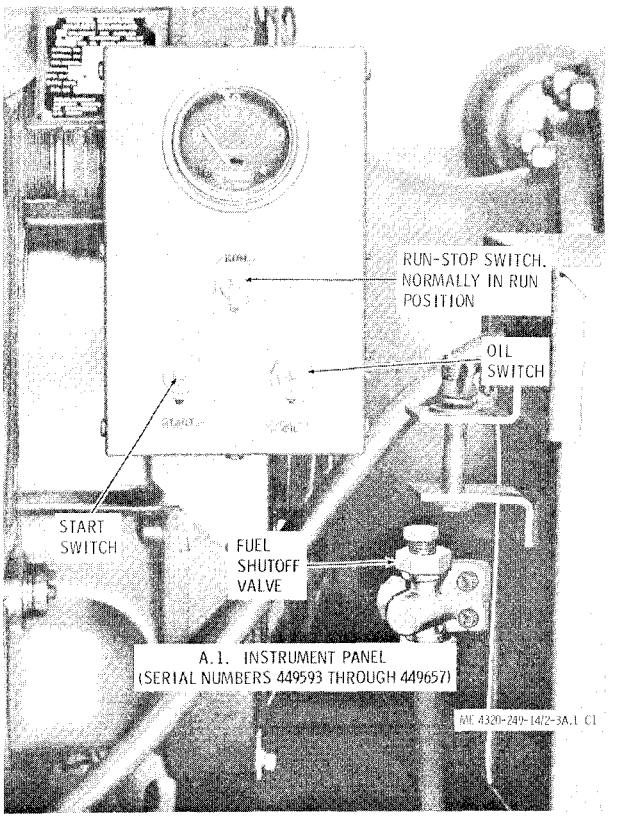


Figure 2-3 — Continued.

Page 2-4. Paragraph 2-12*a* is superseded as follows:

a. Refer to figure 2-4 or 2-4.1 and stop the centrifugal pump.

Figure 2-3. The caption for part A is changed to read: "A. INSTRUMENT PANEL (SERIAL NUMBERS 392630 THROUGH 392765)."

Part A.1 is added to figure 2-3 as follows:

Page 2-5. Figure 2-4. After the figure caption add (serial numbers 392630 through 392765).

Figure 2-4.1 is added as follows:

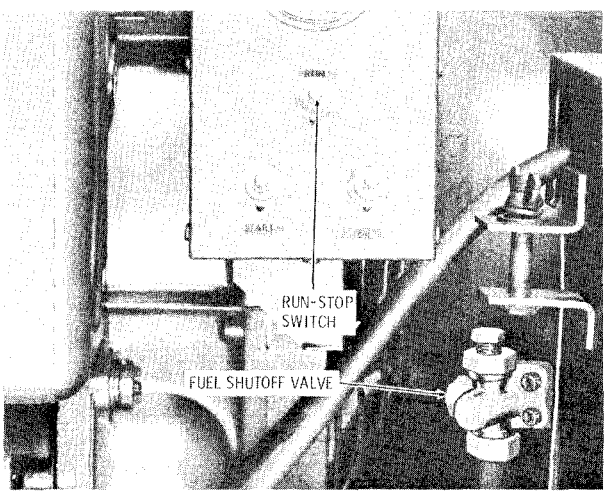


Figure 2-4.1. Stopping the pump.

Page 3-2. Figure 3-1, item 3, line 7. "Tachometer" is changed to read "Tachometer (serial numbers 392630 through 392765 only)."

Page 3-3. Figure 3-2, item 3, line 7. "Tachometer" is changed to read "Tachometer (serial numbers 392630 through 392765 only)."

Page 3-5. Paragraph 3-8, item, 5, in lines 2 and 3. "Check tachometer" is changed to read "Check with tachometer."

Figure 3-3. After the figure caption add (serial numbers 392630 through 392765).

Figure 3-3.1 is added after figure 3-3.

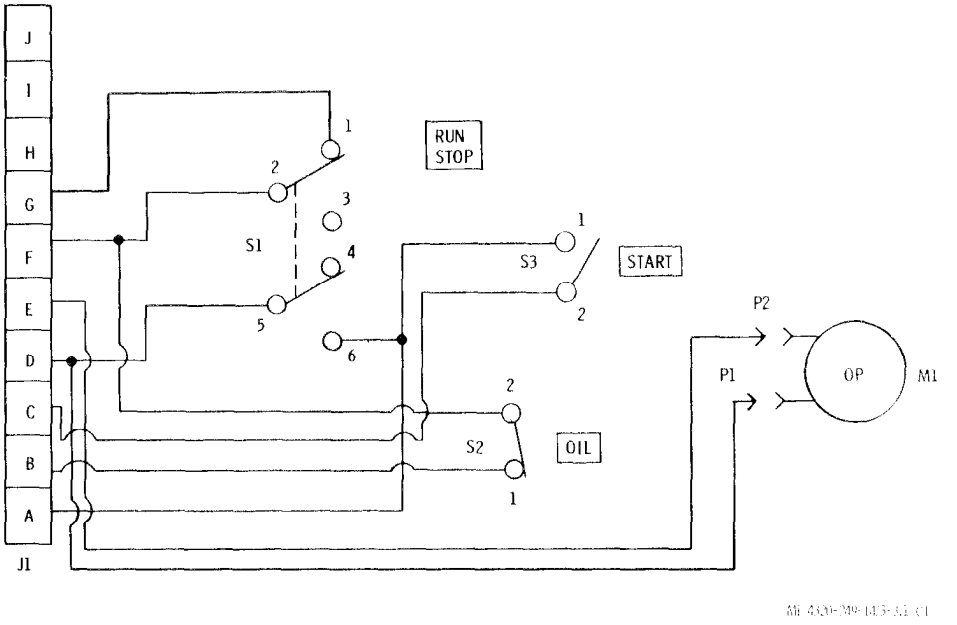


Figure 3-3.1. Control panel electrical schematic diagram (serial numbers 449593 through 449657).

Page 3-6. Paragraph 3-11*b*. In line 1, "Tachometer and Sender" is changed to read "Tachometer and Sender (serial numbers 392630 through 392765 only)."

Paragraph 3-12*a*(2). In line 1, "figure 3-5" is changed to read "figure 3-5 or 3-5.1."

Paragraph 3-12*b*(4). In line 1, "tachometer" is changed to read "tachometer (serial numbers 392630 through 392765 only)."

Paragraph 3-12*c*(1). In line 1, "figures 3-5 and 1-3" are changed to read "figures 3-5 or 3-5.1 and 1-3 or 1-4."

Paragraph 3-13. After the paragraph title is added: (SERIAL NUMBERS 392630 THROUGH 392765 ONLY).

Figure 3-4. The caption for part B is changed to read: "B. INSTRUMENT PANEL FRONT (SERIAL NUMBERS 392630 THROUGH 392765)."

Part B.1 is added to figure 3-4 as follows:

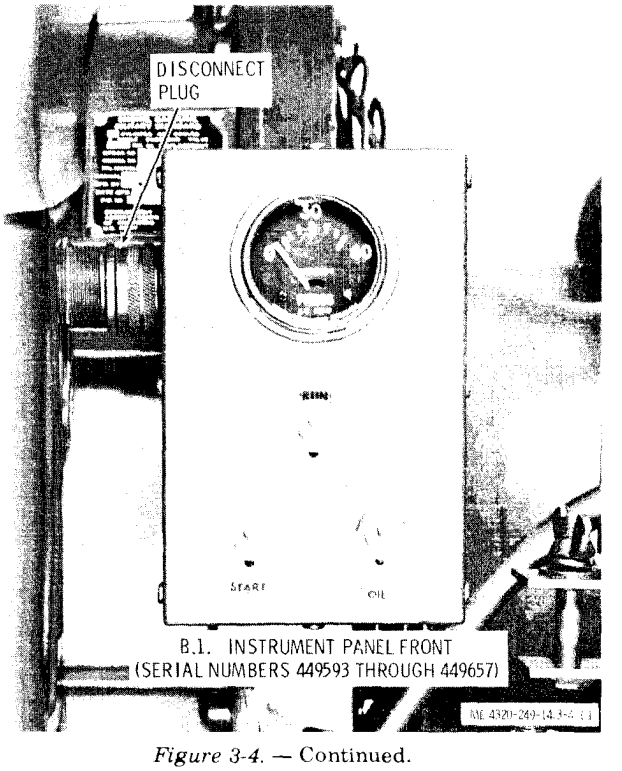


Figure 3-4. — Continued.

Page 3-7. After the figure caption add (serial numbers 392630 through 392765).

Figure 3-5.1 is added as follows:

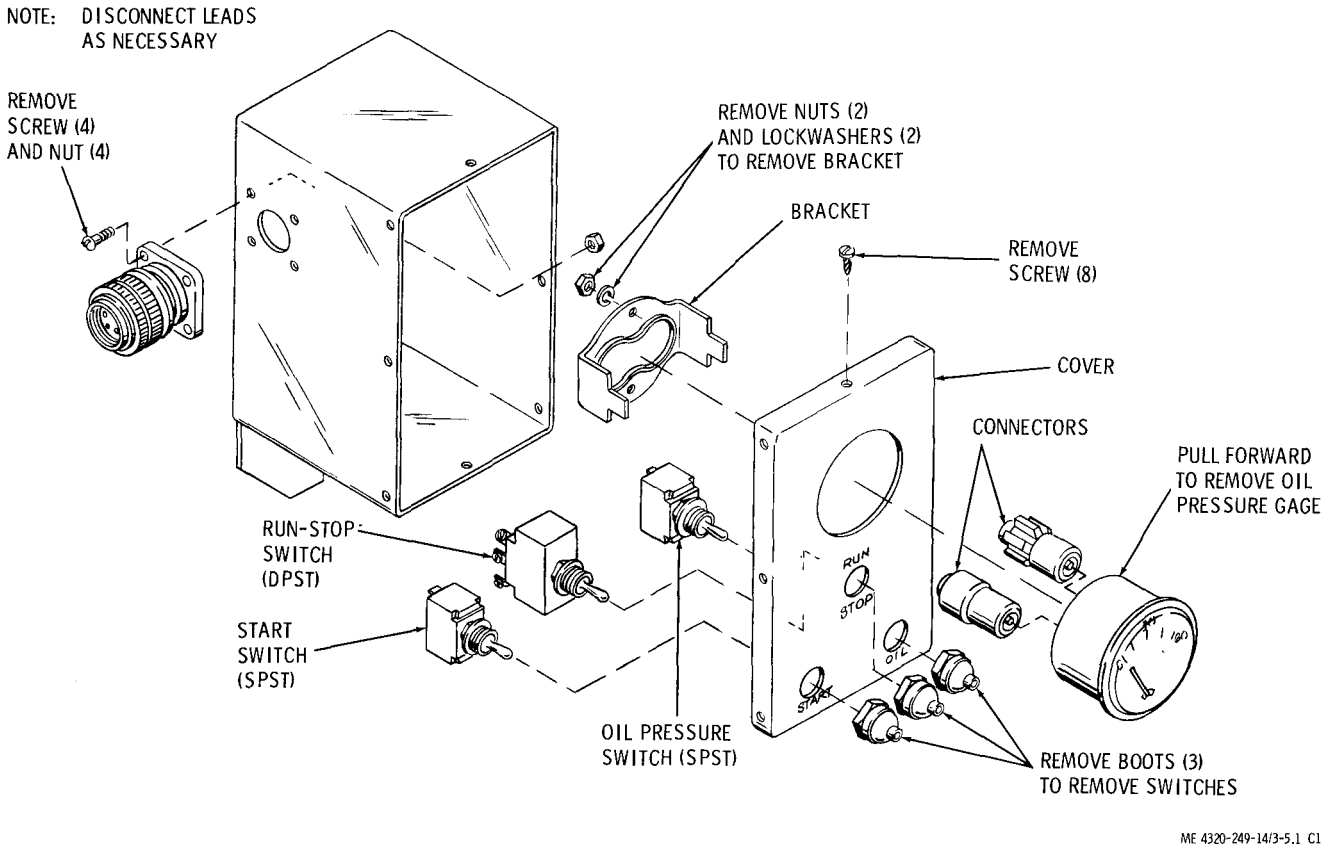


Figure 3-5.1. Control panel, disassembly and reassembly (serial numbers 449593 through 449657).

Figure 3-6. After the figure caption add (serial numbers 392630 through 392765).

Page 3-9. Paragraph 3-16*a*(2). In line 1, "figure 3-9" is changed to read "figure 3-9 or 3-9.1."

Figure 3-9. After the caption is added: (serial numbers 392630 through 392765).

Figure 3-9.1 is added as follows:

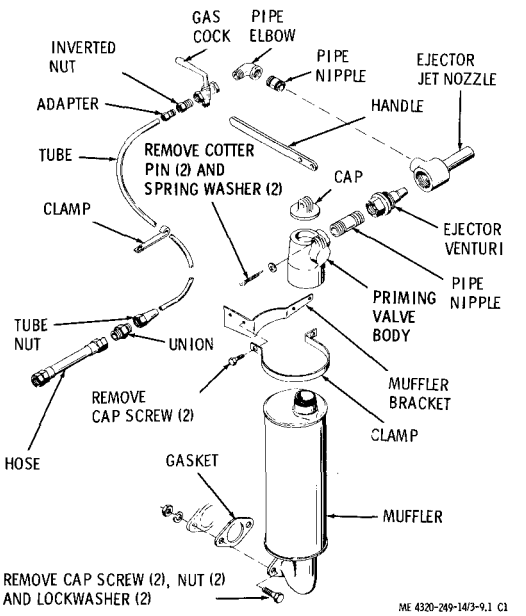


Figure 3-9.1. Muffler and exhaust primer, disassembly and reassembly (serial numbers 449593 through 449657).

Page 3-10. Figure 3-10. After the figure caption add (serial numbers 392630 through 392765).

Figure 3-10.1 is added as follows:

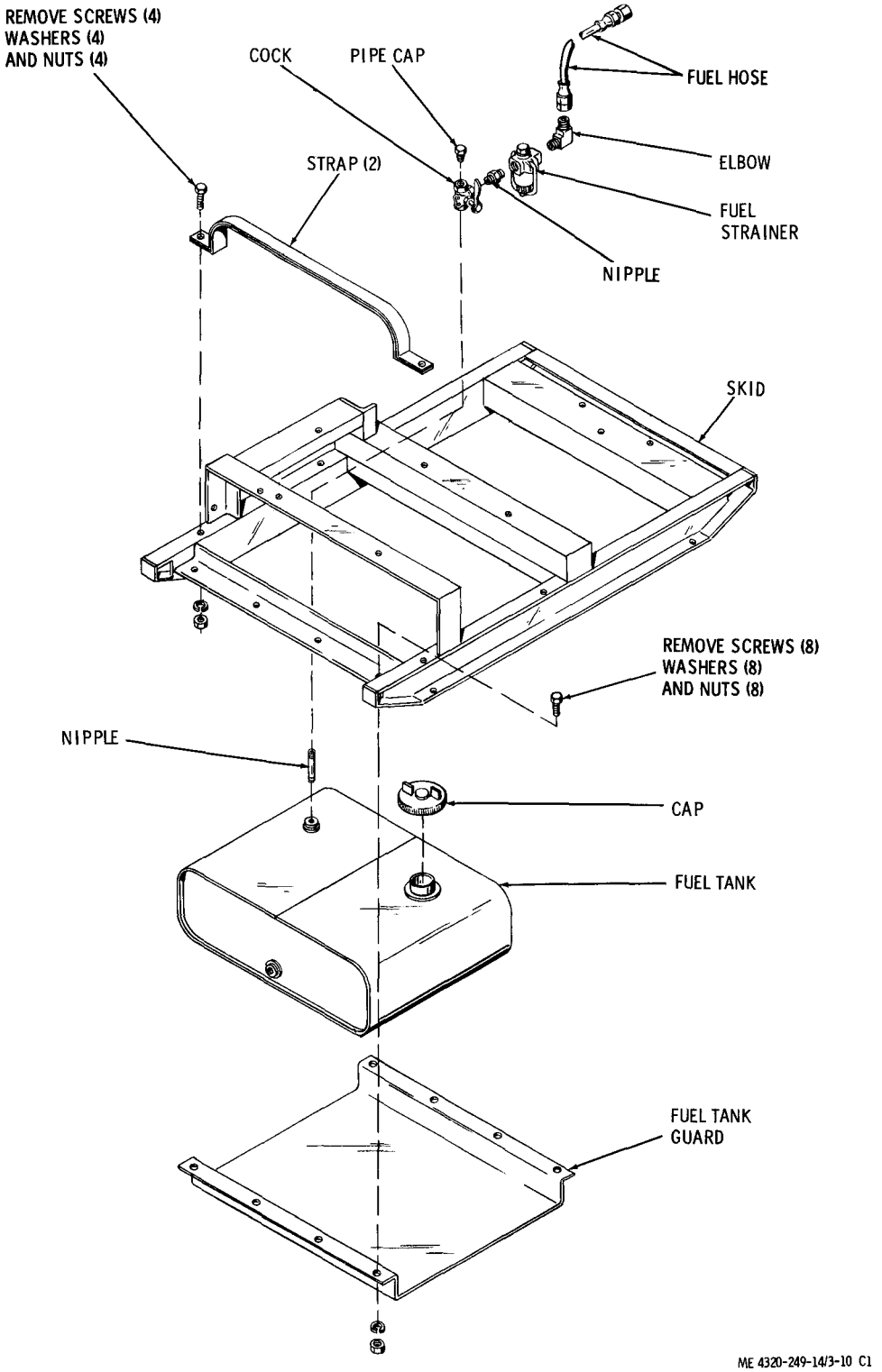


Figure 3-10.1. Fuel tank, strainer, lines, and fittings, disassembly and reassembly (serial numbers 449593 through 449657).

Page 3-11. Paragraph 3-18*a* is superseded as follows:

a. Removal and Disassembly. Refer to figure 3-10 and remove and disassemble the fuel tank, lines, and fittings (serial numbers 392630 through 392765). Refer to figure 3-10.1 and remove and disassemble the fuel tank, strainer, lines, and fittings (serial numbers 449593 through 449657).

Paragraph 3-18*c* is superseded as follows:

c. Reassembly and Installation. Refer to figure 3-10 and reassemble and install the fuel tank, lines, and fittings (serial number 392630 through 392765). Refer to figure 3-10.1 and reassemble and install the fuel tank, strainer, lines, and fittings (serial numbers 449593 through 449657).

Page C-6. Paragraph C-4*e* is added as follows:

e. The "Usable on Code" section of the description column is used when all end items covered by the list are not identical. The code identifies the serial number range of the end item to which the part is applicable. If the column is blank, it indicates that the part is common to all end items covered and that it is shown on the illustration cited in column (7). Some parts having common usage are assigned a code letter because they are employed in a different parts arrangement shown in the illustration cited in column (7). The codes used apply to the following equipments:

Code	*Serial No. range*
A	392630 through 392765
B	449593 through 449657

Page C-9. Section II. line item 4. (Sender, electrical) is deleted.

Page C-11. Group 01. The letter A is added to the Usable on Code column for each item in this group.

Delete line item 17.

After the last item in Group 01, add the following:

(1) SMR Code	(2) Federal stock number	(3) Description Ref No. & mfr code	Usable on code	(4) Unit of meas	(5) Qty inc in unit	(6) 15-day organizational maintenance alw (a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100	(7) Illustration (a) Fig No.	(b) Item No.
P 0	.....	CONTROL PANEL ASSEMBLY 47651-009 (25567)	B	EA	1	*	*	*	*	C1.1	1
0	5305-855-0972	SCREW MS24629-23 (96906)	B	EA	8	- -	- -	- -	- -	C1.1	2
P 0	6620-514-5492	GAGE, OIL PRESSURE: 0-60 PSI MS24541-1 (96906)	B	EA	1	*	*	*	*	C1.1	3
X20	.....	CONNECTOR, PLUG 13213E9867-1 (97403)	B	EA	1	- -	- -	- -	- -	C1.1	4
X20	.....	CONNECTOR, PLUG 13213E9867-2 (97403)	B	EA	1	- -	- -	- -	- -	C1.1	5
P 0	5930-121-5273	BOOT, SWITCH S2128 (25567)	B	EA	3	*	*	*	2	C1.1	6
P 0	5930-655-1522	SWITCH, TOGGLE MS35058-30 (96906)	B	EA	1	*	*	*	2	C1.1	7
P 0	5930-655-1521	SWITCH, TOGGLE MS35058-29 (96906)	B	EA	1	*	*	*	*	C1.1	8
P 0	5930-655-1582	SWITCH, TOGGLE MS35059-23 (96906)	B	EA	1	*	*	*	2	C1.1	9
X20	.....	COVER 42141-004 (25567)	B	EA	1	*	*	*	*	C1.1	10
0	5305-151-0387	SCREW, OVAL	B	EA	4	- -	- -	- -	- -	C1.1	11
0	5310-081-8087	NUT, SELF-LOCK MS21044N06 (96906)	B	EA	4	- -	- -	- -	- -	C1.1	12
X20	.....	CONNECTOR RECEPTACLE 13213E3549 (97403)	B	EA	1	- -	- -	- -	- -	C1.1	13
P20	.....	WIRING HARNESS 47367-005 (25567)	B	EA	1	*	*	*	*	C1.1	14
X20	.....	CONTROL BOX 42821-002 (25567)	B	EA	1	- -	- -	- -	- -	C1.1	15

Page C-12. Group 03. The letter A is added to the Usable on Code column for each item in this group.

Item 2. FSN 4730-011-8539 is added to column 2. PN S328 (25567) is deleted and PSN 41X6 (79470) MS39167-5 (96906) is added to column 3.

Page C-13. Continuation of Group 03. The letter A is added to Usable on Code column for each item in this group.

After the last item of Group 03 list, the following is added:

(1) SMR Code	(2) Federal stock number	(3) Description Ref No. & mfr code	Usable on code	(4) Unit of meas	(5) Qty inc in unit	(6) 15-day organizational maintenance alw (a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100	(7) Illustration (a) Fig No.	(b) Item No.
P20	4320-122-9965	PRIMER ASSEMBLY, EXHAUST 13771 (25567)	B	EA		*	*	*	*	C3.1	1
P 0	.....	HOSE ASSEMBLY, PRIMER 26543-505 (25567)	B	EA	1	*	*	*	*	C3.1	2
P 0	4730-265-6911	UNION, TUBE-TO-HOSE 42X6 (79470)	B	EA	1	*	*	*	*	C3.1	3
P 0	4730-011-8539	NUT, TUBE MS39167-5 (96906) 41X6 (79470)	B	EA	1	*	*	*	*	C3.1	4
P 0	4710-289-0637	TUBE, COPPER BULK .375 OD X .065 W/T	B	FT	37"	*	*	*	*	C3.1	5
P 0	5340-121-3000	BRACKET 6029B (25567)	B	EA	1	*	*	*	*	C3.1	6
P 0	4730-014-2433	NUT, INVERTED 100X6 (79470)	B	EA	1	*	*	*	*	C3.1	7
P 0	4930-424-5872	ADAPTER 236X6 (79470)	B	EA	1	*	*	*	*	C3.1	8
P 0	4820-174-0325	COCK, GAS S2 (25567)	B	EA	1	*	*	*	*	C3.1	9
P 0	4730-904-1414	ELBOW, STREET 90° .375 NPT X .375 NPT	B	EA	1	*	*	*	*	C3.1	10
P 0	4730-125-7988	NIPPLE, BRASS T-06 (25567)	B	EA	1	*	*	*	*	C3.1	11
P 0	4320-122-9966	NOZZLE, JET 1603A (25567)	B	EA	1	*	*	*	*	C3.1	12
P 0	4320-125-8038	BODY EJECTOR, VENTURI 1602A (25567)	B	EA	1	*	*	*	*	C3.1	13
P 0	4730-125-7991	NIPPLE PIPE T08 (25567)	B	EA	1	*	*	*	2	C3.1	14
P 0	5315-297-2444	PIN, COTTER MS24665-623 (96906)	B	EA	2	*	*	*	2	C3.1	15
P 0	5310-122-7283	WASHER, SPRING S165 (25567)	B	EA	2	*	*	*	2	C3.1	16
P 0	4320-024-1982	CAP, PRIMING VALVE 1467 (25567)	B	EA	1	*	*	*	*	C3.1	17
P 0	4320-300-7274	HANDLE 1458A (25567)	B	EA	1	*	*	*	*	C3.1	18
P 0	4320-392-4543	BODY, PRIMING VALVE 1466 (25567)	B	EA	1	*	*	*	*	C3.1	19
0	5305-068-0500	SCREW, CAP MS90725-3 (96906)	B	EA	2	- -	- -	- -	- -	C3.1	20
P 0	2990-103-8813	STRAP MUFFLER 13211E6747 (97403)	B	EA	1	*	*	*	*	C3.1	21
0	5305-269-3213	CAP, SCREW MS90725-62 (96906)	B	EA	2	- -	- -	- -	- -	C3.1	22
0	5310-732-0558	NUT, HEXAGON MS51967-8 (96906)	B	EA	2	- -	- -	- -	- -	C3.1	23
0	5310-722-5658	WASHER, LOCK MS35338-46 (96906)	B	EA	2	- -	- -	- -	- -	C3.1	24
P 0	2990-066-2494	GASKET, EXHAUST 13206E0642 (97403)	B	EA	1	*	*	2	2	C3.1	25

(1) SMR Code	(2) Federal stock number	(3) Description Ref No. & mfr code	Usable on code	(4) Unit of meas	(5) Qty inc in unit	(6) 15-day organizational maintenance alw (a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100	(7) Illustration (a) Fig No.	(b) Item No.
P 0	2990-124-6701	MUFFLER, 13213E2605 (97403)	B	EA	1	*	*	*	2	C3.1	26
P 0	6115-226-7763	BRACKET 13211E6746 (97403)	B	EA	1	*	*	*	*	C3.1	27

Page C-14. Group 05, item 2. The letter A is added to the Usable on Code column.

After item 2 is added: The following item is added after item 2 as follows:

(1) SMR Code	(2) Federal stock number	(3) Description Ref No. & mfr code	Usable on code	(4) Unit of meas	(5) Qty inc in unit	(6) 15-day organizational maintenance alw (a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100	(7) Illustration (a) Fig No.	(b) Item No.
P 0	4730-221-3905	ELBOW, PIPE MALE 90° 49X8 (79470).	B	EA	1	*	*	*	*	C5	10

After item 4. Add the following:

P 0	2910-905-9792	STRAINER, FUEL MS51086-1 (96906)	B	EA	1	*	*	*	*	C5	20
P 0	4730-186-7797	NIPPLE, BRASS S2047 (25567)	B	EA	1	*	*	*	*	C5	21

Page C-15. Group 01. The letter A is added to the Usable on Code column for each item in this group.

Delete line item 17.

After last item in Group 01, the following is added:

(1) SMR Code	(2) Federal stock number	(3) Description Ref No. & mfr code	Usable on code	(4) Unit of meas	(5) Qty inc in unit	(6) 30-day DS maint allowance (a) 1-20	(b) 21-50	(c) 51-100	(7) 30-day GS maint allowance (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-yr alw per 100 equip cntgcy	(9) Illustration (a) Fig No.	(b) Item No.
P 0	.....	CONTROL PANEL ASSEMBLY 47651-009 (25567)	B	EA	1	*	*	*	*	*	*	5	C1.1	1
0	5305-855-0972	SCREW MS24629-23 (96906)	B	EA	8	—	—	—	—	—	—	—	C1.1	2
P 0	6620-514-5492	GAGE, OIL PRESSURE: 0-60 PSI MS24541-1 (96906)	B	EA	1	*	*	2	*	*	2	6	C1.1	3

(1) SMR Code	(2) Federal stock number	(3) Description Ref No. & mfr code	Usable on code	(4) Unit of meas	(5) Qty inc in unit	(6) 30-day DS maint allowance (a) 1-20	(b) 21-50	(c) 51-100	(7) 30-day GS maint allowance (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-yr alw per 100 equip cntgcy	(9) Illustration (a) Fig No.	(b) Item No.
X20	.....	CONNECTOR, PLUG 13213E9867-1 (97403)	B	EA	1	—	—	—	—	—	—	—	C1.1	4
X20	.....	CONNECTOR, PLUG 13213E9867-2 (97403)	B	EA	1	—	—	—	—	—	—	—	C1.1	5
P 0	5930-121-5273	BOOT, SWITCH S2128 (25567)	B	EA	3	2	2	3	2	2	3	36	C1.1	6
P 0	5930-655-1522	SWITCH, TOGGLE MS35058-30 (96906)	B	EA	1	*	2	2	*	2	2	12	C1.1	7
P 0	5930-655-1521	SWITCH, TOGGLE MS35058-29 (96906)	B	EA	1	*	*	2	*	*	2	6	C1.1	8
P 0	5930-655-1582	SWITCH, TOGGLE MS35059-23 (96906)	B	EA	1	*	2	2	*	2	2	12	C1.1	9
P20	.....	COVER 42141-004 (25567)	B	EA	1	*	*	*	*	*	*	5	C1.1	10
0	5305-151-0387	SCREW, OVAL AN500A6-8 (88044)	B	EA	4	—	—	—	—	—	—	—	C1.1	11
0	5310-081-8087	NUT, SELF-LOCK MS21044N06 (96906)	B	EA	4	—	—	—	—	—	—	—	C1.1	12
X20	.....	CONNECTOR RECEPTACLE 13213E3549 (97403)	B	EA	1	—	—	—	—	—	—	—	C1.1	13
P20	4320-124-0932	WIRING HARNESS 47367-005 (25567)	B	EA	1	*	*	*	*	*	*	5	C1.1	14
X20	.....	CONTROL BOX 42821-002 (25567)	B	EA	1	—	—	—	—	—	—	—	C1.1	15

Page C-16. Group 03. The letter A is added to the Usable on Code column for each item in this group.

Item 2. FSN 4730-011-8539 is added to column 2. PN S328 (25567) is deleted and PN 41X6 (79470) MS39167-5 (96906) is added to column 3.

Page C-17. Continuation of Group 03. The letter A is added to the Usable on Code column for each item in this group.

After the last item in this group, the following is added:

(1) SMR Code	(2) Federal stock number	(3) Description Ref No. & mfr code	Usable on code	(4) Unit of meas	(5) Qty inc in unit	(6) 30-day DS maint allowance (a) 1-20	(b) 21-50	(c) 51-100	(7) 30-day GS maint allowance (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-yr alw per 100 equip cntgcy	(9) Illustration (a) Fig No.	(b) Item No.
P20	4320-122-9965	PRIMER ASSEMBLY, EXHAUST 13771 (25567)	B	EA	—	*	*	*	*	*	*	5	C3.1	1
P 0	.....	HOSE ASSEMBLY, PRIMER 26543-505 (25567)	B	EA	1	*	2	2	*	2	2	12	C3.1	2
P 0	4730-265-6911	UNION, TUBE-TO-HOSE 42X6 (79470)	B	EA	1	*	*	2	*	*	2	6	C3.1	3
P 0	4730-011-8539	NUT, TUBE MS39167-5 (96906) 41X6 (79470)	B	EA	1	*	*	2	*	*	2	6	C3.1	4
P 0	4710-289-0637	TUBE, COPPER BULK .375 OD X .065 W/T	B	FT	37"	*	*	2	*	*	2	6	C3.1	5
P 0	5340-121-3000	BRACKET 6029B (25567)	B	EA	1	*	*	2	*	*	2	12	C3.1	6
P 0	4730-014-2433	NUT, INVERTED 100X6 (79470)	B	EA	1	*	*	2	*	*	2	12	C3.1	7
P 0	4730-424-5872	ADAPTER 236X6 (79470)	B	EA	1	*	*	2	*	*	2	6	C3.1	8

(1) SMR Code	(2) Federal stock number	(3) Description Ref No. & mfr code	Usable on code	(4) Unit of meas	(5) Qty inc in unit	(6) 30-day DS maint allowance (a) 1-20	(b) 21-50	(c) 51-100	(7) 30-day GS maint allowance (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-yr alw per 100 equip cntgcy	(9) Illustration (a) Fig No.	(b) Item No.
P 0	4820-174-0325	COCK, GAS S2 (25567)	B	EA	1	*	*	2	*	*	2	6	C3.1	9
P 0	4730-904-1414	ELBOW, STREET 90° .375 NPT X .375 NPT	B	EA	1	*	*	2	*	*	2	6	C3.1	10
P 0	4730-125-7988	NIPPLE, BRASS T-06 (25567)	B	EA	1	*	2	2	*	2	2	12	C3.1	11
P 0	4320-122-9966	NOZZLE, JET 1603A (25567)	B	EA	1	*	*	2	*	*	2	6	C3.1	12
P 0	4320-125-8038	BODY EJECTOR, VENTURI 1602A (25567)	B	EA	1	*	*	2	*	*	2	6	C3.1	13
P 0	4730-125-7991	NIPPLE, PIPE T08 (25567)	B	EA	1	*	2	2	*	2	2	12	C3.1	14
P 0	5315-297-2444	PIN, COTTER MS24665-623 (96906)	B	EA	2	*	2	2	*	2	2	12	C3.1	15
P 0	5310-122-7283	WASHER, SPRING S165 (25567)	B	EA	2	*	2	2	*	2	2	12	C3.1	16
P 0	4320-024-1982	CAP, PRIMING VALVE 1467 (25567)	B	EA	1	*	*	2	*	*	2	6	C3.1	17
P 0	4320-300-7274	HANDLE 1458A (25567)	B	EA	1	*	*	2	*	*	2	6	C3.1	18
P 0	4320-392-4543	BODY, PRIMING VALVE 1466 (25567)	B	EA	1	*	*	2	*	*	2	6	C3.1	19
0	5305-068-0500	SCREW, CAP MS90725-3 (96906)	B	EA	2	—	—	—	—	—	—	—	C3.1	20
P 0	2990-103-8813	STRAP MUFFLER 13211E6747 (97403)	B	EA	1	*	*	2	*	*	2	6	C3.1	21
0	5305-269-3213	CAP, SCREW MS90725-62 (96906)	B	EA	2	—	—	—	—	—	—	—	C3.1	22
0	5310-732-0558	NUT, HEXAGON MS51967-8 (96906)	B	EA	2	—	—	—	—	—	—	—	C3.1	23
0	5310-722-5658	WASHER, LOCK MS35338-46 (96906)	B	EA	2	—	—	—	—	—	—	—	C3.1	24
P 0	2990-066-2494	GASKET, EXHAUST 13206E0642 (97403)	B	EA	1	2	2	3	2	2	3	30	C3.1	25
P 0	2990-124-6701	MUFFLER 13213E2605 (97403)	B	EA	1	*	2	2	*	2	2	12	C3.1	26
P 0	6115-226-7763	BRACKET 13211E6746 (97403)	B	EA	1	*	*	2	*	*	2	6	C3.1	27

Page C-19. Group 05, item 10. The letter A is added to the Usable on Code column for this item.

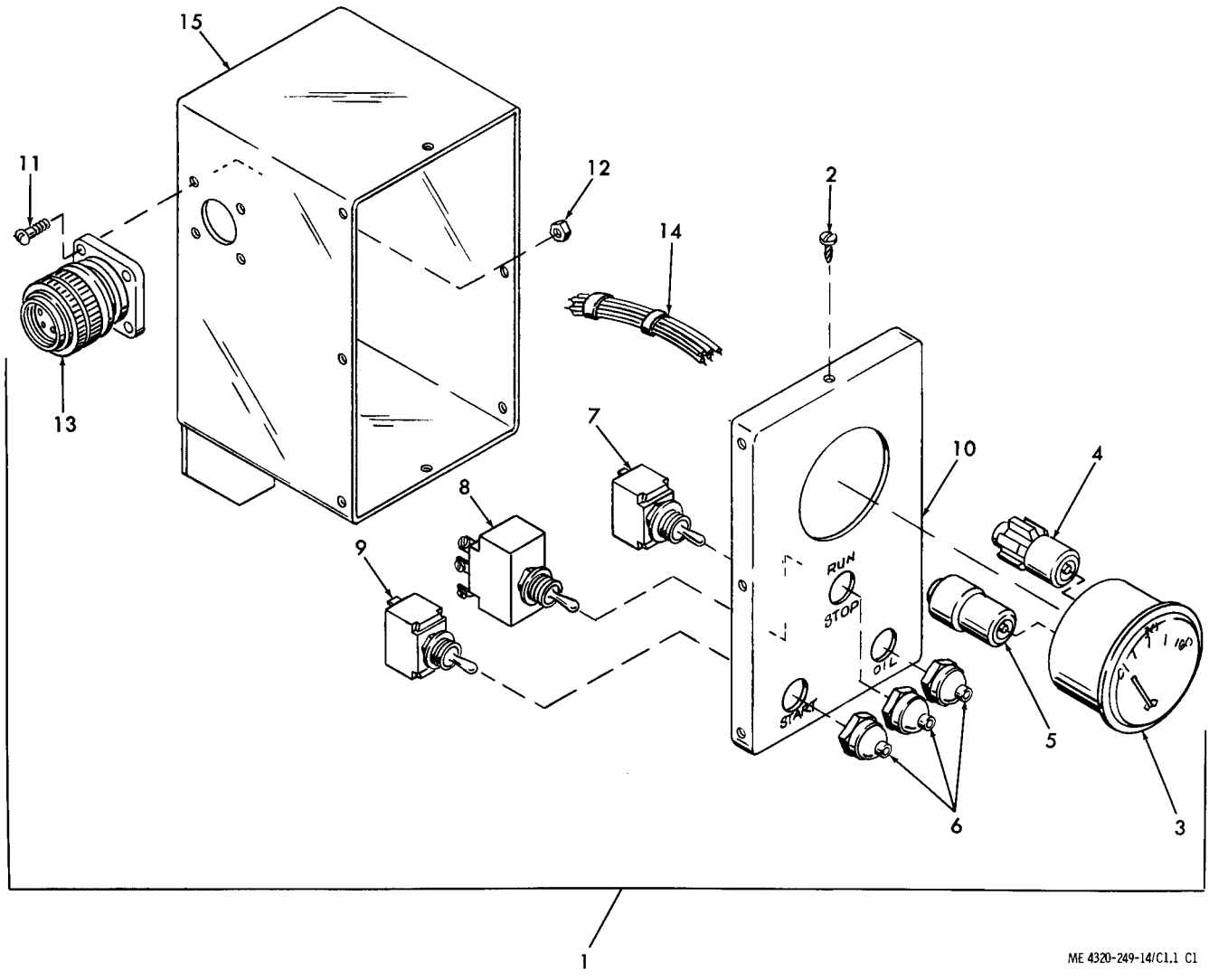
After item 10 is add the following:

(1) SMR Code	(2) Federal stock number	(3) Description Ref No. & mfr code	Usable on code	(4) Unit of meas	(5) Qty inc in unit	(6) 30-day DS maint allowance (a) 1-20	(b) 21-50	(c) 51-100	(7) 30-day GS maint allowance (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-yr alw per 100 equip cntgcy	(9) Illustration (a) Fig No.	(b) Item No.
P 0	4730-221-3905	ELBOW, MALE 90° 49X8 (79470)	B	EA	1	*	*	2	*	*	2	6	C5	10

After item 19 is add the following:

P 0	2910-905-9792	STRAINER, FUEL MS51086-1	B	EA	1	*	2	2	*	*	2	12	C5	20
P 0	4730-186-7797	NIPPLE, BRASS S2047 (25567)	B	EA	1	*	*	2	*	*	2	6	C5	21

Page C-20. Figure C1.1 is added as follows:

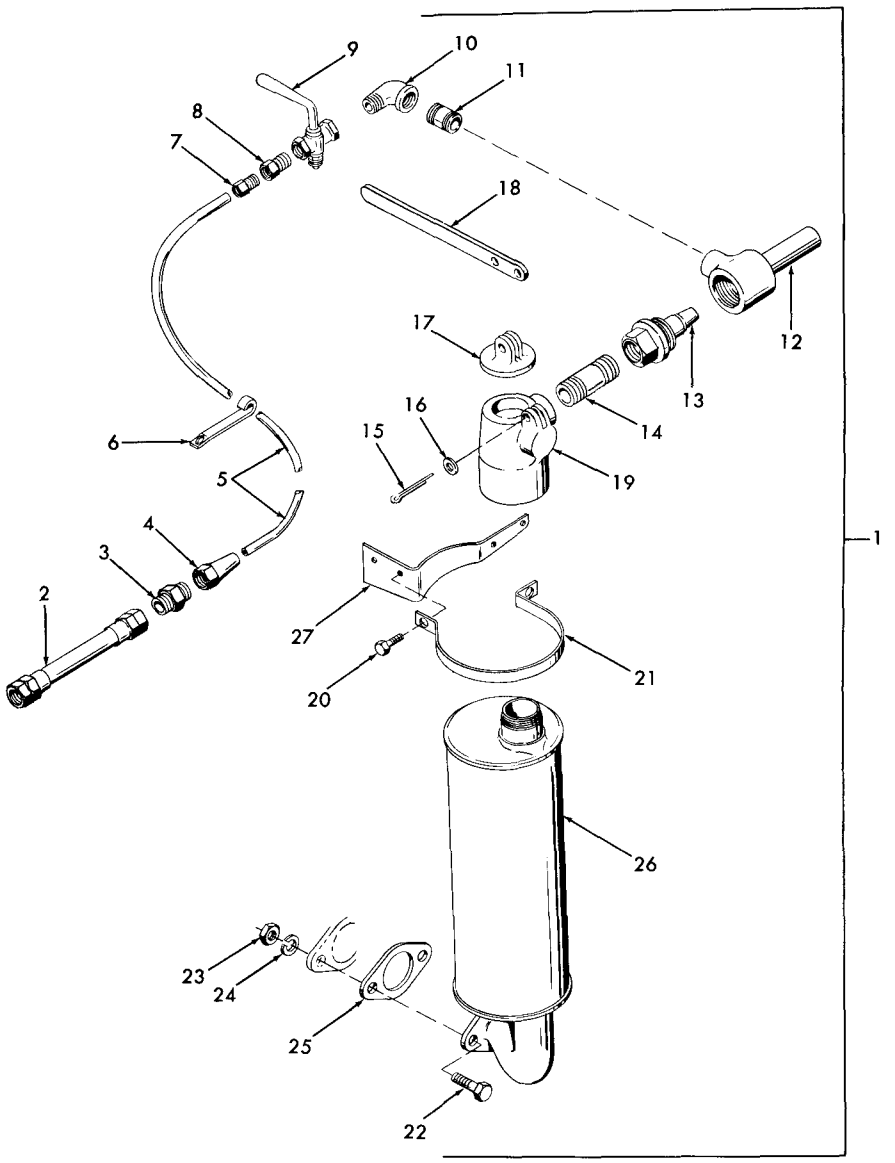


LEGEND TO PARTS, FIGURE C1.1

ITEM NO.	FUNCT GROUP	ITEM NAME
1	01	CONTROL PANEL
2	01	SCREW
3	01	GAGE
4	01	CONNECTOR
5	01	CONNECTOR
6	01	BOOT
7	01	SWITCH
8	01	SWITCH
9	01	SWITCH
10	01	COVER
11	01	SCREW
12	01	NUT
13	01	CONNECTOR
14	01	WIRING HARNESS
15	01	CONTROL BOX

Figure C1.1. Control panel (serial numbers 449593 through 449657).

Page C-22. Figure C3.1 is added as follows:

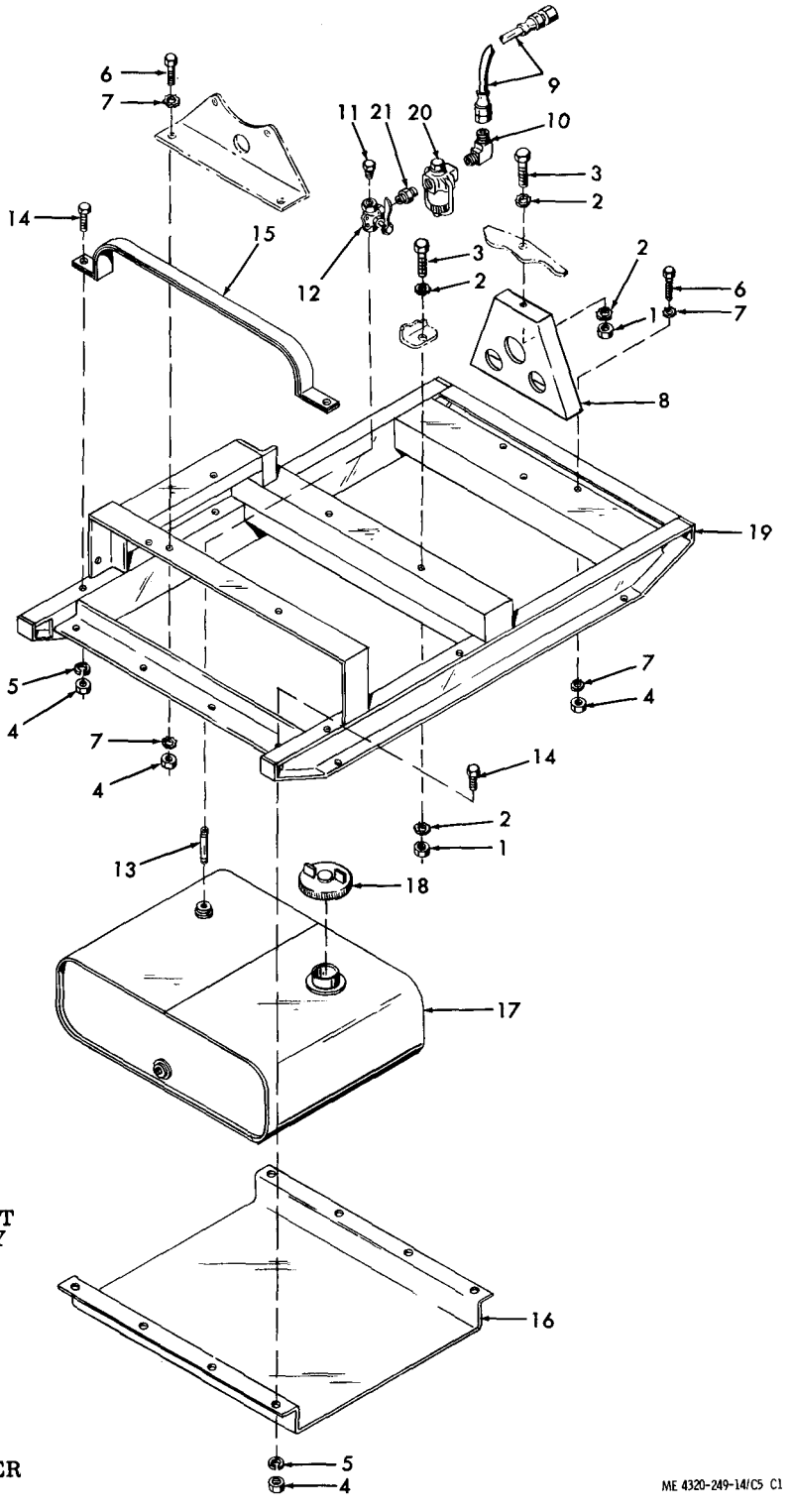


LEGEND TO PARTS, FIGURE C3.1

ITEM NO.	FUNCT GROUP	ITEM NAME			
1	03	PRIMER AY	15	03	PIN
2	03	HOSE AY	16	03	WASHER
3	03	UNION	17	03	CAP
4	03	NUT	18	03	HANDLE
5	03	TUBE	19	03	BODY
6	03	BRACKET	20	03	SCREW
7	03	NUT	21	03	STRAP
8	03	ADAPTER	22	03	SCREW
9	03	COCK	23	03	NUT
10	03	ELBOW	24	03	WASHER
11	03	NIPPLE	25	03	GASKET
12	03	NOZZLE	26	03	MUFFLER
13	03	BODY	27	03	BRACKET
14	03	NIPPLE			

Figure C3.1. Muffler and exhaust primer (serial numbers 449593 through 449657).

Page C-24. Figure C5 is superseded as follows:



LEGEND TO PARTS, FIGURE C5

ITEM NO.	FUNCT GROUP	ITEM NAME
1	05	NUT
2	05	WASHER
3	05	SCREW
4	05	NUT
5	05	WASHER
6	05	SCREW
7	05	WASHER
8	05	BRACKET
9	05	HOSE AY
10	05	ELBOW
11	05	PLUG
12	05	COCK
13	05	NIPPLE
14	05	SCREW
15	05	STRAP
16	05	GUARD
17	05	TANK
18	05	CAP
19	05	SKID
20	05	STRAINER
21	05	NIPPLE

Figure C5. Fuel tank, skid, and engine bracket.

Page C-25. The following items are added to index:

Stock No.	*Figure No.*	*Item No.*
2910-905-9792	C5	20
2990-066-2494	C3.1	25
2990-103-8813	C3.1	21
2990-124-6701	C3.1	26
4320-024-1982	C3.1	17
4320-122-9965	C3.1	1
4320-122-9966	C3.1	12
4320-125-8038	C3.1	13
4320-300-7274	C3.1	18
4320-392-4543	C3.1	19
4710-289-0637	C3.1	5
4730-011-8539	C3.1	4
4730-014-2433	C3.1	7
4730-125-7988	C3.1	11
4730-125-7991	C3.1	14
4730-186-7797	C5	21
4730-221-3905	C5	10
4730-265-6911	C3.1	3
4730-424-5872	C3.1	8
4730-904-1414	C3.1	10
4820-174-0325	C3.1	9
5305-068-0500	C3.1	20
5305-151-0387	C1.1	11
5305-269-3213	C3.1	22
5305-855-0972	C1.1	2
5310-081-8087	C1.1	12
5310-122-7283	C3.1	16
5310-722-5658	C3.1	24
5310-732-0558	C3.1	23
5315-297-2444	C3.1	15
5340-121-3000	C3.1	6
5930-121-5273	C1.1	6
5930-655-1521	C1.1	8
5930-655-1522	C1.1	7
5930-655-1582	C1.1	9
6115-226-7763	C3.1	27
6620-514-5492	C1.1	3

Page C-26. The following items are added to index:

Reference No.	*Mfg Code*	*Figure No.*	*Item No.*
AN500A6-8	88044	C1.1	11
MS21044N06	96906	C1.1	12
MS24541-1	96906	C1.1	3
MS24629-23	96906	C1.1	2
MS24665-623	96906	C3.1	15
MS35058-29	96906	C1.1	8
MS35058-30	96906	C1.1	7
MS35059-23	96906	C1.1	9
MS35338-46	96906	C3.1	24
MS39167-5	96906	C3.1	5
MS51086-1	96906	C5	20
MS51967-8	96906	C3.1	23
MS90725-3	96906	C3.1	20
MS90725-62	96906	C3.1	22
S165	25567	C3.1	16
S2	25567	C3.1	9
S2047	25567	C5	21
S2128	25567	C1.1	6
T-06	25567	C3.1	11
T08	25567	C3.1	14
100X6	79470	C3.1	7
13206E0642	97403	C3.1	25
13211E6746	97403	C3.1	27
13211E6747	97403	C3.1	21
13213E2605	97403	C3.1	26
13213E3549	97403	C1.1	13
13213E9867-1	97403	C1.1	4
13213E9867-2	97403	C1.1	5
13771	25567	C3.1	1
1458A	25567	C3.1	18
1466	25567	C3.1	19
1467	25567	C3.1	17
1602A	25567	C3.1	13
1603A	25567	C3.1	12
236X6	79470	C3.1	8
26543-505	25567	C3.1	2
41X6	79470	C3.1	4
42X6	79470	C3.1	3
42141-004	25567	C1.1	10
42821-002	25567	C1.1	15
47367-005	25567	C1.1	14
47651-009	25567	C1.1	1
49X8	79470	C5	10
6029B	25567	C3.1	6

By Order of the Secretary of the Army:

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

Official:

KENNETH G. WICKHAM,
Major General, United States Army,
The Adjutant General.

Distribution:

To be distributed in accordance with DA Form 12-25, Sec I (qty rqr Block No. 242), Organizational maintenance requirements for Pumps, Centrifugal, Fresh Water.

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TECHNICAL MANUAL)
)
No. 5-4320-249-14)

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D. C., 26 June 1969

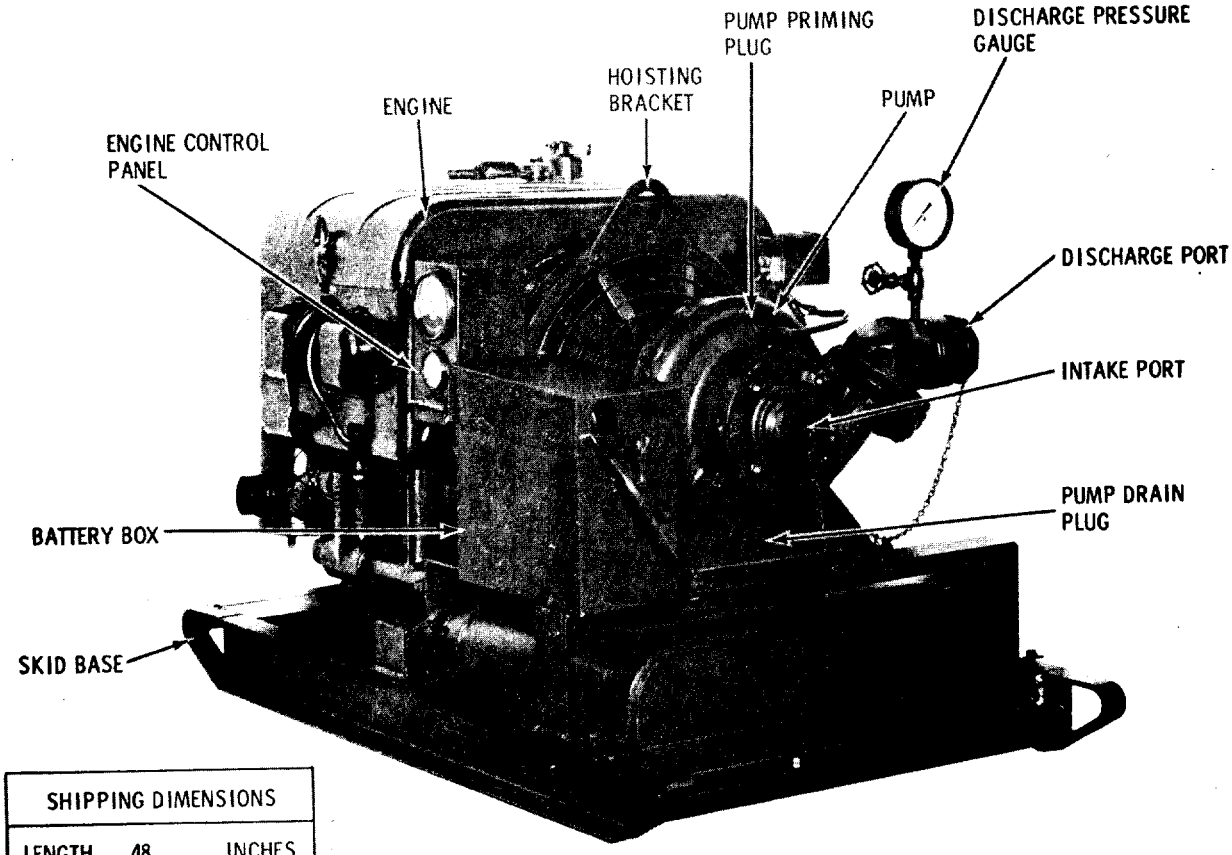
Operator, Organizational, Direct Support and General Support Maintenance Manual Including Repair Parts and Special Tools Lists for:

PUMP CENTRIFUGAL, WATER, 200 GPM (GORMAN-RUPP CO. MODEL 62-1/2E13-4A084) FSN 4320-935-1618

TABLE OF CONTENTS

TABLE OF CONTENTS (CONT.)

LIST OF ILLUSTRATIONS



SHIPPING DIMENSIONS		
LENGTH	48	INCHES
WIDTH	28-1/2	INCHES
HEIGHT	28-9/16	INCHES
WEIGHT	563	POUNDS

Figure 1-1. Centrifugal pump, model 62-1/2E13-4A084, left-rear, three-quarter view.

CENTRIFUGAL PUMP

MODEL 62-1/2E13-4A084

CHAPTER 1

INTRODUCTION

1-1. SCOPE

These instructions are published for personnel responsible for operation and maintenance of Gorman-Rupp Centrifugal Pump, Model 62-1/2E13-4A084. The engine used with the pump is a Military Standard type, FSN 2805-872-5972. Detailed operation and maintenance instructions for this engine are provided in Technical Manual TM 5-2805-259-14.

1-2. DESCRIPTION

a. Centrifugal Pump, Model 62-1/2E13-4A084 (fig. 1-1 and 1-2) is a gasoline-engine-driven, centrifugal pump designed to pump fresh water at a rate of 200 gpm (gallons per minute) at 300 ft tdh (feet total dynamic head). The pump and engine are skid mounted. The engine is a 20-hp (horsepower) Military Standard type, Model 4A084-III. Refer to TM 5-2805-259-14 for a description of the engine.

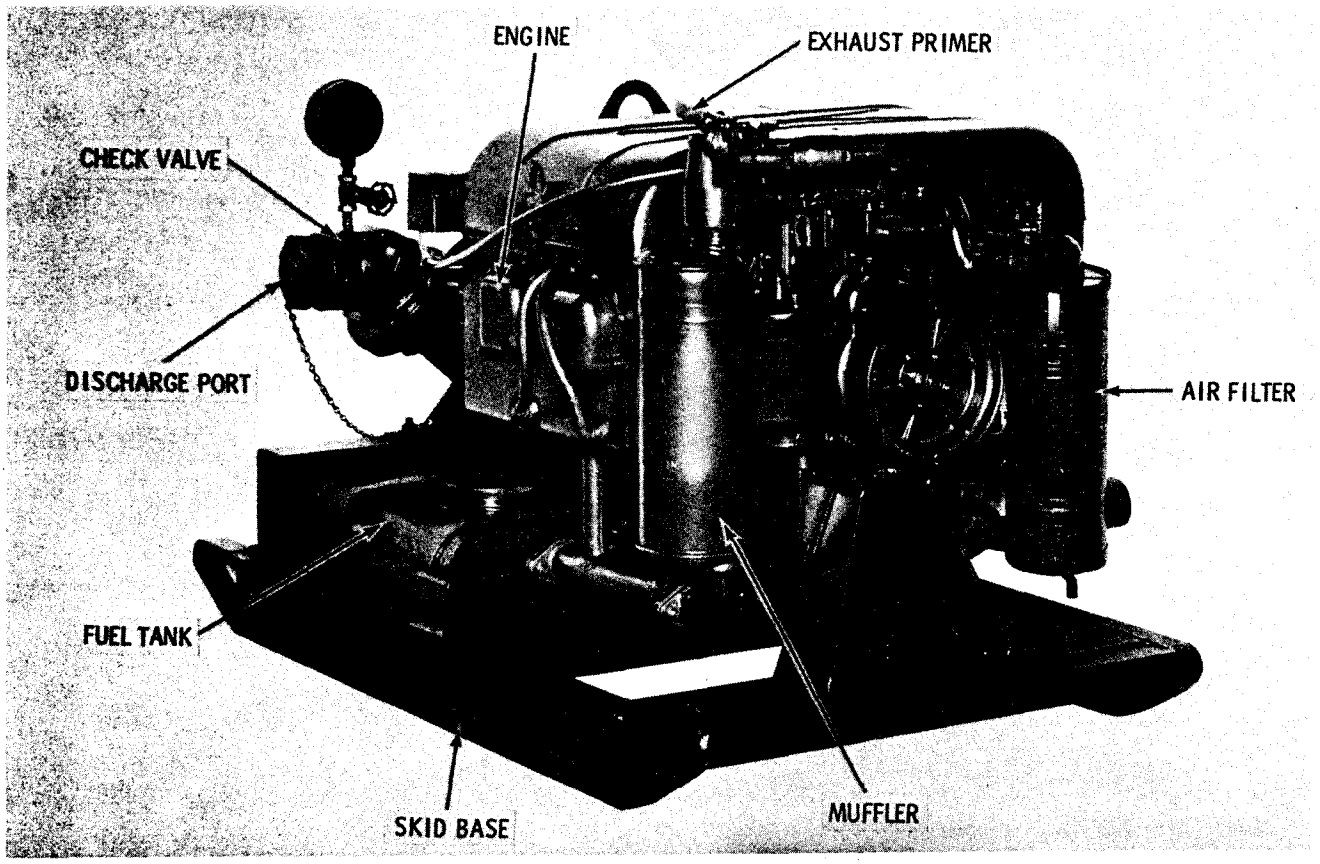


Figure 1-2. Centrifugal pump, model 62-l/2E13-4A084, right-front, three-quarter view.

b. Gages are provided on the pump control panel for monitoring the engine oil pressure and engine speed.

c. The suction connection is made to the pump at a 2-l/2-inch threaded female port. The discharge connection is made at a 2-1/2-inch threaded female port at the check valve.

1-3. IDENTIFICATION AND TABULATED DATA

a. Identification. The Centrifugal Pump, Model 62-l/2E13-4A084, has three major identification plates. The information contained on the plates is listed below.

(1) Engine plate. (U.S. Army Mobility Equipment Command)

ENGINE, GASOLINE
MILITARY STANDARD
4-CYLINDER, AIR-COOLED
4-CYCLE, OVERHEAD VALVE
84-CU-IN. DISPLACEMENT
STOCK NO. 2805-872-5972
SERIAL NO.
MIL MODEL 4A084-III
MANUAL TM 5-2805-259-14 & -24P

(2) Performance plate. The performance plate provides performance characteristics of the pump.

(3) Pump plate.

Manufacturer . . . . . German-Rupp Company
Model 62-1/2E13-4A084
Serial No.

b. Tabulated data.

(1) Centrifugal pump.

Manufacturer . . . . . German-Rurm Company
Model 62-1/2E13-4A084
Type . . . . . Centrifugal
Serial number . . . . . 392630 through 392765
Fuel tank capacity . . . . . 11 gal.

(2) Engine.

Refer to engine manual, TM 5-2805-259-14.

(3) Nut and bolt torque data.

Intermediate bracket screws . . . . 15 to 20 ft-lbs
Hoisting bracket screws . . . . . 15 to 20 ft-lbs
Spline coupling screws . . . . . 15 to 20 ft-lbs

(4) Control panel wiring diagram.

Figure 1-3 shows the control panel wiring diagram for the centrifugal pump.

1-4. DIFFERENCES IN MODELS

This manual covers only the centrifugal pump, model 62-1/2E13-4A084. No known unit differences exist for the model covered by this manual.

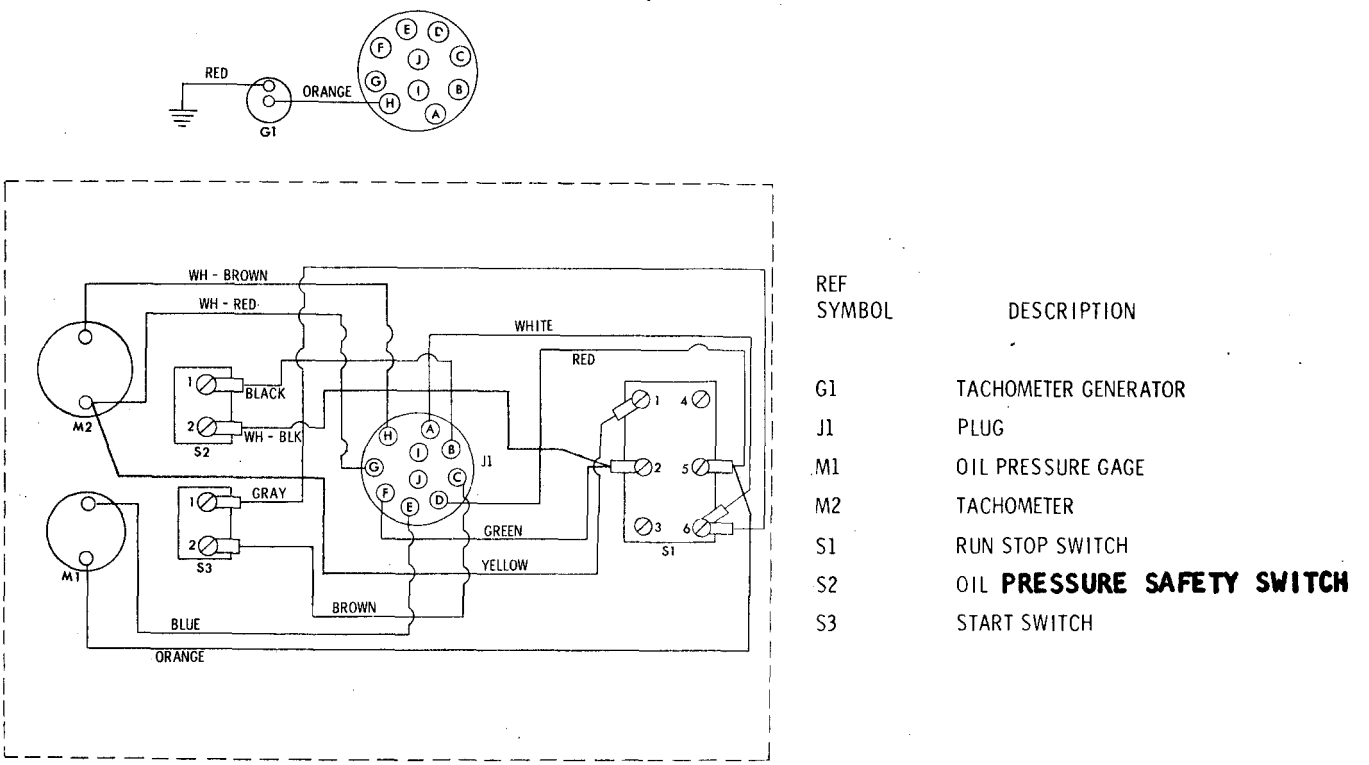


Figure 1-3. Control panel wiring diagram.

CHAPTER 2

INSTALLATION AND OPERATION INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

2-1. UNLOADING EQUIPMENT

Carefully unload the crated pump, using a lift truck or other suitable means. Take care to prevent piercing crates with forks of truck.

2-2. UNPACKING EQUIPMENT

Remove the wooden crate carefully. Do not allow pry bars, used for crate removal, to penetrate crate interior. This could damage pump unit.

2-3. INSPECTING AND SERVICING EQUIPMENT

a. Inspect the pump for obvious damage which might have occurred during shipment.

b. Inspect for loose or missing nuts, bolts, and other attaching hardware. Check the suction and discharge ports for damaged threads.

Note. The pump has been tested prior to shipment. Since gaskets have a tendency to dry and shrink after testing, make especially sure that all bolts on gasket joints are tight in order to prevent pump leakage.

c. Set the RUN-STOP switch in the STOP position to prevent starting, and manually rotate the starting pulley of the engine several turns to assure that the engine has not seized and that the pump impeller rotates freely without scraping or binding.

d. Perform all daily preventive maintenance services for the engine described in TM 5-2805-259-14.

add par. , sec 2

2-4. INSTALLATION OF SEPARATELY PACKED COMPONENTS

a. The dry-charged, lead-acid storage battery is shipped mounted in the battery box, but the electrolyte is shipped separately. Add electrolyte to each cell in the dry-charged battery until the electrolyte level is above the battery plates. Do not overfill the battery.

Warning. The electrolyte for the dry-charged battery consists of sulphuric acid. Use care when filling the battery to avoid injury or damage to clothes. If electrolyte contacts skin, immediately flush affected area with water.

b. Refer to figure 2-1 and connect battery cables; replace cover.

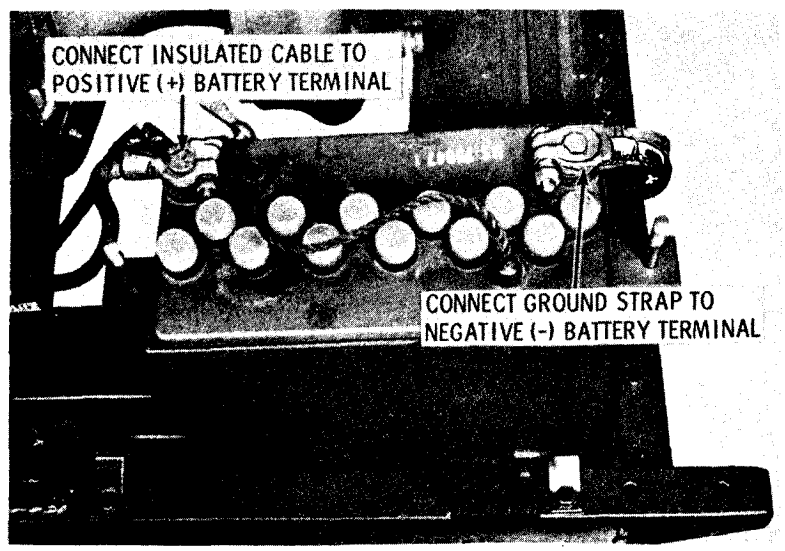


Figure 2-1. Battery installation diagram.

2-5. INSTALLATION OR SETTING UP INSTRUCTIONS

a. Locate the pump as near to the liquid source as practicable. Select a location which is as level as possible in order to insure proper engine servicing and pump operation. If necessary, set the pump on supports in order to compensate for uneven terrain.

Warning. Do not operatethe pump in an enclosed area. Exhaust fumes contain carbon monoxide, a clear, odorless, poisonous gas. Inhalation of exhaust fumes will result in serious illness or death.

b. Connect the suction line to the intake port and the discharge line to the discharge port. If a hose is used for the suction line, it should be a rigid-walled type in order to prevent collapsing under suction. Carefully seal and tighten all connections in the suction line to prevent air leaks. Even a slight leak will will greatly reduce pumping efficiency.

c. Connect a strainer to the end of the suction line to prevent foreign matter from entering the line.

Caution. Do not operate the pump without a strainer on the end of the suction line. Entry of foreign matter will damage the impeller.

Section II. MOVEMENT TO NEW WORKSITE

2-6. DISMANTLING FOR MOVEMENT

a. Clean all mud and dirt from the exterior of the pump with water. Remove greasy or gummy deposits with a cloth dampened with an approved cleaning solvent.

b. Disconnect suction and discharge hoses from their respective ports. Install plugs in adapter ports to prevent entry of foreign objects or thread damage during shipment.

c. Remove the drain plug (fig. 2-5) at the bottom of the pump housing to drain all fluid from the pump.

2-7. REINSTALLATION AFTER MOVEMENT

Reinstall the pump as described in paragraph 2-5.

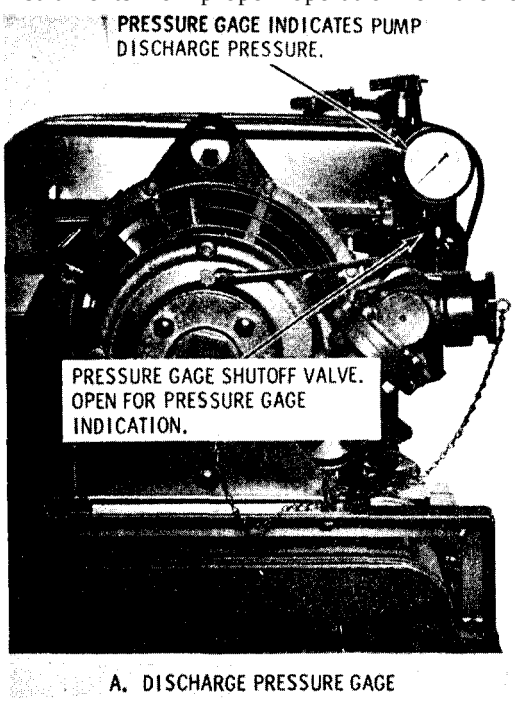
Section III. CONTROLS AND INSTRUMENTS

2-8. GENERAL

This section describes, locates, illustrates, and furnishes operator, crew, or maintenance personnel sufficient information about various controls and instruments for proper operation of the centrifugal pump. model 62-1/2E13-4A084.

2-9. CONTROLS AND INSTRUMENTS

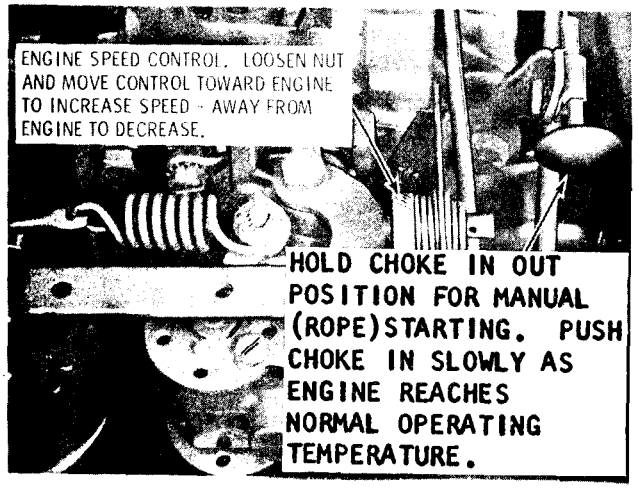
The purpose of controls and instruments is illustrated in figure 2-2.



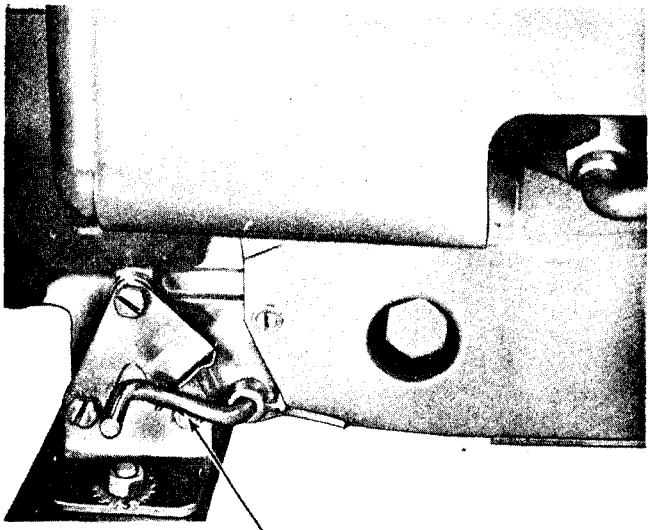
A. DISCHARGE PRESSURE GAGE

B. ENGINE CONTROL PANEL

Figure 2-2. Controls and instruments.

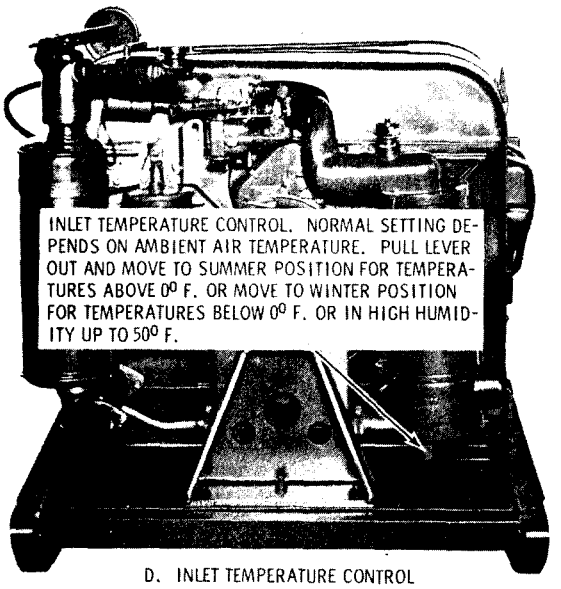


C. CHOKE AND ENGINE SPEED CONTROL

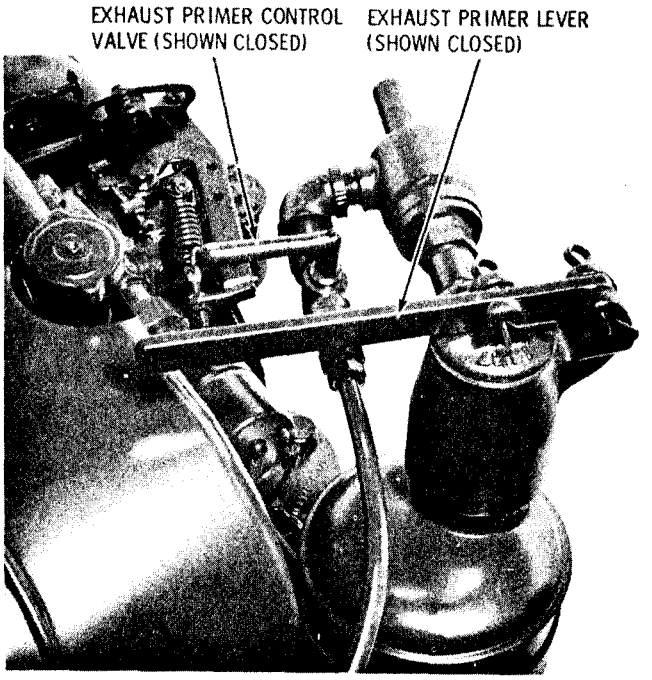


OIL PAN BAFFLE CONTROL. NORMAL SETTING DEPENDS ON AMBIENT AIR TEMPERATURE. MOVE HANDLE LEFT FOR TEMPERATURES ABOVE 0^{0} F. MOVE HANDLE RIGHT FOR TEMPERATURES BELOW 0^{0} F.

E. OIL PAN BAFFLE CONTROL



D. INLET TEMPERATURE CONTROL



F. EXHAUST PRIMER CONTROLS

Figure 2-2. Controls and instruments (Cont.).

2-10. GENERAL

a. Instructions in this section are published for information and guidance of personnel responsible for operation of the pump.

b. The operator must know how to perform every operation of which the pump is capable. This section gives instructions on starting and stopping the pump and basic operations of the unit. Since nearly every job presents a different problem, the operator may have to vary given procedures to fit the individual job.

2-11. STARTING

a. Preparation for Starting.

(1) Perform necessary daily preventive maintenance services for the pump (par. 3-4).

(2) Refer to figure 2-2 and check for proper setting of inlet temperature control and oil baffle control.

Caution. Improper setting of the inlet temperature and oil baffle controls can damage the engine by causing overheating.

b. Starting. Refer to figure 2-3 and start the pump.

Caution. Running the pump for extended periods of time without fluid in the housing will damage the pump seal. Begin pump operation as soon as engine warms up after starting.

2-12. STOPPING

a. Refer to figure 2-4 and stop the centrifugal pump.

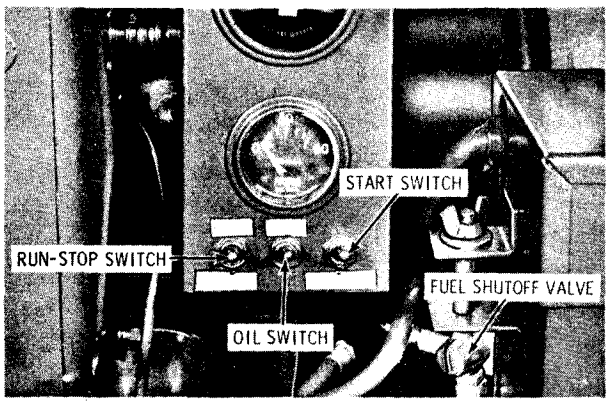
b. If the pump has been pumping liquids containing a considerable amount of solids, refer to figure 3-11, and drain the volute casing and flush with clean water.

c. Perform the necessary daily preventive maintenance services (par. 3-4).

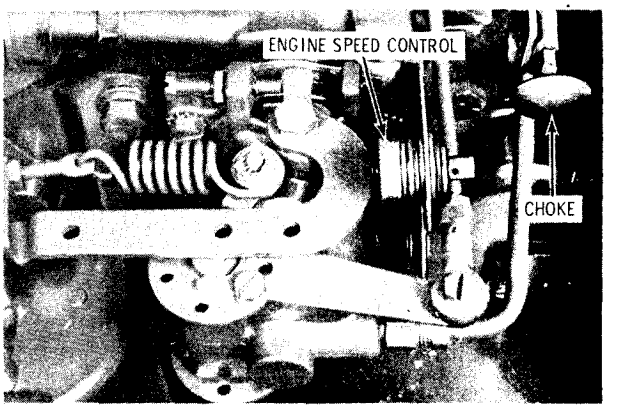
2-13. OPERATION UNDER USUAL CONDITIONS

a. Start the centrifugal pump (par. 2-11).

b. Refer to figure 2-6 and operate the pump.



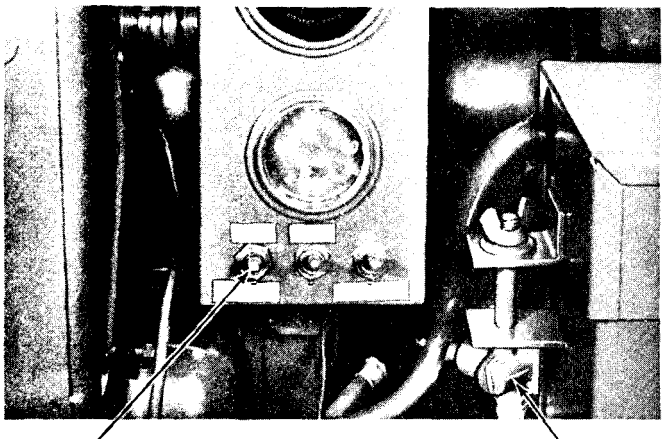
A. INSTRUMENT PANEL



B. ENGINE CONTROLS

STEP 1. OPEN FUEL SHUT-OFF VALVE (TURN TO VERTICAL POSITION).
STEP 2. REMOVE FUEL TANK CAP AND SET INNER VALVE FOR NORMAL OPERATIONS AND REPLACE CAP.
NOTE. RESET VALVE TO FORDING OPERATIONS WHEN FORDING OR TRANSPORTING THE ITEM.
STEP 3. MOVE ENGINE SPEED CONTROL TO MID POSITION.
STEP 4. PLACE RUN-STOP SW ITCH IN. RUN POSITION. (UP).
STEP 5. DEPRESS OIL SW ITCH AND START SWITCH UNTIL ENGINE STARTS.
CAUTION. DO NOT CRANK ENGINE FOR MORE THAN 15 SECONDS CONTINUOUSLY WITHOUT ALLOWING A TWO MINUTE COOLING OFF PERIOD. IF ENGINE DOES NOT START, REFER. TO ENGINE MANUAL TM 5-2805-259-14, AND DETERMINE CAUSE.
NOTE . IF BATTERY IS DEAD, ENGINE CAN BE STARTED BY TURNING OVER WITH ROPE MANUAL STARTING.
STEP 6. PLACE RUN-STOP SWITCH IN "ON" POSITION.
STEP 7. OIL SWITCH MUST BE DEPRESSED WHILE ROPE STARTING.
STEP 8. CHOKE MUST BE (CLOSED) PULLED OUT ANO HELD UNTIL ENGINE STARTS, THEN SLOWLY PUSHED IN AS ENGINE WARMS.
STEP 9. CHECK OIL PRESSURE FOR NORMAL MINIMUM 5 PSI.

Figure 2-3. Starting the pump.

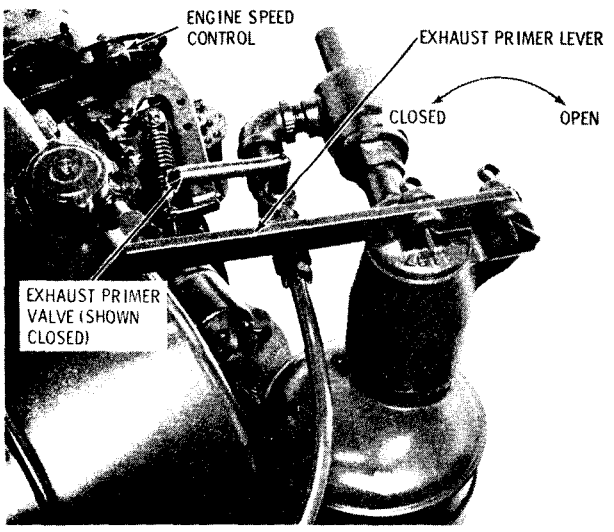


NOTE. IF ENGINE IS HOT FROM RUNNING UNDER HEAVY LOAD, ALLOW IT TO IDLE FOR SEVERAL MINUTES BEFORE STOPPING. THIS WILL ALLOW HEAT TO DISSIPATE EVENLY, PREVENTING WARPING OF ENGINE PARTS.

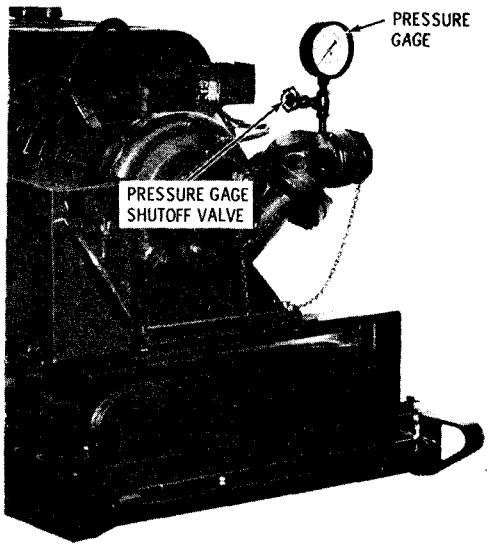
STEP 1. PLACE RUN-STOP SWITCH IN STOP POSITION.
STEP 2. TURN OFF FUEL SHUTOFF VALVE.

Figure 2-4. Stopping the pump.

Figure 2-5. Not applicable



A. EXHAUST PRIMER



B. PRESSURE GAGE

STEP 1. OPERATE ENGINE SPEED CONTROL TOWARD ENGINE TO RUN ENGINE AT GOVERNED SPEED.
STEP 2. WITH THE ENGINE RUNNING OPERATE EXHAUST PRIMER LEVER TO CLOSED POSITION.
STEP 3. OPERATE EXHAUST PRIMER VALVE TO OPEN POSITION. THIS WILL DRAW WATER THROUGH SUCTION LINE INTO PUMP.
NOTE. WITH 20 FOOT SUCTION LIFT, PRIMING SHOULD OCCUR WITHIN TWO MINUTES. LESS TIME SHOULD BE REQUIRED IF PUMP HAS LESS SUCTION LIFT.
STEP 4. RUN ENGINE AT FULL GOVERNED SPEED UNTIL A SPRAY OF WATER IS EJECTED FROM THE EXHAUST PRIMER AND SOUND OF PUMP INDICATES FULL PUMPING LOAD. SHUT EXHAUST PRIMER VALVE IMMEDIATELY AND OPERATE EXHAUST PRIMER LEVER TO OPEN POSITION.
STEP 5. MOVE ENGINE SPEED CONTROL AWAY FROM ENGINE TO REDUCE SPEED, FILLING DISCHARGE PIPING SLOWLY TO REDUCE SHOCK OF INITIAL FILLING.
STEP 6. WHEN DISCHARGE PIPING IS FILLED, OPEN PRESSURE GAGE SHUTOFF VALVE. OPERATE ENGINE SPEED CONTROL TO INCREASE ENGINE SPEED UNTIL DISCHARGE PRESSURE GAGE INDICATES THE DESIRED DISCHARGE PRESSURE.
STEP 7. TO CHANGE PUMPING SPEED OR DISCHARGE PRESSURE, ADJUST SETTING OF ENGINE SPEED CONTROL. MAXIMUM PUMPING IS DELIVERED WHEN ENGINE OPERATES AT GOVERNED SPEED.

Figure 2-6. Operating the pump exhaust primer.

c. Depending upon pumping conditions, the pump may not start pumping immediately, since it is necessary for the suction hose to fill with fluid. If, after a reasonable time, the pump fails to pump, check the suction line carefully for leaks. A small air leak in the suction line will greatly reduce pumping efficiency under any conditions, and especially when the pump is operating with a high suction lift.

d. This pump does not have self-priming characteristics. When the pump loses prime due to depletion of the water source or excessive entrance of air into the suction line, the pump will require repriming. Refer to figure 2-6.

2-14. OPERATION IN EXTREME COLD

a. Keep the pump free of snow and ice at all times. Cover it when not in use and provide some shelter from weather while it is operating if possible.

b. Set inlet temperature control and oil baffle control to proper position (par. 2-11).

c. Heat the pump body before operating and prime the pump with warm water.

d. Keep the fuel tank full to prevent condensation of moisture and service the fuel filter regularly.

e. Lubricate the engine with cold-weather lubricants as described in the engine manual, TM 5-2805-259-14

f. After operating the pump, refer to figure 2-5, and drain the body to prevent damage from freezing.

2-15. OPERATION IN EXTREME HEAT

a. Protect the pump from direct rays of the sun when possible.

b. Allow adequate space for ventilation.

c. Set inlet temperature control and oil baffle control to proper position (par. 2-11).

d. Keep the exterior of the engine clean to provide proper heat transfer to the air.

e. Lubricate the engine for hot weather as described in the engine manual, TM 5-2805-204-14.

2-16. OPERATION AT HIGH ALTITUDES

At high altitudes it may be necessary to adjust the engine carburetor and service the air filter more frequently to insure proper air and fuel mixture. Carburetor adjustments are provided in engine manual, TM 5-2805-259-14

CHAPTER 3

MAINTENANCE INSTRUCTIONS

Section I. GENERAL MAINTENANCE INFORMATION

3-1. SPECIAL TOOLS AND EQUIPMENT

No special tools or equipment are required by maintenance personnel for maintenance of the centrifugal pump.

3-2. GENERAL LUBRICATION INFORMATION

a. Refer to TM 5-2805-259-14 required by the engine.

b. The centrifugal pump requires no lubrication.

Section II. PREVENTIVE MAINTENANCE SERVICES

3-3. GENERAL

To insure that the centrifugal pump is ready for operation at all times, it must be inspected syste - matically so that defects may be discovered and corrected before they result in serious damage or failure, The necessary preventive maintenance services to be performed are listed in paragraphs 3-4 and 3-5. Item numbers indicate the sequence of minimum inspection requirements. Defects discovered during operation of the unit shall be noted for future correction, to be made as soon as operation has ceased. Stop operation immediately if a deficiency is noted which would damage the equipment if operation were continued. All deficiencies should be corrected at the earliest opportunity.

3-4. DAILY PREVENTIVE MAINTENANCE SERVICES

This paragraph contains an illustrated tabulated listing of preventive maintenance services which must be performed by the operator. The item numbers are listed consecutively and indicate the sequence of minimum requirements. Refer to figure 3-1 for the daily preventive maintenance services.

3-5. QUARTERLY PREVENTIVE MAINTENANCE SERVICES

This paragraph contains an illustrated tabulated listing of preventive maintenance services which must be performed by maintenance personnel at quarterly intervals. A quarterly interval is equal to 3 calendar months, or 250 hours of operation, whichever occurs first. Refer to figure 3-2 for quarterly preventive maintenance services.

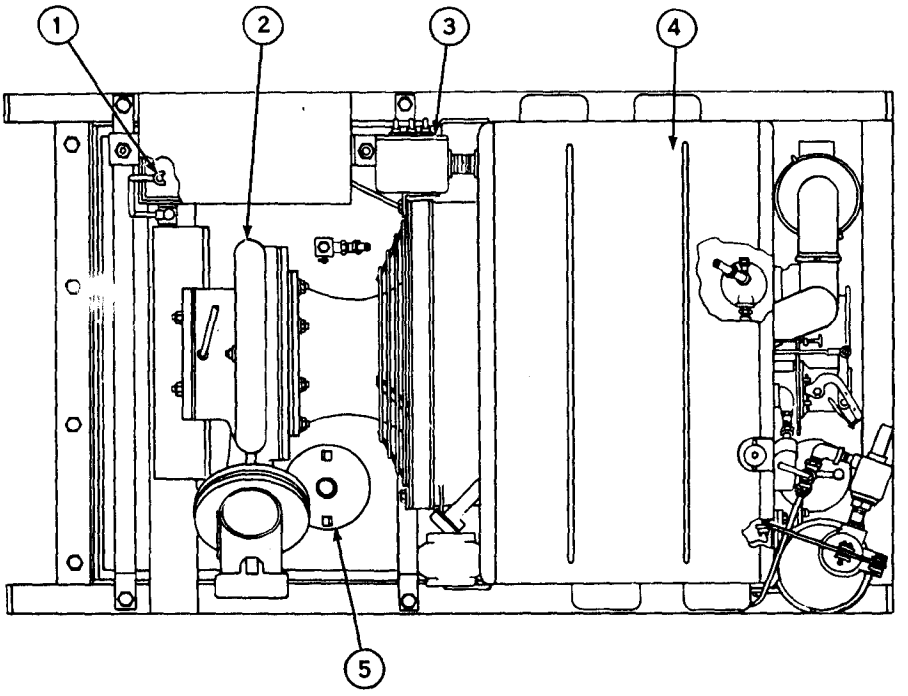
Section III. TROUBLESHOOTING

3-6. GENERAL

This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the centrifugal pump and its components. Each trouble symptom stated is followed by a list of probable causes. The possible remedy recommended is described opposite the probable cause.

PREVENTIVE MAINTENANCE SERVICES
DAILY

GORMAN-RUPP MODEL 62-1/2E13-4A084

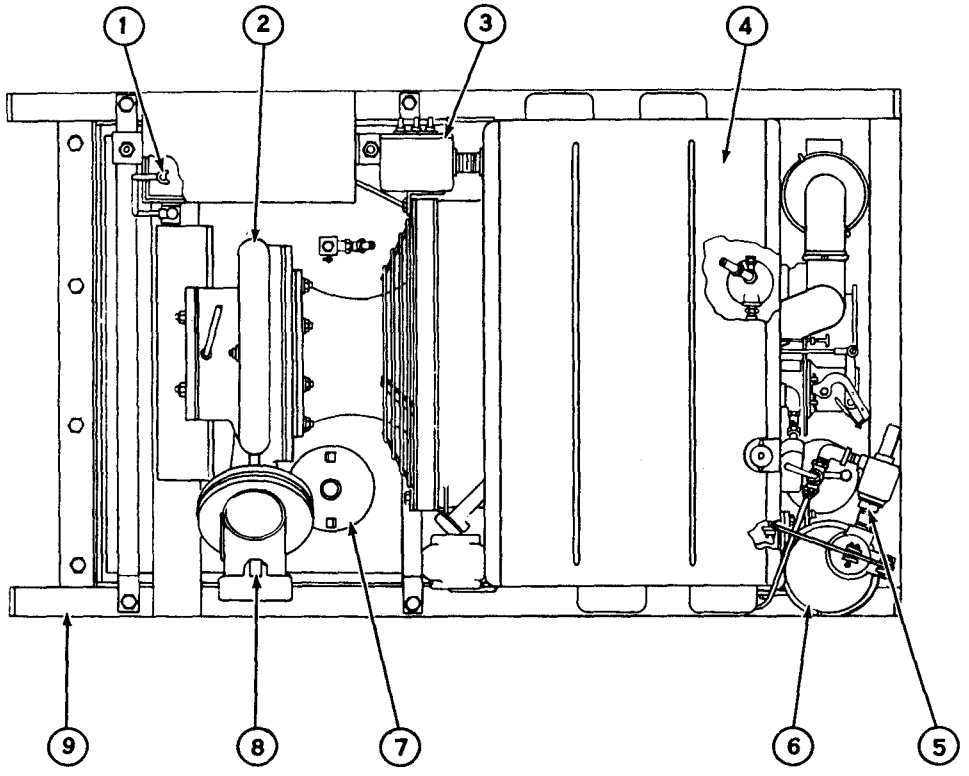


ITEM	NO LUBRICATION REQUIRED	PAR REF
1	BATTERY. Tighten loose cables and mountings. Remove corrosion. Check electrolyte level; add water as required to bring level in each cell above plates. CAUTION: In freezing weather, run engine minimum of one hour after adding water.	
2	PUMP. Inspect for damage or leaks.	
3	CONTROLS AND INSTRUMENTS. Inspect for damage and insecure mounting. With unit operating, inspect for improper operation. Normal operating ranges for instruments are as follows: Oil Pressure Idle 5-7 PSI Governed Speed 40-45 PSI Tachometer Idle 700-800 RPM Governed Speed 3300-3600 RPM	
4	ENGINE. Refer to TM 5-2805-259-14 for all engine maintenance services.	
5	FUEL TANK. Add fuel as required.	
	NOTE 1. OPERATION. During operation observe for leaks and any unusual noise or vibration.	

Figure 3-1. Daily preventive maintenance services.

PREVENTIVE MAINTENANCE SERVICES
QUARTERLY

GORMAN-RUPP MODEL 62-1/2E13-4A084



ITEM	NO LUBRICATION REQUIRED	PAR REF
1	BATTERY. Tighten loose cables and mountings. Remove corrosion. Check electrolyte level; add water as required to bring level in each cell above plates. Clean vent holes in caps before installing. Replace cracked or leaking battery. NOTE: In freezing weather, run engine a minimum of one hour after adding water.	3-14
2	PUMP. Inspect for damage or leaks. Drain seal cavity. If seal cavity fills with water frequently, seal is defective and must be replaced.	3-23
3	CONTROLS AND INSTRUMENTS. Inspect for damage and insecure mounting. With unit operating, inspect for improper operation. Normal operating ranges for instruments are as follows: Oil Pressure Idle 5-7 PSI Governed Speed 40-45 PSI Tachometer Idle 700-800 RPM Governed Speed 3300-3600 RPM	

Figure 3-2. Quarterly preventive maintenance services.

ITEM		PAR REF
4	ENGINE. Refer to TM 5-2805-259-14 for all engine maintenance.	
5	EXHAUST PRIMER. Check for missing parts and for hard operation of primer lever. Check for proper operation of control valve.	3-16
6	MUFFLER. Check for cracks and holes and for insecure mounting.	3-16
7	FUEL TANK. Check for cracks and leaking. Repair or replace if necessary. Add fuel if required.	3-18
8	PRESSURE GAGE. Check for cracked or broken glass, disfigured or illegible dial face, and for moisture in case. Replace if necessary.	
9	SKID BASE. Check for cracks, distortion, and broken weldments. Repair or replace if necessary.	
	NOTE 1. OPERATION. During operation observe for leaks and any unusual noise or vibration.	

Figure 3-2. Quarterly preventive maintenance services (Cont.).

3-7. PUMP FAILS T0 START

Probable cause	Possible remedy
Battery weak or dead	Service battery and recharge, or replace battery if defective (par. 3-14).
Engine defective	Refer to TM 5-2805-259-14,
Impeller frozen	Clean or replace impeller (par. 3-23).
Impeller clogged or jammed	Disassemble and clear obstruction (par. 3-23).

3-8. NO WATER DISCHARGE OR INSUFFICIENT DISCHARGE

Probable cause	Possible remedy
Discharge check valve not seating	Remove discharge elbow at pump discharge flange and clean deposits from around discharge valve. If gasket is worn in area where check valve seats, replace damaged gasket.
Excessive suction lift	Move pump closer to water source.
Leak in suction line	Check all suction hose and line connections, all exhaust primer line connections, and exhaust primer valve for air-tight condition.
Exposed suction intake	Submerge suction intake.
Engine speed too low	Make sure engine speed control is in governed position. Check tachometer with pump in operation; speed should be 3600 rpm. Adjust engine speed if incorrect (TM 5-2805-259-14).
Impeller clogged	Disassemble and clear obstruction (par. 3-23).
Impeller broken, damaged, or worn	Replace impeller (par. 3-23).
Suction hose faulty	Replace suction hose if rubber inner line has collapsed.
Suction line or strainer clogged	Clear strainer and suction line.

3-9. PUMP NOISY

Probable cause	Possible remedy
Impeller loose, broken, or damaged	Tighten or replace impeller (par. 3-23).
pump bearing defective	Replace bearing (par. 3-23).
Engine bearing defective	Refer to engine manual, TM 5-2805-259-14.

3-10. PUMP LEAKS

Probable cause	Possible remedy
Suction or discharge connections loose	Tighten connections.
Bolts on flanged joints loos e	Tighten bolts.
Seal defective	Replace gaskets (par. 3-23).
Gaskets defective	Replace gaskets (par. 3-23).
Pump body defective	Repair or replace pump (par. 3-20 or 3-23).

Section IV. ELECTRICAL SYSTEM

3-11. GENERAL

a. Control Panel. An electrical schematic diagram of the control panel is given in figure 3-3. The control panel provides controls and instruments for starting, stopping, and monitoring the operation of the engine. The RUN-STOP switch is connected to the engine magneto, allowing it to provide spark for the

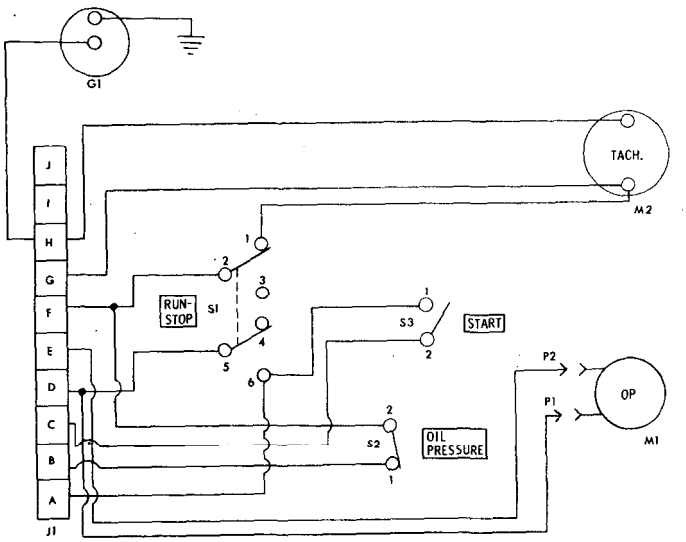


Figure 3-3. Control panel electrical schematic diagram.

engine in the RUN position and to interrupt spark in the STOP position. The OIL switch, when released, completes a connection to the oil pressure gage to provide an indication of engine oil pressure. The START switch, when depressed, completes a connection to the engine starter to turn over the engine.

b. Tachometer and Sender. Engine speed is constantly monitored by the electrical sending unit, which is mounted on the engine governor, and which sends electrical impulses to the tachometer mounted on the control panel. The tachometer provides an indication of engine speed in rpm's.

c. Battery. The battery supplies the electrical power necessary to operate the starter to start the engine. It is a 24-volt, lead-acid type, and it is mounted in a covered battery box which is secured to the skid base. The negative battery terminal is connected to the frame with a ground strap. The positive battery terminal connects to a terminal on the starter by means of a battery cable.

3-12. CONTROL PANEL

a. Removal and Disassembly.

(1) Refer to figure 3-4 and remove the control panel.

(2) Refer to figure 3-5 and disassemble the control panel as necessary to replace defective parts.

b. Cleaning and Inspection.

(1) Clean all electrical parts with a cloth lightly dampened with an approved cleaning solvent; dry thoroughly.

(2) Inspect for broken or damaged wire insulation; worn, burned, or loose terminals, and cracked, broken, or damaged parts.

(3) Check switches for proper continuity. Refer to figure 3-3.

(4) Check the tachometer and oil pressure gage for cracked dial glasses, discolored or illegible dials, or other damage.

(5) Repair or replace damaged parts.

c. Reassembly and Installation.

(1) Refer to figures 3-5 and 1-3 and reassemble the control panel.

(2) Refer to figure 3-4 and install the control panel.

3-13. ELECTRICAL SENDING UNIT

a. Removal. Refer to figure 3-6 and remove the electrical sending unit.

b. Cleaning and Inspection.

(1) Clean sending unit with a cloth dampened lightly with an approved cleaning solvent; dry thoroughly.

(2) Inspect sending unit for cracks, breaks, defec - tive insulation, and other damage. Manually turn the shaft of the sender. It should rotate easily without catching or binding. Replace a damaged sender.

c. Installation. Refer to figure 3-6 and install the electrical sending unit.

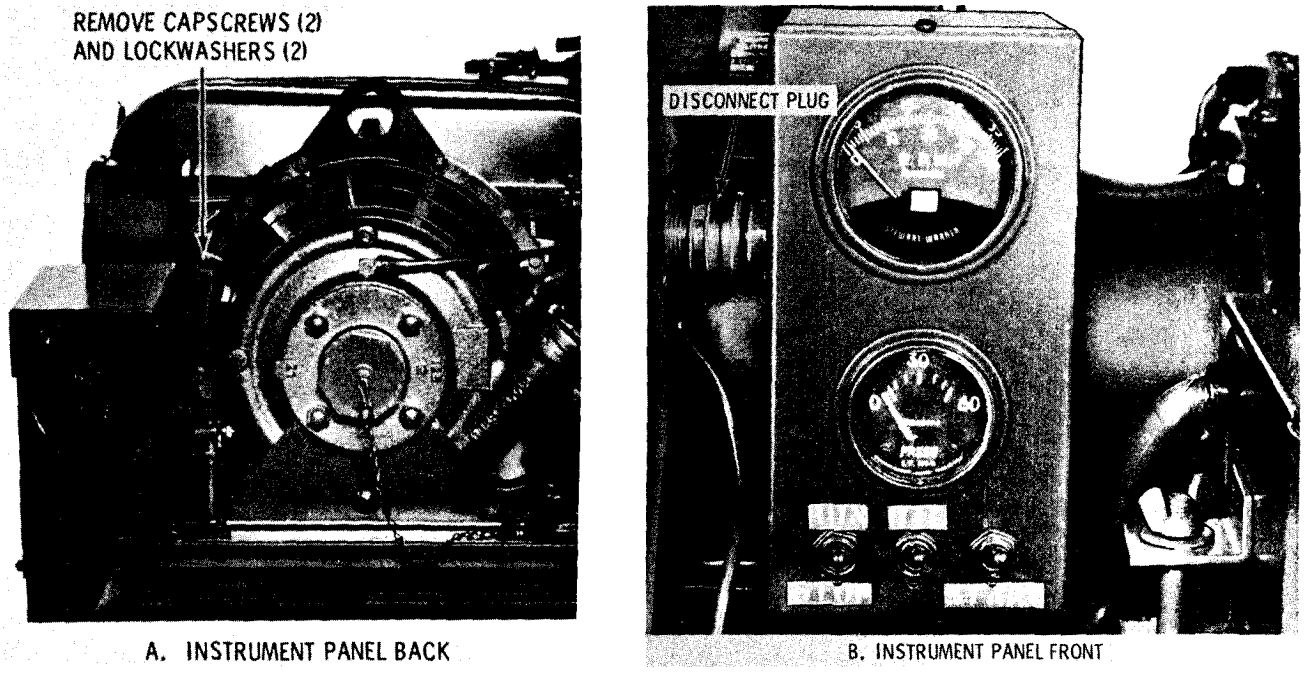


Figure 3-4. Control panel, removal and installation.

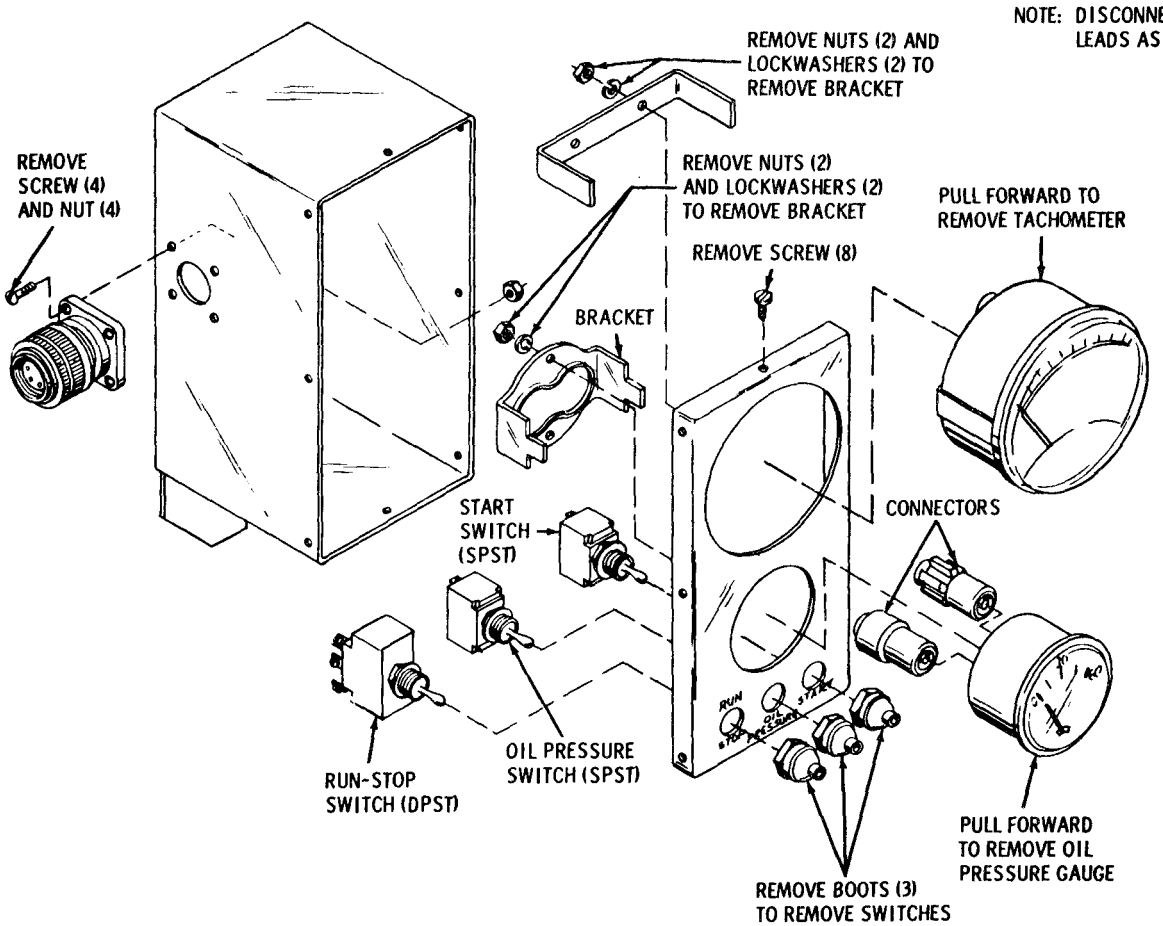


Figure 3-5. Control panel, disassembly and reassembly.

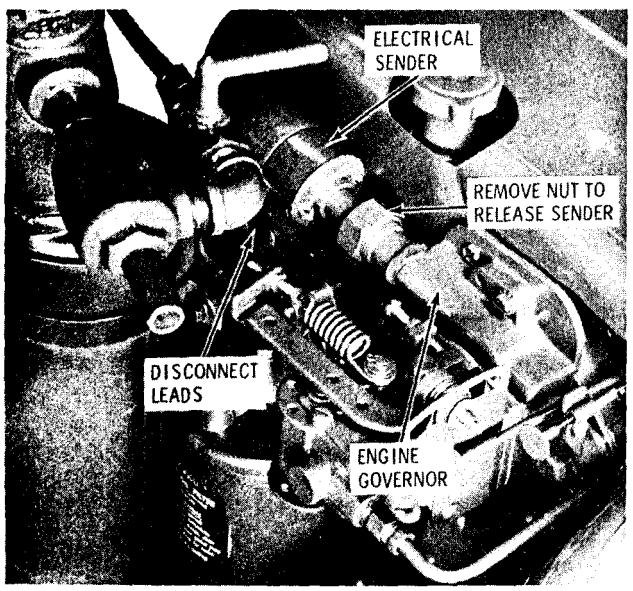


Figure 3-6. Electrical sending unit, removal and installation.

3-14. BATTERY AND BATTERY BOX

a. Removal and Disassembly. Refer to figure 3-7, remove the battery, and disassemble the battery box as necessary to replace defective components.

b. Cleaning and Inspection.

(1) Clean the battery box, battery terminals, cables, and cover with a mild bicarbonate of soda solution to remove loose corrosion.

(2) Remove loose paint from metal parts with a wire brush and repaint bare spots,

(3) Inspect battery leads for burned, broken, or damaged insulation. Replace cables if damaged.

(4) Inspect battery for cracks, leaking, breaks, loose terminals, and other damage. Replace battery if damaged.

c. Reassembly and Installation. Refer to figure 3-7 and reassemble and install the battery box and battery.

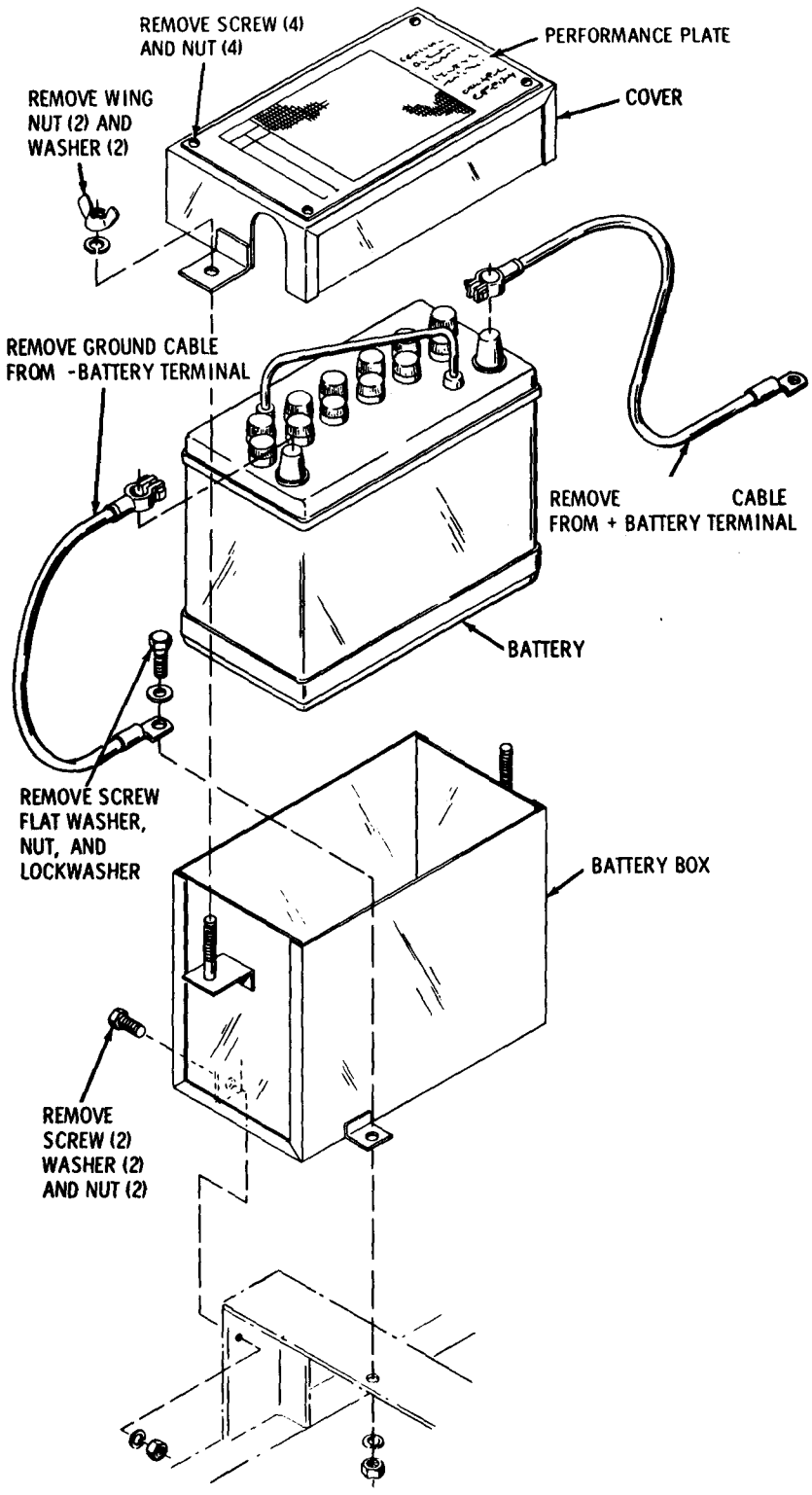


Figure 3-7. Battery and battery box, disassembly and reassembly.

3-15. DESCRIPTION

a. General. The exhaust system consists of a muffler which connects to the manifold piping of the engine, and an exhaust primer which mounts on top of the muffler.

b. Muffler. The muffler helps reduce engine exhaust noise. It consists of a sheetmetal cylinder which contains baffles around which exhaust gases must circulate before they are dispelled to atmosphere. This system tends to equalize the pressures at which the exhaust is released, resulting in a noise reduction.

c. Exhaust Primer. When the exhaust primer is not operating, exhaust gases from the muffler are directed through the exhaust port at the top of the priming valve body with little restriction. To operate the primer, the exhaust primer lever is positioned so that a cap seals the exhaust port at the top of the valve body. This forces the exhaust gases through a venturi system at the side of the valve body. As the gases pass through the venturi, their speed is highly accelerated. Suction is created as the gases rush past a port just beyond the restricted area of the venturi. A vacuum line connects this port and a port at the top of the pump housing. When the exhaust primer control valve in the exhaust line is open, the suction created by the venturi action sucks water into the pump body, and when it is filled, into the suction line. The water which is sucked through the suction line is discharged through the primer. This indicates that the pump body is full and that additional priming is not required. The exhaust primer control valve is then closed and the exhaust primer lever operated to remove the cap from the top of the exhaust primer and to allow the exhaust gases to be discharged through the exhaust port at the top of the body without restriction. The exhaust primer control valve should remain closed until the next time priming is required.

3-16. MUFFLER AND EXHAUST PRIMER

a. Removal and Disassembly.

(1) Refer to figure 3-8 and remove the muffler and exhaust primer.

(2) Refer to figure 3-9 and disassemble the muffler and exhaust primer as necessary to replace defective parts.

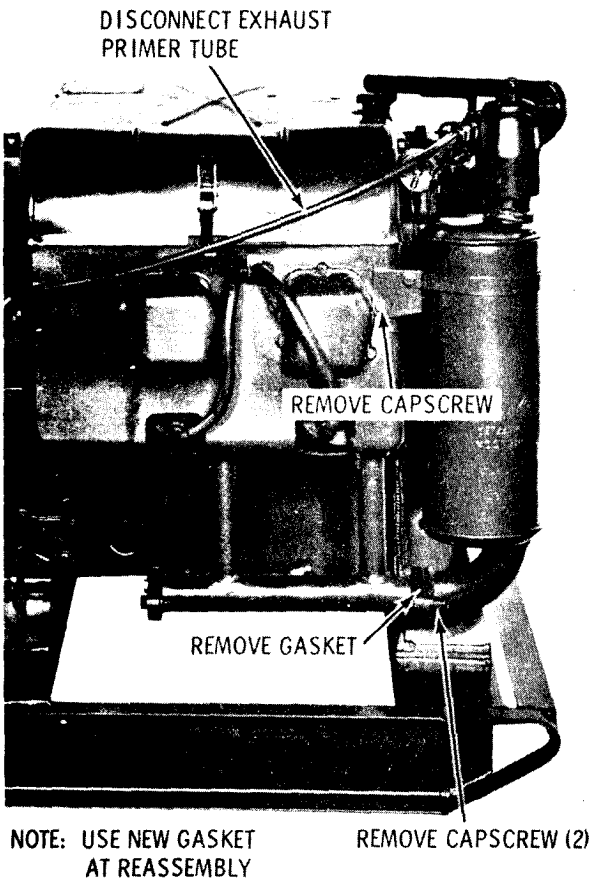


Figure 3-8. Muffler and exhaust primer, removal and installation.

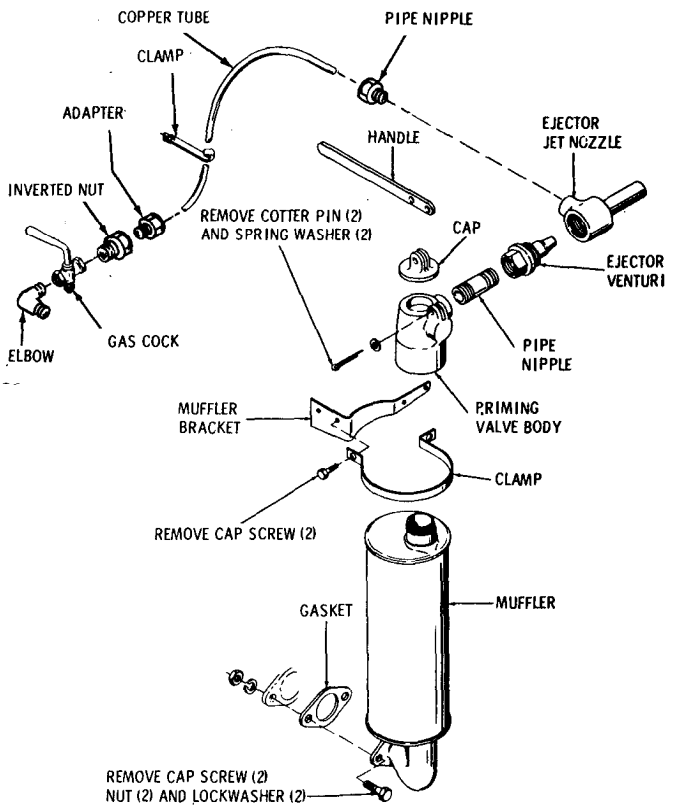


Figure 3-9. Muffler and exhaust primer, disassembly and reassembly.

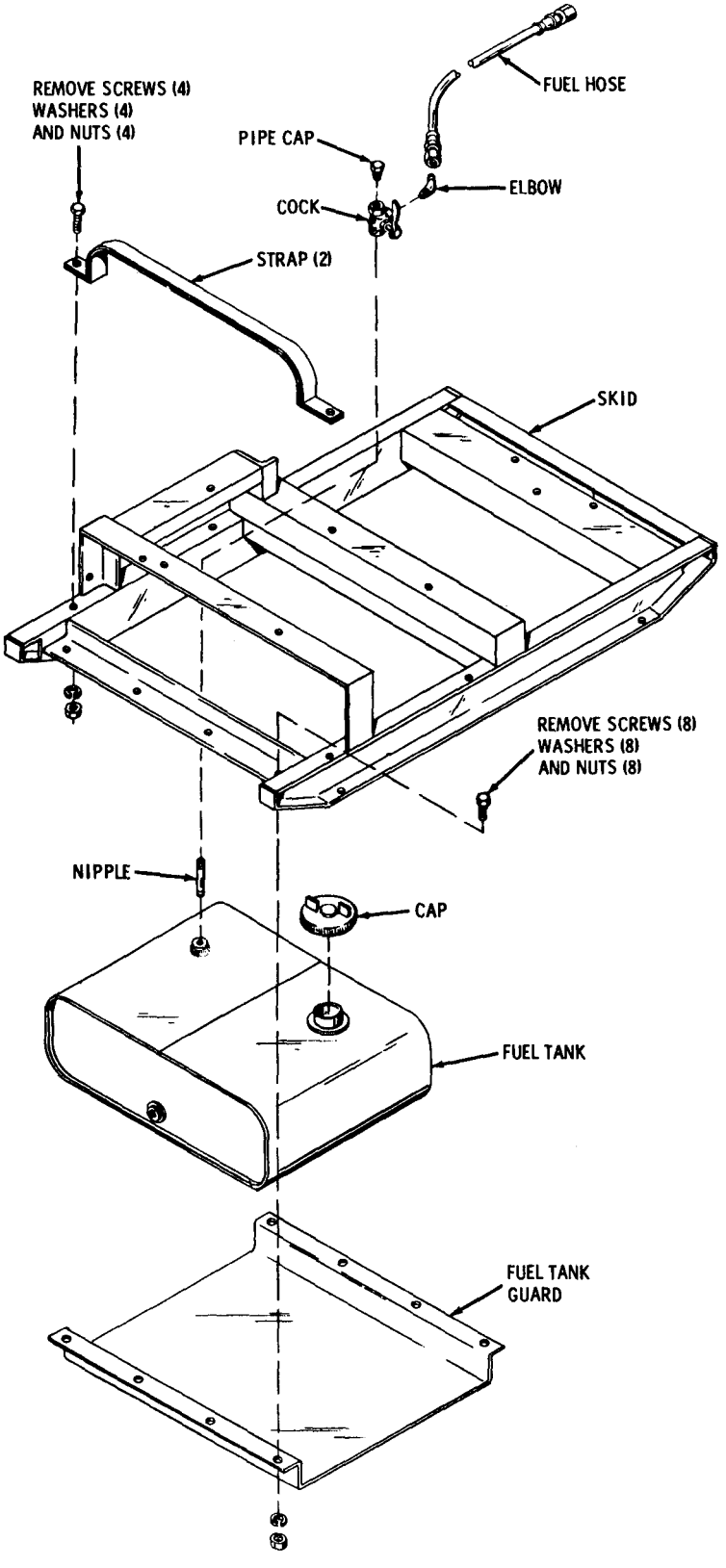


Figure 3-10. Fuel tank, lines, and fittings, disassembly and reassembly.

b. Cleaning and Inspection.

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

(2) Inspect all parts for cracks, breaks, or other damage. Replace damaged parts.

c. Reassembly and Installation.

(1) Refer to figure 3-9 and reassemble the muffler and exhaust primer.

(2) Refer to figure 3-8 and install the muffler and exhaust primer.

Section VI. FUEL SYSTEM

3-17. GENERAL

The fuel system, which consists of the fuel tank, shutoff cock, and fuel hose, supplies fuel to the engine fuel filter. Fuel is drawn up from the skid-base-mounted fuel tank by the fuel pump on the engine.

3-18. FUEL TANK, LINES, AND FITTINGS

a. Removal and Disassembly. Refer to figure 3-10 and remove and disassemble the fuel tank lines and fittings.

b. Cleaning and Inspection.

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

(2) Inspect fuel tank for cracks, breaks, leaking, and other damage. Repair or replace damaged tank.

(3) Inspect the fuel hose for cracks, deterioration, kinks, restrictions, and other damage.

(4) Inspect all fuel fittings for cracks, damaged threads, and other damage. Replace damaged parts.

c. Reassemble and Installation. Refer to figure 3-10, and reassemble and install the fuel tank, lines, and fittings.

Section VII. REMOVAL AND INSTALLATION OF MAJOR COMPONENTS

3-19. GENERAL

This section provides information for removing the pump and engine from, and installing them on, the skid base.

3-20. PUMP

Note. This procedure is intended for use when it is necessary to remove the pump for replacement purposes only. When overhauling the

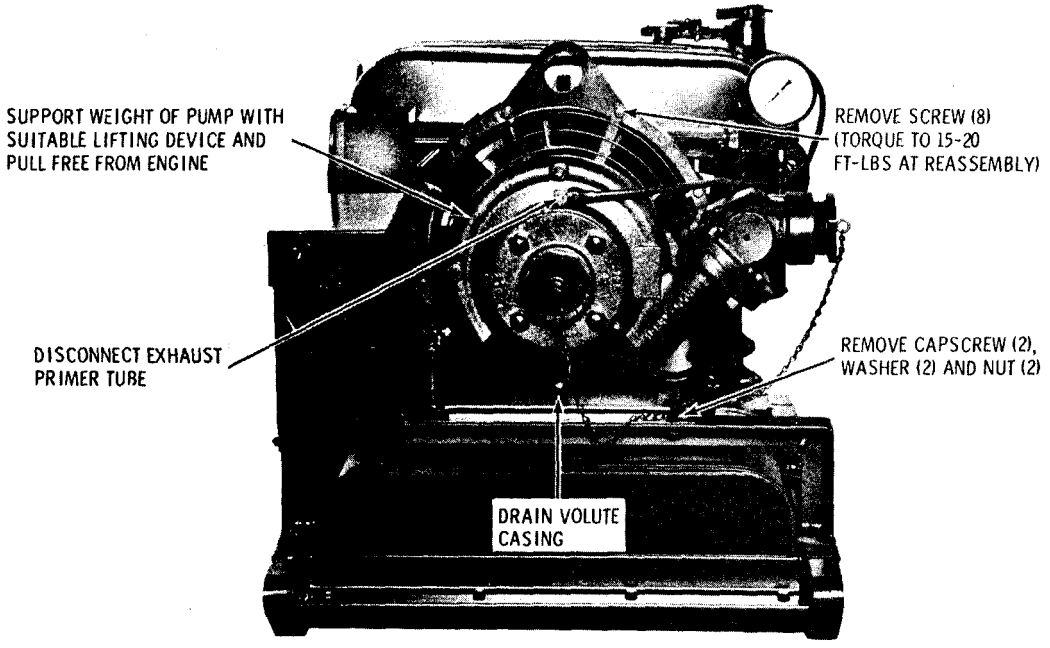


Figure 3-11. Pump, removal and installation.

pump, it is more easily disassembled while mounted on and connected to the engine (par. 3-23).

a. Removal.

(1) Remove the control panel (par. 3-12).

(2) Refer to figure 3-11 and remove the pump from the skid and engine,

b. Cleaning and Inspection.

(1) Clean the exterior of the pump with a cloth dampened with an approved cleaning solvent; dry thoroughly.

(2) Inspect the pump for cracks, broken castings, damaged fittings and threads, and other damage. Manually turn the pump shaft to check for free rotation. It should turn freely without binding or scraping. Repair or replace pump if necessary.

c. Installation.

(1) Refer to figure 3-11 and install the pump.

(2) Install the control panel (par. 3- 12).

3-21. ENGINE

a. Removal.

(1) Remove the pump (par. 3-20).

(2) Remove battery cable from plus (+) terminal, disconnect fuel line at the fuel tank.

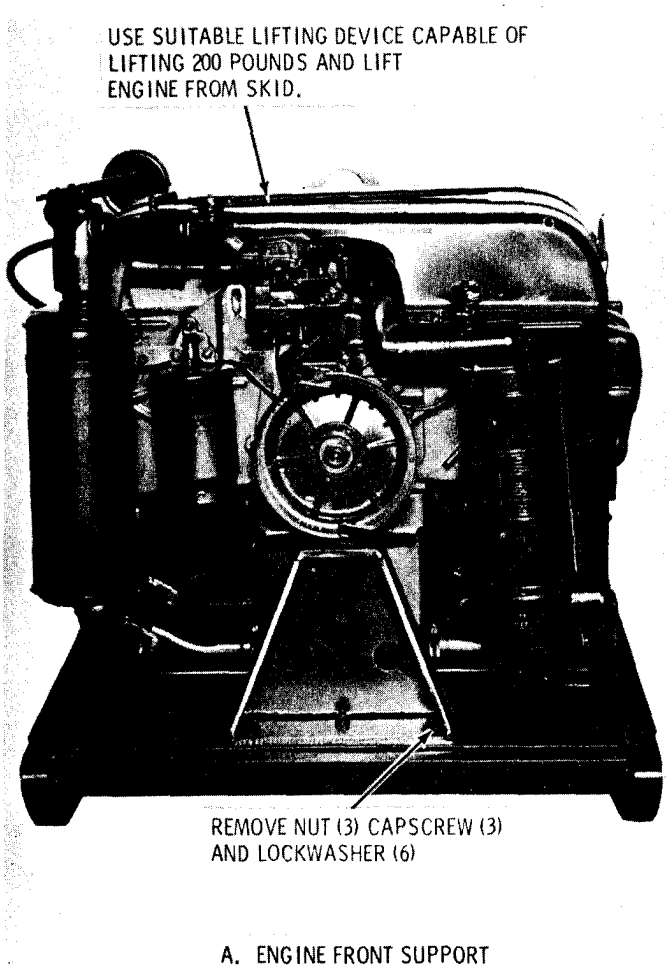
(3) Refer to figure 3-12 and remove the engine.

b. Installation

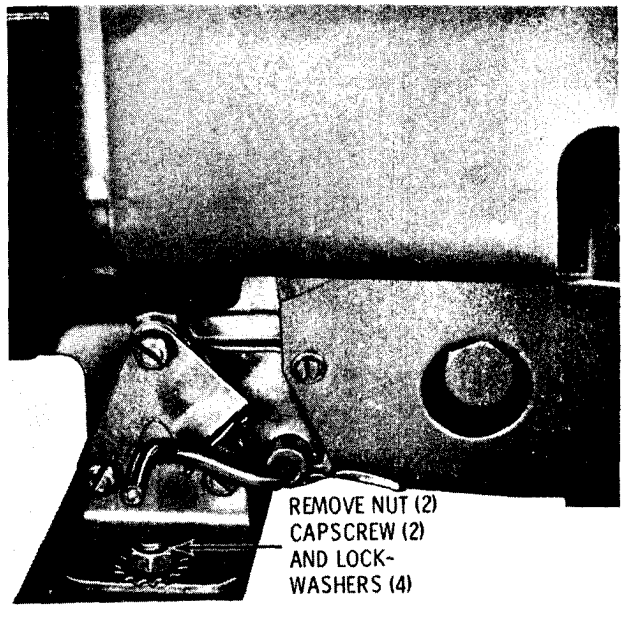
(1) Refer to figure 3-12 and install the engine.

(2) Reconnect the fuel line and plus (+) battery cable.

(3) Install the pump (par. 3-20).



A. ENGINE FRONT SUPPORT



B. ENGINE REAR SUPPORT

Figure 3-12. Engine, removal and installation.

3-22. GENERAL

This section provides information useful for repair and replacement of pump components. Detailed repair information for the engine is provided in the engine manual. TM 5-2805-259-14.

3-23. CENTRIFUGAL PUMP

a. Disassembly.

Warning. Always disconnect spark plug leads from spark plugs before starting disassembly procedures. This will prevent engine from starting accidentally during disassembly.

Disassemble and remove the pump, following the sequence of the key index numbers assigned to the exploded view in figure 3-13. Give particular attention to the following:

(1) Before beginning disassembly:

(a) Drain volute casing (fig. 3-11).

(b) Remove exhaust primer connection from priming tube (16).

(c) Remove the attaching parts which secure the support bracket (25) to the skid.

(2) When volute casing (21) and assembled parts are removed, impeller (27) and intermediate bracket (42) will remain mounted on the engine.

(3) A right-hand thread secures impeller (27) to impeller shaft (44). To remove the impeller from the impeller shaft, hold the engine starter pulley and turn the impeller counterclockwise facing impeller end.

(4) After the removal of the impeller, the shims (28), seal spring, and seal rotating element can be removed from the impeller shaft (44). The shaft sleeve (34) can also be removed.

(5) Remove the eight nuts (29) and lockwashers (30) that secure the seal plate (32) to the intermediate bracket (42) of the pump; remove the seal plate and its assembled wear ring (35), and stationary ring of the seal assembly. Remove the stationary ring and its assembled O-ring from the seal plate.

(6) Remove the eight capscrews (36 and 38) and lockwashers (37 and 39) that secure the intermediate bracket (42) and guard (40) to the engine; remove the guard and intermediate bracket with its assembled impeller shaft (44), bearing (48), and seal (46). Pull straight out on the bracket so that the splines of the impeller shaft will disengage the splined coupling (53) secured to the engine.

(7) Remove the retaining ring (43) and push the assembled impeller shaft (44) and bearing (48) from the intermediate bracket (42). The bearing retainer (45) and its assembled oil seal (46) will be released as the shaft is removed from the bracket. Remove the oil seal (50) from the intermediate bracket after the shaft assembly is removed.

(8) Remove the two retaining rings (47 and 49) and press the shaft (44) from the bearing (48). .

(9) Remove the four capscrews (51) and lockwashers (52) that secure the splined coupling (53) to the engine. Do not remove the pilot bushing from the coupling unless it is damaged and requires replacement.

b. Cleaning. Clean all parts in an approved solvent and blow dry with clean, dry compressed air.

c. Inspection and Repair.

(1) Inspect all parts for wear, cracks, scoring, and other damage. Replace all gaskets and seals, and all other parts found to be defective.

(2) Check the condition of the wear rings (28 and 35) pressed into the volute casing (21) and seal plate (32). The internal diameter of the rings should not exceed 0.070 inch more than the external diameter of the mating portion of the impeller. If worn or damaged, lay the assembly on a flat surface and block firmly. Using a sharp chisel, remove the bronze wear rings. Press new rings into place until they are fully seated. If the internal diameter of the new wear ring is 0.070 inch greater than the mating external diameter of the old impeller, replace the impeller.

(3) Inspect the ball bearing for cracked or scored races, pitted or scored balls, and signs of overheating. Rotate the races by hand and check for rough, catching, or binding operation. There should be no more than just perceptible play between the balls and races.

(4) It is good practice to replace the shaft seal with every overhaul. Replace the seal as a complete assembly. Do not mix new and used parts.

d. Reassembly and Installation. Pump reassembly and installation are essentially the reverse of the disassembly sequence. Refer to figures 3-13 and 3-14 and to torque values in paragraph 1-3b(3). Give particular attention to the following:

(1) Install the splined coupling (53) on the engine with four capscrews (51).

(2) Press the oil seal (50) in the seal seat of the intermediate bracket (42) so that the lip faces the bearing bore.

(3) Pack the ball bearing (48) with grease per MIL-G-23827. Install the retaining ring (49) in the groove of the impeller shaft (44). Press the ball bearing (48) into the shaft until it engages the retaining ring. Install the second retaining ring to retain the bearing.

(4) The bearing (48), pressed on the impeller shaft, is a light push fit into the intermediate bracket (42). Install the assembled bearing and impeller shaft in the bracket. Press the seal (46) in the bearing retainer (45) and position the assembled seal and retainer in the bearing bore of the intermediate bracket with the lip of the seal facing the bearing. Retain the assembled parts with the retaining ring (43).

(5) Position the assembled intermediate bracket and shaft, hoisting bracket (41) and guard (40) on the engine. Secure with eight capscrews (36 and 38) and lockwashers (37 and 39). Tighten the capscrews to 15-20 ft-lbs.

(6) The shaft seal assembly (33) consists of stationary ring and a rotary element as shown in figure 3-14. The stationary ring uses an O-ring around its circumference to seal the stationary ring in the seat of the seal plate. The one face of the stationary ring is lapped and must face outward so that it can be engaged by the mating face of the rotary seal. The rotary element of the seal is held into engagement with the stationary ring by a spring which is part of the seal assembly.

Caution: Take care during the installation of the stationary ring so that the lapped face is not marred. Install the ring until it bottoms in the bore. A marred face or an improperly seated stationary ring will result in a leak when the pump is restored to service.

(7) Lubricate the bore of the seal plate (32) with a light coat of oil, MIL-L-2104, grade 10. Install the O-ring on the stationary ring of the seal assembly in the seal plate. Position the seal plate on the intermediate bracket and secure with eight nuts (19). Take care not to dislodge the stationary ring during installation.

(8) Lubricate the internal diameter of the rubber sleeve of the rotary portion of the seal with oil, MIL-L-2104, grade 10. One end of shaft sleeve (34) has a bevel on the internal diameter. Insert the shaft sleeve into the rubber sleeve so that the beveled end is on the same end as the lapped seal face and approximately flush with the lapped face of the rotating element.

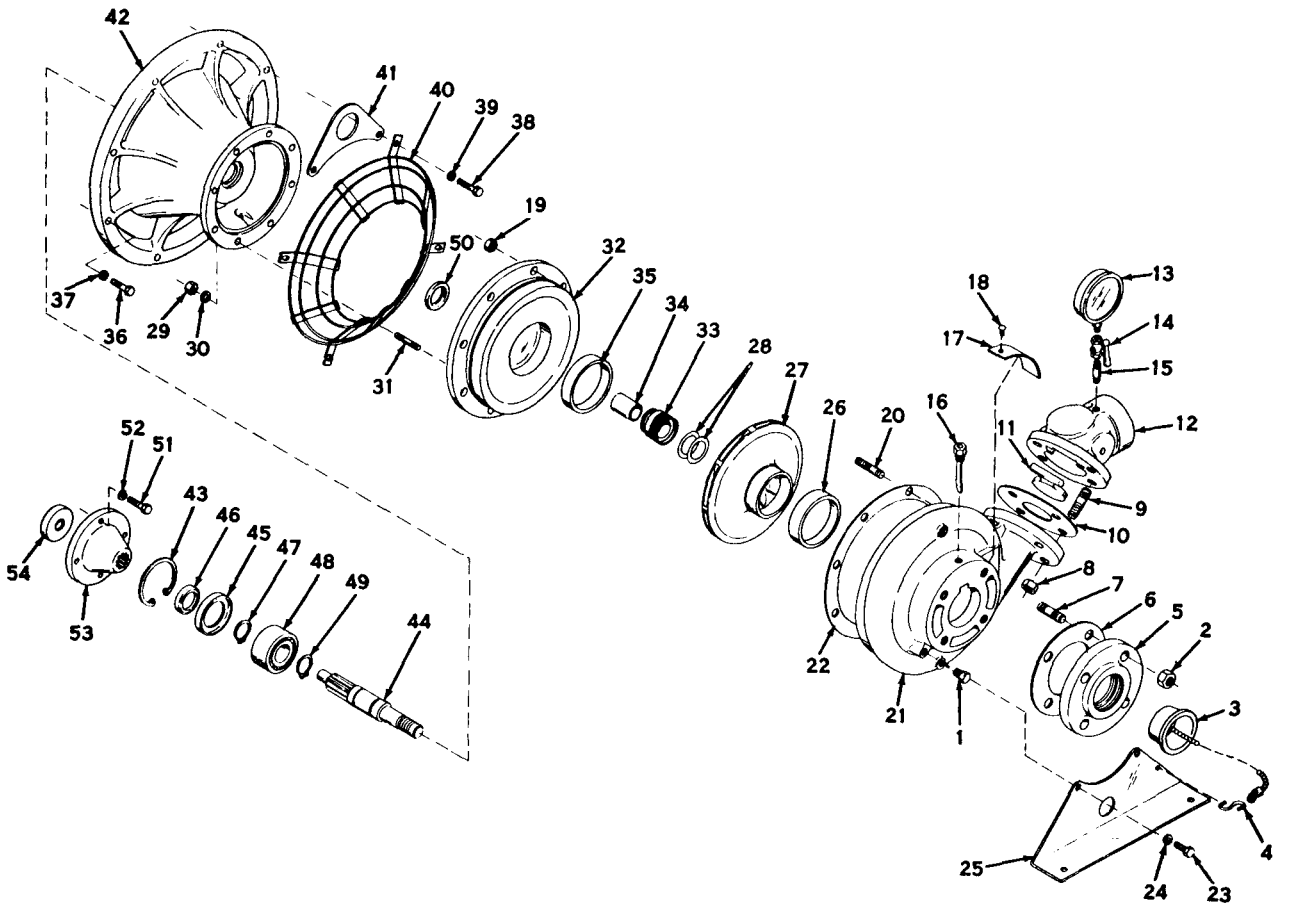
(9) Install the assembled shaft sleeve and rotary element of the shaft seal on the impeller shaft so that the lapped surface of the rotary seal faces the engine. Push the shaft sleeve onto the shaft until it seats against the shaft shoulder.

Caution. Make sure that no dust or foreign material is on the lapped surfaces of the seal elements as the lapped surfaces engage.

(10) If no parts except seal (33) have been replaced, the thickness of shims (28) which had been used between the shaft sleeve and impeller may be reinstalled. If the impeller shaft, intermediate bracket, seal plate, or impeller was replaced, add shims between the impeller and shaft sleeve to provide clearance between the impeller and seal plate and equalize the distance between the impeller and housing parts. Refer to figure 3-14. Shims are provided in thicknesses of 0.005, 0.010, and 0.030.

(11) Install the volute casing (21) and gasket (22). Secure with eight nuts and torque to 15-20 ft-lbs. Make sure no rubbing occurs between the impeller and casing. If necessary, remove some of the shims that were installed between the impeller and shaft sleeve.

(12) Refer to figure 3-13 and complete reassembly of the pump.



1. Pipe plug, 1/4"
2. Hex nut, 5/8"-11 (4 reqd)
3. Plug
4. Chain hook
5. Suction flange, 2-1/2" NPT
6. Suction flange gasket
7. Stud, 5/8"-11 x 2" (4 reqd)
8. Nut, 5/8"-11 (4 reqd)
9. Stud, 5/8"-11 x 2" (4 reqd)
10. Check valve gasket
11. Valve arm
12. Check valve
13. Pressure gage
14. Cock
15. Pipe nipple
16. Priming tube
17. Nameplate
18. Screw
19. Nut, 1/2"-13 (8 reqd)
20. Stud, 1/2"-13 x 1-1/2" (8 reqd)
21. Volute casing
22. Volute casing gasket
23. Capscrew, 3/8"-16 x 3/4" (2 reqd)
24. Lockwasher, 3/8" (2 reqd)
25. Support bracket
26. Wear ring
27. Impeller
28. Shim set
29. Nut, 3/8"-16 (8 reqd)
30. Lockwasher, 3/8" (8 reqd)
31. Stud (8 reqd)
32. Seal plate
33. Seal assembly
34. Shaft sleeve
35. Wear ring
36. Capscrew, 5/16"-18 x 1-3/4" (6 reqd)
37. Lockwasher, 5/16" (6 reqd)
38. Capscrew, 5/16"-18 x 2" (2 reqd)
39. Lockwasher, 5/16" (2 reqd)
40. Guard
41. Hoisting bracket
42. Intermediate bracket
43. Retaining ring
44. Impeller shaft
45. Bearing retainer
46. Oil seal
47. Retaining ring
48. Bearing
49. Retaining ring
50. Oil seal
51. Capscrew, 5/16"-18 x 1" (4 reqd)
52. Lockwasher, 5/16" (4 reqd)
53. Splined coupling
54. Pilot bushing

Figure 3-13. Centrifugal pump, exploded view.

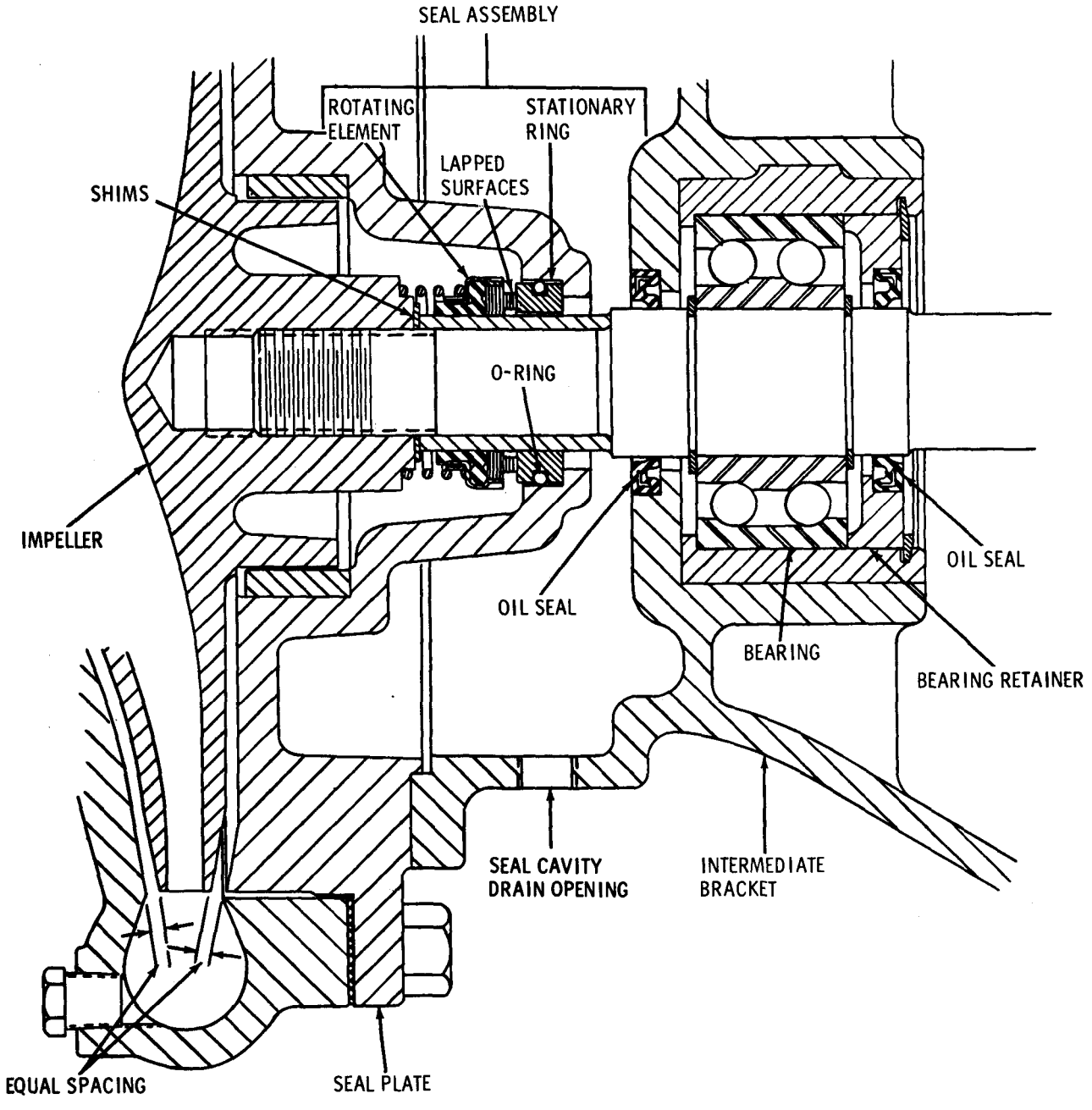


Figure 3-14. Cross-sectional view showing seal and impeller installation.

APPENDIX A

BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

A-1. Scope

This appendix lists items which accompany the Centrifugal Pump or are required for installation, operation, or operator's maintenance.

A-2. General

This Basic Issue Items List divided into the following sections:

a. Basic Issue Items -- Section II. A list of items which accompany the Centrifugal Pump and are required by the operator/crew for" installation, operation, or maintenance.

b. Maintenance and Operating Supplies -- Section III. A listing of maintenance and operating supplies required for initial operation.

A-3. Explanation of Columns

The following provides an explanation of columns in the tabular list of Basic Issue Items, Section II.

a. Source, Maintenance, and Recoverability Codes (SMR), Column 1:

(1) Source code, indicates the selection status and source for the listed item. Source codes are:

Code	Explanation
P	Applied to repair parts which are stocked in or supplied from GSA/DSA or Army supply system, and authorized for use at indicated maintenance categories.

(2) Maintenance code, indicates the lowest category of maintenance authorized to install the listed item. The maintenance level code is:

Code	Explanation
C	Operator/crew.

b. Federal Stock Number, Column 2. This column indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. Description, Column 3. This column indicates the Federal item name and any additional description of the item required. The abbreviation "w/e", when used as a part of the nomenclature, indicates the Federal stock number includes all armament, equipment, accessories, and repair parts issued with the item. A part number or other reference number is followed by the applicable five-digit Federal supply code for manufacturers in parenthesis. The physical security classification of the item is indicated by the parenthetical entry repair parts quantities included in kits, sets, and assemblies are shown in front of the repair part name.

d. Unit of Measure (u/m), Column 4. A 2 character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based, e.g., ft, ca, pr, etc.

e. Quantity Incorporated in Unit, Column 5. This column indicates the quantity of the item used in the functional group or the assembly group. A "V" appearing in this column in lieu of a quantity indicates that a definite quantity cannot be indicated (e.g., shims, spacers, etc.).

f. Quantity Furnished With Equipment, Column 6. This column indicates the quantity of an item furnished with the equipment.

g. Illustration, Column 7. This column is divided as follows:

(1) Figure Number Column 7a. Indicates the figure number of the illustration in which the item is shown.

(2) Item Number Column 7b. Indicates the call out number used to reference the item in the illustration.

A-4. Explanation of Columns in the Tabular List of Maintenance and Operating Supplies -- Section III

a. Component Application. Column 1. This column identifies the-component application of each maintenance or operating supply i tern.

b. Federal Stock Number, Column 2. This column indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. Description, Column 3. This column indicates the item name and brief description.

d. Quantity Required for Initial Operation, Column 4. This column indicates the quantity of each maintenance or operating supply item required for initial operation of the equipment.

e. Quantity Required for 8 Hours Operation, Column 5. This column indicates the estimated quantities required for an average 8 hours of operation

f. Notes, Column 6. This column indicates informative notes keyed to data appearing in a preceding column.

A-5. Abbreviations

Abbreviations	Explanation
ea	each
gal	gallon
w/	with

SECTION II. BASIC ISSUE ITEMS

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF NO. & MFR CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) QTY FURN WITH EQUIP	(7) ILLUSTRATION (A) FIG NO.	(7) ILLUSTRATION (B) ITEM NO.
		GROUP 31 - BASIC ISSUE ITEMS MANUFACTURER OR DEPOT INSTALLED					
		3100 - BASIC ISSUE ITEMS MANUFACTURER OR DEPOT INSTALLED					
PC	7520-559-9618	Case, Cotton Duck: Maintenance and Operating Equipment Manuals	EA		1		
		DEPARTMENT OF THE ARMY OPERATOR, ORGANIZATIONAL, DIRECT AND GENERAL SUPPORT MAINTENANCE MANUAL TM 5-2805-259-14	EA		1		
		GROUP 32 - BASIC ISSUE ITEMS TROOP INSTALLED					
		3200 - BASIC ISSUE ITEMS TROOP INSTALLED OR AUTHORIZED					
PC	4210-555-8837	Extinguisher, Fire, Hand, Monobromotriflouromethane, w/bracket	EA				
		NOTE: Refer to TM 5-2805-259-14 for engine basic issue items					

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. General

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

b. Section II designates overall responsibility for the performance of maintenance functions on the identified end item or component. The implementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.

c. Section III lists the special tools and test equipment required for each maintenance function as referenced from Section II.d.

d. Section IV contains supplemental instructions, explanatory notes and/or illustrations required for a particular maintenance function.

B-2. Explanation of Columns in Section II

a. Group Number. Column 1. The functional group is a numerical group set up on a functional basis. The applicable functional grouping indexes (obtained from TB 750-93-1, Functional Grouping Codes) are listed on the MAC in the appropriate numerical sequence. These indexes are normally set up in accordance with their function and proximity to each other.

b. Functional Group. Column 2. This column contains a brief description of the components of each functional group.

c. Maintenance Functions. Column 3. This column lists the various maintenance functions (A through K) and indicates the lowest maintenance category authorized to perform these functions. The symbol designations for the various maintenance categories are as follows:

C - Operator or crew

O - Organizational maintenance

F - Direct support maintenance

H - General support maintenance

D - Depot maintenance

The maintenance functions are defined as follows:

A - INSPECT. To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards.

B - TEST. To verify serviceability and to detect electrical or mechanical failure by use of test equipment.

C - SERVICE. To clean, to preserve, to charge, to paint, and to add fuel, lubricants, cooling agents, and air.

D - ADJUST. To rectify to the extent necessary to bring into proper operating range.

E - ALIGN. To adjust specified variable elements of an item to bring to optimum performance.

F - CALIBRATE. To determine the corrections to be made in the readings of instruments or test equipment used in precise measurement. Consists of the comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared with the certified standard.

G - INSTALL. To set up for use in an operational environment such as an emplacement, site, or vehicle.

H - REPLACE. To replace unserviceable items with serviceable assemblies, subassemblies, or parts.

I - REPAIR. To restore an item to serviceable condition. This includes, but is not limited to, inspection, cleaning, preserving, adjusting, replacing, welding, riveting, and strengthening.

J - OVERHAUL. To restore an item to a completely serviceable condition as prescribed by maintenance serviceability standards using the Inspect and Repair Only as Necessary (I ROAN) technique,

K - REBUILD. To restore an item to a standard as nearly as possible to original or new condition in appearance, performance, and life expectancy. This is accomplished through complete disassembly of the item, inspection of all parts or components, repair or replacement of worn or unserviceable elements (items) using original manufacturing tolerances and specifications, and subsequent reassembly of the item.

d. Section III. Not applicable.

e. Remarks. Column 5. This column is provided for referencing by code the remarks (Section IV) pertinent to the maintenance functions.

B-3. Explanation of Columns in Section IV

a. Reference Code. This column consists of two letters separated by a dash, both of which are references to Section II. The first letter references column 5 and the second letter references a maintenance function, column 3, A through K.

b. Remarks. This column lists information pertinent to the maintenance function being performed, as indicated on the MAC, Section II.

SECTION II - MAINTENANCE ALLOCATION CHART

FOR

PUMP CENTRIFUGAL: 200 GPM, GED

GORMAN-RUPP MODEL 62-1/2E13-4A084, FSN 4320-935-1618

(1) GROUP NO.	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTIONS											(4) TOOLS AND EQUIPMENT	(5) REMARKS
		A INSPECT	B TEST	C SERVICE	D ADJUST	E ALIGN	F CALIBRATE	G INSTALL	H REPLACE	I REPAIR	J OVERHAUL	K REBUILD		
01	ENGINE													
0100	Engine Assembly:													
	Engine, gasoline	C	O	C					F	H	H			A
03	FUEL SYSTEM													
0306	Tanks, Lines:													
	Fuel tank	C	F	C					O	F				B
04	EXHAUST SYSTEM													
0401	Muffler and Pipes	C							O					
06	ELECTRICAL SYSTEMS AND COMPONENTS													
0607	Instrument or Engine Control Panel	C							O					
0612	Batteries, Storage	C	O	O					O					

SECTION III. MAINTENANCE AND OPERATING SUPPLIES

(1) COMPONENT APPLICATION	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION	(4) QUANTITY REQUIRED F/ INITIAL OPERATION	(5) QUANTITY REQUIRED F/ 8 HRS OPERATION	(6) NOTES
0306 Fuel Tank	9130-160-1818	Gasoline, Automotive, Combat, Bulk	2-1/2 GAL	20 GAL	

SECTION II - MAINTENANCE ALLOCATION CHART

FOR

PUMP, CENTRIFUGAL: 200 GPM, GED

GORMAN-RUPP MODEL 62-1/2E13-4A084, FSN 4320-935-1618

(1) GROUP NO.	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTIONS A INSPECT	B TEST	C SERVICE	D ADJUST	E ALIGN	F CALIBRATE	G INSTALL	H REPLACE	I REPAIR	J OVERHAUL	K REBUILD	(4) TOOLS AND EQUIPMENT	(5) REMARKS
15	FRAME													
1501	Frame Assembly:													
	Skid									F				C
22	BODY, CHASSIS OR HULL AND ACCESSORY ITEMS													
2210	Data Plates									O				
47	GAGES													
4701	Instruments (Speed)									O				
4702	Gages, Mountings, Lines and Fittings									O				
55	PUMPS													
5500	Pump Assembly:													
	Pump Assembly	C		C					F	O	H			
	Volute Casing	C		C						F				

SECTION II - MAINTENANCE ALLOCATION CHART

FOR

PUMP, CENTRIFUGAL: 200 GPM, GED

GORMAN-RUPP MODEL 62-1/2E13-4A084, FSN 4320-935-1618

(1) GROUP NO.	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTIONS											(4) TOOLS AND EQUIPMENT	(5) REMARKS
		A INSPECT	B TEST	C SERVICE	D ADJUST	E ALIGN	F CALIBRATE	G INSTALL	H REPLACE	I REPAIR	J OVERHAUL	K REBUILD		
5500	Pump Assembly: (cont)													
	Seal Plate	F								F				
5501	Shafts, Impellers:													
	Impeller				F				F					
	Wear Plate				F				F					D
	Shafts	F							F					
	Seals, Sleeves	F							F					
5505	Suction and Discharge Assembly:													
	Valves, Flanges	O		O						O				
	Manifold Primer	C								O				
5507	Pump Drive:													
	Spline Coupling	F								F				

SECTION II - MAINTENANCE ALLOCATION CHART

FOR

PUMP, CENTRIFUGAL: 200 GPM, GED

GORMAN-RUPP MODEL 62-1/2E13-4A084, FSN 4320-935-1618

(1) GROUP NO.	(2) FUNCTIONAL GROUP	(3) MAINTENANCE FUNCTIONS											(4) TOOLS AND EQUIPMENT	(5) REMARKS
		A INSPECT	B TEST	C SERVICE	D ADJUST	E ALIGN	F CALIBRATE	G INSTALL	H REPLACE	I REPAIR	J OVERHAUL	K REBUILD		
5507	Pump Drive: (cont)													
	Intermediate Housing	O		C					F					

SECTION II I

MAINTENANCE ALLOCATION CHART

FOR: Pump, Centrifugal: 200 GPM

FSN 4320-935-1618

DATE:

PAGE 1 OF 1

SPECIAL TOOL AND SPECIAL TEST EQUIPMENT REQUIREMENTS

REFERENCE CODE	MAINTENANCE LEVEL	NOMENCLATURE	TOOL NUMBER
A		Military Standard Engine: Refer to TM 5-2805-259-14 Pump, Centrifugal: No special tools or test equipment required	

SECTION XXX IV

MAINTENANCE ALLOCATION CHART

FOR: Pump, Centrifugal, 200GPM,
FSN 4320-935-1618

DATE

PAGE 1 OF 1

REFERENCE CODE	REMARKS
B-F	Hydrostatic Test of tank for leaks .
B-1	Repair by welding or straightening.
C-1	Repair by welding.
D-D	Adjust clearance with shims.

APPENDIX C

Section I. INTRODUCTION

C-1. Scope

This appendix lists repair parts, special tools, test and support equipment required for the performance of organizational, direct support, general support, and depot maintenance of the centrifugal pump.

C-2. General

This Repair Parts and Special Tools List is divided into the following sections:

a. Prescribed Load Allowance (PLA) - Section II. A composite listing of repair parts, special tools, test and support equipment having quantitative allowances for initial stockage at the organizational level.

b. Repair Parts - Section III. A list of repair parts authorized for the performance of maintenance at the organizational level in figure and item number sequence.

c. Special Tools, Test and Support Equipment - Section IV. Not applicable.

d. Repair Parts - Section V. A list of repair parts authorized for the performance of maintenance at the direct support, general support, and depot level in figure and item number sequence.

e. Special Tools, Test and Support Equipment - Section VI. Not-applicable.

f. Federal Stock Number and Reference Number Index - Section VII. A list of Federal stock numbers in ascending numerical sequence, followed by a list of reference numbers appearing in all of the listings, in alpha-numeric sequence, cross-referenced to the illustration figure number and item number. NOTE: Items not Illustrated are cross-referenced to assembly group number.

C-3. Explanation of Columns

The following provides an explanation of columns in the tabular lists in Sections II through VI:

a. Source, Maintenance, and Recoverability Codes (SMR).

NOTE: Common hardware items known to be readily available in Army supply channels are assigned Maintenance codes only. Source codes, Recoverability codes, and Maintenance Allowances are not assigned this category.

(1) Source Code. Indicates the selection status and source for the listed item. Source codes used are:

Code	Explanation
P	Repair parts which are stocked in or supplied from the GSA/DSA, or Army supply system and authorized for use at indicated maintenance categories.
P2	Repair parts which are procured and stocked for insurance purposes because the combat or military essentiality of the end item dictates that a minimum quantity be available in the supply system.
M	Repair parts which are not procured or stocked, but are to be manufactured in indicated maintenance levels.
A	Assemblies which are not procured or stocked as such, but are made up of two or more units. Such component units carry individual stock numbers and descriptions, are procured and stocked separately and can be assembled to form the required assembly at indicated maintenance categories.
X	Parts and assemblies which are not procured or stocked and the mortality of which normally is below that of the applicable end item or component. The failure of such part or assembly should result in retirement of the end item from the supply system.
X1	Repair parts which are not procured or stocked. The requirement of such items will be filled by use of the next higher assembly or component.

Code	Explanation
X2	Repair parts which are not stocked. The indicated maintenance category requiring such repair parts will attempt to obtain them through cannibalization. Where such repair parts are not obtainable through cannibalization, requirements will be requisitioned, with accompanying justification, through normal supply channels.
C	Repair parts authorized for local procurement. Where such repair parts are not obtainable from local procurement, requirements will be requisitioned through normal supply channels accompanied by a supporting statement of nonavailability from local procurement.
G	Major assemblies that are procured with PEMA funds for initial issue only as exchange assemblies at DSU and GSU level. These assemblies will not be stocked above GS and DS level or returned to depot supply level.

(2) Maintenance Code. Indicates the lowest category of maintenance authorized to install the listed item. The maintenance codes are:

Code	Explanation
O	Organizational maintenance
F	Direct support maintenance
H	General support maintenance

(3) Recoverability Code. Indicates whether unserviceable items should be returned for recovery or salvage. Items not coded are expendable. Recoverability codes are:

Code	Explanation
R	Applied to repair parts (assemblies and components) which are considered economically repairable at direct and general support maintenance levels. When the maintenance capability to repair these items does not exist, they are normally disposed of at the GS level. When supply considerations dictate, some of these repair parts may be listed for automatic return to supply for depot level repair as set forth in AR 710-50. When so listed, they will be replaced by supply on an exchange basis.

Code	Explanation
S	Repair parts and assemblies which are economically reparable at DSU and GSU activities and which normally are furnished by supply on an exchange basis. When items are determined by a GSU to be uneconomically reparable they will be evacuated to a depot For evaluation and analysis before final disposition.
T	High dollar value recoverable repair parts which are subject to special handling and are issued on an exchange basis. Such repair parts are normally repaired or overhauled at depot maintenance activities.
U	Repair parts specifically selected for salvage by reclamation units because of precious metal content, critical materials, or high dollar value reusable casings or castings.

b. Federal Stock Number. Indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. Description. Indicates the Federal item name and any additional description of the item required. Assembly components and subassemblies are indented under major assemblies. The abbreviation "w/e" when used as a part of the nomenclature, indicates the Federal stock number includes all armament, equipment, accessories, and repair parts issued with the item. A part number or other reference number is followed by the applicable 5-digit Federal supply code for manufacturers in parenthesis. Repair parts quantities included in kits and sets are shown in front of the repair part name. Material required for manufacture or fabrication is identified.

d. Unit of Measure (U/M). A 2 character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based, e.g., ft, ea, pr, etc.

e. Quantity Incorporated in Unit. Indicates the quantity of the item used in the assembly group. A "V" appearing in this column in lieu of a quantity indicates that a definite quantity cannot be indicated (e.g., shims, spacers, etc.).

f. 15-Day Organizational Maintenance Allowance.

(1) The allowance columns are divided into four subcolumns. Indicated in each subcolumn opposite the first appearance of each item is the total quantity of the items authorized for the number

of equipments supported. Subsequent appearances of the same item will have the letters "REF" in the allowance column. To locate the referenced item, locate the FSN or reference number in the index, The earliest figure and item number is the referenced item. Items authorized for use as required but not for initial stockage are identified with an asterisk in the allowance column.

(2) The quantitative allowance for organizational level of maintenance represents one initial prescribed load for a 15-day period for the number of equipments supported. Units authorized additional prescribed loads, multiply the number of prescribed loads by the quantity in the appropriate density column to determine the number of repair parts authorized.

(3) To determine allowances when supporting more than 100 of these equipments. First, divide the number of equipments supported by 100 by moving the decimal two spaces left. Second, multiply the result by the quantity in the 51-100 density column. Example, authorized allowance for 51-100 equipments is 12; for 140 equipments, multiply 12 by 1.40 or 16.80 rounded off to 17 parts required.

(4) Subsequent changes to allowances will be limited as follows: No change in the range of items is authorized. If additional items are considered necessary, recommendation should be forwarded to the U. S. Army Mobility Equipment Command for exception or revision to the allowance list. Revisions to the range of items authorized will be made by the U. S. Army Mobility Equipment Command based upon engineering experience, demand data, or TAERS information.

g. 30-Day DS/GS Maintenance Allowances.

NOTE: Allowances in GS Column are for GS maintenance only.

(1) The allowance columns are divided into three subcolumns. Indicated in each subcolumn, opposite the first appearance of each item, is the total quantity of items authorized for the number of equipments supported. Subsequent appearances of the same item will have the letters "REF" in the applicable allowance column. To locate the referenced item locate the FSN or reference number in the index. The earliest figure and item number is the referenced item. Items authorized for use as required but not for initial stockage are identified with an asterisk in the allowance column.

(2) The quantitative allowances for DS/GS levels of maintenance will represent initial stockage for a 30-day period for the number of equipments supported.

(3) To determine allowances when supporting more than 100 of these equipments. First, divide the number of equipments supported by 100 by moving the decimal two places left. Second, multiply the result by the quantity in the 51-100 density column. Example, authorized allowance For 51-100 equipments is 40; for 150 equipments multiply 40 by 1.50 or 60 parts required.

h. 1-Year Allowance Per 100 Equipments/Contingency Planning Purposes. Indicates opposite the first appearance of each item the total quantity required for distribution and contingency planning purposes. The range of items indicates total quantities of all authorized items required to provide for adequate support of 100 equipments for one year. Subsequent appearances of the same item will have the letters "REF" in the allowance column.

i. Illustration. This column is divided as follows:

(1) Figure number. Indicates the figure number of the illustration in which the item is shown.

(2) Item number. Indicates the callout number used to reference the item in the i Illustration.

C-4. Special Information

a. Repair parts mortality has been based on 1000 hours operation per year.

b. Parts which require manufacture or assembly at a category higher than that authorized for installation will indicate in the source column the higher category. ,

c. The following publications pertain to the centrifugal pump and-its components:

TM 5-2805-259-14	Operator, Organizational, Direct Support and General Support Maintenance Manual
TM 5-2805-259-24P	Organizational, DS and GS Maintenance Repair Parts and Special To ols Lists

d. The same illustrations are used to illustrate the repair parts and special tools listed in both organizational maintenance section and direct and general support maintenance section.

C-5. How to Locate Repair Parts

a. When Federal stock number or reference number is unknown:

(1) First. Using the table of contents determine the assembly group within which the repair part belongs. This is necessary since illustrations are prepared for assembly groups, and listings are divided into the same groups.

(2) Second. Find the illustration covering the assembly group to which the repair part belongs.

(3) Third. Identify the repair part on the illustration and note the illustration figure and item number of the repair part.

(4) Using the Repair Parts Listings, find the assembly group to which the repair part belongs and locate the illustration figure and item number noted on the Illustration.

b. When Federal stock number or reference is known:

(1) First. Using the Index of Federal Stock Numbers and Reference Numbers find the pertinent Federal stock number or reference number. This index is in ascending FSN sequence Followed by a list of reference numbers in alpha-numeric sequence, cross--referenced to the illustration figure number and item number.

(2) Second. Using the Repair Parts Listing, find the assembly group of the repair part and the illustration Figure number and item number referenced in the Index of Federal Stock Numbers and Reference Numbers.

c. When the Federal stock number or reference number is known and-the repair part is not illustrated:

(1) First. Using the Index of Federal Stock Numbers and Reference Numbers, find the pertinent Federal stock number or reference number in the section titled I terns not I Illustrated and note the group number. This section is in ascending FSN sequence followed by a list of reference numbers in alpha-numeric sequence, cross-referenced to assembly group number.

(2) Second. Using the Table of Contents, locate the assembly group number and page number.

(3) Third. Using the applicable group number and page number, locate the pertinent stock number or reference number in the Repair Parts Listing. Items which are not illustrated are listed at the end of the assembly group to which they belong.

C-6. Federal Supply Codes for Manufacturers

Code	Manufacturer
00643	Crane Packing Co.
25567	German-Rupp Co.
28520	Heyman Mfg. Co.
43334	New Departure Division of General Motors Corp.
57733	Stewart-Warner Corp.
79470	Weatherhead Co., The
80204	United States of America Standards Institute
88044	Aeronautical Standards Group Department of Navy and Air Force
96906	Military Standards Promulgated By Standardization
97403	Army Engineer Research and Development Laboratories

SECTION II PRESCRIBED LOAD ALLOWANCE							
(1) FEDERAL STOCK NUMBER	DESCRIPTION useable on code			15-D (A) 1-5	ORC (B) 6-20	AINT. ALW (C) 21-50	(D) 51-10(
	GROUP 01 - Control Panel and Sender Unit						
5930-655-1522	SWITCH, TOGGLE						2
5930-655-1582	SWITCH, TOGGLE						2
5930-121-5273	BOOT, SWITCH	(25567)	S2128				2
6680-125-8541	SENDER, ELECTRICAL	(57733)	811532				2
	GROUP 02 - Battery Box Assembly						
6140-059-3528	BATTERY, 24 VOLT						2
6140-935-2586	CABLE, BATTERY	(25567)	13082B				2
6140-935-2585	CABLE, BATTERY	(25567)	13082C				2
	GROUP 03 - Muffler and Exhaust Primer						
2990-066-2494	GASKET, EXHAUST					2	2
4730-014-2433	NUT, INVERTED						2
5315-297-2444	PIN, COTTER						2
2990-124-6701	MUFFLER	(97403)	13213E2605				2
4730-125-7991	NIPPLE, PIPE	(25567)	T08				2

SECTION II PRESCRIBED LOAD ALLOWANCE							
(1) FEDERAL STOCK NUMBER	(2) DESCRIPTION	useable on code		(3) 15-DAY ORG MAINT. ALW (A) 1-5	(B) 6-20	(C) 21-50	(D) 51-100
	GROUP 03 - Muffler and Exhaust Primer (cont)						
5310-122-7283	WASHER, SPRING	(25567)	S165				2
	GROUP 04 - Pump Assembly						
5307-998-1047	STUD						4
5330-121-7987	GASKET	(25567)	6323GA			2	2
5330-121-7221	GASKET, FLANGE	(25567)	1675GA			2	2
4030-122-2002	HOOK, CHAIN	(25567)	S1563				2
4320-122-9981	PLUG ASSEMBLY	(25567)	13705			2	2
	GROUP 05 - Fuel Tank, Skid and Engine Bracket						
4320-570-7788	HOSE ASSEMBLY						2

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF EA	(5) QTY INC IN UNIT	(6) 15-DAY ORGANIZATIONAL MAINTENANCE ALW (a) 1-5	(b) 6-20	(c) 21-50	(d) 1-100	(7) ILLUSTRATION (a) FIG. NO.	(b) ITEM NO.
		SECTION III - REPAIR PARTS FOR ORGANIZATIONAL MAINTENANCE									
		GROUP 01 - CONTROL PANEL AND SENDER UNIT									
O	6110-123-0166	CONTROL PANEL ASSEMBLY 13213 E2581 (97403)		EA	1	*	*	*	*	C1	1
O	5305-855-0972	SCREW MS24629-23 (96906)		EA	8					C1	2
O		PLUG, HOLE P562 (28520)		EA	1					C1	3
O	6620-514-5492	GAGE, OIL PRESSURE: 0-60 PSI MS24541-1 (96906)		EA	1	*	*	*	*	C1	5
O		CONNECTOR, PLUG 13213 E9867-1 (97403)		EA	1					C1	6
O		CONNECTOR, PLUG 13213 E9867-2 (97403)		EA	1					C1	7
O	5930-121-5273	BOOT, SWITCH S2128 (25567)		EA	3	*	*	*	2	C1	8
O	5930-655-1522	SWITCH, TOGGLE MS35058-30 (96906)		EA	1	*	*	*	2	C1	9
O	5930-655-1521	SWITCH, TOGGLE MS35058-29 (96906)		EA	1	*	*	*	*	C1	10
O	5930-655-1582	SWITCH, TOGGLE MS35059-23 (96906)		EA	1	*	*	*	2	C1	11
O	6110-122-4650	COVER 13213E2580 (97403)		EA	1	*	*	*	*	C1	12
O	5305-151-0387	SCREW, OVAL AN500A6-8 (88044)		EA	4					C1	13
O	5310-081-8087	NUT, SELF-LOCK MS21044N06 (96906)		EA	4					C1	14
O		CONNECTOR RECEPTACLE 13213 E3549 (97403)		EA	1					C1	15
O	4320-124-0932	WIRING HARNESS 13541A (25567)		EA	1	*	*	*	*	C1	16
O		CONTROL BOX 13540 (25567)		EA	1					C1	17
O	6680-125-8541	SENDER, ELECTRICAL 811532 (57733)		EA	1	*	*	*	2	C1	18
O	5940-283-5280	TERMINAL MS25036-6 (96906)		EA	8					C1	19
		GROUP 02 - BATTERY BOX ASSEMBLY									
O		BATTERY BOX ASSEMBLY		EA	1					C2	1
O	5310-889-2606	NUT, WING MS35425-42 (96906)		EA	2					C2	2
O	5310-637-9541	WASHER, LOCK		EA	2					C2	3
O		COVER, BATTERY 13213E9832 (97403)		EA	1					C2	4
O	6140-935-2585	CABLE, BATTERY 13082C (25567)		EA	1	*	*	*	2	C2	5
O	6140-935-2586	CABLE, BATTERY 13082B (25567)		EA	1	*	*	*	2	C2	6

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 15-DAY ORGANIZATIONAL MAINTENANCE ALW (a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100	(7) ILLUSTRATION (a) FIG. NO.	(b) ITEM NO.
0	6140-059-3528	BATTERY, 24 VOLT MS75047-1 (96906)		EA	1	*	*	*	2	C2	7
0	5305-225-3839	SCREW, CAP MS90725-8 (96906)		EA	1					C2	8
0	5310-141-1795	WASHER, FLAT AN960-416 (88044)		EA	1					C2	9
0	5310-761-6882	NUT, HEXAGON MS51967-2 (96906)		EA	1					C2	10
0	5310-582-5965	WASHER, LOCK		EA	1					C2	11
0	5305-068-0502	SCREW, CAP MS90725-6 (96906)		EA	2					C2	12
0	5310-761-6882	NUT MS51967-2 (96906)		EA	2					C2	13
0	5310-582-5965	LOCKWASHER MS35338-44 (96906)		EA	2					C2	14
20		BOX BATTERY 132 13E2590 (97403)		EA	1					C2	15
0	5305-984-6191	SCREW, MACHINE MS35206-243 (96906)		EA	4					C2	16
0	5310-811-3494	NUT MS21044N08 (96906)		EA	4					C2	17
20	4320-123-7111	PLATE, PERFORMANCE 13578 (25567)		EA	1	*	*	*	*	C2	18
		GROUP 03 - MUFFLER AND EXHAUST PRIMER									
20	4320-122-9965	PRIMER ASSEMBLY, EXHAUST 13771 (25567)		EA		*	*	*	*	C3	1
0		NUT, TUBE S328 (25567)		EA	1					C3	2
0	5340-121-3000	BRACKET 6029B (25567)		EA	1	*	*	*	*	C3	3
0	4730-014-2433	NUT, INVERTED 100X6 (79470)		EA	2	*	*	*	2	C3	4
0	4710-125-8525	TUBE, COPPER W06180 (25567)		EA	1	*	*	*	*	C3	5
0	4730-424-5872	ADAPTER 236X6 (79470)		EA	1	*	*	*	*	C3	6
0	4820-174-0325	COCK, GAS S2 (25567)		EA	1	*	*	*	*	C3	7
0	4730-277-8260	ELBOW, PIPE TO TUBE		EA	1	*	*	*	*	C3	8
0	4320-122-9966	NOZZLE, JET 1603A (25567)		EA	1	*	*	*	*	C3	9
0	4320-125-8038	BODY EJECTOR, VENTURI 1602A (25567)		EA	1	*	*	*	*	C3	10
0	4730-125-7991	NIPPLE PIPE T08 (25567)		EA	1	*	*	*	2	C3	11
0	5315-297-2444	PIN, COTTER MS24665-623 (96906)		EA	2	*	*	*	2	C3	12
0	5310-122-7283	WASHER, SPRING S165 (25567)		EA	2	*	*	*	2	C3	13
0	4320-024-1982	CAP, PRIMING VALVE 1467 (25567)		EA	1	*	*	*	*	C3	14

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 15-DAY ORGANIZATIONAL MAINTENANCE ALW (a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100	(7) ILLUSTRATION (a) FIG. NO.	(b) ITEM NO.
0	4320-300-7274	HANDLE 1458A (25567)		EA	1	*	*	*	*	C3	15
0	4320-392-4543	BODY, PRIMING VALVE 1466 (25567)		EA	1	*	*	*	*	C3	16
0	5305-068-0500	SCREW, CAP MS90725-3 (96906)		EA	2					C3	17
0	2990-103-8813	STRAP MUFFLER 13211E6747 (97403)		EA	1	*	*	*	*	C3	18
0	5305-269-3213	CAP, SCREW MS90725-62 (96906)		EA	2					C3	19
0	5310-732-0558	NUT, HEXAGON MS51967-8 (96906)		EA	2					C3	20
0	5310-722-5658	WASHER, LOCK MS35338-46 (96906)		EA	2					C3	21
0	2990-066-2494	GASKET, EXHAUST 13206E0642 (97403)		EA	1	*	*	2	2	C3	22
0	2990-124-6701	MUFFLER 13213E2605 (97403)		EA	1	*	*	*	2	C3	23
0	6115-226-7763	BRACKET 13211E6746 (97403)		EA	1	*	*	*	*	C3	24
		GROUP 04 - PUMP ASSEMBLY									
0	4030-122-2002	HOOK, CHAIN S1563 (25567)		EA	2	*	*	2	2	C4	6
0	4320-122-9981	PLUG ASSEMBLY 13705 (25567)		EA	2	*	*	2	2	C4	7
0	6685-168-0847	GAGE PRESSURE S2133 (25567)		EA	1	*	*	*	*	C4	8
0	4820-263-3019	COCK MS35931-2 (96906)		EA	1	*	*	*	*	C4	9
0	4730-193-2709	NIPPLE, PIPE 3327X4 (79470)		EA	1	*	*	*	*	C4	10
0	5310-763-8920	NUT MS51967-20 (96906)		EA	8					C4	11
20	4320-122-9967	BODY CHECK VALVE 6323 (25567)		EA	1	*	*	*	*	C4	12
0	4320-122-9968	ARM CHECK VALVE 6324 (25567)		EA	1	*	*	*	*	C4	13
0	5307-998-1047	STUD C1009 (25567)		EA	8	*	*	*	4	C4	14
0	5330-121-7987	GASKET 6323GA (25567)		EA	1	*	*	2	2	C4	15
20	4730-193-6955	FLANGE, SUCTION B16-1-125-21-2 (80204)		EA	1	*	*	*	*	C4	16
0	5330-122-7221	GASKET, FLANGE 1675GA (25567)		EA	1	*	*	2	2	C4	17
0	5305-175-3230	SCREW, DRIVE MS21318-14 (96906)		EA	2					C4	18
20		NAMEPLATE 2613CW (25567)		EA	1					C4	19
0	4320-122-9984	TUBE PRIMER 11867 (25567)		EA	1	*	*	*	*	C4	20
0	4730-125-7994	PLUG, PIPE S2137 (25567)		EA	3	*	*	*	*	C4	21

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF ISSUE	(5) QTY INC IN UNIT	(6) 15-DAY ORGANIZATIONAL MAINTENANCE ALW (a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100	(7) ILLUSTRATION (a) FIG. NO.	(b) ITEM NO.
		GROUP 05 - FUEL TANK, SKID AND ENGINE BRACKET									
PO	320-570-7788	HOSE ASSEMBLY S2051 (25567)		EA	1	*	*	*	2	C5	9
PO	730-125-7993	ELBOW, PIPE S2136 (25567)		EA	1	*	*	*	*	C5	10
PO	730-125-7992	PLUG, PIPE S2046 (25567)		EA	1	*	*	*	*	C5	11
PO	910-141-9758	CAP, FUEL TANK WITH GASKET MS35645-1 (96906)		EA	1	*	*	*	*	C5	18

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF EA	(5) QTY INC IN UNIT	(6) 30-DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30-DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-YR ALW PER 100 CNTGY	(9) ILLUSTRATION (a) FIG. NO.	(b) ITEM NO.
		SECTION V - REPAIR PARTS FOR DS, GS MAINTENANCE												
		GROUP 01 - CONTROL PANEL AND SENDER UNIT												
P O	6110-123-0166	CONTROL PANEL ASSEMBLY 13213E2581 (97403)		A	1	*	*	*	*	*	*	5	C1	1
O	5305-855-0972	SCREW MS24629-23 (96906)		A	8								C1	2
X20		PLUG, HOLE P562 (28520)		A	1								C1	3
P O	6620-514-5492	GAGE, OIL PRESSURE: 0-60 PSI MS24541-1 (96906)		A	1	*	*	2	*	*	2	6	C1	5
X20		CONNECTOR, PLUG 13213E9867-1 (97403)		A	1								C1	6
X20		CONNECTOR, PLUG 13213E9867-2 (97403)		A	1								C1	7
P O	5930-121-5273	BOOT, SWITCH S2128 (25567)		A	3	2	2	3	2	2	3	36	C1	8
P O	5930-655-1522	SWITCH, TOGGLE MS35058-30 (96906)		A	1	*	2	2	*	2	2	12	C1	9
P O	5930-655-1521	SWITCH, TOGGLE MS35058-29 (96906)		A	1	*	*	2	*	*	2	6	C1	10
P O	5930-655-1582	SWITCH, TOGGLE MS35059-23 (96906)		A	1	*	2	2	*	2	2	12	C1	11
P20	6110-122-4650	COVER 13213E2580 (97403)		A	1	*	*	*	*	*	*	5	C1	12
O	5305-151-0387	SCREW, OVAL AN500A6-8 (88044)		A	4								C1	13
O	5310-081-8087	NUT, SELF-LOCK MS21044N06 (96906)		A	4								C1	14
X20		CONNECTOR RECEPTACLE 13213E3549 (97403)		A	1								C1	15
P20	4320-124-0932	WIRING HARNESS 13541A (25567)		A	1	*	*	*	*	*	*	5	C1	16
X20		CONTROL BOX 13540 (25567)		A	1								C1	17
P O	6680-125-8541	SENDER, ELECTRICAL 811532 (57733)		A	1	*	2	2	*	2	2	12	C1	18
O	5940-283-5280	TERMINAL MS25036-6 (96906)		A	8								C1	19
		GROUP 02 - BATTERY BOX ASSEMBLY												
A O		BATTERY BOX ASSEMBLY		A	1								C2	1
O	5310-889-2606	NUT, WING MS35425-42 (96906)		A	2								C2	2
O	5310-637-9541	WASHER, LOCK		A	2								C2	3
X20		COVER, BATTERY 13213E9832 (97403)		A	1								C2	4
P O	6140-935-2585	CABLE, BATTERY 13082C (25567)		A	1	*	2	2	*	2	2	12	C2	5
P O	6140-935-2586	CABLE, BATTERY 13082B (25567)		A	1	*	2	2	*	2	2	12	C2	6

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF NUMBER & MFR CODE / USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 30-DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30-DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-YR ALW PER 100 EQUIP CNTGY	(9) ILLUSTRATION (a) FIG. NO.	(b) ITEM NO.
P O	6140-059-3528	BATTERY, 24 VOLT MS75047-1 (96906)	EA	1	*	2	2	*	2	2	12	C2	7
O	5305-225-3839	SCREW, CAP MS90725-8 (96906)	EA	1								C2	8
O	5310-141-1795	WASHER, FLAT AN960-416 (88044)	EA	1								C2	9
O	5310-761-6882	NUT, HEXAGON MS51967-2 (96906)	EA	1								C2	10
O	5310-582-5965	WASHER, LOCK	EA	1								C2	11
O	5305-068-0502	SCREW, CAP MS90725-6 (96906)	EA	2								C2	12
O	5310-761-6882	NUT MS51967-2 (96906)	EA	2								C2	13
O	5310-582-5965	LOCKWASHER MS35338-44 (96906)	EA	2								C2	14
P20		BOX BATTERY 13213E2590 (97403)	EA	1								C2	15
O	5305-984-6191	SCREW, MACHINE MS35206-243 (96906)	EA	4								C2	16
O	5310-811-3494	NUT MS21044N08 (96906)	EA	4								C2	17
P20	4320-123-7111	PLATE, PERFORMANCE 13578 (25567)	EA	1	*	*	*	*	*	*	5	C2	18
		GROUP 03 - MUFFLER AND EXHAUST PRIMER											
P20	4320-122-9965	PRIMER ASSEMBLY, EXHAUST 13771 (25567)	EA		*	*	*	*	*	*	5	C3	1
O		NUT, TUBE S328 (25567)	EA	1								C3	2
P O	5340-121-3000	BRACKET 6029B (25567)	EA	1	*	*	2	*	*	2	12	C3	3
P O	4730-014-2433	NUT, INVERTED 100X6 (79470)	EA	2	*	2	2	*	2	2	12	C3	4
P O	4710-125-8525	TUBE, COPPER W06180 (25567)	EA	1	*	*	2	*	*	2	6	C3	5
P O	4730-424-5872	ADAPTER 236X6 (79470)	EA	1	*	*	2	*	*	2	6	C3	6
P O	4820-174-0325	COCK, GAS S2 (25567)	EA	1	*	*	2	*	*	2	6	C3	7
P O	4730-277-8260	ELBOW, PIPE TO TUBE	EA	1	*	*	2	*	*	2	6	C3	8
P O	4320-122-9966	NOZZLE, JET 1603A (25567)	EA	1	*	*	2	*	*	2	6	C3	9
P O	4320-125-8038	BODY EJECTOR, VENTURI 1602A (25567)	EA	1	*	*	2	*	*	2	6	C3	10
P O	4730-125-7991	NIPPLE, PIPE T08 (25567)	EA	1	*	2	2	*	2	2	12	C3	11
P O	5315-297-2444	PIN, COTTER MS24665-623 (96906)	EA	2	*	2	2	*	2	2	12	C3	12
P O	5310-122-7283	WASHER, SPRING S165 (25567)	EA	2	*	2	2	*	2	2	12	C3	13
P O	4320-024-1982	CAP, PRIMING VALVE 1467 (25567)	EA	1	*	*	2	*	*	2	6	C3	14

(1) SMR COD	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION REF NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEA	(5) QTY INC IN UNIT	(6) 30-DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30-DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1-YR ALW PER 100 EQUIP ENTGY	(9) ILLUSTRATION (a) FIG. NO.	(b) ITEM NO.
P O	4320-300-7274	HANDLE 1458A (25567)		EA	1	*	*	2	*	*	2	6	C3	15
P O	4320-392-4543	BODY, PRIMING VALVE 1466 (25567)		EA	1	*	*	2	*	*	2	6	C3	16
O	5305-068-0500	SCREW, CAP MS90725-3 (96906)		EA	2								C3	17
P O	2990-103-8813	STRAP MUFFLER 13211E6747 (97403)		EA	1	*	*	2	*	*	2	6	C3	18
O	5305-269-3213	CAP, SCREW MS90725-62 (96906)		EA	2								C3	19
O	5310-732-0558	NUT, HEXAGON MS51967-8 (96906)		EA	2								C3	20
O	5310-722-5658	WASHER, LOCK MS35338-46 (96906)		EA	2								C3	21
P O	2990-066-2494	GASKET, EXHAUST 13206E0642 (97403)		EA	1	2	2	3	2	2	3	30	C3	22
P O	2990-124-6701	MUFFLER 13213E2605 (97403)		EA	1	*	2	2	*	2	2	12	C3	23
P O	6115-226-7763	BRACKET 13211E6746 (97403)		EA	1	*	*	2	*	*	2	6	C3	24
		GROUP 04 - PUMP ASSEMBLY												
F	5305-269-3209	CAP, SCREW MS90725-58 (96906)		EA	2								C4	1
F	5310-637-9541	WASHER, LOCK MS35338-46 (96906)		EA	2								C4	2
AFF		PUMP ASSEMBLY 11750A (25567)		EA	1								C4	3
F	5305-025-8503	SCREW, CAP MS90725-39 (96906)		EA	6								C4	4
F	5310-012-0214	WASHER, LOCK MS35338-26 (96906)		EA	12								C4	5
P O	4030-122-2002	HOOK, CHAIN S1563 (25567)		EA	2	2	2	2	2	2	2	25	C4	6
P O	4320-122-9981	PLUG ASSEMBLY 13705 (25567)		EA	2	2	2	2	2	2	2	24	C4	7
P O	6685-168-0847	GAGE PRESSURE S2133 (25567)		EA	1	*	*	2	*	*	2	6	C4	8
P O	4820-263-3019	COCK MS35931-2 (96906)		EA	1	*	*	2	*	*	2	6	C4	9
P O	4730-193-2709	NIPPLE, PIPE 3327X4 (79470)		EA	1	*	*	2	*	*	2	6	C4	10
O	5310-763-8920	NUT MS51967-20 (96906)		EA	8								C4	11
P20	4320-122-9967	BODY CHECK VALVE 6323 (25567)		EA	1	*	*	*	*	*	*	5	C4	12
P O	4320-122-9968	ARM CHECK VALVE 6324 (25567)		EA	1	*	*	2	*	*	2	6	C4	13
P O	5307-998-1047	STUD C1009 (25567)		EA	8	*	4	4	*	4	4	24	C4	14
P O	5330-121-7987	GASKET 6323GA (25567)		EA	1	2	2	3	2	2	3	30	C4	15
P20	4730-193-6955	FLANGE, SUCTION B16-1-125-21-2 (80204)		EA	1	*	*	*	*	*	*	5	C4	16

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	DESCRIPTION EF NUMBER & MFR CODE	USABLE ON CODE	UNIT OF MEA.	(5) QTY C UNIT	(6) 0-DAY DS MAINT ALLOWANCE (a) -20	(b) -50	(c) 10(	(7))-DAY GS MAINT ALLOWANCE a) 20	b) -50	c) -10(	(8) YR LW ER 00 QUIP NTGY	(9) ILLUS-RATION a) G. D.	(b) ITEM NO.
P O	5330-122-7221	GASKET, FLANGE 1675GA (25567)		EA	1	2	2	3	2	2	3	30	C4	17
O	5305-175-3230	SCREW, DRIVE MS21318-14 (96906)		EA	2								C4	18
X20		NAMEPLATE 2613CW (25567)		EA	1								C4	19
P O	4320-122-9984	TUBE PRIMER 11867 (25567)		EA	1	*	*	2	*	*	2	6	C4	20
P O	4730-125-7994	PLUG, PIPE S2137 (25567)		EA	3	*	*	2	*	*	2	6	C4	21
F	5310-768-0318	NUT, HEXAGON MS15967-14 (96906)		EA	8								C4	22
P2F	4320-122-0617	VOLUTE 11739 (25567)		EA	1	*	*	*	*	*	*	4	C4	23
P F	5330-121-7982	GASKET 11739GA (25567)		EA	1	2	2	2	2	2	2	24	C4	24
P F	5340-122-7169	RING, WEAR 11737 (25567)		EA	2	*	2	2	*	2	2	12	C4	25
P F	5307-360-0844	STUD C0807 (25567)		EA	8	*	2	2	*	2	2	12	C4	26
P F	1140-122-9986	IMPELLER 11738A (25567)		EA	1	*	*	2	*	*	2	6	C4	27
P F	4320-377-6983	SHIM SET 2X (25567)		EA	1	2	2	2	2	2	2	24	C4	28
P F	4930-887-3807	SEAL ASSEMBLY B27P171 (00643)		EA	1	2	2	2	2	2	2	24	C4	29
P F	4320-077-0596	SLEEVE, SHAFT 11847 (25567)		EA	1	*	2	2	*	2	2	12	C4	30
P F	4320-122-9987	PLATE, SEAL 11740 (25567)		EA	1	*	*	2	*	*	2	9	C4	31
P F	5330-079-1293	SEAL, OIL MS51001-19 (96906)		EA	2	4	4	6	4	4	6	60	C4	32
F	5310-732-0556	NUT, HEXAGON MS51967-8 (96906)		EA	8								C4	33
F	5310-637-9541	WASHER, LOCK MS35338-46 (96906)		EA	8								C4	34
F	5306-225-8502	SCREW, CAP MS90725-40 (96906)		EA	2								C4	35
X2F		BRACKET, HOISTING 13544 (25567)		EA	1								C4	36
P2F	4320-122-9986	GUARD 12098 (25567)		EA	1	*	*	*	*	*	*	5	C4	37
P F	5307-360-0726	STUD C0606 (25567)		EA	8	2	2	2	2	2	2	24	C4	38
F		SCREW, CAP MS35763-19 (96906)		EA	4								C4	39
P F	5340-081-1376	RING, RETAINING MS16631-315 (96906)		EA	1	*	*	2	*	*	2	9	C4	40
P F	2590-763-2426	BUSHING, PILOT 11736 (25567)		EA	1	*	*	2	*	*	2	6	C4	41
P F	4320-122-9990	COUPLING, SPLINE 13213E9830 (97403)		EA	1	*	*	2	*	*	2	6	C4	42
P F	4320-934-7941	RETAINER, BRACKET 13213E9838 (97403)		EA	1	*	*	2	*	*	2	9	C4	43

(1) SMR CODE	FEDERAL STOCK NUMBER	DESCRIPTION REF NUMBER & MFR CODE	USABLE ON CODE	UNIT OF MEAS	(5) QTY INCORP IN UNIT	(6) 30-DAY DS MAIN ALLOWANCE (a) 1-20	(b) 21-5	(c) 1-1	(7) 30-DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-5	(c) 51-1(	(8) 1-YR ALW PER 100 EQUIP CNTG	(9) ILLUSTRATION (a) FIG NO	(b) ITEM NO.
P F	5340-536-268	RING, RETAINING S248 (25567)		EA					*	2	2	12	C	4
P F	3110-018-468	BEARING, BALL 5307W (43334)		EA					*	2	2	12	C	4
P F	4320-824-037	SHAFT, IMPELLER 11735 (25567)		EA			1		*	*	2	9	C	4
P2F	4320-124-093	BRACKET, INTERMEDIATE 117328 (25567)		EA			1		*	*	*	4	C	4
P2F	4320-122-997	BRACKET 11790 (25567)		EA	1		1	1	*	*	*	4	C	4
		GROUP 05 - FUEL TANK, SKID AND ENGINE BRACKET												
F	5310-768-031	NUT, HEXAGON MS51967-14 (96906)		EA									C	
P F	5310-124-307	LOCKWASHER AL08 (25567)		EA	6	1	2	2	*	2	2	12	C	
F	5305-042-641	SCREW, CAP MS90725-113 (96906)		EA	3								C	
F	5310-732-055	NUT, HEXAGON MS51967-8 (96906)		EA	17								C	2
F	5310-637-9541	WASHER, LOCK MS35338-46 (96906)		EA	17								C	5
F	5305-269-3213	SCREW, CAP MS90725-62 (96906)		EA	5								C	6
F		LOCKWASHER AL06 (25567)		EA	7								C	7
2F	2990-124-6700	BRACKET, ENGINE 13213E2585 (97403)		EA	1	*	*	*	*	*	*	5	C	8
0	4320-570-7788	HOSE ASSEMBLY S2051 (25567)		EA	1	*	2	2	*	2	2	12	C	9
0	4730-125-7993	ELBOW, PIPE S2136 (25567)		EA	1	*	*	2	*	*	2	6	C	10
0	4730-125-7992	PLUG, PIPE S2046 (25567)		EA	1	*	*	2	*	*	2	6	C	11
F	4820-639-9224	COCK MS35932-2 (96906)		EA	1	*	*	2	*	*	2	6	C	12
F	4730-188-1857	NIPPLE, PIPE 13053A (25567)		EA	1	*	*	2	*	*	2	6	C	13
F	5305-269-3211	CAP, SCREW MS90725-60 (96906)		EA	2								C	14
2F		STRAP 13213E2589 (97403)		EA	2								C	15
2F	2910-124-6723	GUARD, FUEL TANK 13213E2588 (97403)		EA	1	*	*	*	*	*	*	3	C	16
2F	2910-124-6708	TANK, FUEL, WITH CAP 13213E2587 (97403)		EA	1	*	*	*	*	*	*	5	C	17
0	2910-141-9758	CAP, FUEL TANK WITH GASKET MS35645-1 (96906)		EA	1	*	*	2	*	*	2	9	C	18
2F		SKID 13213E2579 (97403)		EA	1								C	19
F 1	2805-872-5972	ENGINE 13206E1000 (97403)		EA	1									

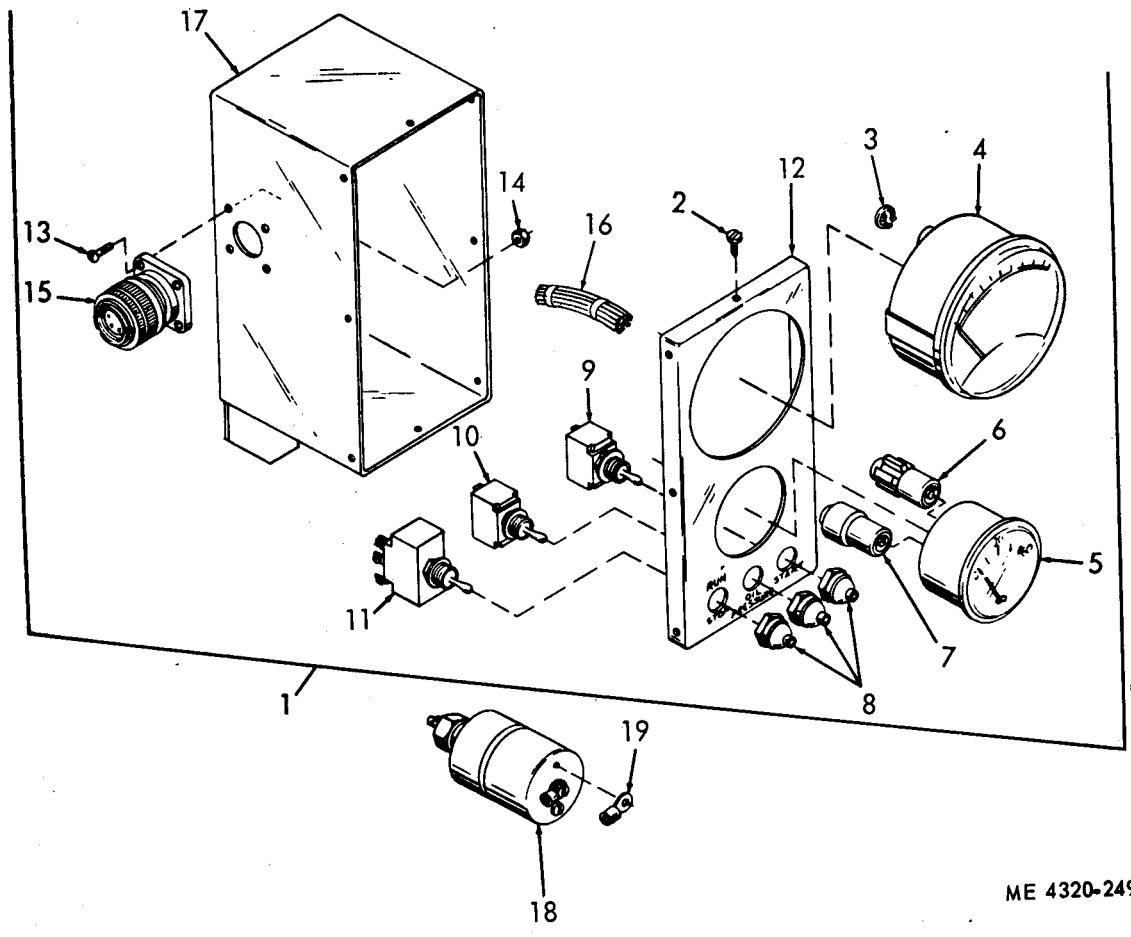


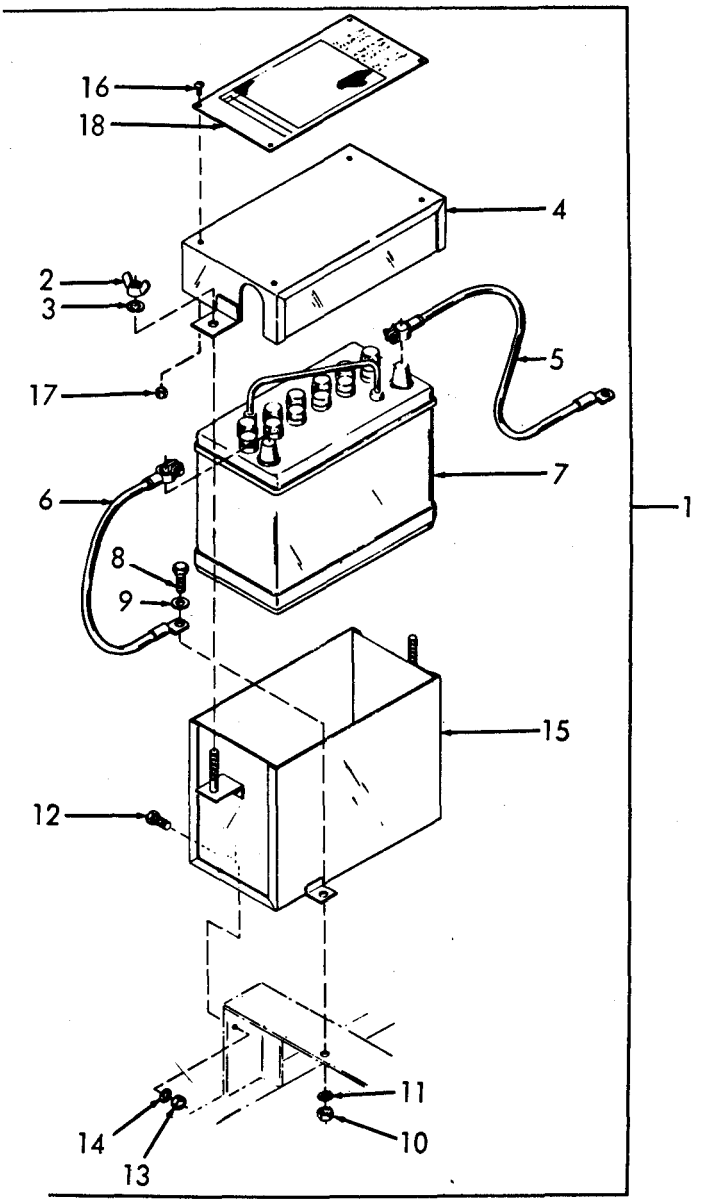
FIGURE No. C1 CONTROL PANEL ANO SENDER UNIT

LEGEND TO PARTS, FIGURE C1

ITEM NO.	FUNCT GROUP	ITEM NAME
1	01	CONTROL PANEL
2	01	SCREW
3	01	PLUG
4	01	N/A
5	01	GAGE
6	01	CONNECTOR
7	01	CONNECTOR
8	01	BOOT
9	01	SWITCH
10	01	sWITCH
1 1	0 1	SWITCH
1 2	0 1	COVER
1 3	0 1	SCREW
1 4	0 1	NUT
1 5	0 1	CONNECTOR
1 6	0 1	wIRING HARNESS
1 7	0 1	CONTROL B0X
1 8	0 1	SENDER
1 9	0 1	TERMINAL

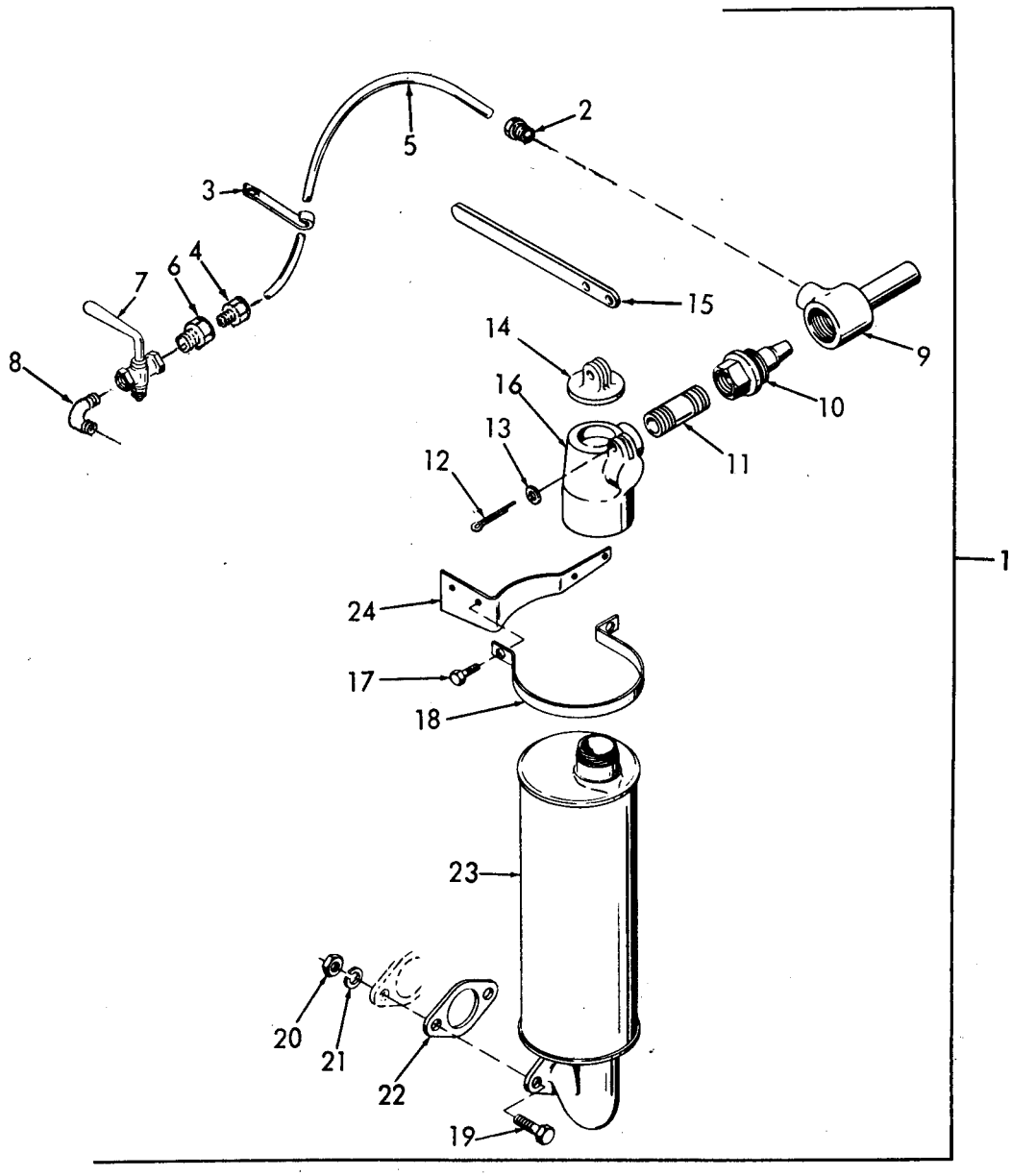
LEGEND TO PARTS, FIGURE C2

ITEM NO.	FUNCT GROUP	ITEM NAME
1	02	BATTERY BOX
2	02	NUT
3	02	WASHER
4	02	COVER
5	02	CABLE
6	02	CABLE
7	02	BATTERY
8	02	SCREW
9	02	WASHER
10	02	NUT
11	02	WASHER
12	02	SCREW
13	02	NUT
14	02	WASHER
15	02	BOX
16	02	SCREW
17	02	NUT
18	02	PLATE



ME 4320-249-14/C-2

FIGURE NO. C2 BATTERY BOX

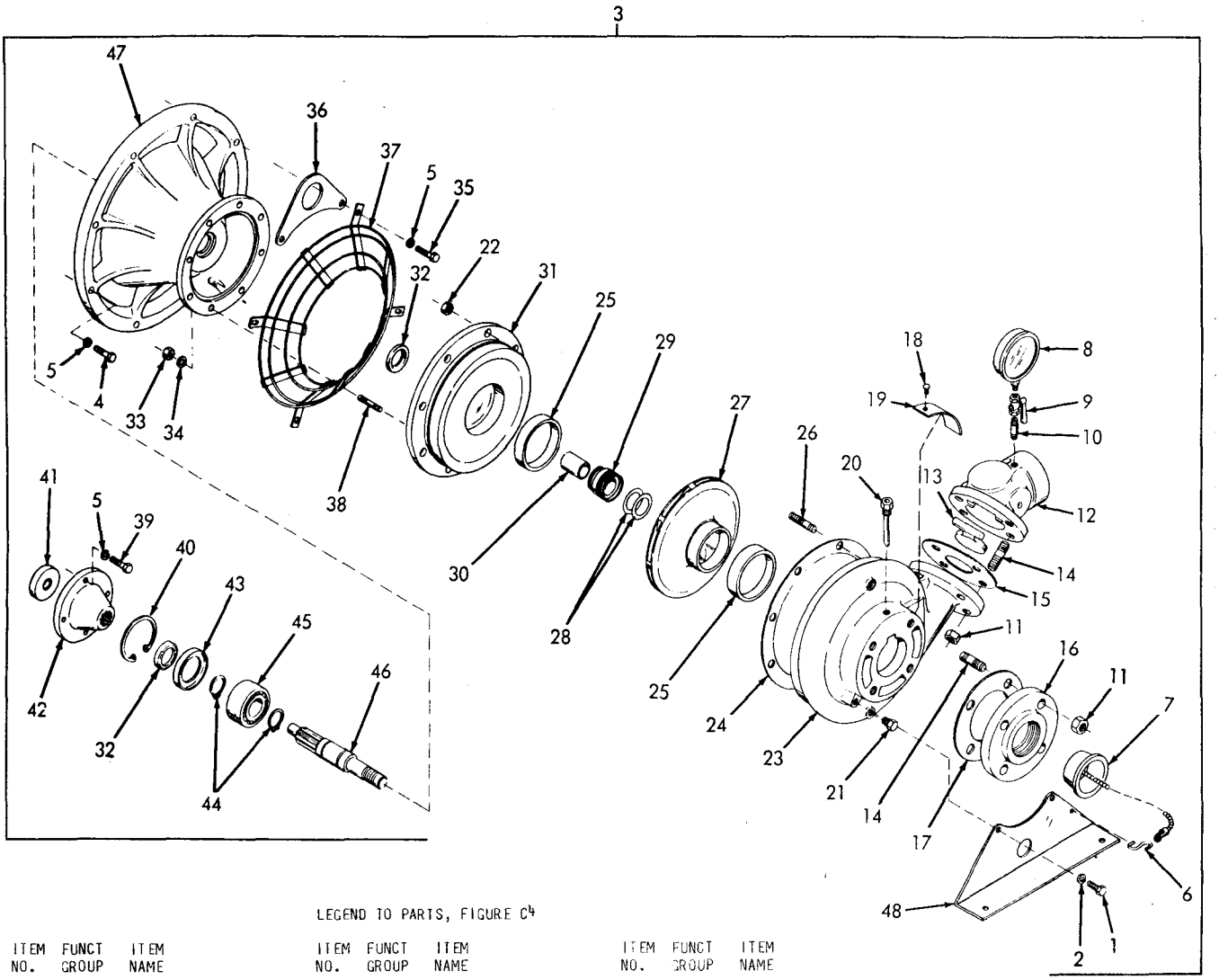


ME 4320-249-14/C-3

FIGURE NO. C3 MUFFLER

LEGEND TO PARTS, FIGURE C3

ITEM NO.	FUNCT GROUP	ITEM NAME
1	03	PRIMER AY
2	03	NUT
3	03	BRACKET
4	03	NUT
5	03	TUBE
6	03	ADAPTER
7	03	COCK
8	03	ELBOW
9	03	NOZZLE
10	03	BODY
11	03	NIPPLE
12	03	PIN
13	03	WASHER
14	03	cAP
15	03	HANDLE
16	03	BODY
17	03	SCREW
18	03	STRAP
19	03	SCREW
20	03	NUT
21	03	WASHSER
22	03	GASKET
23	03	MUFFLER
24	03	BRACKET

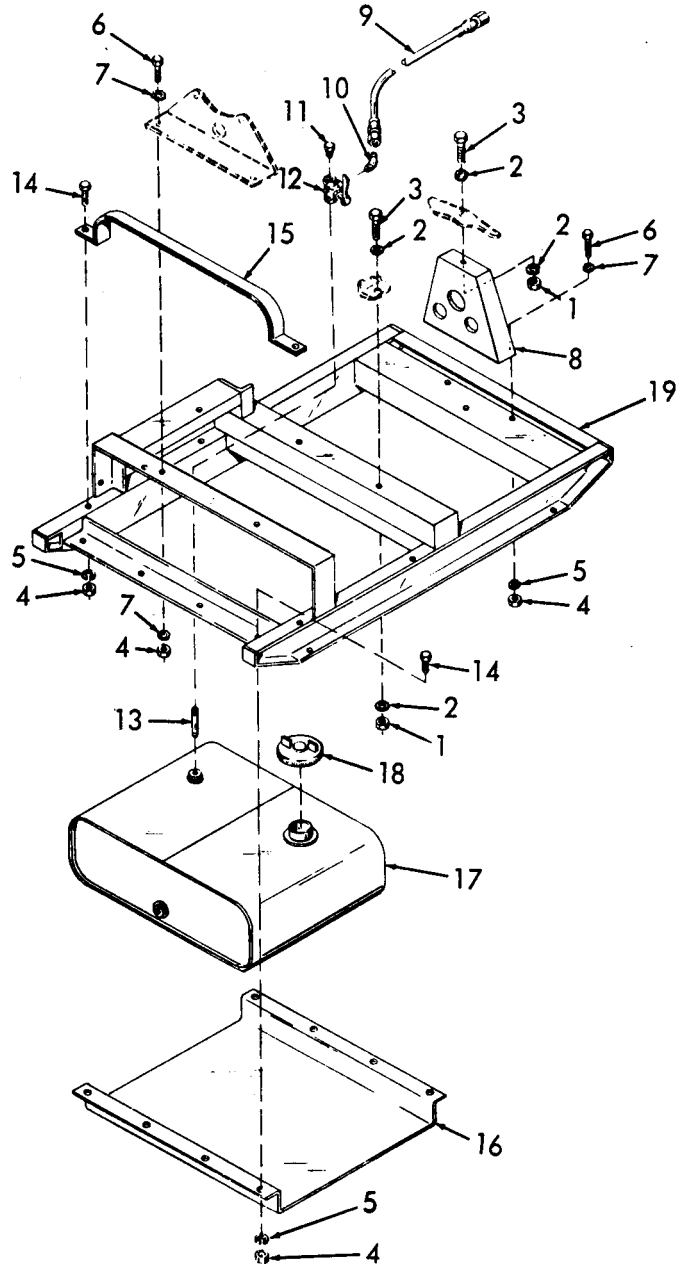


LEGEND TO PARTS, FIGURE C4

ITEM NO.	FUNCT GROUP	ITEM NAME	ITEM NO.	FUNCT GROUP	ITEM NAME	ITEM NO.	FUNCT GROUP	ITEM NAME
1	04	CAPSCREW	17	04	GASKET	33	04	NUT
2	04	WASHER	18	04	SCREW	34	04	WASHER
3	04	PUMP	19	04	NAMEPLATE	35	04	SCREW
4	04	SCREW	20	04	TUBE	36	04	BRACKET
5	04	WASHER	21	04	PLUG	37	04	GUARD
6	04	HOOK	22	04	NUT	38	04	STUD
7	04	PLUG	23	04	VOLUTE	39	04	SCREW
8	04	GAGE	24	04	GASKET	40	04	RING
9	04	COCK	25	04	RING	41	04	BUSHING
10	04	NIPPLE	26	04	STUD	42	04	COUPLING
11	04	NUT	27	04	IMPELLER	43	04	RETAINER
12	04	BODY	28	04	SHIM SET	44	04	RING
13	04	ARM	29	04	SEAL	45	04	BEARING
14	04	STUD	30	04	SLEEVE	46	04	SHAFT
15	04	GASKET	31	04	PLATE	47	04	BRACKET
16	04	FLANGE, suction	32	04	SEAL	48	04	BRACKET

ME 4320-249-14/C-4

Figure No. C4 Pump



LEGEND TO PARTS, FIGURE C5

ITEM NO.	FUNCT GROUP	ITEM NAME
1	05	NUT
2	05	WASHER
3	05	SCREW
4	05	NUT
5	05	WASHER
6	05	SCREW
7	05	WASHER
8	05	BRACKET
9	05	HOSE AY
10	05	ELBOW
11	05	PLUG
12	05	COCK
13	05	NIPPLE
14	05	SCREW
15	05	STRAP
16	05	GUARD
17	05	TANK
18	05	CAP
19	05	SKID

FIGURE NO. C5 FUEL TANK, SKID AND ENGINE BRACKET

Section IV. INDEX - FEDERAL STOCK NUMBER AND REFERENCE NUMBER CROSS-REFERENCE TO FIGURE AND ITEM NUMBER

Stock Number	Figure No.	Item No.
1140-122-9986	C4	27
2590-763-2428	C4	41
2805-872-5972		
2910-124-6708	C5	17
2910-124-6723	C5	16
2910-141-9758	C5	18
2990-066-2494	C3	22
2990-103-8813	C3	18
2990-1 24-6700	C5	8
2990-124-6701	C3	23
3110-018-4684	C4	45
4030-122-2002	C4	6
4320-024-1 982	C3	14
4320-077-0596	C4	30
4320-122-0617	C4	23
4320-122-9965	C3	1
4320-1 22-9966	C3	9
4320-1 22-9967	C4	12
4320-1 22-9968	C4	13
4320-122-9971	C4	48
4320-122-9981	C4	7
4320-1 22-9984	C4	20
4320-1 22-9987	C4	31
4320-122-9988	C4	37
4320-122-9990	C4	42
4320-123-7111	C2	18
4320-124-0932	C1	16
4320-124-0936	C4	47
4320-125-8038	C3	10
4320-300-7274	C3	15
4320-377-6983	C4	28
4320-392-4543	C3	16
4320-570-7788	C5	9
4320-824-0374	C4	46
4320-934-7945	C4	43
4710-125-8525	C3	43
4730-014-2433	C3	5
4730-014-2433	C3	4
4730-125-7991	C3	11
4730-125-7992	C5	11
4730-125-7993	C5	10
4730-125-7994	C4	21
4730-188-1857	C5	13
4730-193-2709	C4	10
4730-1 93-6953	C4	16
4730-277-8260	C3	8
4730-424-5872	C3	6
4820-174-0325	C3	7
4820-263-3019	C4	9
4820-639-9224	C5	12
4930-887-3807	C4	29
5305-025-8503	C4	4
5305-042-6417	C5	3
5305-068-0500	C3	17
5305-068-0502	C2	12
5305-151-0387	C1	13
5305-175-3230	C4	18
5305-225-3839	C2	8
5305-269-3209	C4	
5305-269-321 1	C5	14
5305-269-3213	C3	19
	C5	6
5305-984-6191	C2	16
5306-225-8504	C4	35
5307-360-0720	C4	38
5307-360-0844	C4	26
5307-998-1047	C4	14
5310-012-0214	C4	5
5310-081 -8087	C1	14
5310-122-7283	C3	13
5310-124-3070	C5	2
531 0-141-1795	C2	9
5310-582-5965	C2	11
	C2	14
531 0-637-954 1	C2	
	C4	
	C4	
	C5	
5310-722-5658	C3	
5310-732-0558	C3	20
	C4	33
	C5	4
5310-761-6882	C2	10
	C2	13
5310-763-8926	C4	11
5310-768-0318	C4	22
	C5	1
5310-81 1-3494	C2	17
5310-889-2606	C2	2
5315 -297 -2444	C3	12
5330-079-1293	C4	32
5330- 121-7982	C4	24
5330-121-7987	C4	15
5330- 1 22-7221	C4	17
5330-855-0972	C1	2
5340-121-3000	C3	3
5340-122-7169	C4	25
5930-12 1 -5273	C1	8
5930-655-1521	C1	10
5930-655-1522	C1	9
5930-655-1582	C1	11
5940-283-5280	C1	19
6110-122-4650	C1	12
6110-123-0166	C1	1
6115-226-7763	C3	24
6140-059-3528	C2	7
6140-935-2585	C2	5
6140-935-2586	C2	6
6620-514-5492	C1	5
6680-125-8541	C1	18
6685-168-0847	C4	8

Reference No.	Mfg Code	Fig No.	Item No.
AL06	25567	C5	7
AL08	25567	C5	2
AN500A6-8	88044	C1	13
AN960-416	88044	C2	9
B16-1-125-21-2	25567	C4	16
B27P171	00643	C4	29
C0606	25567	C4	38
C0807	25567	C4	26
C1009	25567	C4	14
MS16631-315	96906	C4	29
MS21044N06	96906	C1	14
MS21044N08	96906	C2	17
MS21318-14	96906	C4	18
MS24541-1	96906	C1	5
MS24629-23	96906	C1	2
MS24665-623	96906	C3	12
MS25036-6	96906	C1	19
MS35058-29	96906	C1	10
MS35058-30	96906	C1	9
MS35059-23	96906	C1	11
MS35206-243	96906	C2	16
MS35338-26	96906	C4	5
MS35338-44	96906	C2	14
MS35338-46	96906	C3	21
		C4	2
		C4	34
MS35425-42	96906	C2	2
MS35645-1	96906	C5	18
MS35763-19	96906	C4	39
MS35931-2	96906	C4	9
MS35932-2	96906	C5	12
MS51001-19	96906	C4	32
MS51967-2	96906	C2	10
		C2	13
MS51967-8	96906	C3	20
		C4	33
MS51967-14	96906	C4	22
		C5	
MS51967-20	96906	C4	11
MS75047-1	96906	C2	7
MS90725-3	96906	C3	17
MS90725-6	96906	C2	12
MS90725-8	96906	C2	8
MS90725-39	96906	C4	4
MS90725-40	96906	C4	35
MS90725-38	96906	C4	
MS90725-60	96906	C5	14
MS90725-62	96906	C3	19
		C5	6
MS90725-113	96906	C5	3
P562	28520	C1	3
S1563	25567	C4	6
S165	25567	C3	13
S2	25567	C3	7
S2046	25567	C5	11
S2051	25567	C5	9
S2128	25567	C1	8
S2133	25567	C4	8
S2136	25567	C5	10
S2137	25567	C4	21
S248	25567	C4	44
S328	25567	C3	2
T08	25567	C3	11
W06180	25567	C3	5
100X6	79470	C3	4
11732B	25567	C4	47
11735	25567	C4	46
11736	25567	C4	41
11737	25567	C4	25
11738A	25567	C4	27
11739	25567	C4	23
11739GA	25567	C4	24
11740	25567	C4	31
00750A	25567	C4	3
11790	25567	C4	48
11847	25567	C4	30
11867	25567	C4	20
12098	25567	C4	37
13082B	25567	C2	6
13082C	25567	C2	5
13053A	25567	C5	13
13206E0642	97403	C3	22
13206E1000	97403	C5	

Reference	Mfg Code	Fig No.	Item No.
13211E6746	97403	C3	24
13211E6747	97403	C3	18
13213E2579	97403	C5	19
13213E2590	97403	C2	15
13213E2605	97403	C3	23
13213E2580	97403	C1	12
13213E2581	97403	C1	1
13213E2585	97403	C5	8
13213E2587	97403	C5	17
13213E2588	97403	C5	16
13213E2589	97403	C5	15
13213E3549	97403	C1	15
13213E9830	97403	C4	42
13213E9832	97403	C2	4
13213E9838	97403	C4	43
13213E9867-1	97403	C1	6
13213E9867-2	97403	C1	7
13540	25567	C1	17
13541A	25567	C1	16
13544	25567	C4	36
13578	25567	C2	18
13705	25567	C4	7
13771	25567	C3	1
1458A	25567	C3	15
1466	25567	C3	16
1467	25567	C3	14
1602A	25567	C3	10
1603A	25567	C3	9
1675GA	25567	C4	17
2X	25567	C3	6
236X6	79470	C3	6
2613CW	25567	C4	19
3327X4	79470	C4	10
5307W	43334	C4	45
6029B	25567	C3	3
6323	25567	C4	12
6323GA	25567	C4	15
6324	25567	C4	13
811532	57733	C1	18

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