DEPARTMENT OF THE ARMY TECHNICAL MANUAL

DEPARTMENT OF THE AIR FORCE TECHNICAL ORDER

TM 5-6115-293-12 TO 35C2-3-329-1

OPERATOR AND ORGANIZATIONAL MAINTENANCE MANUAL

GENERATOR SET, DIESEL ENGINE: PRECISE POWER; 100 KW, AC 120/208V, 240/416V, 3 PHASE 60 CYCLE, AT 1800 RPM 83.3 KW, 120/208V, 240/416V 3 PHASE 50 CYCLE AT 1500 RPM SKID MOUNTED

(DETROIT DIESEL, GENERAL MOTORS MODEL 6910A) FSN 6115-798-3444

UNIVERSITY OF VIRGINIA

MAR 0 2 '93 MAR 93 0100

This copy is a reprint which includes current A DERMAN-GOVT DOCUMENTS pages from Changes 1 through 4.

DEPARTMENTS OF THE ARMY AND THE AIR FORCE

APRIL 1961

AGO 5806A

SAFETY PRECAUTIONS

Before Operation

When lifting the generator set, be sure that the lifting device has a capacity of at least 8,000 pounds. Do not allow the unit to swing while suspended. Failure to observe this warning may result in damage to the unit or severe injury to personnel.

When the unit is operated in an inclosed area, exhaust gases must be piped to the outside. These gases contain carbon monoxide. Continued breathing of exhaust fumes is dangerous and may be fatal.

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

Do not fill the fuel tank while the engine is in operation. Fuel spilled on a hot engine may explode and cause injury to personnel. When filling the fuel tank, always provide a metal-to-metal contact between the container and the fuel tank. This will prevent a spark from being generated as fuel flows over the metallic surface.

Exercise extreme caution when using a carbon tetrachloride fire extinguisher in an inclosed area. A deadly gas is generated by the contact of carbon tetrachloride with a heated metallic surface. Provide adequate ventilation before entering an enclosed area where carbon tetrachloride has been used.

Do not operate the generator set without a suitable ground connection. Electrical defects in the unit can cause death by electrocution when contact is made with an ungrounded system

Exercise care in the use of test lamp circuits of 110 volts or higher. Death by electrocution. can result from contact with the test lamp circuit or the circuit under test.

When a malfunction of the selenium rectifier occurs, thoroughly ventilate the area to prevent inhalation of poisonous fumes. Do not handle the damaged selenium rectifier. Selenium oxide may be absorbed through the skin, especially when the rectifier is hot. Failure to observe this warning can result in severe illness or death.

During Operation

Do not attempt to make or break load connections or perform maintenance on the generator while it is in operation. Always make sure it is not connected to an energized line before performing maintenance.

Exercise extreme caution when using a carbon tetrachloride fire extinguisher in an enclosed area. A deadly gas is generated by the contact of carbon tetrachloride with a heated metallic surface. Provide adequate ventilation before entering an inclosed area where carbon tetrachloride has been used.

Exercise care in the use of test lamp circuits of 110 volts or higher. Death by electrocution can result from contact with the test lamp circuit or the circuit under test.

When a malfunction of the selenium rectifier occurs, thoroughly ventilate the area to prevent inhalation of poisonous fumes. Do not handle the damaged selenium rectifier. Selenium oxide may be absorbed through the skin, especially when the rectifier is hot. Failure to observe this warning can result in severe illness or death.

After Operation

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

Exercise extreme caution when using a carbon tetrachloride fire extinguisher in an enclosed area. A deadly gas is generated by the contact of carbon tetrachloride with a heated metallic surface. Provide adequate ventilation before entering an inclosed area where carbon tetrachloride has been used.

Do not attempt to make or break load connections or perform maintenance on the generator set while it is in operation. Always make sure that it is not connected to an energized line before performing maintenance.

Exercise care in the use of test lamp circuits of 110 volts or higher. Death by electrocution can result from contact with the test lamp circuit or the circuit under test.

When a malfunction of the selenium rectifier occurs, thoroughly ventilate the area to prevent inhalation of poisonous fumes. Do not handle the damaged selenium rectifier. Selenium oxide may be absorbed through the skin, warning can result in severe illness o

TECHNICAL MANUAL

Operator and Organizational Maintenance

GENERATOR SET, DIESEL ENGINE: PRECISE POWER; 100 KW, AC, 120/208V, 240/416V, 3 PHASE, 60 CYCLE, AT 1800 RPM, 83.3 KW, 120/208V, 240/416V, 3 PHASE, 50 CYCLE AT 1500 RPM; SKID MOUNTED (DETROIT DIESEL, GENERAL MOTORS MODEL 6910A) FSN 6115-798-3444

TM 5-6115-298-12 CHANGES No. 1 HEADQUARTERS, DEPARTMENT OF THE ARMY WASHINGTON 25, D.C., 16 July 1968

TM 5-6115-298-12, 18 April 1961, is changed as follows:

Page 2, paragraph 1.

- d. (Superseded) Report all deficiencies in this manual on DA Form 2428, Recommended Changes to DA Technical Manual Parts Lists or Supply 7, 8, or 9). Submit recommendations for changes, additions, or deletions to the Commanding Officer, U. S. Army Mobility Support Center, ATTN: SMOS-MM, P.O. Box 119, Columbus 16, Ohio. Direct communication is authorized.
- e. (Added) Report all equipment improvement recommendations as prescribed by TM 88-750.

2. Record and Report Forms (Superseded)

- a. DA Form 2258 (Depreservation Guide of Engineer Equipment).
- b. For other record and report forms applicable to the operator and organizational maintenance, refer to TM 88-750.

Note. Applicable forms, excluding Standard Form 46 (U.S. Government Motor Vehicle Operator's Identification Card) which is carried by the operator, shall be kept in a canvas bag mounted on the equipment.

Page 33.

33. General (Superseded)

To insure that the generator set is ready for operation at all times, it must be inspected sys-

tematically, so that defects may be discovered and corrected before they result in serious damor failure. The necessary Preventive Maintenance Services to be performed are listed and described in paragraphs 34 and 36. The 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 during operation which would damage the equipment if operation were continued. All deficiencies and shortcomings will be recorded, together with the corrective action taken, on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) at the earliest possible opportunity.

Page 68.

34. Daily Preventive Maintenance Services (Superseded)

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 23 for the Daily Preventive Maintenance Services.

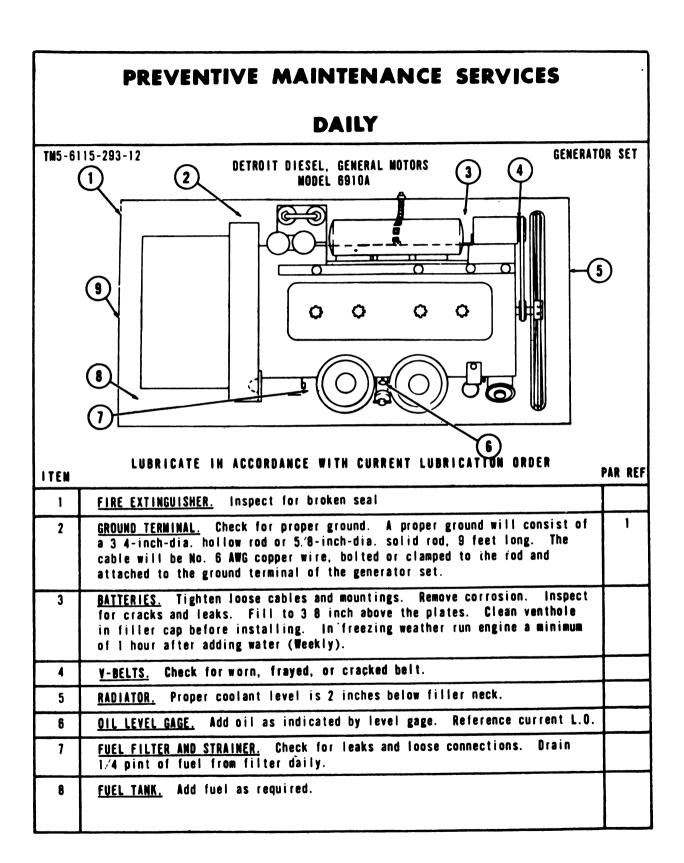


Figure 23. (Superseded) Daily preventive maintenance nervicen.

EM				PAR	R
9	CONTROLS AND INST	TRUMENTS. Inspect f	or damage and loose mounting. With unit		
	operating, check	for proper operatio	n. Normal operating readings for	1	
	instruments are	s follows:		1	
	Water temperatur	e gage	180°F	1	
	Qil pressure gag	?	5-15 psi, minimum, idle speed;		
			30-50 psi, operating speed	-	
	Battery charging	ammeter	Slight charge		
	Ac ammeter		Indicates percent of rated current,	1	
			100% maximum		
	Frequencymeter	50 cycle operation	50 cycle	1	
		60 cycle operation	bu cycle	ı	
	Voltmeter	4 wire, single-phas	e operation 120 208 volt		
		4 wire, 3 phase ope	ration 240 416 volt 120 240 volt	ı	
		3 wire operation			
	Wattmeter		83.3 KW maximum	1	
		60 cycle operation	109 KW maximum		_

MSC 6115-293-12 23

Page 36, paragraph 35. Rescinded Page 36.

36. Quarterly Preventive Maintenance Services (Superseded)

a. This paragraph contains an illustrated tabulated listing of preventive maintenance

services which must be performed by Organizational Maintenance personnel at quarterly intervals. A quarterly interval is equal to 3 calendar months, or 250 hours of operation, whichever occurs first.

b. The item numbers are listed consecutively and indicate the sequence of minimum requirements. Refer to figure 23.1 for the Quarterly Preventive Maintenance Services.



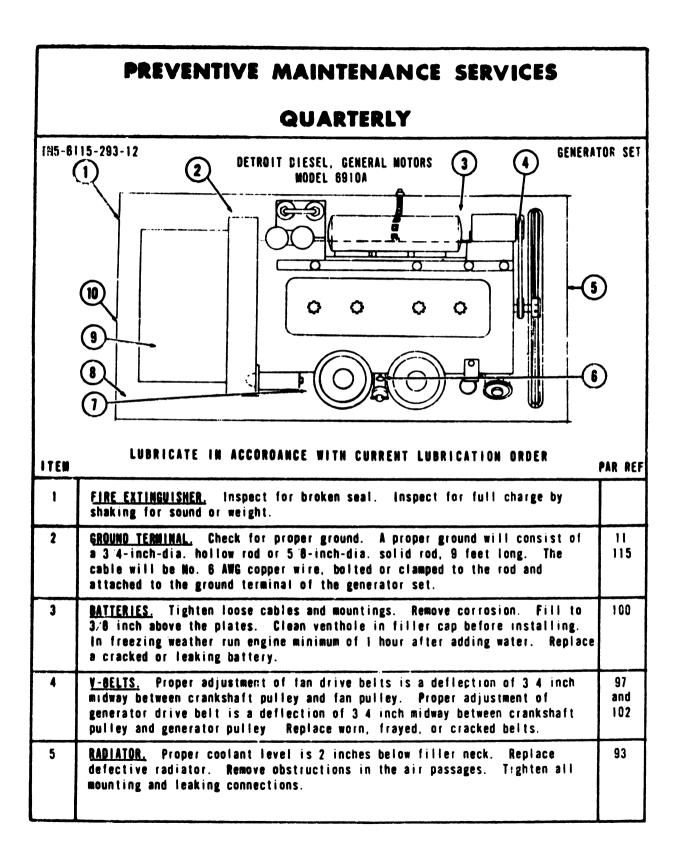


Figure 23.1. (Added) Quarterly preventive maintenance services.

ITEM		PAR REI
6	OIL LEVEL GAGE. Add oil as indicated by level gage. Reference current L.O.	
7	<u>FUEL FILTER AND STRAINER</u> Tighten loose connections. Drain water from filter.	78 79
8	<u>FUEL TANK.</u> Add fuel as required. Tighten loose mounting. Replace defective cap gasket. Clean cap vent.	
9	MAIN GENERATOR, BRUSHES, AND SLIPRINGS. Check the main generator for worn or frayed wiring. Clean dirty or rough sliprings. Replace brushes if worn to less than 3/4 inch. Correct brush spring tension is 8 to 10 ounces.	114
10	CONTROLS AND INSTRUMENTS. Replace damaged instruments. Tighten loose, mounting. With the unit operating, check for proper operation. Normal operating readings for instruments are as follows: Water temperature gage 180°F Oil pressure gage 5-15 psi, minimum idle speed; 30-50 psi, maximum operating speed Battery charging ammeter Slight charge Indicates percent of rated current, 100 maximum. Frequencymeter 50 cycle operation 50 cycle 60 cycle operation 60 cycle Voltmeter 4-wire, single-phase operation-120 208 volt 4-wire, 3-phase operation 240'416 volt 3-wire operation 120 240 volt Wattmeter 50 cycle operation 83.3 KW maximum 60 cycle operation 100 KW maximum	16
	NOTE 1. OPERATIONAL TEST. During operation observe for any unusual noise or vibration.	
	HOTE 2. ADJUSTMENTS. Make all necessary adjustments during operational test.	

Page 99.

141. Inspection and Maintenance of Equipment in Storage (Superseded)

- a. Inspection. When equipment has been placed in limited storage, all scheduled preventive maintenance services, including inspection, shall be suspended and preventive maintenance inspection shall be performed as specified herein. Refer to AR 743-505.
- b. Worksheet and Preventive Maintenance. Applicable forms listed in TM 38-750 shall be prepared for each major item of equipment when initially placed in limited storage, in accordance with the scheduled interval contained in AR 743-505. Perform required maintenance promptly to make sure equipment is mechanically sound and ready for immediate use.
- c. Operation. Operate equipment in limited storage long enough to bring it up to operating temperature and insure complete lubrication of all bearings, gears, and the like, in accordance

with the scheduled interval contained in AR 743-505. Equipment must be serviced and in satisfactory operating condition before it is operated.

Page 100, paragraph 5. Delete the following references:

AR 700-38 Unsatisfactory Equipment Report TM 5-505 Maintenance of Engineer Equipment

Add: TM 38-750 The Army Equipment Record System and Procedures.

Page 112.

4. Comments and Suggestions (Superceded)

Suggestions and recommendations for changes to the Basic Issue Items List will be submitted on DA Form 2028 to the Commanding Officer, U. S. Army Mobility Support Center, ATTN: SMOMS-MM, P. O. Box 119, Columbus 16, Ohio. Direct communication is authorized.

By Order of the Secretary of the Army:

EARLE G. WHEELER, General, United States Army, Chief of Staff.

Official:

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

Distribution:

To be distributed in accordance with DA Form 12-32, Section II (Unclas) requirements for Missile Monitor—TM—Power Generating Equipment (Eng).

Changes in force: C 1 and C 2

TM 5-6115-293-12 C 2

CHANGE No. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 19 June 1969

Operator and Organizational Maintenance Manual

GENERATOR SET, DIESEL ENGINE: PRECISE POWER;

100 KW, AC, 120/208V, 240/416V, 3 PHASE, 60 CYCLE
AT 1800 RPM; 83.3 KW, 120/208V, 240/416V, 3 PHASE,

50 CYCLE AT 1500 RPM, SKID MOUNTED

(DETROIT DIESEL, GENERAL MOTORS MODEL 6910A)

FSN 6115-798-3444

TM 5-6115-293-12, 18 April 1961, is changed as follows:

Page 2. Paragraph 1d is superseded as follows:

d. Report of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to DA Publications) and forwarded direct to Commanding General, U. S. Army Mobility Equipment Command, ATTN: AMSME-MPP, 4300 Goodfellow Boulevard, St. Louis, Mo. 63120.

Paragraph 5 is superseded as follows:

5. Differences in Models

- a. The differences existing in the two generating sets are as follows:
- (1) Model 6910 utilizes a model 5548842 main generator regulator, and a model 5548841 exciter assembly.
 - (2) Model 6910A utilizes a model

5551983 main generator regulator, and a model 5550468 exciter assembly.

- b. Serial number ranges are 001 thru 1077 and 1A thru 237A respectively.
- Page 3. Paragraph 6c, add model 21-4676, effective with engine serial 6A-133350 up.
- Page 5. Paragraph 6m, add model 1113847, effective with engine serial 6A-144938 up.

Paragraph 6z is superseded as follows:

z. Maintenance and Operating Supplies. Refer to appendix III for a complete list of Maintenance and Operating Supplies required for initial operation.

Page 6. Table I is deleted.

Page 24, paragraph 25b. In line 2, TM 9-2851 is changed to read TM 9-213.

Paragraph 29 deleted.

Page 33. Paragraph 33 is superseded as follows:

33. General

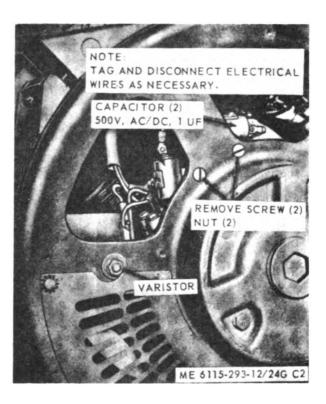
To insure that the generator set is ready for operations at all times, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance checks and services to be performed are listed and described in paragraphs 34, 35 and 36. Defects discovered during operation of the unit will be noted for future correction, to be made as soon as operation has ceased. Stop operation immediately if a deficiency is noted during operation which would damage the equipment if operation were continued. All deficiencies and shortcomings will be recorded together with the corrective action taken on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) at the earliest possible opportunity.

Page 37. Under Inspection column, item 4, Fire extinguisher, line 11, TM 9-1799 is changed to read TB 5-4200-200-10.

Under Inspection column, item 7, Modifications, is superseded as follows:

Modifications. See that all available modification work orders, applying to this unit, have been completed and recorded on DA Form 2408-5.

Page 45. Figure 24G is superseded as follows:



G. MAIN GENERATOR BRUSH CAPACITORS. Figure 24 — Continued.

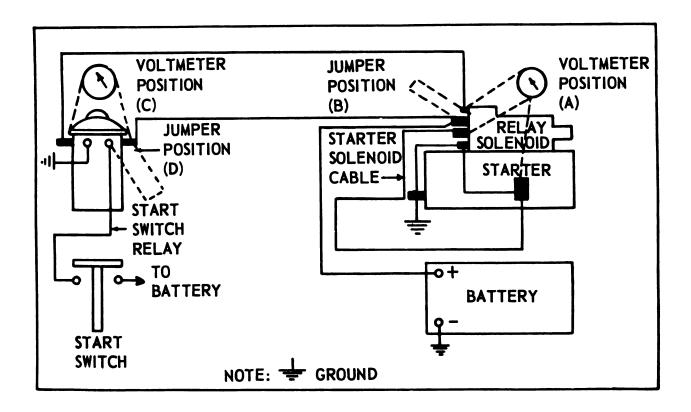
Page 72. Paragraphs 101a and b are superseded as follows:

- a. For generator sets having starters with part number 1113809, refer to figure 56 and perform starter and solenoid onengine test; for starters with part number 1113847, refer to figure 56A to perform test.
- b. For generator sets with starters having part numbers 1113809, refer to figure 57 for removal and installation instructions; for starters with part number 1113847, refer to figure 57A for removal and installation.

Page 75. Figure 56 caption is superseded as follows:

Figure 56. Starter (P/N 1113809) and solenoid relay, on-engine testing.

After figure 56 add the following figure:



- STEP 1. DETERMINE THAT BATTERY IS FULLY CHARGED AND THAT ALL BATTERY AND STARTER CABLES ARE SERVICABLE AND PROPERLY INSTALLED.
- STEP 2. REMOVE STARTER SOLENOID CABLE. CONNECT A VOLTMETER AS SHOWN AT POSITION A
 ABOVE. IF VOLTAGE IS INDICATED, STARTER RELAY IS DEFECTIVE AND MUST BE REPLACED.
- STEP 3. INSTALL THE STARTER SOLENOID CABLE. WITH THE VOLTMETER INSTALLED AS IN POSITION A ABOVE, BATTERY VOLTAGE (24-V) MUST BE INDICATED. IF NOT, THE STARTER IS DEFECTIVE AND MUST BE REPLACED.
- STEP 4. WITH THE VOLTMETER CONNECTED AS IN POSITION A ABOVE, MOMENTARILY CONNECT A JUMPER WIRE AS IN POSITION D ABOVE. THE VOLTMETER SHOULD DROP TO ZERO AND THE STARTER SHOULD CRANK THE ENGINE. IF VOLTMETER DOES NOT DROP TO ZERO, STARTER SOLENOID IS DEFECTIVE AND MUST BE REPLACED. IF THE VOLTMETER DROPS TO ZERO BUT STARTER FAILS TO CRANK ENGINE, STARTER IS DEFECTIVE AND MUST BE REPLACED.
- STEP 5. REMOVE THE JUMPER WIRE FROM POSITION \underline{D} ABOVE AND INSTALL THE VOLTMETER AT POSITION \underline{C} ABOVE. BATTERY VOLTAGE WILL BE INDICATED. MOMENTARILY CONNECT A JUMPER WIRE AS SHOWN AT POSITION \underline{D} ABOVE. THE VOLTMETER SHOULD DROP TO ZERO. IF NOT, THE START SWITCH RELAY IS DEFECTIVE AND MUST BE REPLACED.

ME 6115-293-12/56A/C2

Figure 56A. Starter (P/N 1113847) and solenoid relay, on-engine testing.

Page 76. Figure 57 caption is superseded as follows:

Figure 57. Starter (P/N 1113809) and solenoid relay, removal and installation.

After figure 57 add the following figure:

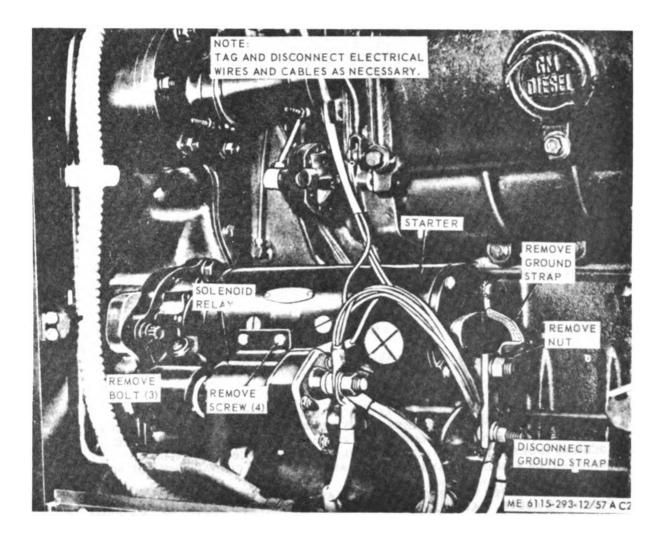


Figure 57A. Starter (P/N 1113847) and solenoid relay, removal and installation.

Page 99, paragraph 138i. In line 1, TM 9-200 is changed to read, TM 740-90-1 and TB 740-93-2.

Paragraph 140b. In line 7, TM 9-2851 is changed to read TM 9-213.

Paragraph 141b. In lines 1 and 2, DA Form 464 is changed to read, Log books will *** for immediate use.

Page 100. Appendix I is superseded as follows:

APPENDIX I

REFERENCES

1.	Fire Protection	
	TB 5-4200-200-10	Hand Portable Fire Extinguishers for Army Users
2.	Lubrication	
	C9100IL	Fuels, Lubricants, Oils and Waxes
	LO 5-6115-293-12	Lubrication Order
3.	Painting	
	TM 9-213	Painting Instructions for Field Use
4.	Radio Suppression	
	TM 11-483	Radio Interference Suppression
5.	Maintenance	
	TM 5-6115-293-20P	Organizational Maintenance Repair Parts and Special Tools List
	TM 9-6140-200-15	Operation and Organizational Field and Depot Mainte- nance, Storage Batteries, Lead-Acid Type
	TM 38-750	Army Equipment Record Procedures
6.	Shipment and Storage	
	TB 740-93-2	Preservation of USAMECOM Mechanical Equipment for Shipment and Storage
	TM 740-90-1	Administrative Storage of Equipment

Page 111. Appendix III is superseded as follows:

APPENDIX III

BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

1. Scope

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

2. General

This Basic Issue Items List is divided into the following sections:

- a. Basic Issue Items Section II. A list of items which accompany the generator set 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.

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

Code

Explanation

- 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.
- X2 Repair parts which are not stocked. The indicated maintenance category requiring such repair parts will attempt to obtain them through canibalization. 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 non-availability 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 levels.
- (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

(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 Repair parts and assemblies which are economically reparable at DSU and GSU activities and are normally furnished by supply on an exchange basis.

- 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. This column indicates the Federal stock number assigned to the item and 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). A2-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. This column 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. Quantity Furnished With Equipment. This column indicates the quantity of an

- item furnished with the equipment.
- g. 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 illustration.
- Explanation of Columns in the Tabular List of Maintenance and Operating Supplies — Section III
- a. Component Application. This column identifies the component application of each maintenance or operating supply item.
- b. Federal Stock Number. This column indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.
- c. Description. This column indicates the item name and brief description.
- d. Quantity Required for Initial Operation. 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. This column indicates the estimated quantities required for an average 8 hours of operation.
- f. Notes. This column indicates informative notes keyed to data appearing in a preceding column.

Section II. BASIC ISSUE ITEMS

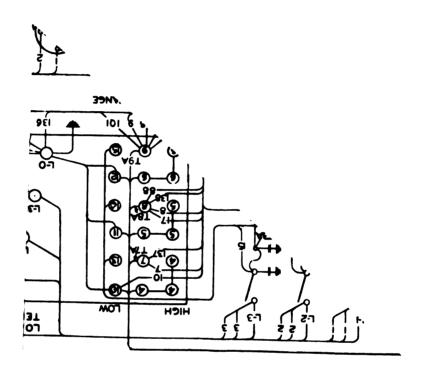
(1)	(2)	(3)	(4)	(5)	(6)	0	7)
		DESCRIPTION	Unit	Qty	Qty	(a)	ration (b)
SMR Code	Federal Stock No.	Ref No & Mfr Usable Code on Code	of Mees	in Unit	with Equip	Fig No.	Item No.
PC	2910-066-1225	ADAPTER, DRUM	ea		•		
PC	7510 -889-3494	BINDER, LOG BOOK	68		1		
PC	7520-559-9618	CASE, OPERATIONAL AND MAINTENANCE PUBLICATIONS	ea		1		
		DA TECHNICAL MANUAL TM 5-6115-293-12	ea		1		
PC	5935-258-9156	PLUG, CONNECTOR	68		•		
PC	5975-878-3791	ROD ASSEMBLY, GROUND	ea		•		

Section III. MAINTENANCE AND OPERATING SUPPLIES

(1)	(2)	(3)	(4)	(5)	(9)
Component Application	Federal Stock Number	DESCRIPTION	Quantity Required F/Initial Operation	Quantity Required F/8 Hrs Operation	# O I
0101 — CRANKCASE		OIL, LUBRICATING: 5 gal drums as follows:			(1) Includes quantity of oil to fill engine oil system as follows:
	9150-265-9435	OE 30	37 3/4 qt	(3)	1
	9150-265-9428	OE 10	37 3/4 qt	(3)	29 qt — crankcase 4 qt — oil filters.
	(2) 9150-242-7603 (3)	OES	(I) 37 3/4 qt	(3)	3 qt — air cleaners 1 qt — oil filter, governor
0106.2 — OIL FILTER ENGINE	€	OIL, LUBRICATING	€		3/4 qt — hydraulic gov- ernor reservoir
0106.2 — OIL FILTER GOVERNOR	€	OIL, LUBRICATING			(2) See C9100IL for additional data and requisitioning procedure.
0106.6 — HYDRAUL- IC GOVERNOR RESERVOIR	•	OIL, LUBRICATING			(3) See current LO for grade application and repleniahment intervals.
304 — AIR CLEANER	€	OIL, LUBRICATING			(4) Use oil as prescribed in 0101 above.
0306 — TANK		FUEL OIL, DIESEL: Bulk as follows:			(5) Tank capacity.
	9140-286-5294 (2) 9140-286-5296 (2)	Regular grade (DF-2) Winter grade (DF-1)	87 gal (5) 87 gal (5)	48 gal (6) 48 gal (6)	
	9140-286-5283 (2)	Artic grade (DF.A)	87 gal (5)	48 gal (6)	(7) Radiator capacity.(8) Minimum protection obtained at 60 percent by
0311 — PRIMER PUMP		STARTING AID			volume, i.e., 4.8 pints of antifreeze per gal of solution.

Z O
H
물
E
2
Ç
Ž
₹
MAINTENANCE AND OPERATING SUPPLIES
0
6
3
Ä
ဋ
2
Ž
Ź
₹
Σ
目
Section III.
끃

				-	
(1)	(2)	(6)	(4)	(2)	(9)
Component Application	Faderal Stock Number	DESCRIPTION	Quentity Required F/Initial Operation	Quantity Required F/8 Mrs Operation	N O T E S
	6810-200-2407	Ether (Reagent) 4 oz. can	As req.	As req.	Pure artic type anti-
0601 — RADIATOR		COOLING SYSTEM: Water	16 gal (7)	(9) As req. (3)	freeze is used where temper- atures are below 40°F.
	6850-224-8730	ANTIFREEZE: Ethylene	8 1/4 gal		(10) Winterization fuel
	6850-174-1806	ANTIFREEZE; ARTIC: 55 gal drum	<u>6</u> 6	(6)	tank capacity.
2207 — WINTER- IZATION HEATER		STARTING AID:			(11) Fuel consumption high fire; 3/4 gal. per hr; low fire; 1/2 gal. per hr.
	9130-160-1818 (2)	Gasolins, automotive bulk	2 1/2 gal (10)	6 grad (11)	





1

Page 119. Immediately after page 119, figure 4, (fold-in, fold-out) is superseded as follows:

Figure 4. Practical wiring diagram. (Located in back of manual)

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 IV (qty rqr Block No. 750), Organizational maintenance requirements for Generator Sets, Engine Driven, 100 kw, 60 cycles.

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

TM 5-6115-293-12 C 3

CHANGE

No. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 15 June 1973

Operator and Organizational Maintenance Manual GENERATOR SET, DIESEL ENGINE: PRECISE POWER 100 KW, AC, 120/208V, 240/216V, 3 PHASE 60 CYCLE AT 1800 RPM: 83.3 KW, 120/208V, 240/416V, 3 PHASE 50 CYCLE AT 1500 RPM, SKID MOUNTED (DETROIT DIESEL, GENERAL MOTORS MODEL 6910A) FSN 6115-798-3444

TM 5-6115-293-12, 18 April 1961, is changed as follows:

Page 111. APPENDIX III is superseded as follows:

APPENDIX III BASIC ISSUE-ITEMS-LIST AND ITEMS TROOP INSTALLED OR AUTHORIZED LIST

Section I. INTRODUCTION

1. Scope

This appendix lists items required by the operator for operation of the generator set.

2. General

This 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 of items in alphabetical sequence, which at the discretion of the unit commander may accompany the generator set. These items are NOT SUBJECT TO TURN-IN with the generator set when evacuated.

3. Explanation of Columns

The following provides an explanation of columns in the tabular list of Basic Issue Items List, Section II, and Items Troop Installed or Authorized List, 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 and 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 two 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 Furnished with Equipment (BIIL). (Not applicable).
- f. Quantity Authorized (Items Troop Installed or 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 Unable on Code	(4) Unit of Meas	(5) Qty Auth
	7520 -559-9618 4210 -555-883 7	Case, Manual Extinguisher, Fire	EA EA	1
	5 9 75- 878-379 1	Rod Assy., Ground	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

.stribution:

To be distributed in accordance with DA Form 12-25D (qty rqr block 1086) organizational maintenance for Generator Sets, 100 KW, 60 HZ Precise Power.

GPO 902-854

Changes in Force: C 1, C 2, C 3, C 4

TM 5-6115-293-12 C 4

CHANGE No. 4 HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 27 November 1974

Operator and Organizational Maintenance Manual

GENERATOR SET, DIESEL ENGINE:
PRECISE POWER; 100KW, AC
120/208V, 240/416V, 3 PHASE
60 HERTZ; AT 1800 RPM
83.3KW, 120/208V, 240/416V
3 PHASE 50 HERTZ AT 1500 RPM
SKID MOUNTED
(DETROIT DIESEL, GENERAL MOTORS
MODEL 6910A) FSN 6115-798-3444

TM 5-6115-293-12, 18 April 1961, is changed as follows: The title is changed as shown above. Inside Front Cover. The following warnings are added:

WARNING

Operation of this equipment presents a noise hazard to personnel in the area. The noise levels exceeds the allowable limits for unprotected personnel. Wear ear muffs or ear plugs which were fitted by a trained professional.

WARNING

Dry cleaning solvent, PD 680, used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat. Flash point of solvent is 100F (38C) - 138F (59C).

Throughout this manual, wherever the word "CYCLE" appears, is changed to read "HERTZ". Page 2. Paragraph 1d is superseded as follows:

d. You can improve this manual by calling attention to errors and by recommending improvements, using DA Form 2028 (Recommended Changes to Publications and Blank Forms), or by a letter, and mailing the form direct to Commander, U.S. Army Troop Support Command, ATTN: AMSTS-MPP. A reply will be furnished direct to you.

Page 5. Paragraph z is rescinded.

Page 8. Paragraph 11d is superseded as follows:

- d. Grounding. Generator sets will be grounded in order to prevent electrical shock, caused by defective insulation, or external electrical faults, defective grounding can endanger personnel or damage equipment, and can create interference of communication in electronic circuits.
- (1) Install one of the following items as grounding device:
- (a) Drive a ground rod to depth of at least 8 feet. This is the preferred device which is available in the Army supply system.
- (b) Drive a ground pipe, 3/4 inch, copper or steel, to depth of at least 8 feet. An existing under

ground pipe may be used in an emergency.

- (c) Bury a 1/4 inch thick iron or steel plate, approximately 18 inch x 18 inch size, with ground cable attached, to a depth of at least 4 feet.
- (d) Bury a 1/16 inch thick aluminum or copper plate approximately 18 inch x 18 inch size, with ground cable attached, to a depth of at least 4 feet.
- (e) Position a 1/4 inch thick iron or steel plate, or 1/16 inch thick aluminum or copper plate, approximately 18 inch x 18 inch size, on the hard ground or bedrock beneath the trailer stand or roll

By Order of the Secretary of the Army:

the wheel of a trailer or truck until it comes to rest on top of the grounding plate.

- (f) Saturate the area around the grounding device with water to increase conductivity.
- (2) Ground cables should be copper. Braided cable is the best, but No. 6 AWG gauge (or larger) copper wire will suffice.
- (3) Connect the ground cable from the grounding device to the generator set frame ground terminal (fig. 5.B), and tighten the nut securely.

FRED C. WEYAND 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 12-25D, (qty rqr block No. 1066) Organizational maintenance requirements for Generator maintenance requirements Sets, 100 KW, 60 HZ, Precise Power.

TECHNICAL MANUAL No. 5-6115-293-12 TECHNICAL ORDER No. 35C2-3-329-1 DEPARTMENTS OF THE ARMY AND THE AIR FORCE

Washington 25, D. C., 18 April 1961

Operator and Organizational Maintenance Manual

GENERATOR SET, DIESEL ENGINE: PRECISE POWER; 100 KW, AC, 120/208V, 240/416V, 3 PHASE, 60 CYCLE, AT 1800 RPM, 83.3 KW, 120/208V, 240/416V, 3 PHASE, 50 CYCLE AT 1500 RPM; SKID MOUNTED (DETROIT DIESEL, GENERAL MOTORS MODEL 6910A) FSN 6115-798-3444

Ceanes 1	INTRODUCTION	raragraph	rag
Section I.	General.	1, 2	
II.	Description and data		
		0.0	
CHAPTER 2.	INSTALLATION AND OPERATING INSTRUCTIONS		
Section I.	Service upon receipt of equipment.	7-13	8-10
II.	Movement to a new worksite	14, 15	1
III.	Controls and instruments and operation under usual conditions	16-20	11-1
IV.	Operation under unusual conditions	21-26	23, 2
V.	Operation of materiel used in conjunction with the generator set	27-30	2
CHAPTER 3.	OPERATOR AND ORGANIZATIONAL MAINTENANCE INSTRUCTIONS		
Section I.	Lubrication	31, 32	2
II.	Preventive maintenance services.	33-36	33-3
III.	Troubleshooting	37-67	40-43
IV.	Radio interference suppression	68, 69	43
V.	Fire extinguisher bracket, hood, doors, and panels		40
VI.	Exhaust system		49
VII.	Fuel system	75-85	51-50
VIII.	Lubrication system.		61, 63
IX.	Cooling system		67-72
X.	Engine electrical system		72-8
XI.	Engine.		8
XII.	Main generator		84-8
XIII.	Safety devices		88, 89
XIV.	Winterisation system		89-9
XV.	Engine and generator controls and instruments		93
CHAPTER 4.	DEMOLITION OF GENERATOR SET TO PREVENT ENEMY USE	133-137	97
CHAPTER 5.	SHIPMENT AND LIMITED STORAGE		
Section I.	Shipment within sone of interior	138, 139	98
II.	Limited storage	140, 141	98
Appendix I.	REFERENCES		100
II.	MAINTENANCE ALLOCATION		10
III.	BASIC ISSUE ITEMS		11
INDEX			11-

CHAPTER 1 INTRODUCTION

Section I. GENERAL

1. Scope

- a. These instructions are published for the use of the personnel to whom the General Motors Models 6910 and 6910A Generator Sets are issued. This manual contains information on the operation and organizational maintenance of the equipment. This manual also provides a description of the main units and their functions in relationship to other components.
- b. Appendix I contains a standard list of all publications applicable to this manual. Appendix II contains the maintenance allocation chart. Appendix III contains the basic issue items authorized for use of the operator of this equipment. The organizational maintenance repair parts and special tool lists are contained in TM 5-6115-293-20P.
- c. The numbers placed in parentheses on the illustrations used within this manual indicate quantity.
- d. Report all deficiencies as specified in AR 700-38. Submit recommendations for changes, additions, or deletions to the Commanding General, U.S. Army Engineer Maintenance Center, Corps of Engineers, ATTN: EMCDM, P.O. Box 119, Columbus 16, Ohio. Direct communication is authorized.

2. Record and Report Forms

For record and report forms applicable to the first and second echelons of maintenance, refer to TM 5-505.

Section II. DESCRIPTION AND DATA

3. Description

- a. General. The General Motors Generator Sets Models 6910 and 6910A (figs. 1 and 2) are self-contained, skid-mounted, canopy-covered, winterized, portable units. They are powered by a six-cylinder diesel engine (fig. 2) that is directly coupled to the main generator (fig. 1). The generator control panel (fig. 1), the engine control panel (fig. 1), and the winterization control panels (fig. 1) contain the controls and instruments necessary for single or parallel operation and remote control. Doors and panels are provided for easy access to all components.
- b. Engine. The General Motors Corporation series 6-71 diesel engine (fig. 2), is a 425 cubic inch displacement engine, which is governed at a speed of 1,800 rpm (revolutions per minute) at 60 cycles; 1,500 rpm for 50 cycles.
- c. Main Generator. The Delco Products Main Generator Model 1-4676 (fig. 1), is driven directly from the engine flywheel. It is a 3-phase, 50/60-cycle, 100 KW (kilowatt) unit. The generator has 12 stator leads which can be connected at the conversion block (fig. 2) for 120 single phase and 208 or 240/416-volts, 3-phase, 4-wire operation.

The full load rating is 100 kw at 60 cycles or 83.3 kw at 50 cycles.

4. Identification

The generator set has two identification plates, the data on these plates can be found in the tabulated data section of the technical manual (par. 6).

5. Differences in Models

This manual covers the General Motors Generator Set Models 6910 and 6910A. The differences existing in the two models are that Generator Set Model 6910 utilizes a Model 5548842 main generator regulator, and a Model 5548841 exciter assembly. Generator Set Model 6910A is equipped with a Model 5551983 main generator regulator, and a Model 5550468 exciter assembly.

6. Tabulated Data

a. General.	
Manufacturer	General Motors Corp.
Model	6910 and 6910A
Туре	Skid mounted, diesel driven
b. Engine.	
Manufacturer	Detroit Diesel Division of General
	Motors Corp.
Type	Diesel

Model	.6910 and 691 0A
Series	.6-71
Cooling	. Liguid
Number of cylinders	.6
Cycle	.2
Bore	.4.25 in. (inch)
Stroke	.5 in.
Piston displacement	425 cu in. (cubic inch)
Compression ratio	.17 to 1
Firing order	.1-5-3-6 2-4
Crankshaft rotation (view from generator end).	Counterclockwise
Governor speed	.1,500 and 1,800 rpm

c. Generator.	
Manufacturer	Delco-Remy Division of General
	Motors Corp.
Model	1-4676
Kilowatt rating	100 KW @ C0 cy
	83.3 KW @ 50 cy
Phase	1 and 3
Type	Ac (alternating current) 50 '60 cycle
Voltage (4 wire)	120 single phase and 208 or 240/416 3 phase
Voltage (3 wire)	120 240
Manufacturer	_ Donaldson Company
Type	_Oil bath
Number	

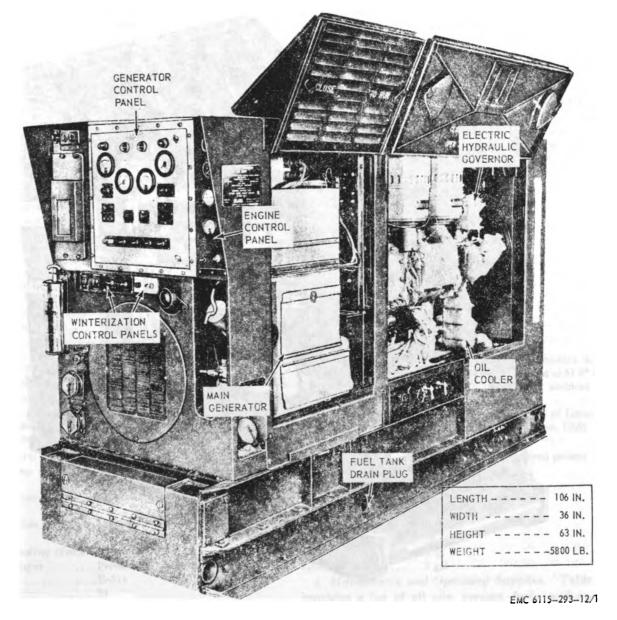
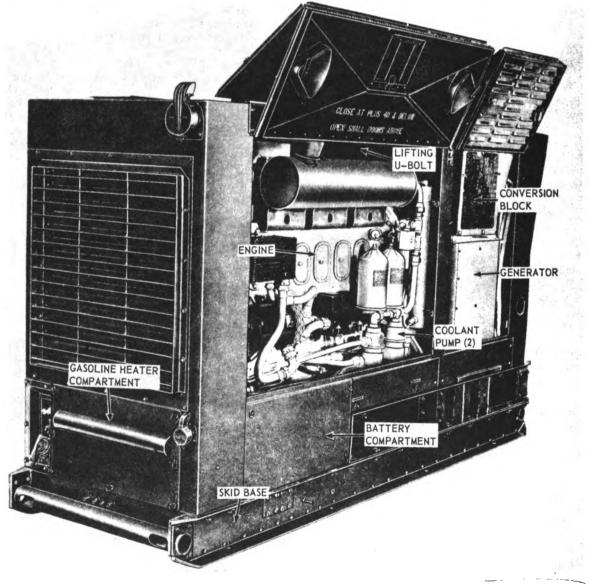


Figure 1. Generator set, right rear, three-quarter view, with shipping dimensions.

Digitized by Google

e. Fuel Transfe	r Pump.
Manufacturer	Tut Hill Corp.
Model	90L35
Type	Direct drive
f. Injector Pum	ıp.
Manufacturer	General Motors Corp.
Type	Gear driven
Output pressure	40 lb (pound)
g. Governor.	
Manufacturer	Woodward Governor Company
Serial number	557723
Model	LSG-1
Type	Hydraulic load sensing

Manufacturer	AC Spark Plug Company, Division
Manulacturer	
	of General Motors Corp.
Model	8-2
Туре	Bypass
Element	P-117
i. Governor Oil	Filter.
Manufacturer	Purolator Products Corp.
Model	P92-07
Element	P-92
j. Overspeed Ge	overnor.
Manufacturer	Synchro Start Products, Inc.
Model	GW-2
	1,800 to 2,100 rpm



EMC 6115-293-12/2

Figure 2. Generator set, left front, three-quarter view.

k. Balleries.
ManufacturerDelco-Remy Division of General
Motors Corp.
ModelUS-ST
Volta12
Quantity2 GroundNegative
Ciroundvegauve
l. Circulation Pump.
ManufacturerRobbins and Myers Company
ModelGM-20124
Volta24
Serial
141101
m. Starter.
ManufacturerDelco-Remy Division of General
Motors Corp.
Model1113809
Volts24
n. Battery-Charging Generator.
ManufacturerLeece-Neville Company
Manufacturer Leece-Nevine Company
Type5300 GP
Volta28
Amperes100
Ordnance number7954720
o. Generator Regulator.
ManufacturerLeece-Neville Company
TypeR0013392RP
Volts28
Amperes100
()rdnance number8699744
p. Rectifier.
ManufacturerLeece-Neville Company
ТуреС0011029СР
Volts28
Amperes100
Ordnance number7954343
q. Governor Computer.
ManufacturerWoodward Governor Company
Volts208
Cycle50-60
Part number379002
r. Static Exciter. Manufacturer Delco-Remy Division of General
Motors Corp.
Part number
Part number5548841 for Model 6910
8. Main Generator Regulator.
ManufacturerDelco-Remy Division of General
Motors Corp.
Part number Model 5548842
6910.
Part number Model 5551983
6910A
t. Gasoline Heater.
1. Gasotthe rieuter. ManufacturerPerfection Industries
ManufacturerPerfection industries ModelE-511
Volta24
Fuel Gasoline
Output
per hr (hour).

Fuel Consumption:	
	75 gph (gallons per hour)
Lo-fire0.	5 gph
u. F ^{1]. P} rimer.	
ManuiacturerA	utomotive and Marine Products
	Corp.
ModelA	
TypeE	
v. Generator Data P	
Model1	
Kw1	
P f (power factor)	
••	-
Kva (Kilovolt ampere) 1	
Phase3	
Cycle6	
Rpm1	
Ampere excitation2	
Voltage 1	
Amperage (at 120/208) 3	
Amperage (at 240/416).1	13.0
Serial No	_
Exciter volts4	
Continuous temperature 7	5° C. (centigrade) (167° F.) Fahr-
rise	enheit) and 95° C. (203° F.) on
	field at 51.6° C. (124.8° F.) maxi-
	mum ambient temperature
Manufacturerl	Delco Products Division of General
	Motors Corp. at Dayton, Ohio
w. Generator Data I	Plate (50 Cycles).
Model	-4676
Kw8	
P f	
Kva	
Phase	
Cycle	
Rpm	
Ampere excitation27	,,,
Voltage	20/208. 240/416
Amperage (at 120/208).2	
Amperage (at 240/416).1	
Serial No	
Exciter volts	15
Continuous tempers	75° C. (167° F.) on armature and
tura rias	95° C. (203° F.) on field at 51.6° C.
ture rise.	(124.8° F.) maximum ambient
	temperature
Manufacturer	Delco Products Division of General
Manufacturer	Motors Corp. at Dayton, Ohio
A J & 4 D = 4.	-
x. Adjustment Date	
V-belts	in. depression between pulleys
Valves	0.009 in. (cold)
y. Capacities.	
Fuel tank	87 gal (gallon)
Engine crankcase	29 qt (quart)
Air cleaners	2 qt
Cooling system	16 gal
Oil filters	3 qt
Gasoline tank	2 gal
z. Maintenance and	d Operating Supplies. Table I
provides a list of all	oils, greases, fuels, and anti-
provides a list of an	and for the initial energtion of
	ired for the initial operation of
the generator set	

Digitized by Google

the generator set.

Item	Component application	Source of supply	Federal stock No.	Description	Quantity required for initial operation	Quantity required for 8 hours operation	Notes
 1	0101—CRANK-			OIL, LUBRICAT-			(1) Includes quan-
•	CASE (1)			ING:			tity of oil to fill engine
	CASE (I)			5 gal drums as			
				, –			oil system as follows:
		••		follows:		(0)	
		10	9150-265-9435 (2)	OE30	, •	(3)	29 qt. crankcase
					(1)	1	4 qt. oil filters
		10	9150-265-9428 (2)	OE10	37¾ qt.	(3)	3 qt. air cleaners
					(1)		1 qt. oil filter,
	•				1		governor ¾ qt. hy-
		10	9150-242-7603 (2)	OES	3734 qt.	(3)	draulic governor
					(1)		reservoir.
2	0106.2—OIL FIL-			OIL, LUBRICAT-		1	(2) See SM 10-1-
	TER ENGINE (4)			ING:		i	C4-1 for additional
				(Draw from engine	i	•	data and requisition-
				supply).			ing procedure.
3	0106.2—OIL FIL-			OIL, LUBRICAT-			(3) See LÓ 5-6115-
,	TER GOVER-			ING:			
						i	293-12 for grade ap-
	NOR (4)			(Draw from engine	i		plication and replen-
_				supply).			ishment intervals.
4	0.06.6—HY-			OIL, LUBRICAT-		ļ	(4) Use oil as pre-
	DRAULIC			ING:			scribed in item 1
	GOVERNOR			(Draw from engine		1	above.
	RESERVOIR (4)			supply).		į	(5) Tank capacity.
5	0304—AIR			OIL, LUBRICAT-		1	(6) Average fuel
	CLEANER (4)			ING:			consumption is 5.86
	, ,			(Draw from engine			gal per hour of con-
				supply).		1	tinuous operation at
6	0306—TANK			FUEL OIL DIESEL:	į	·	1,800 rpm.
•	OOO TANK			Bulk as follows:			(7) Radiator
		10	0140 000 5004 (0)		071	401	
		10	9140-286-5294 (2)	Regular grade	87 gal.	48 gal.	capacity.
				(DF-2) or	(5)	(6)	(8) See table II for
		10	9140-286-5286 (2)	Winter grade	87 gal.	48 gal.	quantities, ambient
				(DF-1)	(5)	(6)	temperatures, specific
				or			gravity and replenish-
	!	10	9140-286-5283 (2)	Arctic grade	87 gal.	48 gal.	ment data.
				(D F-A)	(5)	(6)	(9) Minimum pro-
7	0311—PRIMER			STARTING AID:			tection obtained at
	PUMP	10	6810-200-2407	Ether, (reagent)	As re-	As re-	60 percent by volume
				4 oz. can.	quired.	quired.	I.E. 4.8 pints of anti-
3	0501-RADIATOR			COOLING SYS-	16 gal.	As re-	freeze per gal of
_				TEM: Water.	(7)	quired (8)	solution.
		9	6850-224-8730	ANTIFREEZE:	8¼ gal.	quirou (o)	(10) Pure arctic
		3	0000-221-0100	Ethylene glycol	(9)		type antifreeze is used
				,	(9)	1	
	·			5 gal. can.	(10)	(10)	where temperatures
		9	6850-174-1806	ANTIFREEZE	(10)	(10)	are below —40°F.
				ARCTIC: 55 gal.	!		(11) Winterization
				drum.			fuel tank capacity.
•	2207—WINTERI-	10	9130-160-1817 (2)	STARTING AID:	2½ gal.	6 gal.	(12)Fuel consump-
	ZATION	:		Gasoline unleaded-	(11)	(12)	tion High fire; ¾ gal.
	1			bulk or		1	per hr. Low fire; 1/2
	HEATER.			, Dunk Oi	'		per m. Downie, /2
	HEATER.	10	9130-160-1816 (2)	Gasoline, Auto-	2½ gal.	6 gal.	gal. per hr.

aa. Dimensions and We	right.
Length, overall	106 in
Width, overall	36 in.

ab. Base Plan. Refer to figure 3 for an illustrated base plan for the generator set.

ac. Nut and Bolt Torque Data.

•	Sim	Torque (fool-p	(Jt-lh) (bawe
Fuel injector tube and lever assembly	½-20	12 to	15
Blower drive coupling	%-24	10 to	12
Air inlet housing to blower bolt	⅓-16	16 to	20
Handhole cover	. ¾ -16	10 to	15
Injector clampnut	3/6-24	20 to	25
Water manifold nut	3/8-24	25 to	30
Exhaust manifold to head	1/4-20	30 to	35
Lifting bracket to cylinder head	14−14	55 to	60
Blower to cylinder block	1∕6 −14	55 to	60

Fuel connector and nut	74-20	30	to	35
Front cover bolt to frame	1⁄2–13	80	to	90
Cylinder head nut	54-18	165	to	178
Studs:				
Water manifold stud		_ 10	to	25
Exhaust manifold stud		_ 15	to	30
Cylinder head stud		. 35	to	75

ad. Wiring Diagram. A practical wiring diagram of the generator set electrical system is shown by figure 4. (Located in back of manual)

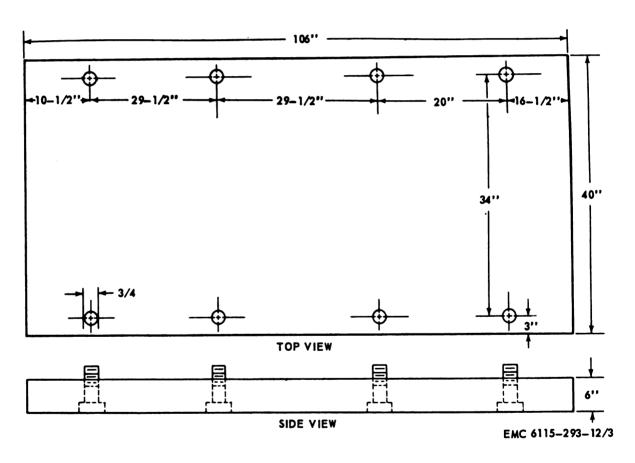


Figure 3. Base plan

CHAPTER 2

INSTALLATION AND OPERATING INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

7. Unloading of Equipment

- a. Remove all tiedown straps and blocks that secure the generator set to the bed of the carrier.
- b. Remove the generator set from the bed of the carrier with either a forklift truck or crane, or skid the unit down a ramp. Attach the cables of the crane to the lifting U-bolt (fig. 2).

Warning: When lifting the generator set, be sure that the lifting device has a capacity of at least 8,000 pounds. Do not allow the unit to swing while suspended. Failure to observe this warning may result in damage to the unit or severe injury to personnel.

8. Unpacking New Equipment

- a. Position the generator set as near the worksite as possible. Remove any protective material that may be on the unit.
- b. Cut the bonding straps that secure the electrolyte and other separately packed components to the skid base and remove them from the unit. Do not uncrate the electrolyte until it is to be used.

9. Inspection of New and Used Equipment

- a. Inspect the packing list and make sure that all equipment listed has been received. Examine the identification plate for positive identification of the equipment.
- b. Inspect the generator set for damaged or missing parts. Be especially careful when inspecting used equipment.
- c. Refer to paragraph 36 for a guide to inspecting the unit.

10. Installation of Separately Packed Components

Remove the caps from the batteries and fill each cell with electrolyte. Be sure the plates are covered by three-eighths of an inch of electrolyte. Refer to TM 9-6104-200-15.

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

11. Installation of Setting-Up Instructions

a. General. The generator set may be installed

either outdoors or indoors, with temporary or permanent mounting. Locate the unit as near as possible to the load. Make sure the generator set is as level as possible.

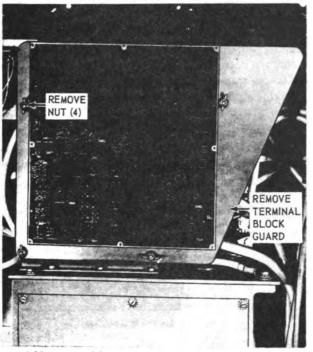
b. Indoor Installation. Make sure the floor of the enclosure is of sufficient strength to support the weight of the unit. If the installation is to be permanent, the unit may be secured to the floor with five-eighths inch bolts. Provide at least 4 feet of space around the unit for servicing and adequate ventilation. Install a flexible exhaust line to carry the exhaust gases to the outside. Use as few bends as possible in the exhaust line and make sure that all connections are gastight.

Warning: When the unit is to be operated in an enclosed area, exhaust gases must be piped to the outside. These gases contain carbon monoxide. Continued breathing of exhaust fumes is dangerous and may be fatal.

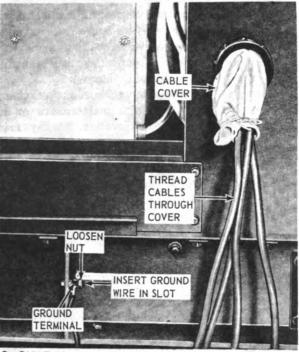
- c. Outdoor Installation. Avoid sandy, muddy, or damp locations if possible. If it is necessary to install the unit on soft ground, refer to figure 3, and construct a foundation of planks, logs, or concrete. Locate the generator set so that it is as level as possible.
- d. Grounding. The generator set must be grounded prior to operation. The ground can be an underground water piping system, driven galvanized rod, or a buried metal plate. A ground rod must be at least ¾ inch in diameter if hollow, or ¾ inch if solid, and be driven to a depth of at least 8 feet. A ground plate must have a minimum area of 9 sq ft (square feet) and be buried at a depth of at least 4 feet. The ground lead must be a No. 6 AWG (American Wire Gage) or larger, copper wire and bolted or clamped to the rod, plate, or piping system. Connect the other end of the ground lead to the generator set as shown by figure 5.

Warning: Do not operate the generator set without a suitable ground connection. Electrical defects in the unit can cause death by electrocution when contact is made with an ungrounded system.

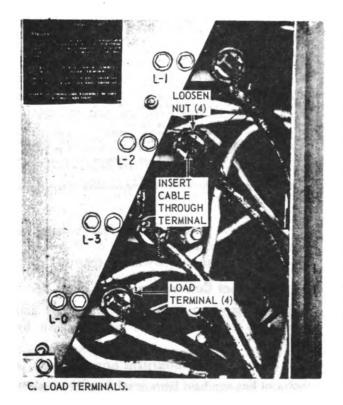
e. Auxiliary Fuel Line Installation. The generator set is equipped with an 87 gallon diesel fuel tank that will operate the engine for approximately 8 hours. If the generator set is operated on standby,



A. TERMINAL BLOCK GUARD.



B. CABLE COVER AND GROUND WIRE.



LOAD RECEPTACLE CONNECTORS (2)

REMOVE CAP AND INSTALL CABLES

D. LOAD RECEPTACLE CONNECTORS.

EMC 6115-293-12/5

Figure 5. Ground lead and load cables, installation instructions.

or if it is more practical to operate the unit from an auxiliary fuel source, refer to figure 6 for auxiliary fuel line installation and valve positions.

f. Load Connections. Connect the load cables to the generator set as shown by figure 5.

Warning: Do not attempt to make or change load connections or perform maintenance on the generator set while it is in operation. Always make sure that it is not connected to an energized line before performing maintenance.

12. Servicing New and Used Equipment

- a. Servicing. Refer to paragraph 34 and perform the operator's daily services.
- b. Lubrication. Lubricate as described in the current lubrication order.
- c. Fuel System. Refer to table I and fill the diesel fuel tank and the heater gasoline tank with the proper grade of fuel or gasoline as applicable.

Warning: Do not fill the fuel tank while the

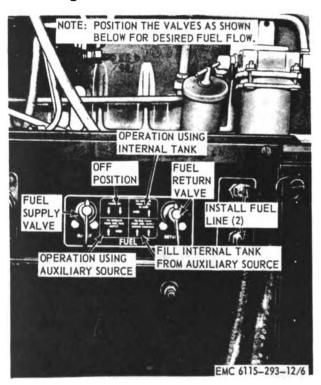


Figure 6. Auxiliary fuel line installation and valve positions.

engine is in operation. Fuel spilled on a hot engine may explode and cause injury to personnel. When filling the fuel tank, always provide a metal-to-metal contact between the container and the fuel tank. This will prevent a spark from being generated as the fuel flows over the metallic surface.

d. Cooling System. Fill the cooling system with clean, fresh water. When freezing temperatures are expected, be sure that the cooling system contains the proper antifreeze mixture in accordance with table II.

Table II. Freezing Points, Composition, and Specific Gravities of Military Antifreeze Materials

Lowest expected ambient temp.	Pints of inhibited glycol per gal of coolant	Compound antifreese arctic	Ethylene glycol coolant solution specified gravity at 68° F.
+20 +10 0 -10 -20 -30 -40 -50 -60	1½ 2 2¾ 3¼ 3¼ 3½ 4 4¼ Arctic antifreese preferred.	Issued full-strength and ready mixed for 0° to -65° F. temperatures for both initial installation and replenishment of losses. Do not dilute with water or any other substance.	1.022 1.036 1.047 1.055 1.062 1.067

^{1.} Maximum protection is obtained at 60 percent by volume, that is 4.8 pints of ethylene glycol per gallon of solution.

Note. Fasten a tag near the radiator filler cap indicating the type of antifreeze.

e. Batteries.

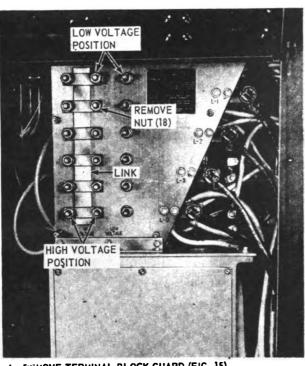
- (1) Refer to paragraph 10 and fill the batteries with electrolyte.
- (2) Connect the battery cables (par. 10).

13. Equipment Conversion

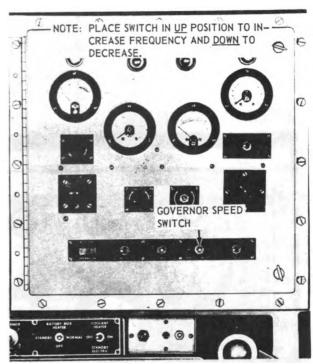
Make voltage and frequency conversions and adjustments on the generator set as shown by figure 7.

^{4.8} pints of entylene grycot per games or soutcon.
2. Military Specifications MIL—C-11755 Arctic type, nonvolatile antifreeze compound is intended for use in the cooling system of liquid cooled internal combustion engines for protection against freezing primarily in Arctic regions where the ambient temperature remains for extended periods of time close to —40° F. or drope below, to as low as —90° F.

^{3.} Use an accurate hydrometer. To test hydrometer, use 1 part ethylene glycol type antifreese to 2 parts water. This should produce a hydrometer reading of 0° F.



A. REMOVE TERMINAL BLOCK GUARD (FIG. 15).
POSITION LINK FOR DESIRED VOLTAGE.



B. ADJUST GOVERNOR SPEED SWITCH FOR DESIRED FREQUENCY.

EMC 6115-293-12/7

Figure 7. Generator set voltage and frequency conversion and adjustment instructions.

Section II. MOVEMENT TO A NEW WORKSITE

14. Dismantling For Movement

- a. Disconnecting the Generator Set.
 - (1) Disconnect all external load cables and the ground wire (fig. 5).
 - (2) Disconnect exhaust pipe extensions if used.
 - (3) Disconnect all auxiliary fuel lines (fig. 6) if used.
- b. Preparation for Movement.
 - (1) Refer to the basic issue items list and make sure that all items described are on, or with the generator set.

- (2) Close all doors and panels.
- (3) The generator set may be skidded or towed for short distances where the terrain permits. Secure a suitable chain or cable to the skid base and tow the generator to the new worksite.

15. Reinstallation After Movement To a New Worksite

Refer to paragraphs 10 and 11 for reinstallation after movement to a new worksite.

Section III. CONTROLS AND INSTRUMENTS AND OPERATION UNDER USUAL CONDITIONS

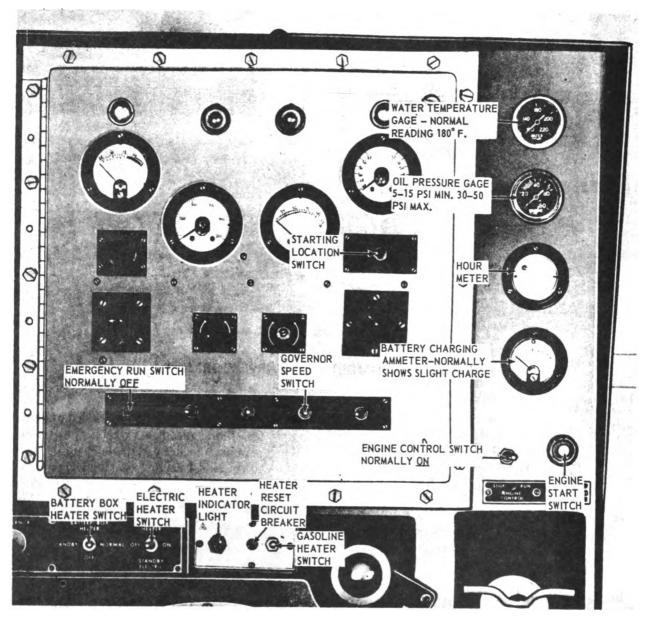
16. Controls and Instruments

Refer to figure 8 for normal readings and location of all controls and instruments.

17. Operation Under Usual Conditions

It is essential that the operator know how to

perform every operation of which the generator set is capable. Since nearly every job presents a different problem, the operator may have to vary the given procedures to fit the individual job. Refer to paragraphs 18, 19, and 20 for starting, stopping, and operating details.



A. ENGINE CONTROLS AND INSTRUMENTS.

EMC 6115-293-12/8 (1)

Figure 8. Controls and instruments.

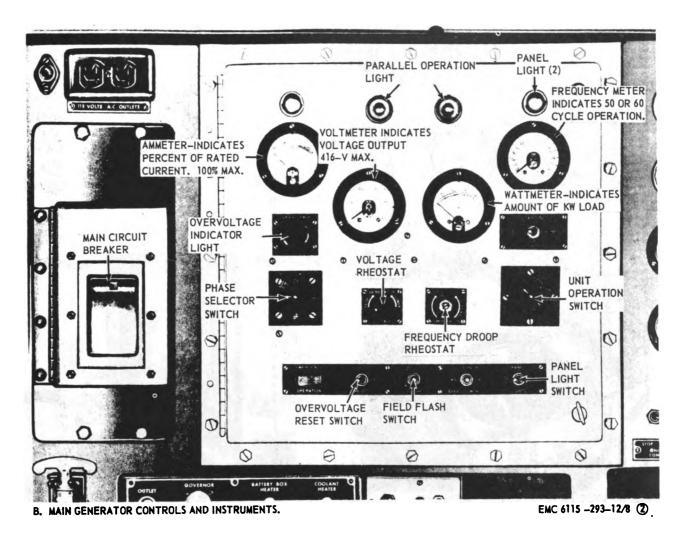
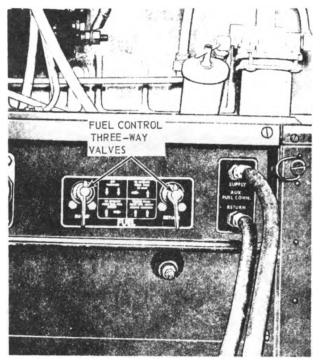
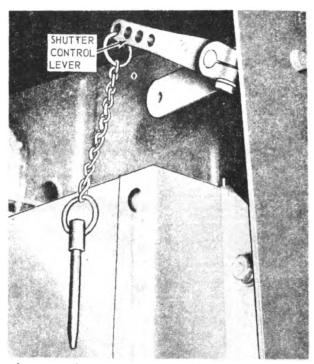


Figure 8-Continued.



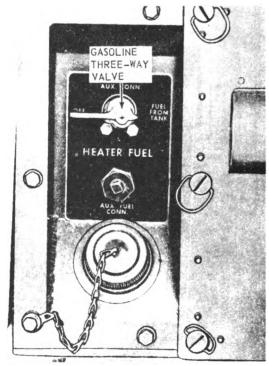
C. DIESEL FUEL CONTROL THREE-WAY VALVES.



D. MANUAL SHUTTER CONTROL LEVER.



E. FUEL QUANTITY GAGE.



F. HEATER GASOLINE CONTROL THREE-WAY VALVE.

EMC 6115-293-12/8 3

Figure 8—Continued.

18. Engine Starting Instructions

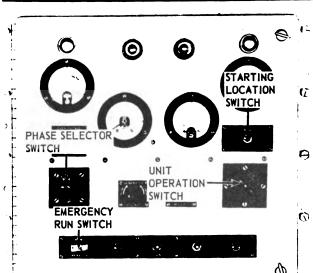
- a. Preparation for Starting.
 - (1) Perform the operator's daily services (par. 34).
 - (2) Install the auxiliary fuel hoses and position the fuel three-way valves (fig. 6).
 - (3) Position the control panel switches for starting as shown by figure 9.
 - (4) If temperature is below 40° F., utilize the starting aid as shown by figure 10.

b. Starting.

- If the temperature is -25° to -65° F., utilize the coolant heaters (pars. 27 and 28).
- (2) Start the engine as shown by figure 11.

19. Engine Stopping Instructions

- a. Normal Stopping. Stop the engine as shown by figure 12.
- b. Stopping by Safety Devices. The generator set is equipped with safety devices which will shut down the engine in the event of a loss of oil pressure, high-coolant temperature, or engine over-speed. These devices, when energized, will in turn, energize the shutdown solenoid to close the air box damper.



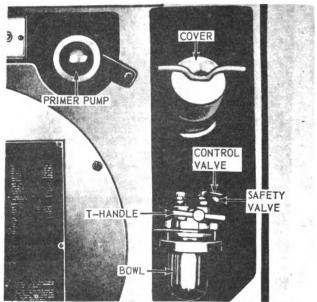
- STEP 1. PLACE EMERGENCY RUN SWITCH IN OFF POSITION.
- STEP 2. PLACE UNIT OPERATION SWITCH IN <u>SINGLE-UNIT</u> POSITION.
- STEP 3. PLACE PHASE SELECTOR SWITCH IN 1-2 VOLTS POSITION.
- STEP 4. PLACE STARTING LOCATION SWITCH IN <u>LOCAL</u> POSITION. EMC 6115–293–12/9

Figure 9. Preparation for starting.

20. Operating Details

- a. Attach the load cables (fig. 5).
- b. Position the conversion bar for the desired voltage (par. 13).
- c. Single Unit Operation. Operate the generator set as shown by figure 13.
 - d. Parallel Operation.
 - (1) General. Generator sets to be operated in parallel must have the same voltage and frequency rating and must be connected for correct phase rotation. Care must be taken to avoid excessive crosscurrents and the motoring of one unit by the other. The voltage regulation characteristics should be similar and the engines must have the same speed regulation characteristics.

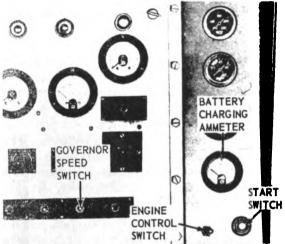
Warning: Do not attempt to make or break load connections or perform maintenance on the generator set while it is in operation. Always make sure it is not connected to an energized line before performing maintenance.



- STEP 1. REMOVE COVER AND INSERT CARTRIDGE OR BULK
 MATERIAL. INSTALL COVER AND TIGHTEN.
- STEP 2. OPEN T-HANDLE AND FILL BOWL. RELEASE T-HANDLE.
- STEP 3. PRESSURIZE PRIMER BY OPERATING PUMP. PLACE SAFETY VALVE IN <u>YENT</u> POSITION.
- STEP 4. OPEN CONTROL VALVE AND DEPRESS START SWITCH (SEE FIG. 11).
- STEP 5. AS SOON AS ENGINE OPERATES ON ITS OWN FUEL, CLOSE CONTROL AND SAFETY VALVES.

EMC 6115-293-12/10

Figure 10. Starting aid operating instructions.



STEP 1. REFER TO FIGURE 9 AND PERFORM STEPS 1 THROUGH 4.

STEP 2. PLACE ENGINE CONTROL SWITCH IN RUN POSITION.

STEP 3. DEPRESS START SWITCH. IF ENGINE DOES NOT FIRE WITHIN 10 TO 15 SECONDS, RELEASE SWITCH AND HOLD GOVERNOR SPEED SWITCH IN UP POSITION FOR 2 SECONDS. DEPRESS START SWITCH.

NOTE: IF TEMPERATURE IS 40°F TO -25°F, OPEN PRIMER CONTROL VALVE AT SAME TIME ENGINE START SWITCH IS DEPRESSED (SEE FIG. 10).

CAUTION: DO NOT OPERATE STARTER LONGER THAN 30 SECONDS. ALLOW 2 MINUTE COOLING-OFF INTERVALS BETWEEN STARTS

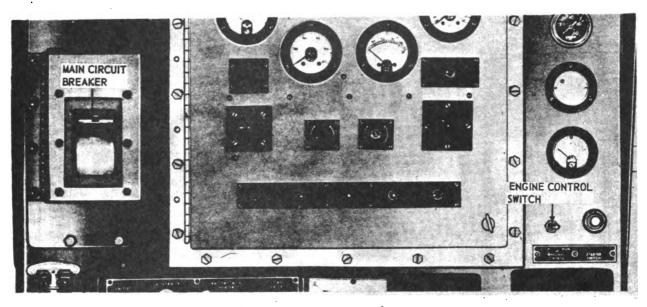
STEP 4. AS SOON AS ENGINE STARTS, CHECK AMMETER. CURRENT SHOULD DROP BELOW 20 AMPS IN 20 MINUTES. IF NOT, STOP THE ENGINE (PAR. 19) AND REPORT THE CONDITION TO ORGANIZATIONAL MAINTENANCE. EMC 6115-293-12/11

Figure 11. Engine starting instructions.

- (2) Both sets must be connected to a common ground. Connect a wire between the ground studs (fig. 5) of both sets.
- (3) Refer to paragraph 11 and connect the ioad cables to one set only, which will hereafter be referred to as the operating unit. The other unit will hereafter be known as the incoming unit.
- (4) Connect the two generator sets for parallel operation as shown by figure 14.
- e. Kilowatt Load Division. Generator sets operated in parallel must divide the kilowatt load in proportion to their ratings. Observe the wattmeter of each unit. Place the governor speed control switch of the unit indicating less than its share of the load in the UP position and, at the same time. place the governor speed control switch of the unit indicating more than its share of the load in the DOWN position. Adjust the two units until the proper load division is indicated. If the frequency of the system has changed during the load division procedure, adjust both units until the correct line frequency is obtained.

Note. If the kilowatt load division changes with change in load, the frequency droop adjustment is incorrect. Report the condition to organizational maintenance.

f. Ampere Load Division. Generator sets operated in parallel must divide the ampere load in proportion to their ratings. Observe the ac ammeter of each unit. Turn the voltage adjusting rheostat of the unit indicating less than its share of the load clockwise, and the voltage adjusting rheostat of the other unit counterclockwise, until the proper load division is indicated. If the voltage of the system has changed during the load division procedure, adjust both units simultaneously until the correct line voltage is obtained.



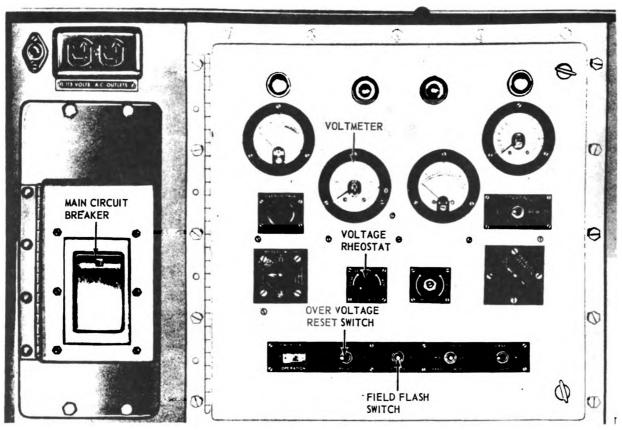
STEP 1. PLACE MAIN CIRCUIT BREAKER IN OFF POSITION.

STEP 2. PLACE ENGINE CONTROL SWITCH IN OFF POSITION.

CAUTION: DO NOT ATTEMPT TO STOP UNIT WITHOUT FIRST PLACING CIRCUIT BREAKER IN \underline{OFF} POSITION. SERIOUS DAMAGE TO THE LOAD MAY RESULT.

EMC-6115-293-12/12

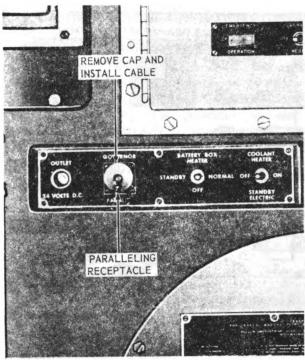
Figure 12. Engine slopping instructions.



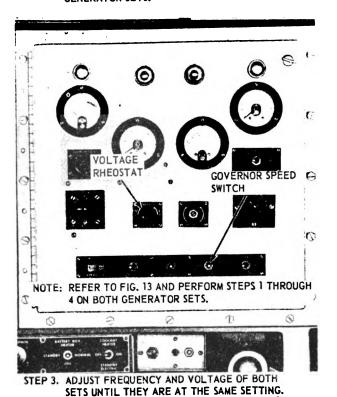
- STEP 1. START ENGINE AND ALLOW IT TO REACH OPERATING TEMPERATURE (PAR. 18).
- STEP 2. PLACE FIELD FLASH SWITCH IN ON POSITION AND HOLD. PLACE OVERVOLTAGE RESET SWITCH IN RESET POSITION AND HOLD. OBSERVE VOLTMETER; WHEN VOLTAGE BUILDS UP, RELEASE FIELD FLASH SWITCH FIRST THEN OVERVOLTAGE RESET SWITCH.
- STEP 3. ADJUST VOLTAGE RHEOSTAT TO THE DESIRED VOLTAGE; CLOCKWISE ROTATION WILL IN-CREASE VOLTAGE AND COUNTERCLOCKWISE WILL DECREASE VOLTAGE.
- STEP 4. PLACE MAIN CIRCUIT BREAKER IN ON POSITION.

EMC 6115-293-12/13

Figure 13. Single unit operating instructions.

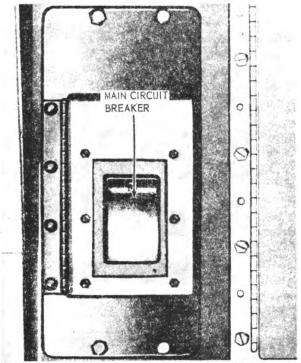


STEP 1. CONNECT PARALLEL CABLE TO BOTH GENERATOR SETS.



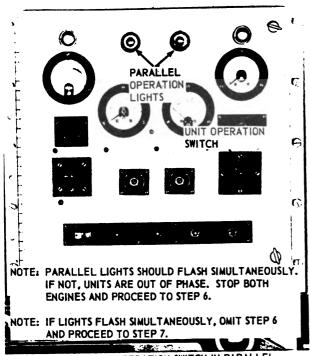
LOAD TERMINAL (4 JUMPER WIRE (3) 0 0 0

STEP 2. CONNECT JUMPER WIRES BETWEEN LIKE LOAD TERMINALS OF BOTH GENERATOR SETS.

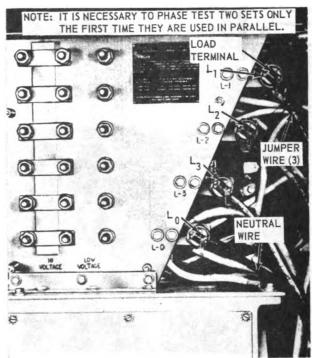


STEP 4. PLACE MAIN CIRCUIT BREAKER OF OPERAT-ING SET IN OFF POSITION.

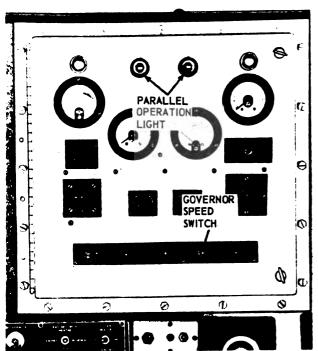
EMC 6115-293-12/14 ①



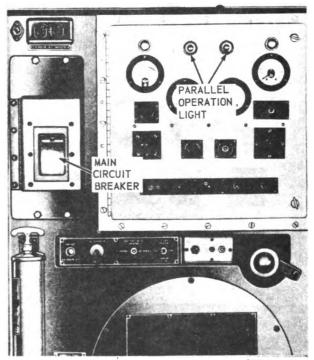
STEP 5. PLACE UNIT OPERATION SWITCH IN PARALLEL POSITION.



STEP 6. REVERSE ANY TWO JUMPER WIRES ON LIKE LOAD TERMINALS. REPEAT STEP 3 ABOVE.



STEP 7. ADJUST FREQUENCY OF INCOMING SET UNTIL PARALLEL LIGHTS FLASH AT 2 SECOND INTERVALS OR SLOWER.



STEP 8. PLACE CIRCUIT BREAKER OF INCOMING SET IN ON POSITION AT EXACT INSTANT LIGHTS GO OUT.

EMC 6115-293-12/14 (2)

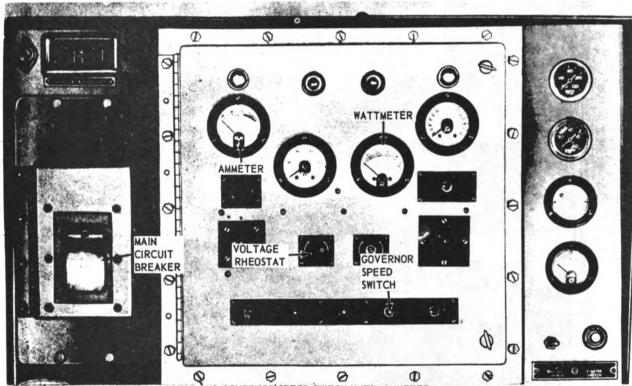
Figure 14—Continued.

Note. If the ampere load division changes with the change in load, the crosscurrent rheostat adjustment is in correct. Report the condition to organisational maintenance.

- g. Removal From Parallel Operation. Remove the unit from parallel operation as shown by figure 15.
- h. Emergency Operation. Under conditions of extreme emergency, the generator set can be operated with overloads or other abnormal conditions. To operate the unit under these conditions, lift the cover and place the emergency run switch

(fig. 8) in the RUN position. This switch will keep any of the safety shutdown devices (except the overspeed governor) from shutting down the engine.

- 1. Preparation for Remote Starting.
 - (1) Refer to figure 13 and perform steps 1 through 4.
 - (2) Refer to figure 12 and stop the engine.
 - (3) Prepare the generator set for remote starting as shown by figure 16.



STEP 1. ADJUST VOLTAGE RHEOSTAT AND GOVERNOR SPEED SWITCH UNTIL AMMETER AND WATTMETER SHOW ZERO.

NOTE: BEFORE THE UNIT MAY BE REMOVED FROM PARALLEL OPERATION, THE TOTAL LOAD MUST NOT EXCEED THE FULL LOAD RATING OF REMAINING UNIT OR UNITS.

STEP 2. PLACE MAIN CIRCUIT BREAKER IN OFF POSITION.

STEP 3. STOP THE ENGINE (PAR. 19).

EMC 6115-293-12/15

Figure 15. Parallel operation, removal instructions.

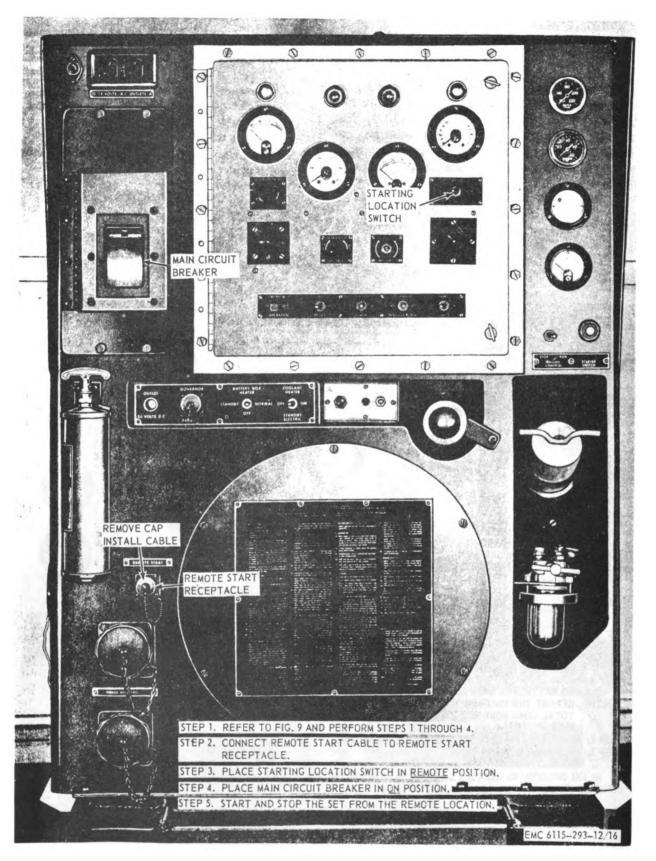


Figure 16. Preparation of the generator set for remote starting.

AGO 5806A

Digitized by Google

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

21. Operation in Extreme Cold (Below 0° F.)

a. General. This generator set is designed to operate in temperatures as low as -65° F. To operate successfully in cold weather, utilize the engine coolant heaters. Refer to paragraph 18 for cold weather starting instructions.

b. Engine.

- Lubrication. See that the engine is lubricated for cold weather operation in accordance with the current lubrication order.
- (2) Cooling system. Inspect the engine coolant to be sure that it contains the correct amount of antifreeze. Prior to adding the initial antifreeze, clean and flush the entire cooling system (par. 93). Inspect cooling system components for signs of leakage and other possible damage. Inspect the shutter control for proper working order.

Caution: Do not bend or kink cooling hoses during cold weather. Rubber hoses will become brittle in cold weather and will crack and break with excessive handling.

- (3) Fuel system. Keep the fuel tank as full as possible at all times to prevent condensation. Any water that does form in the fuel tank will be carried to the secondary fuel filter. Therefore, it may be necessary to drain the filter more frequently than under normal conditions. Drain ¼ pint of fuel from the secondary fuel filter daily.
- (4) Electrical system. Before starting the engine, wipe the engine electrical components free of ice and moisture. Do not disturb the wiring since it becomes brittle with extreme cold. Allow the wiring to warm up before attempting to twist or bend it. Be sure that the batteries are fully charged.

Caution: Run the engine for approximately 1 hour after adding water to the batteries. This will permit added water to mix with the electrolyte and prevent freezing.

c. Generator Assembly.

- Lubrication. The generator assembly is equipped with life-seal bearings and requires no special lubrication.
- (2) Stabilization period. When operating in extreme cold, allow at least a 15-minute

- stabilization period after warmup before applying the load to the generator.
- (3) Field control. The main generator assembly is designed to operate in a wide range of temperatures without special service.

22. Operation in Extreme Heat

a. Engine.

- (1) Cooling system. Keep the cooling system free from rust and scale. If necessary, add an approved rust inhibitor. Clean and flush the cooling system at frequent intervals (par. 93). Inspect the fan V-belts for proper adjustment. Be sure that the generator is free of airflow restrictions.
- (2) Lubrication. Lubricate the engine in accordance with the current lubrication order.
- (3) Fuel system. Do not fill the fuel tank too full; allow sufficient room for the expansion of fuel.
- (4) Batteries. Inspect the electrolyte level of the batteries daily. The plates should be covered by three-eighths of an inch of electrolyte. Add water as necessary.
- b. Generator Assembly. Be sure that the generator is free of airflow restrictions. If surrounding air is not dusty or sandy, all doors and panels may be left open. When operating indoors, make provisions for adequate ventilation and the venting of exhaust fumes to the outside.

23. Operation in Dusty or Sandy Areas

- a. General. If installation of the generator set is permanent, erect a protective cover for the unit. In temporary installation, take advantage of natural barriers as much as possible. Where water is available, keep the immediate area wet down. All doors and panels should remain closed. Keep the unit as clean as possible, paying special attention to screens and radiator cores.
- b. Lubrication. In sandy or dusty areas, filters and strainers must be cleaned more frequently than under normal conditions. Clean all lubrication points before and after lubrication. Be sure that all lubricant containers are tightly sealed and stored in an area as free as possible from dust and sand.
- c. Fuel System. Take all necessary precautions to keep dirt and grit out of the fuel system. Clean the fuel filters at each filling (pars. 78 and 79).

Digitized by Google

24. Operation Under Rainy or Humid Conditions

When the generator set is operated outdoors, erect a shelter, if possible, to protect the unit. If erection of a shelter is not possible, keep the generator set, when inoperative, covered with canvas or other waterproof material. Remove the cover during dry periods, open all doors and panels, and allow the generator set to dry out. Keep the fuel tank as full as possible to prevent the forming of condensation.

Operation in Salt Water Areas

a. General. Salt water causes corrosive action on metal. Care must be taken to avoid contact of equipment with salt water. If contact is made, or if the unit is exposed to salt spray, wash the unit frequently with fresh, clean water.

b. Painting. Paint all exposed nonpolished surfaces. Refer to TM 9-2851. Coat all exposed polished surfaces with standard-issue rustproofing material, if available, or cover parts with a light coat of grease.

26. Operation at High Altitudes

The generator set is designed to operate at elevations up to 5,000 feet above sea level without special service or adjustment. For maximum efficiency above 5.000 feet, make sure the generator set has an adequate fresh air supply to prevent the engine from overheating.

Section V. OPERATION OF MATERIEL USED IN CONJUNCTION WITH THE GENERATOR SET

27. **Gasoline Coolant Heater**

a. General. The generator set is equipped with a thermostatically controlled gasoline coolant heater located in the heater compartment (fig. 2). This heater will heat the engine coolant and the battery box to aid in starting at temperatures below -25° F. The gasoline heater works in conjunction with a 24-v (volt) pump (fig. 2) to circulate preheated water through the engine cooling system. The gasoline heater and pump receive electrical power from the batteries and are controlled by a switch located on the heater control panel at the rear of the unit.

b. Operation. Operate the gasoline coolant heater as shown by figure 17.

Electric Coolant Heaters

a. General. This unit is equipped with two 220-v electric coolant heaters and a 24-v coolant circulation pump which will be utilized whenever an outside source of power is available. An electric heater is also used to heat the battery box. These heaters can be used as a means to maintain coolant and battery box temperatures when the generator set is used as a standby unit. Thermostats located in the battery compartment (fig. 2) and cooling system automatically control these heaters.

b. Operation. Operate the electric coolant heater and the battery box heater as shown by figure 18.

Fire Extinguisher (Carbon Tetrachloride Type)

a. Description. A carbon tetrachloride fire extin-

guisher may be provided with the equipment. It is a vaporizing, liquid-type, pump-operated extinguisher, having a one quart capacity.

b. Operation. Remove the fire extinguisher from its location; turn the handle and work the handle like a pump. Direct the stream at the base of the

Warning: Be extremely careful when using a carbon tetrachloride fire extinguisher in an enclosed area. A poisonous gas is generated by the contact of carbon tetrachloride with a heated metallic surface. Provide adequate ventilation before entering an enclosed area where carbon tetrachloride has been used.

c. Refilling and Maintenance. For detailed information on refilling and maintenance, refer to TM .5-687 and TM 9-1799.

30. Fire Extinguisher (Monobromotrifloromethane Type)

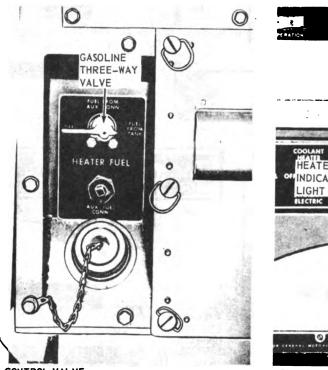
- a. Description. The monobromotrifluoromethane type fire extinguisher replaces the carbon dioxide and carbon tetrachloride type fire extinguishers used in the past. It is generally suitable for use on all types of fire, with exception of fires involved with LOX (liquid oxygen) generating equipment. The fire extinguisher is furnished with a disposable type cylinder
- b. Operation. To operate the fire extinguisher, perform the following operations:
 - (1) Remove the fire extinguisher from its location.

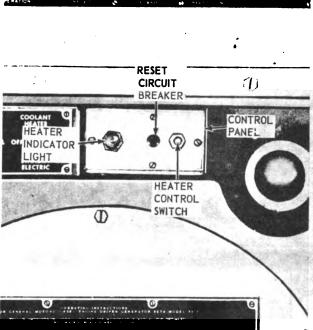
AGO 5806A

- (2) Break the seal by pulling the safety pin from the handle.
- (3) Point the horn at the base of the flame.
- (4) Depress the trigger for discharge and direct the stream of contents at the base of the fire
- (5) Replace with a new cylinder immediately after using.
- c. Replacement of Cylinder. To replace with a new cylinder, perform the following operations:
 - (1) Press the lever to release pressure from the old cylinder.
 - (2) Loosen the swivel valve coupling nut and

- remove the valve assembly from the used cylinder.
- (3) Remove the instruction band from the used cylinder.
- (4) Place a new cylinder through the instruction band.
- (5) Replace the safety pin in the valve and seal the pin with sealing wire.
- (6) Attach the valve assembly and tighten the swivel coupling nut on the new cylinder and replace the fire extinguisher in the mounting bracket.
- (7) Adjust the instruction band on the cylinder

◉





A. FUEL CONTROL VALVE.

B. HEATER CONTROL PANEL.

O

- STEP 1. POSITION GASOLINE THREE-WAY VALVE IN TANK OR AUX POSITION AS APPLICABLE.
- STEP 2. START HEATER BY DEPRESSING CIRCUIT BREAKER.
- STEP 3. PLACE CONTROL SWITCH IN ON-HI POSITION. RED LIGHT SHOULD GLOW INDICATING HEATER IS IN OPERATION.
 - NOTE: HEATER SHOULD START OPERATION WITHIN 30 TO 45 SECONDS. IF HEATER DOES NOT START WITHIN 60 SECONDS RETURN CONTROL SWITCH TO OFF POSITION AND REPORT THE CONDITION TO ORGANIZATIONAL MAINTENANCE.
- STEP 4. ALLOW HEATER TO OPERATE 60 MINUTES OR UNTIL COOLANT TEMPERATURE IS 140° F.
- STEP 5. RETURN CONTROL SWITCH TO OFF POSITION.

NOTE: HEATER MAY BE USED FOR STANDBY OPERATION AS THERMOSTAT SWITCH WILL AUTOMATICALLY MAINTAIN COOLANT TEMPERATURE FOR ENGINE STARTING.

EMC 6115-293-12/17

Figure 17. Gasoline coolant heater operating instructions.

to show maintenance and operating instructions.

d. Maintenance. Weigh the fire extinguisher every 6 months and replace the cylinder if gross

weight has decreased 4 ounces or more. Lubricate the cylinder neck threads with 1 drop of OE 30 oil before reassembly.

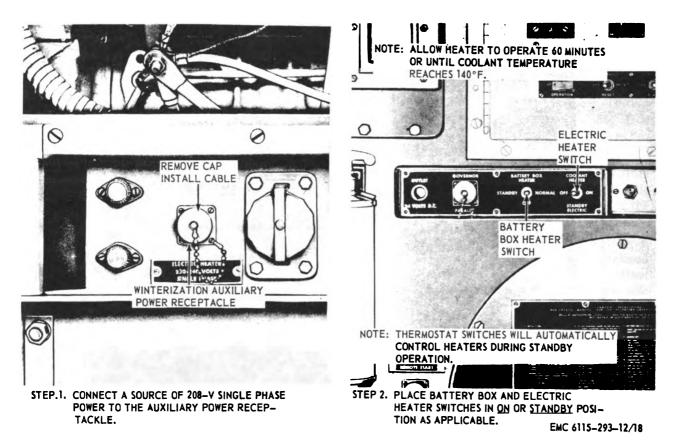


Figure 18. Electric coolant heater and battery box heater operating instructions.

CHAPTER 3

OPERATING AND ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Note. No special tools and equipment are required by the operator or organisational maintenance personnel for maintenance of this generator set.

Section I. LUBRICATION

31. General Lubrication Information

- a. This section contains a reproduction of the lubrication order and lubrication instructions which are supplemental to, and are not specifically covered in, the lubrication order.
- b. The lubrication order shown in figure 19 is an exact reproduction of the approved lubrication order for the generator set. For the current lubrication order, always refer to DA Pam 310-4.

32. Detailed Lubrication Information

- a. Care of Lubricants. Keep all lubricants in closed containers and store in a clean, dry place away from external heat. Allow no dust, dirt, or other foreign material to mix with the lubricants. Keep all lubrication equipment clean and ready for
- b. Points of Lubrication. Refer to figure 19 for illustration of the lubrication points.

- c. Cleaning. Keep all external parts not requiring lubrication clean of lubricants. Before lubricating the equipment, wipe all lubrication points free of dirt and grease. Clean all lubrication points after lubricating to prevent the accumulation of foreign matter.
- d. Operation Immediately After Lubrication. Operate the engine immediately after lubrication. Inspect the oil filter, oil lines, and other connections which might cause oil leakage. If the crankcase oil has been changed, it will be necessary to operate the engine for approximately 5 minutes before checking the oil level.
- e. Oil Filters. Service the oil filters as shown by figure 20.
- f. Air Cleaner Service. Service the air cleaners as shown by figure 21.
- g. Governor Oil Filter. Service the governor oil filter as shown by figure 22.



ORDER

LO 5-6115-293-12

GENERATOR SET, DIESEL ENGINE: PRECISE POWER; 100 KW, AC, 120/208 V,60 CYCLE, 240/416 V, 50 CYCLE; SKID MOUNTED (DETROIT DIESEL DIVN. GENERAL MOTORS CORP. MDL.6910A)W/GENERAL MOTORS ENGINE MODEL 6910A, SERIES 6-71

Reference: SM 10-1-C4-1

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

Clean fittings before lubricating.

Relubricate after washing.

Clean parts with SOLVENT, dry-cleaning, or with OIL, fuel, Diesel. Dry before lubricating.

Drain crankcase only when hot after operation; replenish and check level when cool.

LUBRICANT . INTERVAL

INTERVAL . LUBRICANT

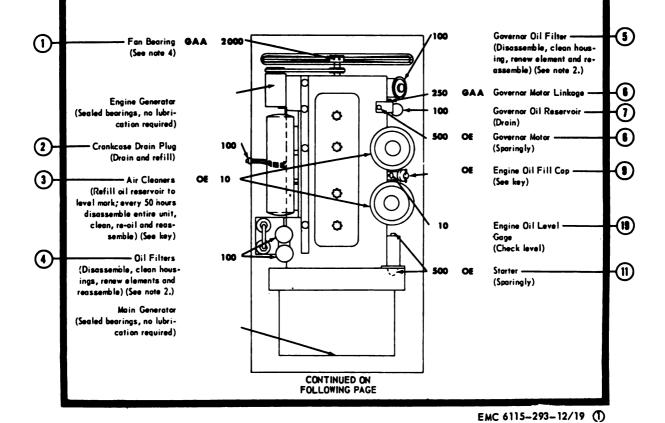


Figure 19. Lubrication order-LO 5-6115-293-12.

CONTINUED FROM PRECEDING PAGE

- KEA -

LUBRICANTS		EXI			
LUBRICARIS	CAPACITY	Above +32°F	+40°F to -10°F	0°F to -65°F	INTERVALS
OE -OIL, Engine, Heavy Duty					Intervals
Crankcase	34-3/4 qt	OE 30	OE 10	OES	given are
Air Cleaners	1-1/2 at ea.	or 9250	or 9110		in hours of
Oil Can Points		7230			normal
OES-OIL, Engine, Subzero					operation.
GAA -GREASE, Automotive and Artillery			All Temperatures		operarion.

NOTES:

1. FOR OPERATION OF EQUIPMENT IN PROTRACTED COLD TEMPERATURES BELOW -10°F. Remove lubricants prescribed in the key for temperatures above -10°F. Clean parts with SOLVENT, dry-cleaning. Relubricate with lubricants specified in the key for temperatures below -10°F.

- 2. OIL FILTERS. After installing new filter elements, fill crankcase, operate engine 5 minutes, check housings for leaks, check crankcase oil level and bring to full mark.
- 3. OIL CAN POINTS. Every 50 hours cleen and lightly coat the governor and carburetar linkage and all hinges with OE.
- 4. FAN BEARING. Remove both plugs, insert fitting, lubricate until new grease extrudes from relief plug hole, operate engine at slow idle speed 3 minutes, install both plugs.

Copy of this Lubrication Order will remain with the equipment at all times; instructions contained herein are mandatory.

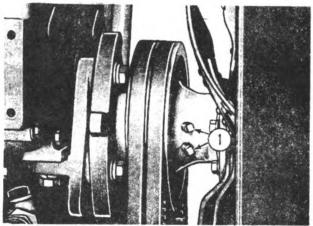
BY ORDER OF SECRETARY OF THE ARMY:

G. H. DECKER, General, United States Army, Chief of Staff.

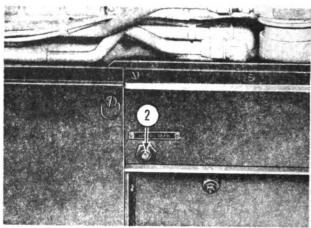
OFFICIAL:

R. V. LEE, Major General, United States Army, The Adjutant General.

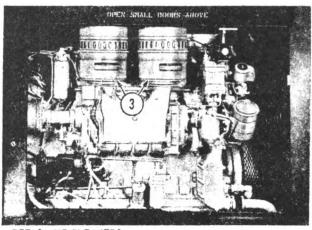
EMC 6115-293-12/19 ②



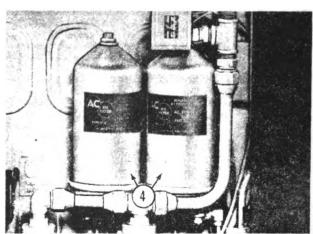
REF. 1. FAN BEARING.



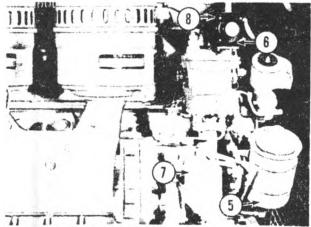
REF. 2. CRANKCASE DRAIN PLUG.



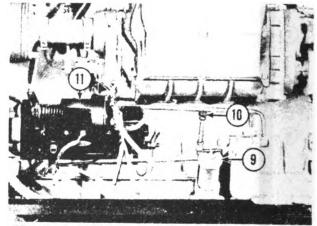
REF. 3. AIR CLEANERS.



REF. 4. OIL FILTERS.



REF. 5. GOVERNOR OIL FILTER. REF. 6. GOVERNOR MOTOR LINKAGE. REF. 7. GOVERNOR OIL RESERVOIR REF. 8. GOVERNOR MOTOR.



REF. 9. ENGINE OIL FILL CAP. REF. 10. ENGINE OIL LEVEL GAGE.

REF. 11. STARTER.

EMC 6115-293-12/19 3

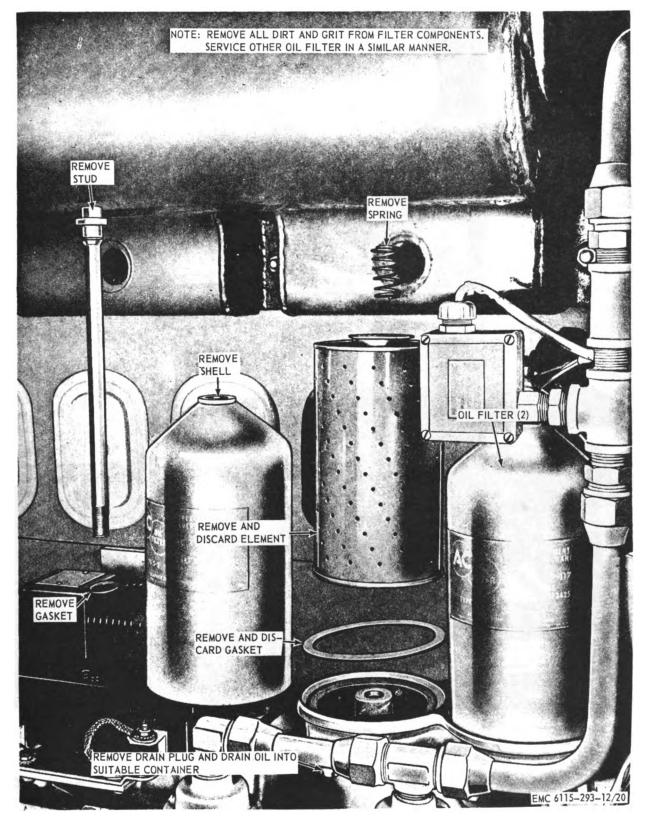


Figure 20. Oil filter service.

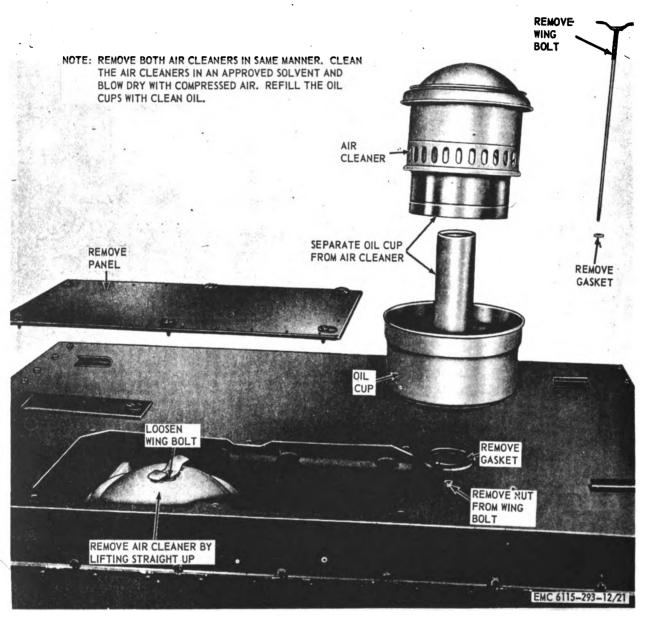


Figure 21. Air cleaner, removal, installation, and service.

AGO 5806A



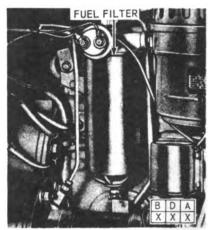
Figure 22. Governor oil filter service.

Section II. PREVENTIVE MAINTENANCE SERVICES

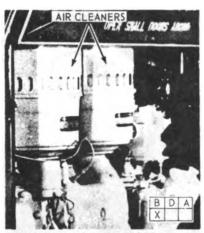
33. General

To insure that the equipment is ready for operation at all times, it must be inspected systematically before operation, during operation, and after operation, so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance services will be performed before operation. Defects

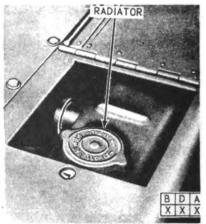
AGO 5006A 33



A. DRAIN 1/4 PT. OF FUEL FROM FILTER DAILY. INSPECT FOR LEAKS.



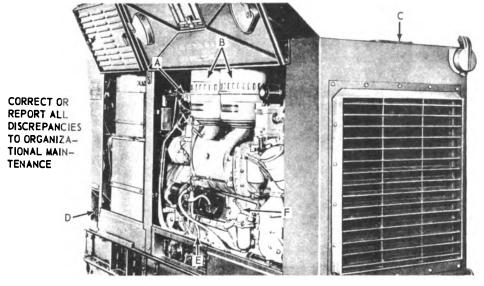
SERVICE AIR CLEANERS AS NECESSARY.



C. INSPECT COOLANT LEVEL.

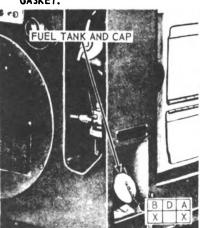
COCLANT MUST BE 1/4 IN. FROM

NECK.



LUBRICATE IN ACCORDANCE WITH CURRENT LUBRICATION ORDER

D. INSPECT FOR LEAKS, LOOSE MOUNTING, AND DEFECTIVE GASKET.

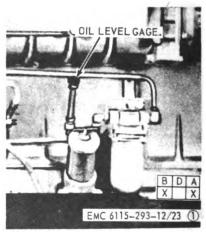


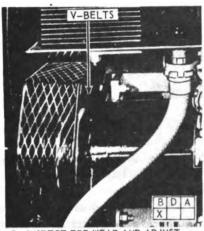
E. INSPECT FOR DAMAGE AND PROPER FUEL LEVEL.



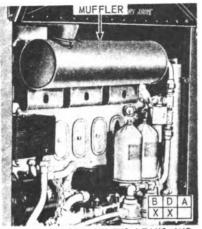
Figure 23. Operator's daily services.

F. INSPECT CRANKCASE OIL LEVEL.

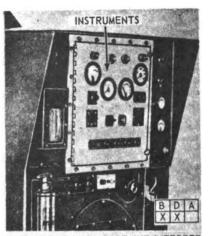




G. INSPECT FOR WEAR AND ADJUST-MENT. V-BELTS SHOULD DEPRESS 3/4 IN.

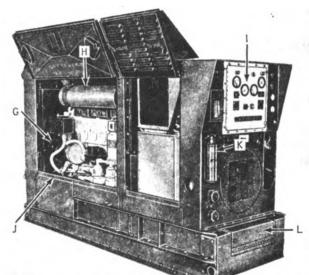


H. INSPECT FOR CRACKS, LEAKS, AND INSECURE MOUNTING.



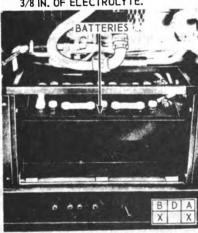
I. INSPECT FOR DAMAGE AND IMPROPER OPERATION.

CORRECT OR REPORT ALL DISCREPANCIES TO ORGANIZA-TIONAL MAIN-TENANCE



ACCORDANCE WITH CURRENT LUBRICATION

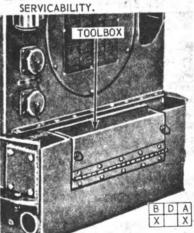
J. SEE THAT PLATES ARE COVERED BY 3/8 IN. OF ELECTROLYTE.



K. INSPECT FOR CONTENT AND SERVICABILITY.



L. INSPECT TOOLBOX AND TOOLS FOR



EMC 6115-293-12/23 ②

discovered during operation of the unit will be noted for future correction, to be made as soon as operation has ceased. Stop operation immediately if a deficiency is noticed during operation which would damage the equipment if operation were continued. After-operation services will be performed by the operator after every operating period. Afteroperation services will be performed at intervals based on the normal operations of the unit. Reduce intervals to compensate for abnormal conditions. Defects or unsatisfactory operating characteristics beyond the scope of the operator to correct must be reported at the earliest possible opportunity to organizational maintenance. Responsibility for performance of preventive maintenance services rests not only with the operator, but with the entire chain of command from section chief to commanding officer (AR 750-5).

34. Operator's Daily Services

- a. General. The intervals at which the operator's daily services are to be performed are indicated by an X in the appropriate column, on the small tab, located at the bottom of each illustration in figure 23. The tab columns are B (before), D (during), and A (after) operation of the equipment. The intervals and services not illustrated are prescribed in b through d below.
 - b. Before-Operation Services.
 - (1) Visual inspection. Visually inspect the entire generator set for missing parts, insecure mounting, and other damage. Correct all discrepancies or report them to organizational maintenance.
 - (2) Publications. Make sure that a copy of this manual, the current lubrication order, and DA Form 285 are on, or with the unit, and in serviceable condition.
 - (3) Lubrication. Lubricate the generator set in accordance with the current lubrication order.
 - (4) Leaks, general. Inspect the entire generator set for evidence of fuel, oil, or coolant leaks. Correct all deficiencies or report them to organizational maintenance.
 - c. During-Operation Services.
 - (1) Visual inspection and observation. Visually inspect the generator set for loose mountings. Observe the unit while in operation for excessive vibration, unusual noises, overheating, and smoking. If any of the above mentioned deficiencies are noted, shut down the unit. Correct or report the

- deficiencies to organizational maintenance.
- (2) Leaks, general. Inspect the generator set for fuel, oil, or coolant leaks. Correct or report all leaks to organizational maintenance.

d. After-Operation Services.

- (1) Lubrication. Lubricate the generator set in accordance with the current lubrication order
- (2) Cleaning. Clean all dirt and grease from the generator set. Pay particular attention to the radiator core.
- (3) Protection. See that all doors and covers are installed on the generator set. If outdoors, cover with a suitable waterproof cover. If low temperatures are expected, and antifreeze is not available, drain the cooling system. Idle the engine for 30 seconds to pump all water from the engine. Place a tag on the radiator, stating that the cooling system has been drained.

35. Organizational Maintenance

- a. Preventive maintenance is performed by organizational maintenance at quarterly intervals. The quarterly interval is equivalent to 3 calendar months or 250 hours of operation, whichever occurs first.
- b. The preventive maintenance services to be performed at quarterly intervals are listed and described in paragraph 36. The number opposite each service refers to a corresponding number on DA Form 464 and indicates the services to be performed. The number listed under "Inspection" indicates the minimum inspection requirements for the equipment.

36. Quarterly Preventive Maintenance Services

Inspection	Service quarterly	
		GENERAL
1	1	Before-operation services. Perform the before-operation services listed in paragraph 33.
2	2	Lubrication. Inspect the entire genera- tor set for damaged oil lines, leaking oil seals and gaskets, and evidence of insufficient lubrication.
	2	Lubricate in accordance with the current lubrication order. Report all un- corrected deficiencies to field main- tenance.

AGO SOMA

		ī		1	
Inspection	Service quarterly		Inspection	Service quarterly	
3	3	Tools and equipment. Inspect the condition of all tools and equipment assigned to the unit. Make sure that all tools assigned to the unit are clean, serviceable, and prop-		12	Replace a defective rocker arm cover and gasket (par. 109). Adjust the valve clearance as necessary (par. 110). Report defective valves or insufficient lubrication to field maintenance.
4	4	erly stowed. Fire extinguisher. Inspect a carbon tetrachloride fire extinguisher every 4 months for improper charge and damage. Weigh a monobromotrifluo-	14	14	Engine breather and crankcase. Inspect the engine breather for damage and clogging. Inspect the crankcase for leaks, loose mounting hardware, and improper oil level.
		romethane-type extinguisher every 6 months and replace the cylinder if gross weight has decreased 4 ounces or more. Lubricate the cylinder neck threads with 1 drop of OE oil before reassembly. Refer to TM 5-687 and TM 9-1799.		14	Remove all restrictions from the breather. Replace a defective breather (par. 111). Tighten all loose mounting hardware. Correct or report all leaks to field maintenance. Fill the crankcase to the proper oil level in accordance with the current lubrication order.
5	4 5	Replace a defective fire extinguisher. Publications. See that a copy of this manual, the current lubrication order and DA Form 285 are on, or with the equipment, and in serviceable condition.	15	15	Oil filters and oil cooler. Inspect oil filters, coolers, and all external engine oil lines for loose mountings, unserviceability, and leakage. Service the oil filters as necessary (par. 32). Service the oil cooler as necessary.
6	6	Appearance. Inspect the general appearance of the generator set, paying special attention to dirt, illegibility of identification markings, and cracked,		1 1 1 1 1 1	sary (par. 88). Tighten all loose mounting hardware, correct all leaks, and remove all excessive grease and oil Replace a defective oil filter (par. 89)
•	6	blistered, or peeling paint. See that all deficiencies noted are corrected or reported to field maintenance.			or oil cooler (par. 88). Report all conditions not corrected to field maintenance.
7	7	Modifications. See that all available modification work orders, applying to this unit, have been completed and recorded on DA Form 478, DA Form 5-73, and DA Form 5-73a as applicable.	16	16	Radiator. Inspect the radiator for leaks, obstructions in the core, air passages, and loose mounting hardware. Inspect the manual shutter control lever for proper operation. Inspect all cooling system hoses for leaks, deterio-
	7	Record all modification work orders applying to the generator set that have not been recorded. ENGINE			ration, and loose connections. In- spect the cooling system thermostat for improper operation. If antifreese is used, test the freezing point of the coolant.
11	11	Manifold, muffler, and exhaust pipe. Inspect the manifold, muffler, and exhaust pipe for leaks, loose mounting hardware, defective gaskets, and rust or corrosion.		16	Clean the radiator core air passages and flush the cooling system as necessary (par. 93). Replace all defective cool- ing system hoses (par. 93). Tighten all loose mounting hardware and hose connections. Replace a defective cool-
	11	Tighten all loose mounting hardware, and remove as much rust and corrosion as possible. Replace a defective manifold and muffler or exhaust pipe (par. 74). Correct or report all leaks to field	17	17	ing system thermostat (par. 95). Refer to table II and add antifreeze as necessary. Report all deficiencies not corrected to field maintenance. Water pump, fan, and fan guard. Inspect
12	12	maintenance. Valve mechanism. Inspect the rocker arm cover and gasket for signs of damage. Refer to paragraph 110 and inspect the valve clearance. Inspect the valve mechanism for defective parts and evidence of insufficient lubrication.			the water pump for leaks, loose mounting, and unusual noises. Inspect for excessive play in the water pump shaft and fan shaft. Inspect the fan for bent or cracked blades. Inspect the water pump, fan, and fan guard for loose mounting hardware.

Inspection	Service quarterly		Inspection	Service quarterly	
	17	Tighten all loose mounting hardware. Replace a defective fan (par. 97) or fan guard (par. 96). Report a defec- tive water pump to field maintenance.		38	electrical connections. See that the pump screen is free of foreign matter. Tighten all loose connections and mount- ing hardware. Replace any damaged electrical wiring. Service the winter-
18	18	V-belts. Inspect for worn, cracked, or frayed V-belts. Inspect the pulleys for cracks, scoring, and misalinement. Inspect the belts for improper tension. Depress the belt midway between the pulleys. The depression should not exceed three-quarters of an inch.	40	40	ization fuel pump screen (par. 129). Replace a defective winterization fuel pump (par. 129). Report deficiencies not corrected to field maintenance. Fuel filter and strainer. Inspect the filter and strainer for insecure mounting. Inspect for cracks, breaks, and
	18	Adjust or replace all defective belts (pars. 97 and 102). Replace a defective fan pulley (par. 97). Report all defects not corrected to field maintenance.		40	leakage. Inspect the fuel lines for loose connections and other damage. Tighten all loose mounting hardware and fuel connections. Correct all leaks.
19	19	Oil pressure relief valve. Remove the oil pressure bypass valve plunger and spring and inspect for evidence of wear, scoring, and dirt between the plunger and seat (fig. 41). Inspect the spring for distortion and weakened condition.	41	41	Replace a defective strainer or filter (pars. 78 and 79). Air cleaners. Inspect the air cleaners for insecure mounting, defective gaskets, and other damage. Inspect the condition of the cleaning elements, baffles,
	19	Remove all dirt and grit from the relief valve plunger and seat. Replace a defective bypass valve (par. 88).		41	and body. Inspect the air cleaners for proper oil level. Clean and service the air cleaners (par.
20	20	dovernor, reservoir, and filter. Inspect the governor, reservoir, and filter for loose mounting hardware, leaks, and other signs of damage. Inspect the	42	42	 Tighten all insecure mountings, replace defective gaskets and defective air cleaners (par. 32). Injector pump and nozzles. Inspect the
	20	filter for dirt. Inspect the governor under load for evidence of improper operation. Tighten all loose mounting hardware. Correct all leaks or report them to field maintenance. Service the filter	72	72	diesel fuel injection pump housing for leaks and insecure mounting. Inspect all lines and connections for leaks. Inspect the engine shutdown solenoid for evidence of damage and restricted movement.
21	21	(fig. 22) and reservoir (par. 90) as necessary. Report a defective gover- nor to field maintenance. Overspeed governor. Inspect the over-		42	Tighten all loose mounting bolts and fuel line connections. Replace a defective injection pump (par. 81). Test and replace a defective shutdown solenoid
21		speed governor for loose mounting hardware, leaks, and loose electrical connections.	43	43	as necessary (par. 106). Fuel tanks, caps, and gaskets. Inspect the diesel fuel tank and winterization tank
20	21	Tighten all loose mounting hardware and electrical connections. Report all defects not corrected to field maintenance.			for leaks, loose mountings, and other damage. Inspect the fuel caps for defective gaskets. See that the vent
22	22	Air box drains. Inspect the air box drains for loose mounting, leaks, and other damage. Inspect the air box drain hoses for clogging and deterioration.		43	holes are open. Tighten all loose mounting hardware. Correct or report leaks to field maintenance. Replace a defective fuel cap and gasket (par. 76).
	22	Tighten all loose connections. Remove all restrictions from the air box drains. Replace defective drain hoses (par. 112).	44	44	Fuel lines. Inspect all fuel lines for kinds, sharp bends, and evidence of leakage. Inspect all fuel hoses for cracks, breaks, and deterioration.
38	38	Fuel pumps. Inspect the high-lift diesel fuel pump for cracks, breaks, and other damage. See that all electrical con-	45	44	Tighten all loose fuel connections. Repair or replace all defective fuel lines. Supercharger. Inspect the supercharger
		nections are tight and undamaged. Inspect the winterization fuel pump for cracks, breaks, leaks, and loose			for loose mounting hardware, cracks or breaks, and leakage.

Inspection	Service quarterly		Inspection	Service quarterly	
	45	Tighten all loose mounting hardware and fuel line connections. Report a defec-			fective coolant heater to field maintenance.
		tive supercharger to field maintenance.	57	57	Gages. Inspect all gages for cracked or broken glass and cases. Inspect the
47	47	ELECTRICAL Batteries and cables. Inspect the bat-		57	gages for improper operation. Tighten all loose mounting hardware. Replace a defective gage (par. 132).
41	1	teries for cracks and leaks. Inspect for loose retainers, loose or corroded terminals, and excessive dirt. See that	58	58	Meters. Inspect all meters for cracked or broken glass, insecure mounting, and improper operation.
		the electrolyte level is three-eighths of an inch above the top of the plates. Test the specific gravity of the bat- teries and record it on DA Form 464.		58	Tighten loose mounting hardware. Replace a defective meter (par. 132). Report a defective wattmeter or frequency meter to field maintenance.
	47	Clean all dirt and corrosion from the batteries and terminals. Replace defective cables (par. 100). Apply a thin coating of grease over the terminals.	00	co	Caution: Disconnect the batteries when servicing electrical instruments, except when current is necessary for testing.
		minals after they are clamped tight. Add distilled water as necessary. If freezing temperatures prevail, or are expected, the batteries should be charged long enough to allow the added water to mix thoroughly with the electrolyte. Make sure the filler cap	62	62	Levers, linkage, and cables. Inspect all levers for loose or missing mounting hardware. Inspect levers, linkage, and cables for proper operation. See that all cable clamps are secure. Make sure that the shutter linkage works freely and correctly.
48	48	vent holes are open. Replace a defective battery (par. 100). Battery-charging generator and starter.		62	Tighten all loose or replace all missing mounting hardware. Correct all improper lever and linkage operation or
		Inspect the battery-charging generator and starter for insecure mounting, loose electrical connections, and ex-	80	80	report the condition to field main- tenance. Replace all defective cables. Frame. Inspect the frame for distortion
	48	cessive dirt and grease. Tighten all loose mountings and electrical connections. Replace a defective battery-charging generator (par. 102).			and loose or missing mounting hard- ware. Note all breaks in structural members or welded joints. Inspect for missing or defective fasteners.
51	51	Replace a defective starter (par. 101). Battery-charging generator regulator. Inspect the battery-charging generator		80	Tighten all loose mounting hardware. Replace defective fasteners. Report a defective frame to field maintenance.
		regulator for insecure mounting, loose electrical connections, and improper operation.	84	84	Hood, panels, and doors. Inspect for dents, cracks, breaks, and other damage. Inspect the hinges and
	51	Tighten all loose mounting hardware and electrical connections. Replace a defective battery-charging generator regulator (par. 103).		84	latches for defective parts and freedom of movement. Inspect for loose or missing hardware. Tighten all loose, or replace all missing
52	52	Lights. Inspect for loose mounting and improper operation of all lights. Inspect for defective electrical wiring and corroded receptacles.	85	85	hardware. Repair or replace all parts as necessary (par. 72). Coolant circulating pumps. Inspect the circulating pumps for loose mountings
	52	Tighten or replace loose or missing mounting hardware. Replace defective lamps and receptacles as necessary (par. 132). Repair or replace defective electrical wiring.		85	and electrical connections. Inspect the pumps for improper operation. Tighten all loose mountings and electrical connections. Report a defective circulating pump to field maintenance.
53	53	Coolant heaters. Inspect the heaters for cracks, breaks, loose mountings, and improper operation.			MAIN GENERATOR
	53	Tighten all loose mounting hardware and electrical connections. Report a de-	52	52	Wiring. Inspect all electrical switches and wiring for loose mountings and connections. Inspect all wiring for

39

	1	Ī		1	İ
Inspection	Service quarterly		Inspection	Service quarterly	
	52	defective insulation. Inspect all receptacle connectors for cracks and breaks. Tighten all loose mountings and electrical connections. Replace defective wiring and switches. Report a defec-		172	spect the brushes for excessive wear. See that all electrical connections are tight and that the insulation is in serviceable condition. Inspect the brush holders for insecure mounting. Replace worn generator brushes (par.
		tive wiring harness to field main- tenance.			114). Tighten all loose electrical con- nections and brush holders. Repair
59	59	Regulator assembly. Inspect the regulator assembly for loose mounting hardware, cracked housing, and defective wiring. Inspect for excessive dirt and grease.			or replace electrical wiring as neces- sary. Adjust brush holders as neces- sary (par. 114). Report a defective brush holder or alipring to field maintenance.
	59	Tighten all loose mounting hardware and electrical connections. Report a damaged or defective regulator assembly to field maintenance.	173	173	Generator control panel and instruments Inspect all instruments for cracked or broken glass. Inspect for insecure mountings, loose connections, and im-
84	84	Side panels. Inspect the generator com- partment for bent, cracked, or loose side panels. Inspect the fasteners for insecure mounting and other damage.		173	proper operation. Inspect the control panel for cracks, breaks, and other damage. Tighten loose mountings and electrical
	84	Correct or report defective side panels to field maintenance.		""	connections. Replace defective instruments (par. 132). Report other
172	172	Sliprings and brushes. Inspect the slip- rings for dirty or worn surfaces. In-			defective instruments or an instru- ment panel to field maintenance.

Section III. TROUBLESHOOTING

37. General

This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the generator set and its components. Each trouble symptom stated is followed by a list of probable causes of the trouble. The possible remedy recommended is described opposite the probable cause. Any operational trouble that is beyond the scope of organizational maintenance must be reported to field maintenance, 3d echelon.

38. Engine Hard To Start or Fails To Start Probable,cause Possible remedy Starter fails to crank engine. Refer to paragraph 46. Fuel tank empty.....Fill the fuel tank. Fuel system clogged......Remove the restriction or report the condition to field maintenance. Valve clearance incorrect....Adjust the valve clearance (par. 140). Injection pump out-of-ad- Replace the injection pump justment or defective. (par. 81).

39. Engine Misses or Runs Erratically

Possible remedy Probable cause Fuel supply to engine in- Service the fuel strainer (par. sufficient. 78). Service the fuel filter (par. 79).

Probable cause Possible remedu Air supply to engine inade-Provide adequate supply of air quate. for engine. Air cleaners clogged Service the air cleaners (par. 32) Tube and lever assembly Adjust the tube and lever assembly (par. 82). out of adjustment. Coolant temperature too low. Inspect the shutter operation. Replace the cooling system thermostat if necessary (par. 95). Fuel system contains dirt Drain and replenish the fuel or water. supply. Drain the fuel filter (par. 79) and internal tank (par. 75).

Engine Stops Suddenly

Probable cause	Possible remedy
Fuel tank empty	Fill the fuel tank.
Fuel system contains dirt or water, or is clogged.	Remove the restriction, drain the fuel system, and replenish the fuel supply (pars. 75 and 79).
Air cleaners clogged	Service the air cleaners (par. 32).
High coolant temperature switch operates.	Inspect the cooling system for restrictions in airflow. Re- place a defective high coolant temperature switch (par. 120).
Low oil pressure switch operates.	Inspect the oil system for re- strictions. Replace a defective oil pressure switch (par. 119).

AGO 58064

41. Engine Overheats

Possible remedy

blocked. operation. Remove restriction from core passages with compressed air.

Exhaust system clogged....Remove the restriction.

Cooling system thermostat defective.

Replace the thermostat (par. 95)

42. Engine Exhaust Smoke Excessive

Probable cause

Possible remedy

Fuel of improper gradeFill the fuel tank with the proper grade of fuel (refer to table I).

Air cleaner clogged Service the air cleaner (par. 32).

Fuel control tube and lever assembly out of adjustment.

Service the air cleaner (par. 32).

Adjust the fuel control tube and lever assembly (par. 82).

43. Engine Oil Pressure Low

44. Engine Lacks Pewer

Air cleaners clogged Service the air cleaners (par. 32).

Restriction in fuel system . . . Remove the restriction.

Engine air supply inadequate Provide proper ventilation for engine.

Possible remedu

Fuel control tube and lever assembly out of adjustment.

Adjust the fuel control tube and lever assembly (par. 82).

Valves improperly adjusted _Adjust the valves (par. 110).

45. Engine Noisy

Probable cause Possible remody

Valves out of adjustment...Adjust the valves (par. 110).

Engine mounts loose......Tighten the engine mounts.

46. Starter Fails Te Crank Engine

Probable cause	Possible remedy
Start switch defective	Replace the start switch (par. 132).
Starter solenoid relay defective.	Replace the starter solenoid relay (par. 101).
Start switch solenoid defective.	Replace the start switch solenoid (par. 107).
Starter defective	Replace the starter (par. 101).
Starter circuit wiring defective.	Repair or replace defective wiring.
Batteries low or discharged.	Charge or replace the batteries (par. 100).

47. Battery-Charging Ammeter Fails To Show Charge When Batteries Are Low or Discharged

Probable cause Possible remedy Battery-charging regulator Replace the battery-charging defective. regulator (par. 103). Replace the battery-charging Battery-charging generator defective. generator (par. 102). Battery-charging circuit Repair or replace defective wiring defective. wiring. Replace the battery-charging Battery-charging ammeter defective. ammeter (par. 132).

48. Battery-Charging Ammeter Shews Charge When Batteries Are Fully Charged

Probable cause

Battery-charging ammeter defective.

Battery-charging regulator defective.

Replace ammeter (par. 132).

Replace the battery-charging regulator (par. 103).

Generator rotor grounded...Replace generator (par. 102).

49. Battery-Charging Generator Overheats

Probable cause

Battery-charging generator defective.

Battery-charging regulator defective.

Possible remedy

Replace the battery-charging generator (par. 102).

Replace the battery-charging regulator (par. 103).

50. Batteries Discharge When Engine is Stopped

Probable cause Possible remedy

Battery-charging regulator defective. Replace the battery-charging regulator (par. 103).

Fuel pressure switch defective. Replace the fuel pressure switch (par. 79).

51. Main Generater Fails To Build Up Rated Voltage

Probable cause Possible remedy

Generator brushes worn.....Replace the brushes (par. 114).

Slip rings rough or dirty....Smooth and polish the slip rings (par. 114).

Generator brush the slip rings (par. 114).

Adjust the generator brush holders (par. 114).

Radio interference suppression capacitors defective.

Replace the radio interference capacitors (par. 69).

52. Main Generater Voltage Drops Under Increase of Load

Probable cause

Governor speed switch defective.

Generator brushes worn.....Replace the generator brushes (par. 114).

(par. 114).

Parallel operation switch on or defective during single unit operation.

(par. 114).

Reposition or replace the parallel operation switch (par. 132).

Slip rings rough or dirty Smooth and polish the slip rings

Probable cause Possible remedy	Probable cause Possible remedy
Generator brush holders Adjust the generator brush out of adjustment. holders (par. 114).	Generator clogged with dirt Remove the generator screens and dust. and blow out dirt and dust
53. Veltmeter er AC Ammeter Registers	from the generator (par. 114).
Incorrectly	61. Main Generater Noisy
Probable cause Possible remedy	Probable cause Possible remedy
Meter defectiveReplace the meter (par. 132). Wiring defectiveRepair or replace the wiring.	Generator mounting bolts loose. Tighten the generator mounting bolts.
54. Main Generator Voltage Erratic Probable cause Possible remedy	Generator brush loose or Replace the generator brush broken. (par. 114).
Brushes worn or defectiveReplace the brushes (par. 114).	62. Main Generator Fails To Maintain Kilo-
Sliprings dirtyClean and polish sliprings (par.	watt Load Division During Parallel
114). Brush holders out of ad- Adjust the brush holders (par.	Operation 9
justment. 114).	Probable cause Possible remedy
·	Parallel operation switch Replace the parallel operation
55. Main Generator Frequency Fluctuates or	defective. switch (par. 132).
Drifts	Parallel operation receptace the parallel operation tacle defective. Replace the parallel operation receptacle (par. 116).
Probable cause Possible remedy	Engine lacks powerRefer to paragraph 44.
Fuel injection pump de- Replace the fuel injection pump fective. (par. 81).	Main generator frequency Refer to paragraph 55.
Governor speed switch de- Replace the governor speed	fluctuates or drifts.
fective. switch (par. 132).	63. Main Generator Fails To Maintain Re-
56. Main Generator Frequency Drops Under	active Load Division During Parallel
Load	Operation
Probable cause Possible remedy	Probable cause Possible remedy
Engine lacks powerRefer to paragraph 44.	Main generator voltage Refer to paragraph 52.
57. Main Generator Fails To Supply Power To The Load	drops upon increase of load.
Probable cause Possible remedy	64 Greetine Henter Fulls To Lunder
Main circuit breaker offPlace circuit breaker in ON	64. Gasoline Heater Fails To Ignite Probable cause Possible remedy
position.	Fuel tank emptyFill the fuel tank,
Load terminals dirty or loose_Clean and tighten loose or dirty	24-v coolant thermostat Replace the 24-v coolant ther-
load terminals.	defective. mostat (par. 125).
58. Main Circuit Breaker Trips or Fails To	Heater switch defectiveReplace the heater switch (par. 124).
Close	Heater reset circuit breaker Replace the heater reset circuit
Probable cause Possible remedy	defective. breaker (par. 124).
Short in load linesEliminate the short in load lines. Generator overloadedReduce the load.	Gasoline pump defectiveReplace the gasoline pump (par. 129).
Main generator fails to Refer to paragraph 51.	65. Battery Box Heater Fails To Operate
build up rated voltage.	
59. Excessive Sparking at Generator Brushes	Battery box thermostat Replace the battery box thermo-
Probable cause Possible remedy	switch defective. stat switch (par. 125).
Brushes worn or defectiveReplace the brushes (par. 114).	Heater switch defectiveReplace the heater switch (par.
Sliprings dirtyClean and polish the sliprings	124).
(par. 114). Brush holders out of ad- Adjust the brush holders (par.	66. Electric Coolant Heater Fails To Operate
justment. 114).	Probable cause Possible remedy
60. Main Generator Overheats	220-v coolant thermostat Replace the 220-v coolant ther-
Probable cause Possible remedy	switch defective. mostat switch (par. 125).
Generator screens cloggedRemove and clean the generator	Heater switch defectiveReplace the heater switch (par. 124).

screens (par. 114).

AGO 5806A"

Fuse defective......Replace the fuse (par. 123).

67. Field Expedient Repairs

Operational troubles may occur while the generator set is operating in the field, where supplies and repair parts are not available and normal remedial action cannot be performed. When this condition exists, the expedient remedies listed below may be used only upon the decision of the unit commander. Equipment so repaired must be removed from operation at the earliest possible moment and properly repaired before being placed in operation again.

Expedient remedu Air cleaner clogged......Remove the air cleaner (par. 80c).

Caution: Operating the unit in sandy or dusty areas without the air cleaner can cause serious damage to the supercharger.

Fuel strainer clogged......Remove the element (par. 78d). Fuel filter clogged......Remove the element (par. 79d).

Caution: Operation of the engine without the fuel filter element can result in damage to the fuel injection pump.

Trouble switch defective.

Cooling system thermostat Remove the thermostat switch (par. 95f).

Cooling system hose col- Remove the hose and install a lapsed.

section of coiled, heavy wire in the hose. Install the hose (par. 93e).

Expedient remedy

switch defective.

High coolant temperature Remove the switch and tape the two wires separately (par. 120d).

Caution: In the event of an overheat condition. and the high coolant temperature switch is disconnected, serious damage may result to the engine.

Low oil pressure switch Remove the switch and tape the defective. ends of the two electrical leads (par. 119d).

Caution: Operation of the generator set without the low oil pressure switch may result in damage to the engine in the event of a loss of oil pressure. Lubricating oil filter ele- Remove the oil filter element ment clogged. (par. 89c).

Caution: Operation of the engine without the oil filter element may result in damage to the engine if operated for extended periods of time.

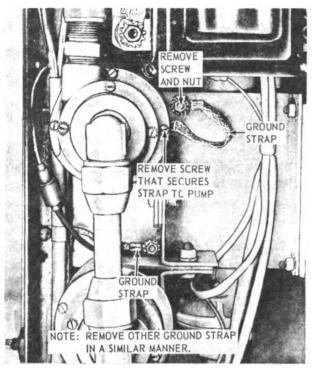
Section IV. RADIO INTERFERENCE SUPPRESSION

68. General Methods Used To Attain Proper Suppression

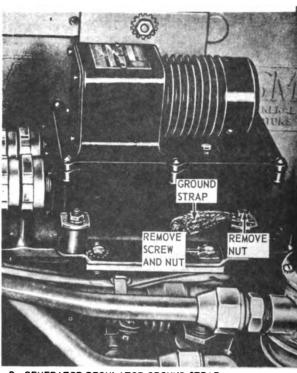
Essentially, suppression is attained by providing a low-resistance path to ground for the stray currents. The methods used to attain suppression include shielding the ignition and high-frequency wires, grounding the frame with bonding straps, and using capacitors and resistors where necessary. For general information on radio interference suppression, refer to TM 11-483.

69. Interference Suppression Components

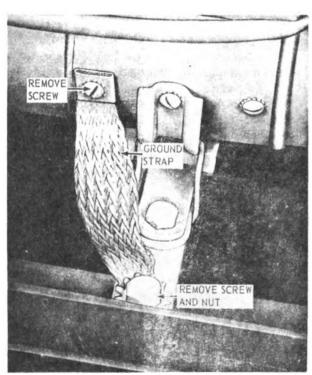
- a. Refer to figure 24 for the location, removal, and installation of interference suppression components.
- b. To correct faulty interference suppression, remove the suppression components one at a time and substitute with new ones until the defective component is found.
- c. Always replace suppression components with identical parts.



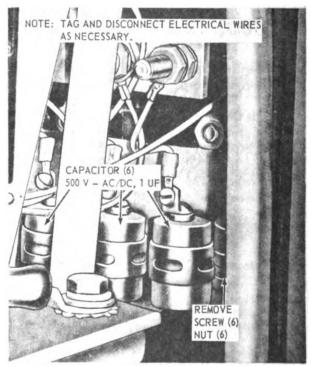
A. ELECTRIC COOLANT PUMP GROUND STRAPS.



B. GENERATOR REGULATOR GROUND STRAP.



C. GASOLINE COOLANT HEATER GROUND STRAP.

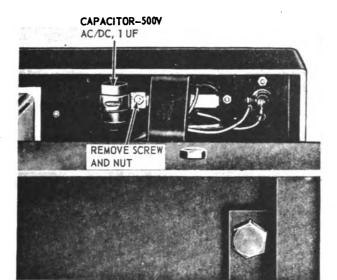


D. MAIN CIRCUIT BREAKER CAPACITORS.

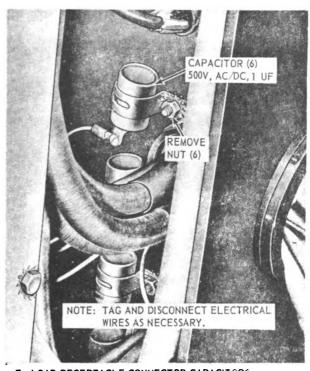
EMC 6115-293-12/24 1

Figure 24. Interference suppression components, removal and installation.

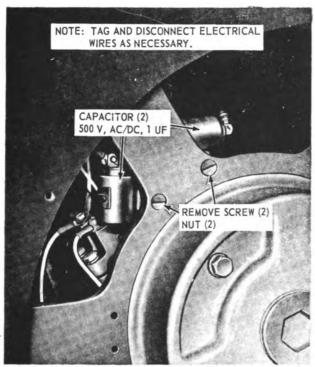
NOTE: TAG AND DISCONNECT ELECTRICAL WIRES AS NECESSARY.



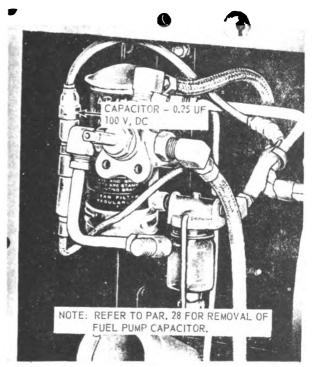
E. 115-Y ELECTRICAL RECEPTACLE CAPACITOR



F. LOAD RECEPTACLE CONNECTOR CAPACITORS.



G. MAIN GENERATOR BRUSH CAPACITORS.

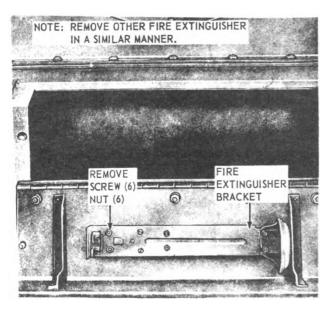


H. GASOLINE PUMP FEED-THROUGH CAPACITOR.

EMC 6115-293-12/74 (2)

Figure 24—Continued.

Section V. FIRE EXTINGUISHER BRACKET, HOOD, DOORS, AND PANELS



EMC 6115-293-12/25

Figure 25. Fire extinguisher bracket, removal and installation.

70. General

The engine and main generator of the generator set is inclosed in a sheet metal housing with doors and panels provided for easy access to all components. This section covers maintenance procedures on the fire extinguisher bracket, hood, doors, and panels.

71. Fire Extinguisher Bracket

- a. Remove and install the fire extinguisher bracket as shown by figure 25.
 - b. Clean and inspect.

72. Hood, Doors, and Panels

- a. Remove and install the hood, doors, and vanels as shown by figure 26.
 - b. Clean, inspect, and repair.

Figure 28. Hood, doors, and panels, removal, disassembly, reassembly, and installation.

EMC 6115-293-12/26 ①

Right generator partment door

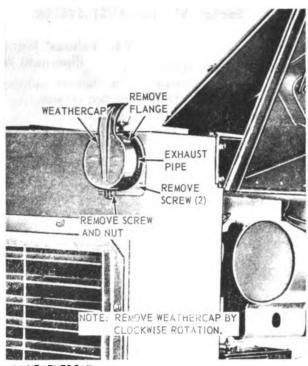
Section VI. EXHAUST SYSTEM

73. General

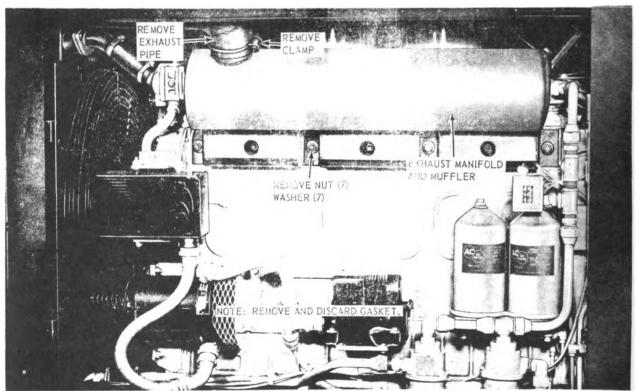
The generator set is equipped with an exhaust manifold constructed integrally with the exhaust muffler. A weathercap is also provided. This section covers maintenance procedures for the exhaust manifold and muffler, exhaust pipe, and weathercap.

74. Exhaust Manifold and Muffler, Exhaust Pipe, and Weathercap

- a. Remove and install the exhaust manifold and muffler, exhaust pipe, and weathercap as shown by figure 27.
 - b. Clean and inspect.



A. WEATHERCAP.



B. EXHAUST MANIFOLD AND MUFFLER AND EXHAUST PIPE.

EMC 6115-293-12/27

Figure 27. Exhaust manifold and muffler, exhaust pipe, and weathercap, removal and installation.

Section VII. FUEL SYSTEM

75. General

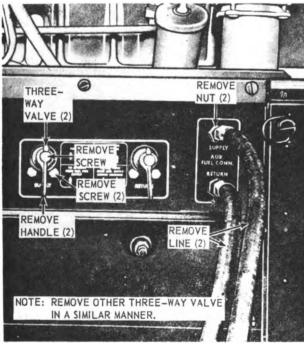
The generator set fuel system is designed to inject fuel into the combustion chambers under pressure at properly timed intervals. Fuel can be drawn from either the internal tank or from an auxiliary fuel source. The high-lift pump draws fuel through the fuel strainer and sends it through the fuel filter to the fuel injectors. The surplus fuel is then returned to the internal tank or auxiliary source.

76. Fuel Tank Cap, Filler Neck, and Screen

- a. Remove and install the right rear side panel (par. 72).
- b. Remove and install the generator brush access panel (par. 114).
- c. Remove and install the fuel tank cap, filler neck, and screen as shown by figure 28.
 - d. Clean and inspect.

77. Diesel Fuel Control Valves and Auxiliary Fuel Connectors

- a. Remove and install the diesel fuel control valves and auxiliary fuel connectors as shown by figure 29.
 - b. Clean and inspect.



A. FRONT VIEW.

AGO 5806A

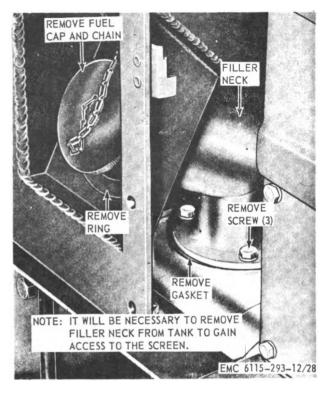
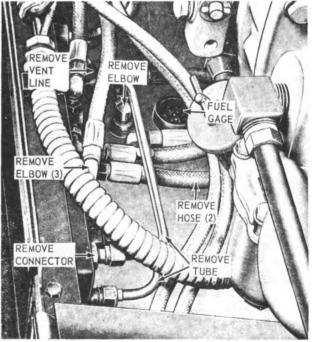


Figure 28. Fuel tank cap, filler neck, and screen, removal and installation.



B. REAR VIEW.

EMC 6115-293-12/29

Figure 29. Diesel fuel control valves, auxiliary fuel connectors, fuel quantity gage, and fuel tank vent, removal and installation.

51

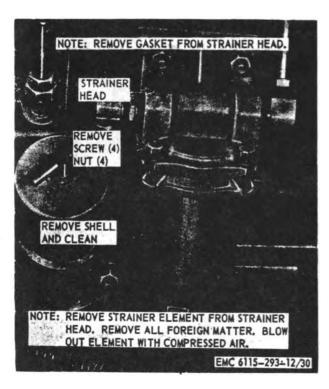


Figure 30. Fuel strainer service.

78. Fuel Strainer

- a. Service the fuel strainer as shown by figure 30
- b. Remove and install the fuel strainer as shown by figure 31.
 - c. Clean and inspect.
- d. Should the engine stop or cease to operate due to a damaged or clogged fuel strainer, remove the strainer element as in b above and operate the engine without the fuel strainer element.

79. Fuel Filter

- a. Service the fuel filter as shown by figure 32.
- b. Remove and install the fuel filter as shown by figure 33.
 - c. Clean and inspect.
- d. Should the engine fail to start or cease to operate due to a damaged or clogged fuel filter, remove the fuel filter element as in b above and operate the engine without the fuel filter element.

Caution: Operation of the engine without the fuel filter element may cause serious damage to the engine. Do not operate the engine any longer than is necessary.

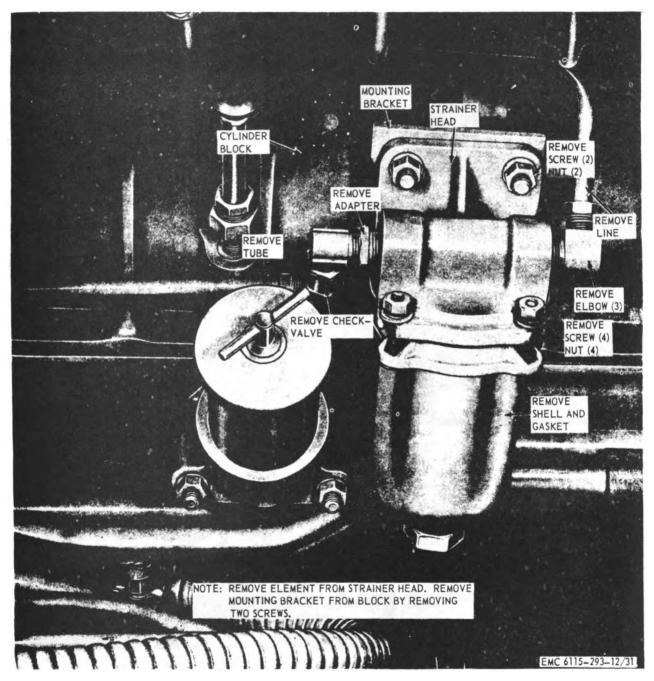


Figure 31. Fuel strainer, removal and installation.

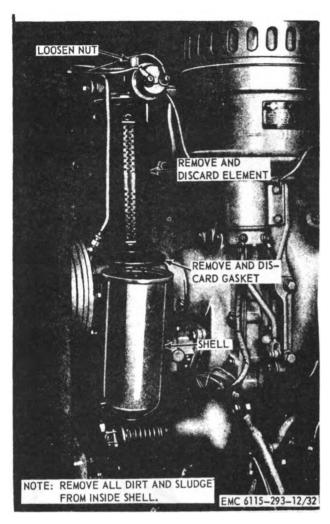


Figure 32. Fuel filter service.

80. Air Cleaners

- a. Remove and install the air cleaners as shown by figure 22.
 - b. Clean and inspect.
- c. Should the generator set fail to start or cease to operate due to a clogged or damaged air cleaner, remove the air cleaner as in a above. Secure a piece of fine mesh screen over the supercharger air intake flange and operate the engine without the air cleaner.

Caution: Operation of the engine in sandy er dusty areas without the air cleaners may result in serious damage to the supercharger.

81. Diesoi Fuol injection Pump

- a. Remove and install the diesel fuel injection pump as shown by figure 34.
 - b. Clean and inspect.

82. Fuel Control Tube and Lever Assembly

- a. Remove and install the rocker arm cover (par. 109).
- b. Adjust the fuel control tube and lever assembly as shown by figure 35.
- c. Remove and install the fuel control tube and lever assembly as shown by figure 36.
 - d. Clean and inspect.

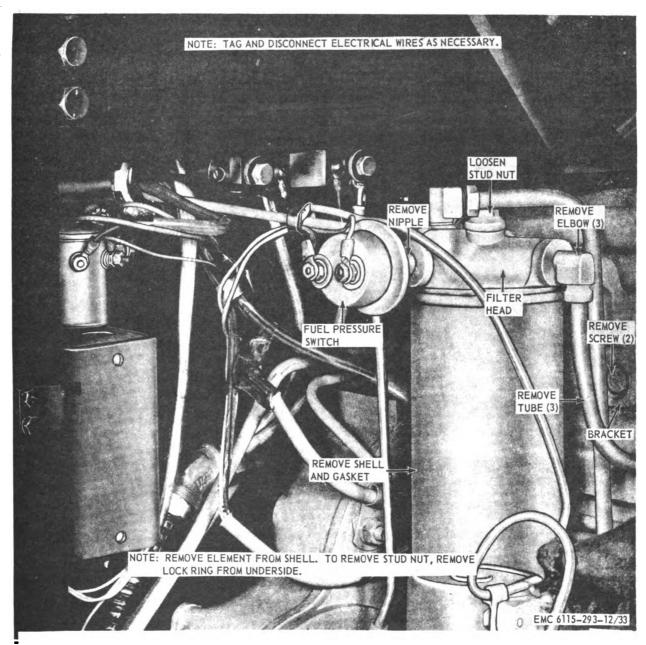


Figure 33. Fuel filter and fuel pressure switch, removal and installation.

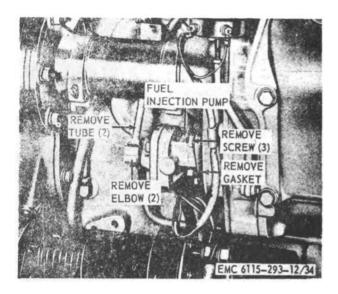


Figure 34. Diesel fuel injection pump, removal and installation.

83. Fuel Tank Vent Lino

- a. Remove and install the fuel tank vent line as shown by figure 29.
 - b. Clean, inspect, and repair.

84. Fuel Quantity Gage

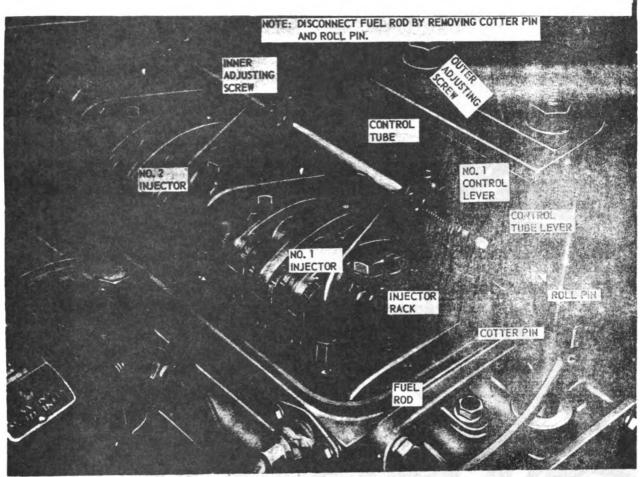
- a. Remove and install the fuel quantity gage as shown by figure 29.
 - b. Clean and inspect.

85. Ether Primer Assembly

- a. Remove, disassemble, reassemble, and install the ether primer pump as shown by figure 37.
- b. Remove and install the ether primer fluid tank and metering reservoir as shown by figure 38.
- c. Remove and install the ether primer air tank as shown by figure 39.
 - d. Clean, inspect, and repair.

Digitized by Google

AGO SOSA



- STEP L DISCONNECT THE FUEL ROD FROM THE CONTROL TUBE LEVER.
- STEP 2, LOOSEN ALL RIMER AND OUTER ADJUSTING SCREWS.
- STEP 3. POSITION THE NO. I CONTROL LEVER ONTIL BOTH SCREWS ARE THE SAME HEIGHT. WHEN TIGHTENED.
- STEP 4. MANUALLY HOLD NO. I INJECTOR IN FULL FUEL POSITION AND THEN TURN DOWN INNER ADJUSTING SCREW OF NO. 2
 INJECTOR UNTIL INJECTOR RACK OF NO. 2 INJECTOR HAS MOVED TO FULL FUEL POSITION AND THE INNER ADJUSTING
 SCREW HAS BOTTOMED AGAINST THE CONTROL TUBE. ALTERNATELY TIGHTEN THE INNER AND OUTER ADJUSTING
 SCREWS UNTIL THEY ARE TIGHT.
- STEP 5. RECHECK NO. 1 INJECTOR RACK TO BE SURE THAT IT HAS REMAINED SNUG ON THE ROUNDED END OF THE NO. 1 CONTROL LEVER WHILE ADJUSTING NO. 2 INJECTOR. IF NO. 1 INJECTOR HAS BECOME LOSSE, BACK OFF SLIGHTLY ON THE INNER ADJUSTING SCREW ON NO. 2 INJECTOR CONTROL LEVER. TIGHTEN THE OUTER ADJUSTING SCREW. WHEN SETTINGS ARE CORRECT, THE RACKS OF BOTH INJECTORS MUST BE SNUG ON THE ROUNDED ENDS OF THE CONTROL LEVERS.
- STEP 6. POSITION THE REMAINING CONTROL LEVERS AS IN 4 AND 5 ABOVE.

EMC 6115--293-12/35

Figure 35. Fuel control tube and lever assembly, adjustment.

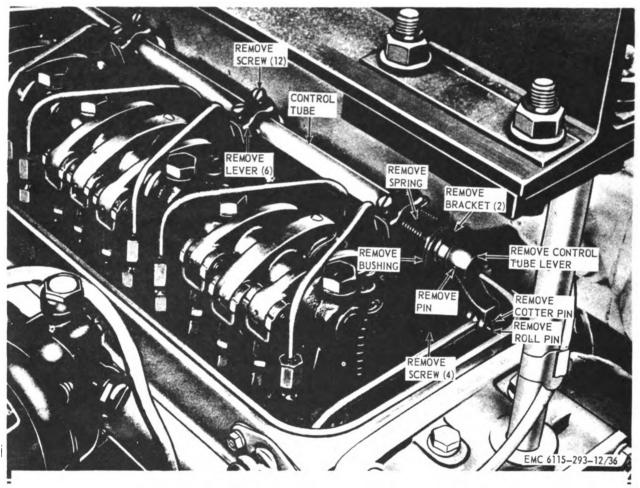


Figure 36. Fuel control tube and lever assembly, removal and installation.

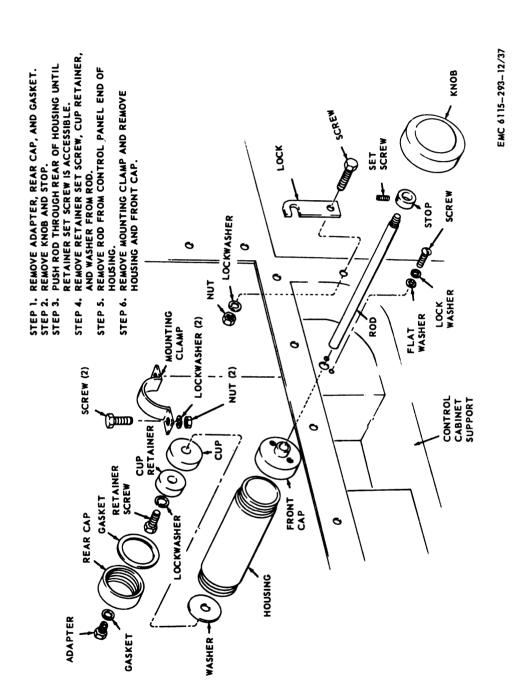
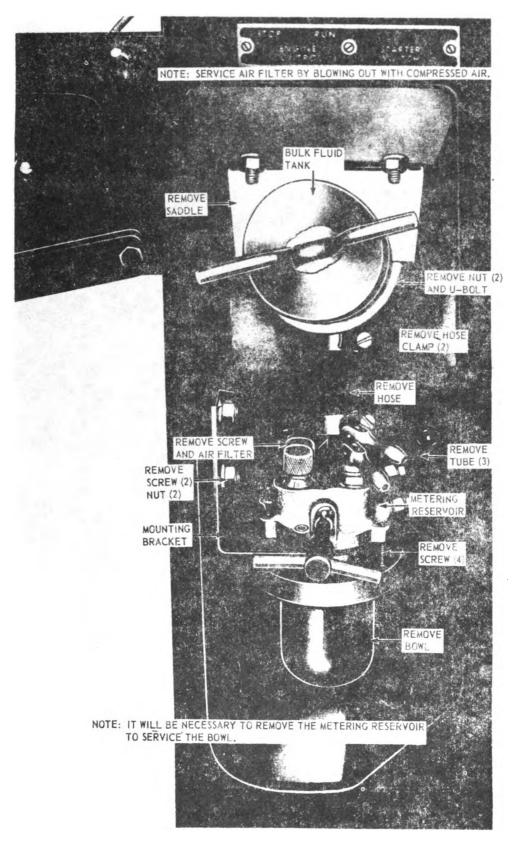


Figure 37. Elher primer pump, removal, disassembly, reassembly, and installation.



EMC 6115-293-12/38

Figure 38. Ether primer fluud tank and metering reservoir, removal and installation.

AGO SENIA

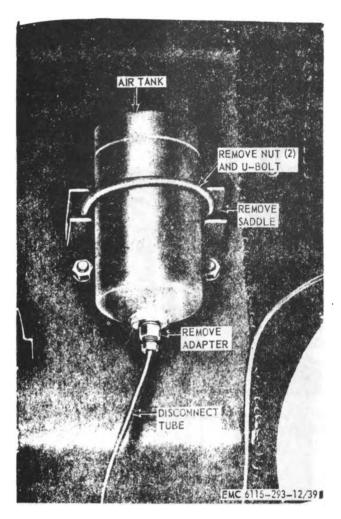


Figure 39. Ether primer air tank, removal and installation.

Section VIII. LUBRICATION SYSTEM

86. General

The lubricating oil system provides a source of cooled, filtered oil under pressure to the various internal lubrication points of the engine. A separate reservoir and filter is provided for the electric hydraulic governor (fig. 2) but utilizes engine lubricating oil. The oil cooler (fig. 1) is equipped with a bypass valve which will allow oil to flow around the cooler in the event of a clogged cooler element.

87. Oil Filler Neck, Cap, and Gage

- a. Drain the engine crankcase oil (par. 92).
- b. Remove the oil filler neck, cap, and gage as shown by figure 40.
 - c. Clean and inspect.

88. Oil Cooler and Bypass Valve

- a. To service the oil cooler, remove the cooling element (fig. 41) and remove all foreign matter.
- b. Remove and install the oil cooler bypass valve as shown by figure 41.
 - c. Clean and inspect.

89. Eubricating Oil Filters and Mounting Bracket

- a. Remove and install the lubricating oil filters and mounting bracket as shown by figure 42.
 - b Clean and inspect.
- c. Should the engine lubrication system cease to function properly due to clogged or damaged oil filter elements, remove the filter elements as in a

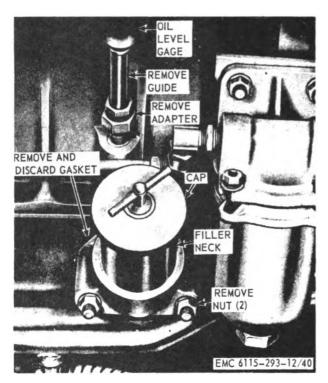


Figure 40. Oil filler neck, cap, and gage, removal and installation.

above and operate the engine without the filter elements.

Caution: Operation of the engine for extended periods of time without the oil filter elements may result in serious damage to the engine.

90. Governor Oil Reservoir and Input Solenoid Vaive

- a. Remove and install the governor oil reservoir and input solenoid valve as shown by figure 43.
 - b. Clean and inspect.

91. Governor Oil Fiiter and Output Solenoid Valve

- a. Remove and install the governor oil filter and output solenoid valve as shown by figure 44.
 - b. Clean and inspect.

92. Engine Oil Drain Hose

- a. Remove and install the engine oil drain hose as shown by figure 45.
 - b. Clean and inspect.

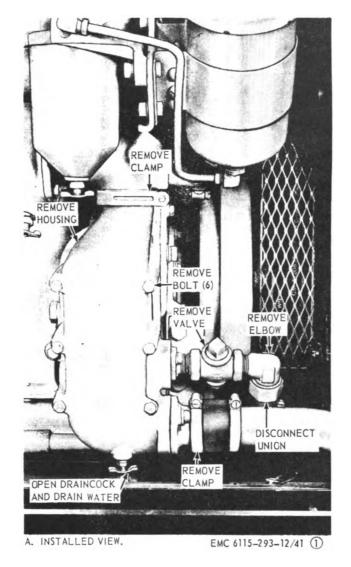


Figure 41. Oil cooler, bypass valve, and coolant shutoff valve, removal, disassembly, reassembly, and installation.

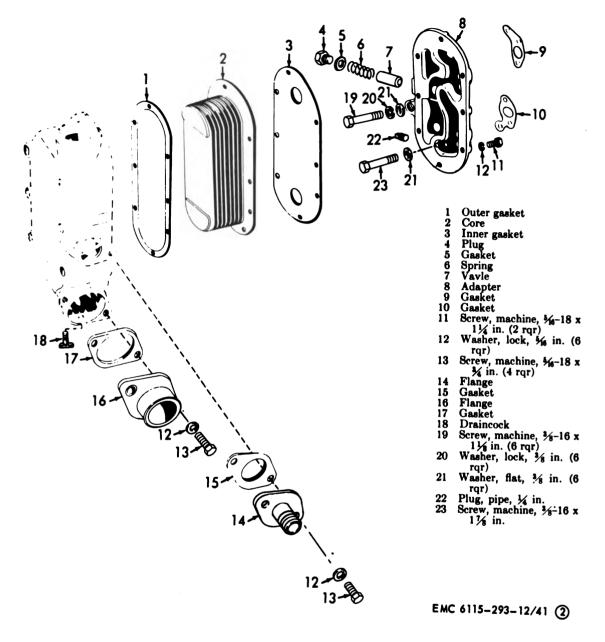


Figure 41—Continued.

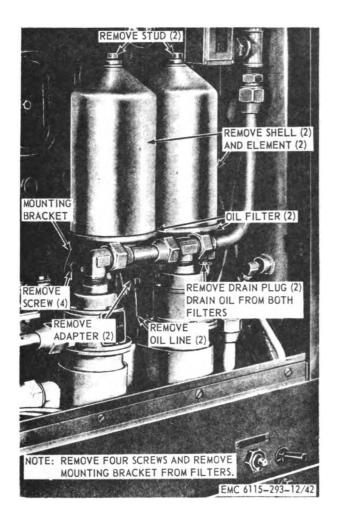


Figure 42. Lubricating oil filters and mounting bracket, removal and installation.

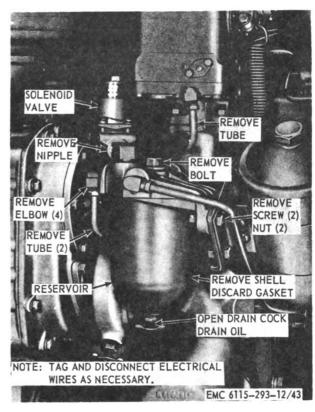


Figure 43. Governor oil reservoir and input solenoid valve, removal and installation.

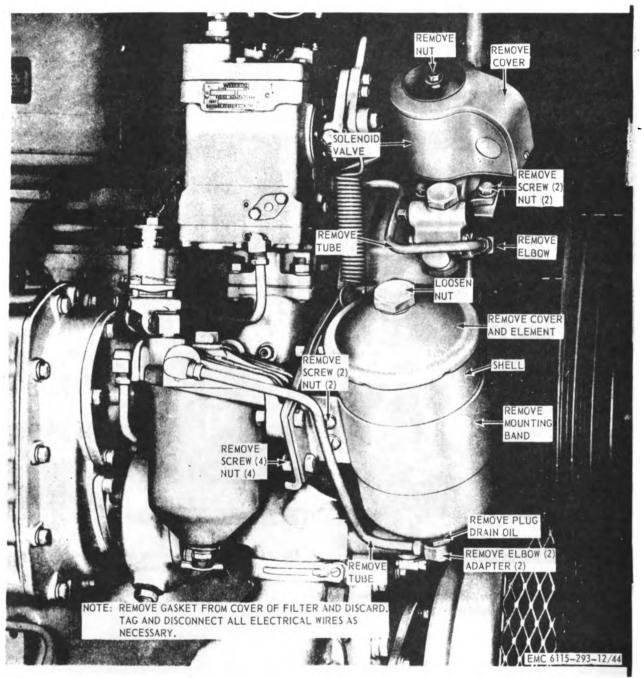


Figure 44. Governor oil filter and output solenoid valve, removal and installation.

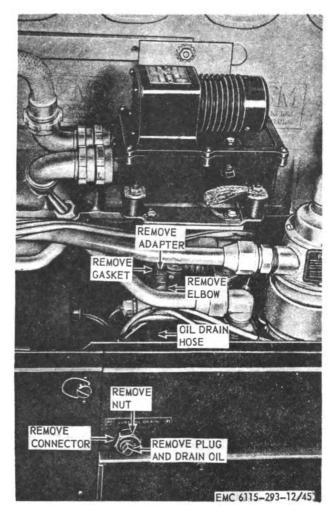


Figure 45. Engine oil drain hose, removal and installation.

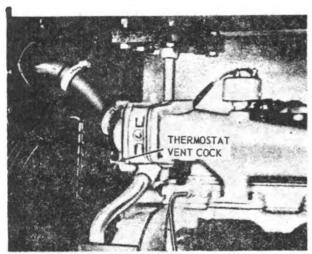
Section IX. COOLING SYSTEM

93. Radiator, Cap, Overflow Valve, and Hoses

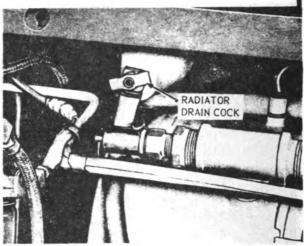
- a. Flush the cooling system as follows:
 - (1) With the engine at operating temperature, drain the cooling system as shown by figure 46.
 - (2) Fill the cooling system with clean water and an approved amount of radiator cleaner.
 - Note. It is necessary to open the thermostat vent valve when filling the cooling system.
 - (3) Operate the engine long enough to remove all rust and scale from the cooling system.

 Drain the cooling system as in (1) above.
 - (4) Repeat (1) and (2) above with an approved neutralizer. Drain the cooling system as in (1) above.

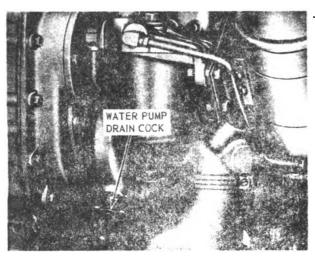
- (5) Continue flushing the cooling system with water only until the water runs clear when the system is drained.
- (6) Fill the cooling system with water and an approved rust inhibitor or antifreeze.
- b. Remove and install the radiator cap, overflow valve, and hose as shown by figure 47.
- c. Remove and install the radiator draincock as shown by figure 48.
 - d. Clean and inspect.
- e. Should the engine cooling system cease to function properly due to a collapsed coolant hose, remove the hose as in b above and insert a coil of heavy wire into the hose. Install the hose and operate the engine.



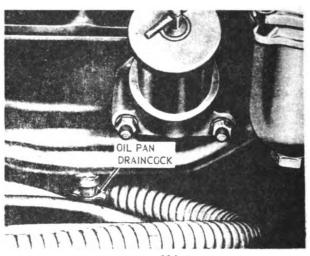
STEP 1. OPEN THERMOSTAT VENT COCK.



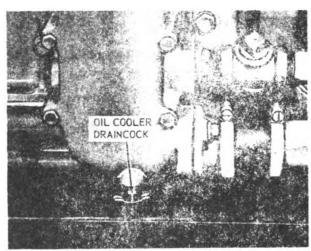
STEP 2. OPEN RADIATOR DRAIN COCK.



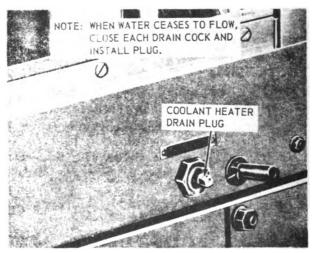
STEP 3. OPEN WATER PUMP DRAM COCK.



STEP 4. OPEN OIL PAN DRAIN COCK.



STEP 5. OPEN OIL COOLER DRAIN COCK.



STEP 6. REMOVE COOLANT HEATER DRAIN PLUG.

EMC 6115-293-12/46

Figure 46. Cooling system draining instructions.

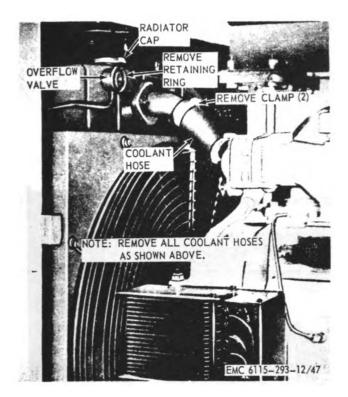


Figure 47. Radiator cap, overflow valve, and hose, removal and installation.

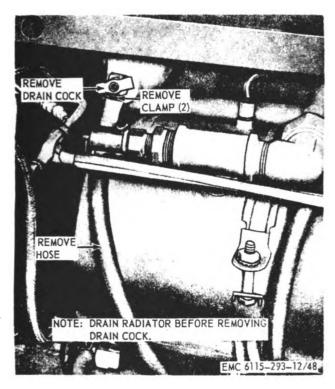


Figure 48. Radiator draincock, removal and installation.

94. Thermostat Bypass Check Valve

- a. Remove and install the fan belt guard (par. 96).
- b. Drain the cooling system (par. 93).
- c. Remove and install the thermostat bypass check valve as shown by figure 49.
 - d. Clean and inspect.

95. Water Outlet Manifold, Thermostat and Housing, and Shutoff Valve

- a. Remove and install the exhaust manifold and muffler (par. 74).
- b. Disconnect the thermostat bypass tube from the thermostat bypass check valve (par. 94).
- c. Remove and install the water outlet manifold, thermostat and housing, and shutoff valve as shown by figure 50.
 - d. Clean and inspect.
- e. Test the thermostat for proper opening by submerging it in a container of water. Position a thermometer in the water and heat the container. When the thermometer indicates between 165° F. and 170° F., the thermostat should start to open and should be completely open when the temperature reaches 185° F. to 190° F. Remove the thermostat from the water. The cooler surrounding air should cause a pronounced closing action and the unit should be completely closed within a short time.

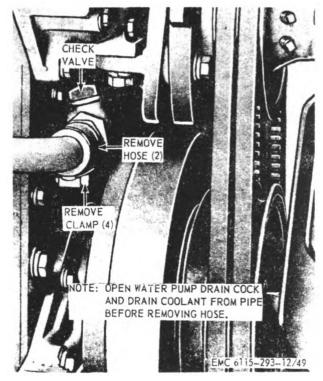


Figure 49. Thermostat bypuss check valve, removal and installation.

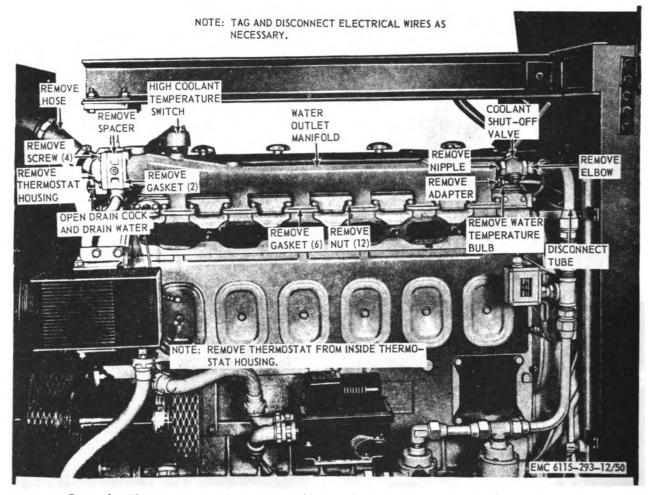
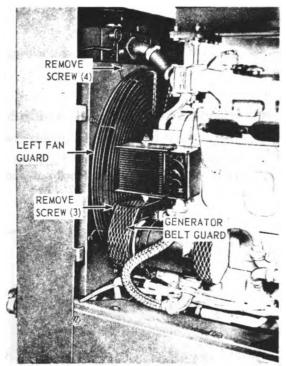
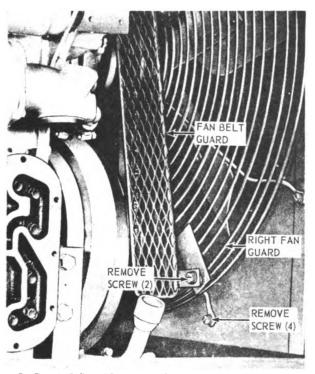


Figure 50. Water outlet manifold, thermostat and housing, high coolant temperature switch, shutoff valve, and water temperature bulb, removal and installation.





A. GENERATOR AND LEFT FAN GUARDS.

B. FAN AND FAN BELT GUARDS.

EMC 6115-293-12/51

71

Figure 51. Fan and belt, guards, removal and installation.

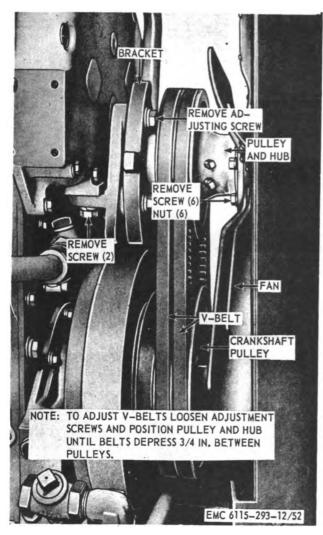


Figure 52. Fan V-belts, fan, pulley and hub, bracket, and support, removal, installation, and V-belt adjustment.

f. Should the generator set cease operation due to an overheat condition caused by a defective cooling system thermostat, remove the thermostat (b above) and operate the engine without the thermostat.

96. Fan and Belt Guards

- a. Remove and install the fan and belt guards as shown by figure 51.
 - b. Clean, inspect, and repair.

97. Fan V-Beits, Fan, Pulley, and Hub

- a. Remove and install the fan guards (par. 96).
- b. Remove and install the fan V-belts, fan, pulley, and hub and adjust the fan V-belts as shown by figure 52.
 - c. Clean and inspect.

Section X. ENGINE ELECTRICAL SYSTEM

98. General

The engine electrical system consists of two 12-v, dc (direct current) batteries, a 28-v, dc battery-charging generator of the alternator type, a 24-v, dc starter, a 28-v, dc rectifier, a starter solenoid relay, a 28-v, dc carbon pile generator regulator, and the necessary wiring and connections. In addition, provisions are made to use 24-v, dc power from an external source or to provide 24-v, dc power to an external source.

99. Battery-Charging Receptacle

- a. Remove and install the battery-charging receptacle as shown by figure 53.
 - b. Clean and inspect.

100. Batteries, Cables, and Trays

- a. Remove and install the batteries as shown by figure 54.
- b. Remove and install the battery cables and trays as shown by figure 55.
 - c. Clean, inspect, and repair.

101. Starter and Solenoid Relay

- a. Refer to figure 56 and perform the starter and solenoid relay on-engine testing.
- b. Remove and install the starter and solenoid relay as shown by figure 57.
 - c. Clean and inspect.

Digitized by Google

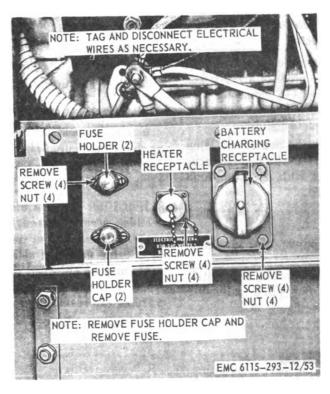
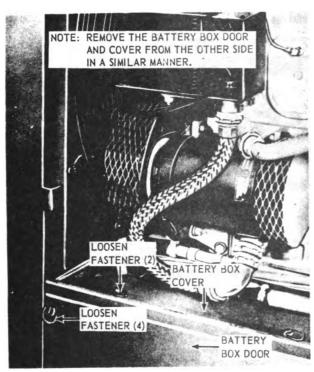
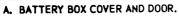
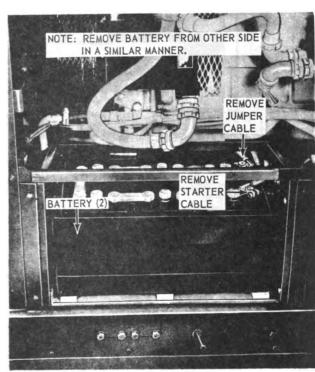


Figure 53. Battery-charging receptacle and paralleling receptacle connector fuses, and fuse holders, removal and installation.







B. BATTERIES.

EMC 6115-293-12/54

Figure 54. Batteries, removal and installation.

102. Generator V-Belts, Generator, Adjusting Straps, and Bracket

a. To test stator winding continuity, without removing generator, position the prods of a 110-v test lamp across the A-B, B-C, and A-C connector pins of the battery-charging cable connector (fig. 58). Each test should show a complete circuit.

Warning: Exercise care in the use of test lamp circuits of 110 volts or higher. Death by electrocution can result from contact with the test lamp circuit or the circuit under test.

- b. Remove and install the generator belt guard (par. 96).
- c. Remove, install, and adjust the generator V-belt as shown by figure 58.
- d. Remove, disassemble, reassemble, and install generator, pulley, generator fan guard, adjusting strap, and bracket as shown by figure 59.
 - e. Clean, inspect, and repair.

103. Generator Regulator and Bracket

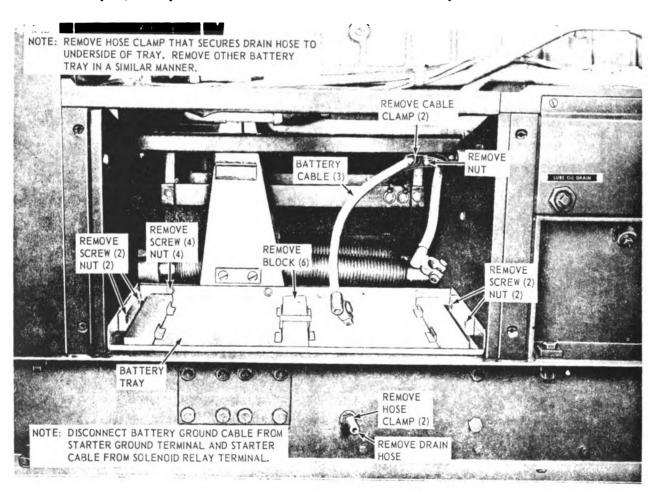
- a. Remove and install the generator regulator and bracket as shown by figure 60.
 - b. Clean and inspect.

104. Rectifier and Brackets

- a. Remove and install the rectifier and brackets as shown by figure 61.
- b. Test the rectifier for defective circuits as shown by figure 62.

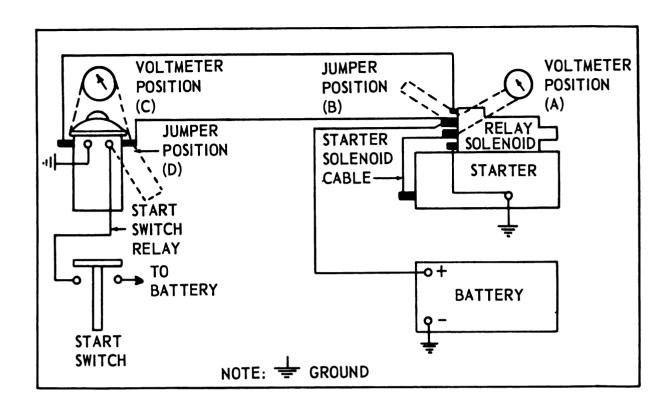
Warning: When a malfunction of the selenium rectifier occurs, thoroughly ventilate the area to prevent inhalation or poisonous fumes. Do not handle the damaged selenium rectifier. Selenium oxide may be absorbed through the skin, especially when the rectifier is hot. Failure to observe this warning can result in severe illness or death.

c. Clean and inspect.



EMC 6115-293-12/55

Figure 55. Battery cables and trays, removal and installation.



- STEP 1. DETERMINE THAT BATTERY IS FULLY CHARGED AND THAT ALL BATTERY AND STARTER CABLES ARE SERVICABLE AND PROPERLY INSTALLED.
- STEP 2. REMOVE STARTER SOLENOID CABLE. CONNECT A VOLTMETER AS SHOWN AT POSITION A ABOVE. IF VOLTAGE IS INDICATED, STARTER RELAY IS DEFECTIVE AND MUST BE REPLACED.
- STEP 3. INSTALL THE STARTER SOLENOID CABLE. WITH THE VOLTMETER INSTALLED AS IN POSITION A ABOVE, BATTERY VOLTAGE (24-V) MUST BE INDICATED. IF NOT, THE STARTER IS DEFECTIVE AND MUST BE REPLACED.
- STEP 4. WITH THE VOLTMETER CONNECTED AS IN POSITION A ABOVE, MOMENTARILY CONNECT A JUMPER WIRE AS IN POSITION D ABOVE. THE VOLTMETER SHOULD DROP TO ZERO AND THE STARTER SHOULD CRANK THE ENGINE. IF VOLTMETER DOES NOT DROP TO ZERO, STARTER SOLENOID IS DEFECTIVE AND MUST BE REPLACED. IF THE VOLTMETER DROPS TO ZERO BUT STARTER FAILS TO CRANK ENGINE, STARTER IS DEFECTIVE AND MUST BE REPLACED.
- STEP 5. REMOVE THE JUMPER WIRE FROM POSITION <u>D</u> ABOVE AND INSTALL THE VOLTMETER AT POSITION <u>C</u> ABOVE. BATTERY VOLTAGE WILL BE INDICATED. MOMENTARILY CONNECT A JUMPER WIRE AS SHOWN AT POSITION <u>D</u> ABOVE. THE VOLTMETER SHOULD DROP TO ZERO. IF NOT, THE START SWITCH RELAY IS DEFECTIVE AND MUST BE REPLACED.

EMC 6115-293-12/56

75

Figure 58. Starter and solenoid relay, on-engine testing.

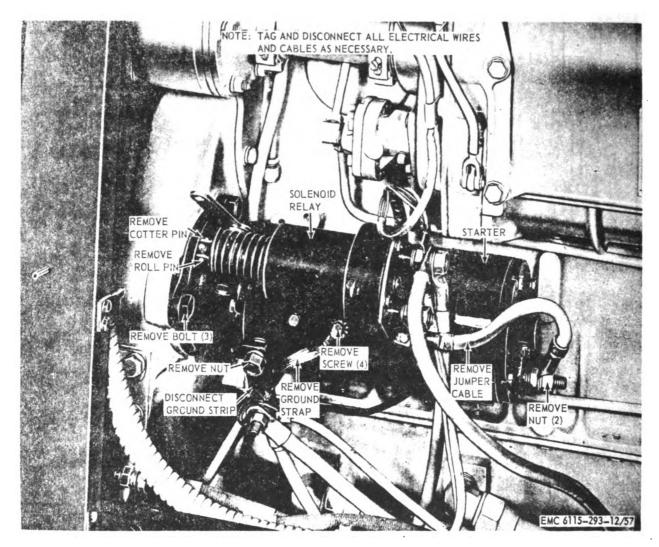


Figure 57. Starter and solenoid relay, removal and installation.

76 AGO SOOLA

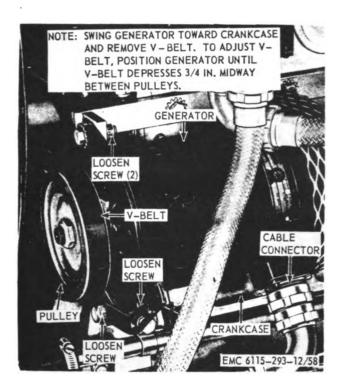


Figure 58. Generator V-belt, removal, installation, and adjustment.

105. Fuel Pressure Switch

- a. Remove and install the fuel pressure switch as shown by figure 33.
 - b. Clean and inspect.
- c. To test remove the fuel pressure switch as in a above. Connect a source of air pressure to the switch. Connect a multimeter across the switch terminals and slowly increase the air pressure. The switch, which is normally open, should close at 20 psi (pounds per square inch). Slowly decrease the air pressure. The switch should open at 20 psi. Should the switch fail to open or close, the switch is defective and must be replaced.

106. Engine Shutdown Solenoid

- a. Remove and install the engine shutdown solenoid as shown by figure 63.
 - b. Clean and inspect.

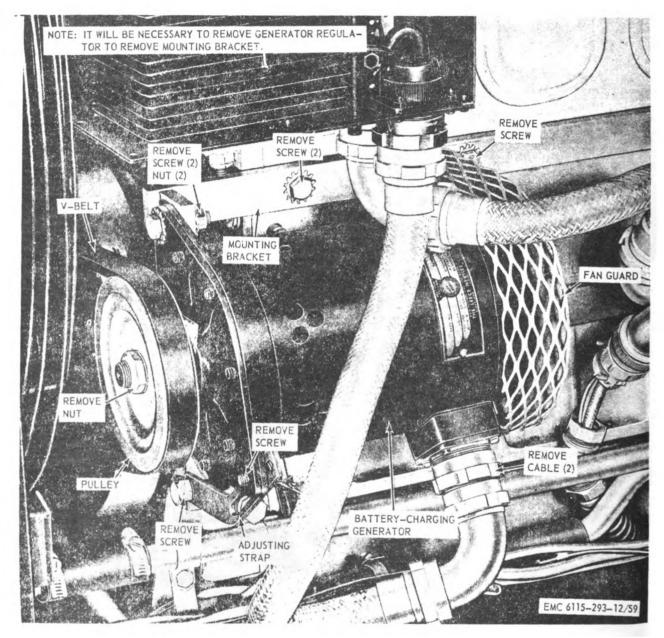


Figure 59. Generator, pulley, fan guard, adjusting strap, and bracket, removal, disassembly, reassembly, and installation.

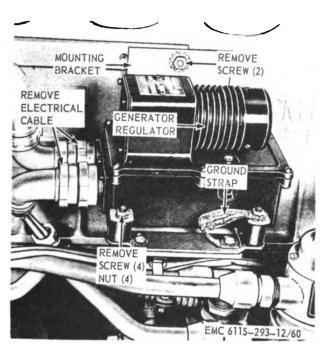


Figure 80. Generator regulator and bracket, removal and installation.

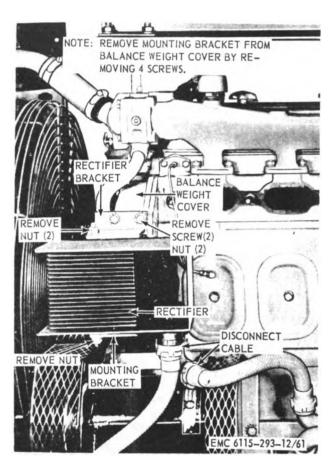
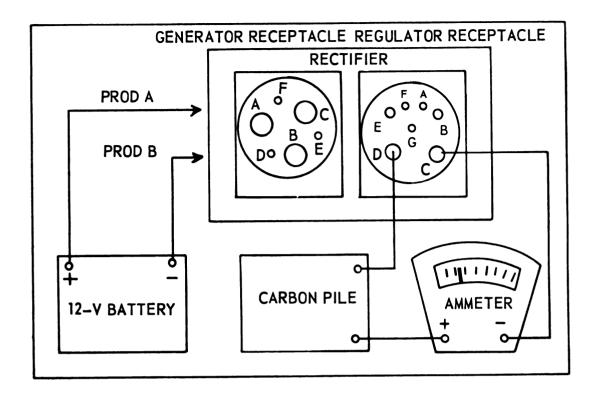


Figure 61. Rectifier and brackets, removal and installation.



- STEP 1. DETERMINE THAT THE GENERATOR IS FUNCTIONING PROPERLY (PAR. 101).
- STEP 2. REMOVE THE RECTIFIER FROM THE ENGINE (FIG. 61).
- STEP 3. SET UP A TEST CIRCUIT AS SHOWN ABOVE.
 - NOTE: USE AN AMMETER WITH A SCALE OF NOT LESS THAN 25 AMPS.
- STEP 4. TOUCH TEST PROD (A) TO GENERATOR CONNECTOR PIN A AND PROD(B) TO PIN B; ADJUST CARBON PILE UNTIL AMMETER INDICATES 25 AMPERES. REVERSE PRODS TOUCHING PROD(A) TO PIN B AND PROD(B) TO PIN A; AMMETER SHOULD AGAIN INDICATE 25 AMPERES.
- STEP 5. TEST PINS B-C AND PINS B-A AS IN 4 ABOVE.
- STEP 6: AMMETER READINGS SHOULD NOT VARY MORE THAN 5 AMPERES IN ANY OF THE ABOVE TESTS.

 IF THE VARIATION IN READINGS EXCEEDS 5 AMPERES, THE RECTIFIER IS FAULTY AND MUST BE REPLACED.

EMC 6115-293-12/62

Figure 62. Rectifier testing instructions.

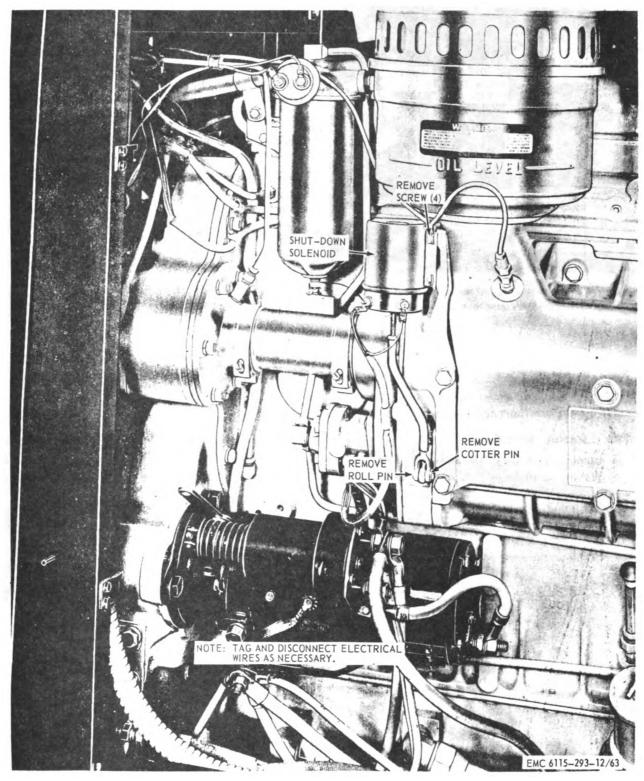


Figure 63. Engine shutdown solenoid, removal and installation.

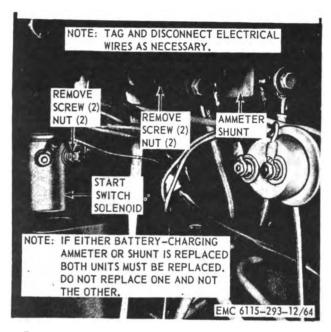


Figure 64. Engine start switch solenoid and battery-charging ammeter shunt, removal and installation.

c. To test the shutdown solenoid, operate the engine at idle speed. Place a jumper wire across the terminals of the high coolant temperature switch (fig. 50). The shutdown solenoid (fig. 63) should actuate to close the air box damper. If the solenoid fails to actuate, it is defective and must be replaced.

107. Engine Start Switch Solehoid and Battery-Charging Ammeter Shunt

- a. Remove and install the engine start switch solenoid and battery-charging ammeter shunt as shown by figure 64.
 - b. Clean and inspect.

Section XI. ENGINE

108. General

This section will cover the various components and accessories of the engine not previously covered.

109. Rocker Arm Cover

- a. Remove and install the air cleaner (par. 80).
- b. Remove and install the rocker arm cover as shown by figure 65.
 - c. Clean and inspect.

110. Rocker Arms

a. Remove the rocker arm cover (par. 109).

- b. Adjust the rocker arms as shown by figure 66.
- c. Clean and inspect.

111. Engine Breather Pipe

- a. Remove and install the engine breather pipe as shown by figure 65.
 - b. Clean and inspect.

112. Air Box Drain Hoses and Fittings

- a. Remove and install the air box drain hoses and fittings as shown by figure 67.
 - b. Clean and inspect.







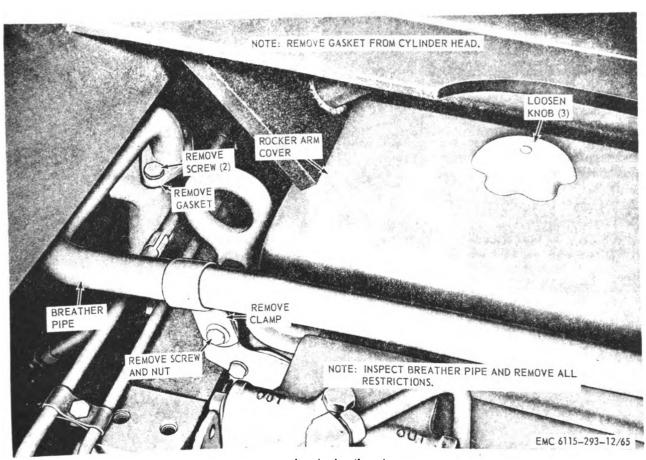
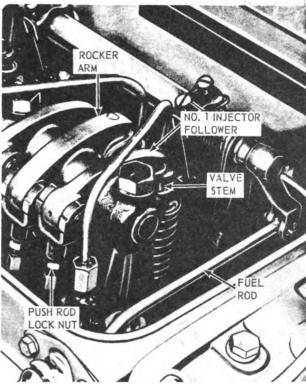


Figure 65. Rocker arm cover and engine breather pipe, removal and installation.





STEP 1. MOVE FUEL ROD TO NO FUEL POSITION.

STEP 2. TURN ENGINE CRANKSHAFT IN DIRECTION OF ENGINE ROTATION UNTIL INJECTOR FOLLOWER FOR NO. 1 CYLINDER IS FULLY DEPRESSED.

STEP 3. LOOSEN THE PUSH ROD LOCK NUT.

STEP 4. INSERT A FEELER GAGE BETWEEN VALVE STEM AND ROCKER ARM. THE CLEARANCE SHOULD BE 0.010 IN. ADJUST PUSH ROD UNTIL A SMOOTH PULL IS OBTAINED AS THE FEELER GAGE IS WITHDRAWN.

STEP 5. TIGHTEN PUSH ROD LOCK NUT AND RE-CHECK THE CLEARANCE.

STEP 6. ADJUST REMAINING VALVES AS IN 1 THROUGH 6 ABOVE.

EMC 6115-293-12/66

REMOVE ELBOW TUBE RAIN HOSE REMOVE AMP (2 EMC 6115-293-12/67 Figure 67. Air box drain hoses and fittings, removal and

NOTE: REMOVE OTHER AIR BOX DRAIN HOSE

IN A SIMILAR MANNER.

installation.

Figure 66. Rocker arm adjustment.

Section XII. MAIN GENERATOR

113. General

84

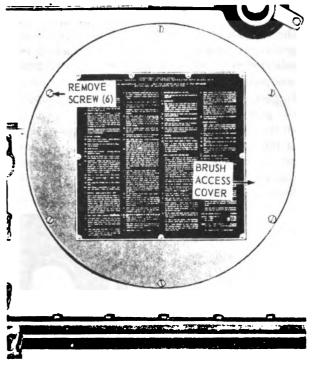
This unit is equipped with 100 kw, 3-phase, 50, 60 cycle, revolving-field, alternator-type generator. It is a self-ventilating unit utilizing surrounding air. The rotor of the main generator is attached through the fan and driving disk to the engine flywheel. The generator brushes are accessible through the brush access door at the rear of the unit.

114. Generator Brushes, Brush Holders, **Access Panel, and Screens**

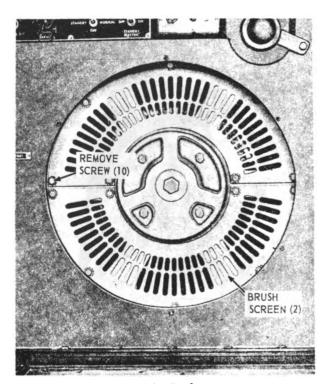
a. Removal and Installation. Remove and install

the brushes, access panel, and screens as shown by figure 68.

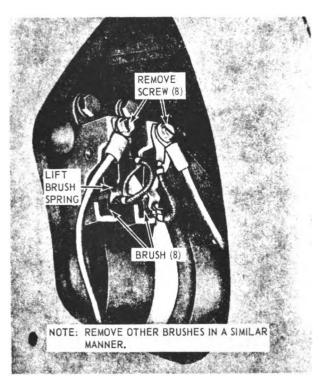
b. Seating New Brushes. Do not permit brushes to become worn shorter than three-quarters of an inch; damage to the sliprings may result. When brushes have been replaced, it is important that they be properly seated to the contour of the sliprings. To correctly seat a brush, insert a strip of No. OOO sandpaper, approximately 1 by 12 inches, between the brush and slipring, with the abrasive side toward the brush. Do not use emery cloth. With the brush in its holder, under pressure, withdraw



STEP 1. REMOVE BRUSH ACCESS COVER.



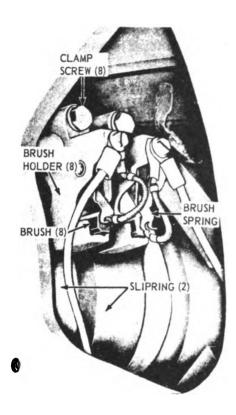
STEP 2. REMOVE BRUSH SCREENS.



STEP 3. REMOVE GENERATOR BRUSHES.

EMC 6115-293-12/68

Figure 68. Generator brushes, access panel, and screens, removal and installation.



STEP 1. LOOSEN CLAMP SCREW.

STEP 2. CENTER BRUSH HOLDER SO THAT BRUSH WILL RIDE IN CENTER OF ITS SLIPRING.

STEP 3. USE A SPRING SCALE AND MEASURE AMOUNT OF PULL NEEDED TO LIFT BRUSH SPRING FROM ITS BRUSH. ADJUST BRUSH HOLDER UNTIL 8 TO 10 OUNCES OF PULL ARE NEEDED.

STEP 4. TIGHTEN CLAMP SCREW AND REMEASURE.

STEP 5. ADJUST OTHER BRUSH HOLDERS AS IN 1 THROUGH 4 ABOVE.

EMC 6115-293-12/69

Figure 69. Generator brush holder adjustment.

the sandpaper in the direction of rotation of the generator, keeping it close to the contour of the collector ring. Continue to insert and withdraw the sandpaper until the brush appears to seat properly. Inspect the brush for proper seating by operating the generator set at no-load with the brush riding on the slipring. Stop the unit and observe the area of the brush polished by the slipring. At least 80 percent of the brush area should appear polished by contact with the slipring. Continue to sand the brush until the brush is seating properly.

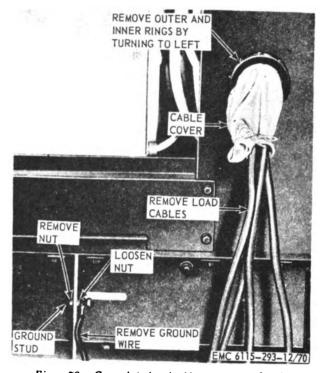


Figure 70. Ground stud and cable cover, removal and installation.

Note. If the sliprings appear to be rough or dirty, they may be polished with No. 000 sandpaper or a suitable polishing stone. Do not use emery cloth. If defects can not be removed in this manner, report the condition to field maintenance.

- c. Brush Holders. Adjust the generator brush holders as shown by figure 69.
 - d. Clean. Clean and inspect.

115. Ground Stud and Cable Cover

- a. Remove and install the ground stud and cable cover as shown by figure 70.
 - b. Clean and inspect.

116. Paralleling Receptacle Connector, 24-Volt Receptacle, and Remote Start Receptacle

- a. Remove and install the paralleling receptacle connector, 24-v receptacle, and remote start receptacle as shown by figure 71.
 - b. Clean and inspect.

117. 115-v Receptacle, Fuses, and Fuse Holders

- a. Remove and install the 115-v receptacle, fuse, and fuse holder as shown by figure 72.
 - b. Clean and inspect.

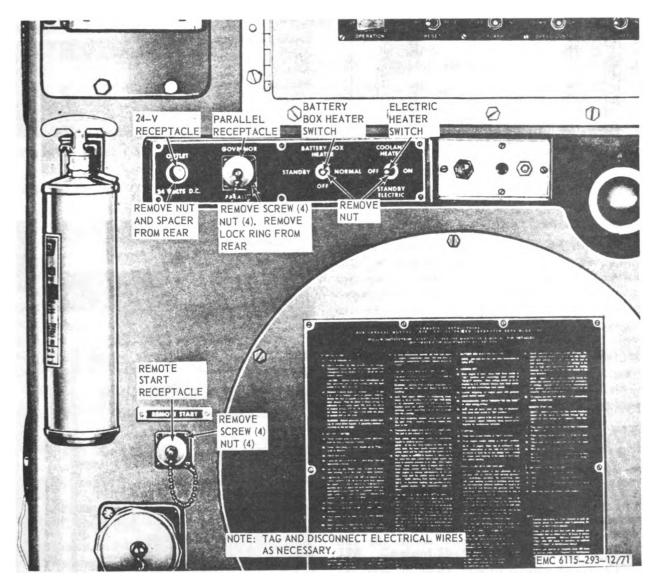
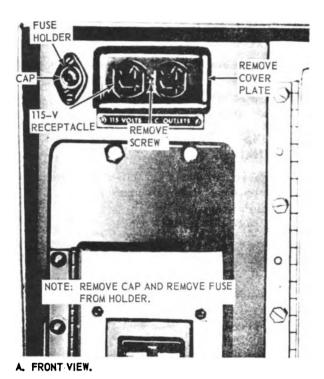


Figure 71. Paralleling receptacle connector, 24-v receptacle, remote start receptacle, and electric and battery box heater switches, removal and installation.



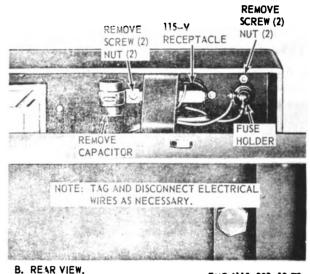


Figure 72. 115-v receptacle, fuse, and fuse holder, removal and installation.

Section XIII. SAFETY DEVICES

118. General

The generator set is equipped with safety devices which will, in the event of low oil pressure, high coolant temperature, or engine overspeed, function to shutdown the engine. A time delay relay is incorporated into the safety system to enable the engine to start by holding the safety shutdown components inoperative during the starting procedure. An emergency operation switch is also provided so that it is possible to override these safety devices, with the exception of the engine overspeed governor, and operate the generator set.

119. Low Oil Pressure Switch

- a. Remove and install the low oil pressure switch as shown by figure 73.
 - b. Clean and inspect.

88

c. To test remove the low oil pressure switch as in a above. Connect a source of air pressure to the switch. Connect a multimeter across the two terminals and slowly increase the air pressure. The switch should open at 10 psi. Slowly decrease the air pressure. The switch should close at 10 psi. If the switch fails to open or close, the switch is defective and must be replaced.

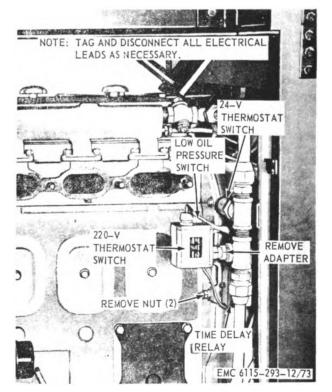


Figure 73. Low oil pressure switch, time delay relay, and winterization system thermostat switches, removal and installation.

AGO 5806A

EMC 6115-293-12/72

d. Should the engine fail to start, or if it stops due to a defective low oil pressure switch, remove the switch as in a above and tape the two ends of the electrical leads. Operate the engine without the switch.

Caution: Should the engine be in operation and a low oil pressure condition develop, serious damage to the engine can result. Do not operate the engine without the low oil pressure switch unless absolutely necessary.

120. High Coolant Temperature Switch

- a. Remove and install the high coolant temperature switch as shown by figure 50.
 - b. Clean and inspect.
- c. To test remove the coolant temperature switch as in a above. Suspend the switch in water and connect a multimeter across the two terminals. Place a thermometer in the container of water and heat the water to 212° F. The switch, which is normally closed, should break the circuit at 212° F.

Should the switch be open below 212° F. or should it fail to open when the temperature reaches 212° F., the switch is defective and must be replaced.

d. Should the engine fail to start or cease to operate due to a defective high coolant temperature switch, remove the switch as in a above. Tape the two electrical wires separately and operate the engine without the high coolant temperature switch.

Caution: In the event that the engine develops an overheat condition while the engine is operating without the high coolant temperature switch, serious damage to the engine may result.

121. Time Delay Relay

- a. Remove and install the time delay relay as shown by figure 74.
 - b. Clean and inspect.
- c. Test the time delay relay (fig. 73) with the engine at idle speed. Place a jumper wire across the terminals of the low oil pressure switch (fig. 73). In 3 to 5 seconds, the air box solenoid should actuate to close the air box damper.

Section XIV. WINTERIZATION SYSTEM

122. General

The generator set is equipped with both a gasoline and an electric winterization system. The gasoline winterization system consists of a gasoline heater, coolant pump, and the necessary controls. The electric winterization system consists of electric heaters, coolant pump, and the necessary controls. Electric heating elements are also provided for the battery compartment. Thermostat switches automatically control the two systems when used on standby. The electric winterization system will be used whenever a source of outside electrical power is available.

123. Heater Receptacle Connector, Fuses, and Fuse Holders

- a. Remove and install the receptacle connector, fuses, and fuse holders as shown by figure 53.
 - b. Clean and inspect.

124. Winterization System Controls and Control Box

- a. Remove and install the electric and battery box heater switches as shown by figure 71.
- b. Remove and install the gasoline heater controls and control box as shown by figure 74.
 - c. Clean and inspect.

125. Winterization System Thermostat Switches

- a. Remove and install the electric coolant heater and gasoline heater thermostat switches as shown by figure 73.
- b. Remove and install the battery box and engine compartment thermostat switches as shown by figure 75.
 - c. Clean and inspect.

126. Battery Compartment Electric Heating Elements

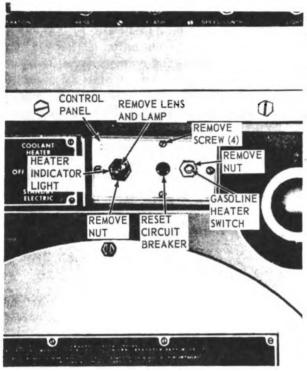
- a. Remove and install the batteries (par. 100).
- b. Remove and install the battery compartment electric heating elements as shown by figure 75.
 - c. Clean and inspect.

127. Gasoline Heater Safety Relief Valve

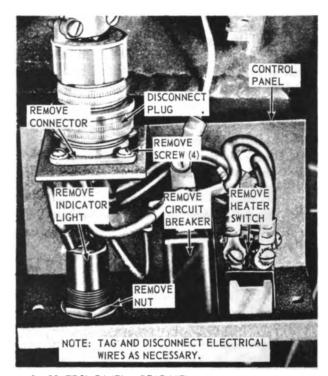
- a. Remove and install the gasoline heater safety relief valve as shown by figure 75.
 - b. Clean and inspect.

128. Coolant Shutoff Valve

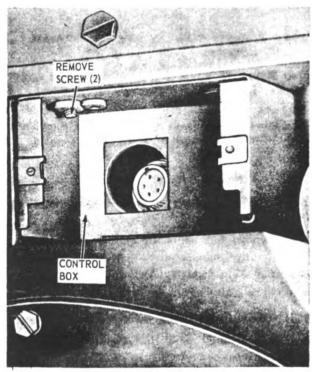
- a. Remove and install the coclant shutoff valve as shown by figure 41.
 - b. Clean and inspect.



A. CONTROL PANEL - FRONT VIEW.



B. CONTROL PANEL - REAR VIEW.



C. CONTROL BOX.

EMC 6115-293-12/74

Figure 74. Gasoline heater controls and control box, removal and installation.

AGO 5006A

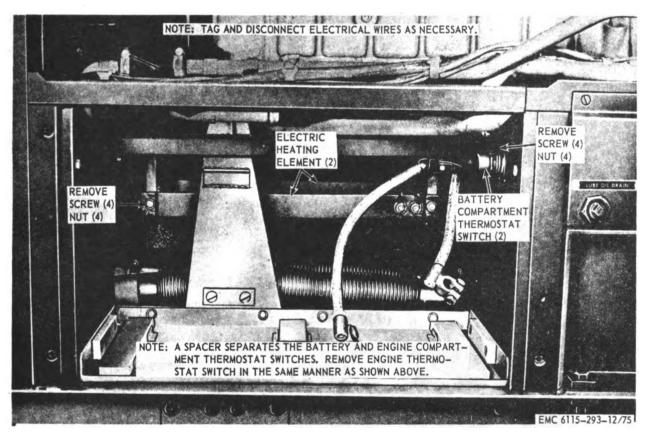
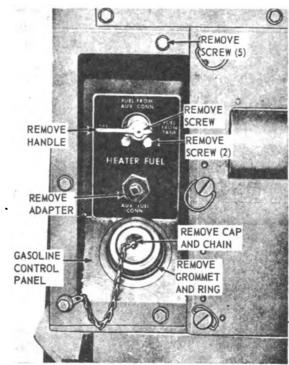
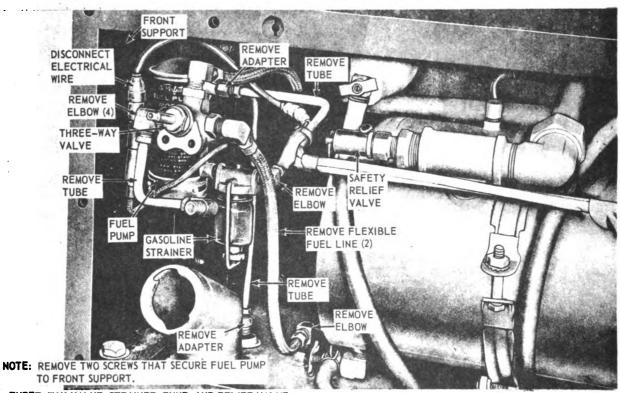


Figure 75. Battery compartment electric heating elements and battery box and engine compartment thermostat switches, removal and installation.

AGO 5806A 91



A. GASOLINE CONTROL PANEL.



B. THREE-WAY VALVE, STRAINER, PUMP, AND RELIEF VALVE.

EMC 6115-293-12/76

Figure 78. Heater gasoline control panel, three-way valve, strainer gasoline pump, and safety relief valve, removal and installation.

92 AGO SINGA



Figure 77. Gasoline pump and strainer servicing instructions.

129. Heater Gasoline Control Panel, Three-Way Valve, Strainer, and Gasoline Pump

- a. Remove and install the heater gasoline control panel, threeway valve, strainer, and gasoline pump as shown by figure 76.
- b. Service the gasoline pump and strainer as shown by figure 77.
 - c. Clean, inspect, and repair.

130. Heater Exhaust Weathercap

- a. Remove and install the heater exhaust weathercap in a manner similar to that of the engine exhaust weathercap (fig. 29).
 - b. Clean and inspect.

Section XV. ENGINE AND GENERATOR CONTROLS AND INSTRUMENTS

131. General

This section covers maintenance procedures on all controls and instruments applicable to the first and second echelons of maintenance.

132. Controls and Instruments

- a. Remove and install the controls and instruments as shown by figure 78.
 - b. Clean and inspect.

NOTE: TAG AND DISCONNECT ELECTRICAL

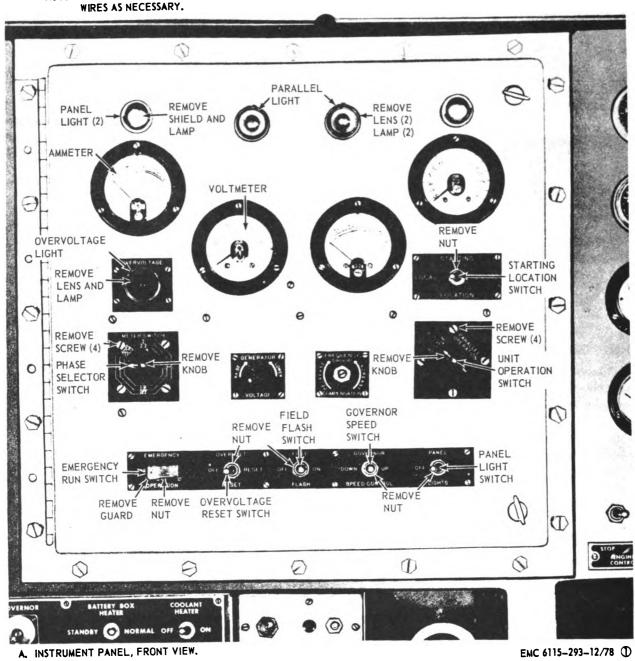


Figure 78. Engine and generator controls and instruments, removal and installation.

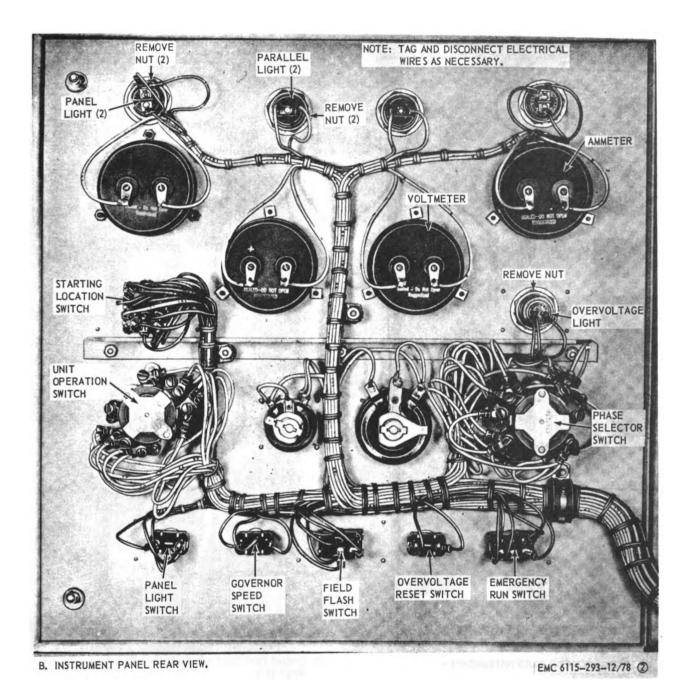
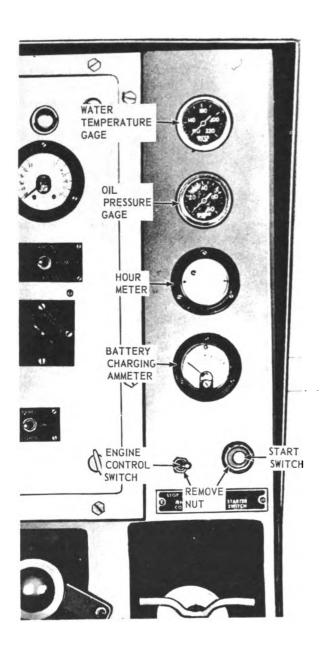
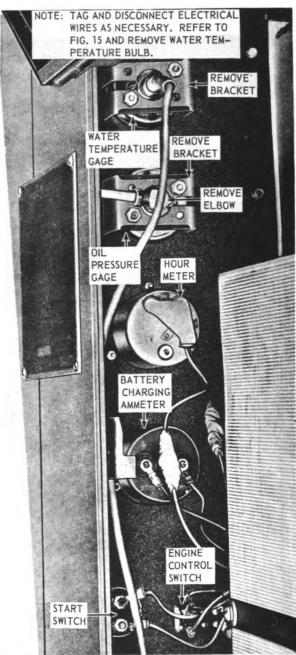


Figure 78—Continued.



C. ENGINE CONTROLS AND INSTRUMENTS – FRONT VIEW.



D. ENGINE CONTROLS AND INSTRUMENTS REAR VIEW.

EMC 6115-293-12/78 3

Figure 78—Continued.

96

CHAPTER 4

DEMOLITION OF GENERATOR SET TO PREVENT ENEMY USE

133. General

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

134. Demolition To Render Generator Set Inoperative

- a. Mechanical Means. Use sledge hammers, crowbars, picks, axes, or other heavy tools which may be available to destroy the following:
 - (1) Fuel injector pump and engine crankcase.
 - (2) All fuel and oil lines.
 - (3) Starter and solenoid relay.
 - (4) Battery-charging generator, generator regulator, and rectifier.
 - Note: The above steps are minimum requirements for this method.
 - (5) Supercharger and water pump.
 - (6) Governor assembly.
 - (7) Main generator assembly.
 - (8) All controls and instruments.
- b. Demolition by Misuse. Perform the following steps to render the generator set inoperative:
 - (1) Drain the radiator and engine crankcase. Pour sand, gravel, nuts, bolts, screws, or broken glass into the radiator, oil filler pipe, fuel tank, and other openings.
 - (2) Remove the belts and block the emergency operation switch in the run position. Operate the engine at operating speed until failure occurs.

135. Demolition by Explosives or Weapons'

- a. Explosives. Place as many of the following charges (fig. 79) as the situation permits and detonate them simultaneously with detonating cord and a suitable detonator.
- b. Weapons' Fire. Fire on the generator set with the heaviest practical weapons available.

136. Other Demolition Methods

- a. Scattering and Concealment. Remove all easily accessible parts such as the fuel injector pump, fuel and oil lines, starter and solenoid relay, battery-charging generator, generator regulator, rectifier, and load computer, and scatter them through dense foilage, bury them in dirt or sand, or throw them in a lake, stream, or other body of water.
- b. Burning. Pack rags, clothing, or canvas under and around the unit. Saturate this packing with gasoline, oil, or diesel fuel and ignite.
- c. Submersion. Totally submerge the unit in a body of water to provide water damage and concealment. A body of salt water will do greater damage to metal parts than submersion in a body of fresh water.

137. Training

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

Digitized by Google

97

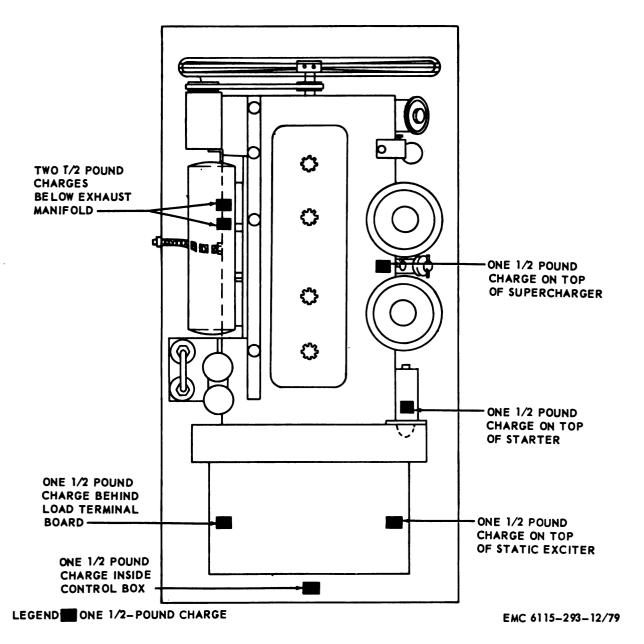


Figure 79. Placement of charges.

CHAPTER 5 SHIPMENT AND LIMITED STORAGE

Section I. SHIPMENT WITHIN ZONE OF INTERIOR

138. Preparation of Equipment For Shipment

- a. Clean the generator set with an approved cleaning solvent.
- b. Drain the fuel tank. Operate the engine until the fuel in the system is used up.
 - c. Drain the cooling system (par. 93).
- d. Drain the lubricating oil system and air cleaners (pars. 92 and 80).
- e. Disconnect the battery cables (par. 100). Tape the jumper cable to the inside of the battery compartment door.
- f. Tag all items requiring special attention before the unit can be operated.
- g. Refer to the basic issue items list (app. III) and make sure that all tools and publications therein listed are on, or with the generator set and in serviceable condition.

- h. Close and fasten all doors and panels.
- i. Refer to TM 9-200 for preservation, packaging, packing, and shipping instructions.

139. Loading Equipment For Shipment

- a. Hoist the generator set aboard the carrier with a sling or hook attached to the lifting U-bolt. For lifting instructions, refer to paragraph 7. When winching the generator set aboard a carrier, attach the sling or hook to the skid base.
- b. Secure the generator set to the bed of the carrier by wedging blocks tightly against the skid base and securing them to the carrier.
- c. Stretch cables from all four sides of the generator set and secure them to the sides of the carrier to prevent shifting during transportation.

Section II. LIMITED STORAGE

140. Preparation of Equipment for Storage

- a. Inspection. Make a complete inspection of the generator set using the quarterly preventive maintenance services (par. 36) as a guide.
- b. Cleaning and Painting. Clean the generator set and all components that are accessible without disassembly. Remove any accumulated water, oil or grease from inside the base of the unit. Remove all rust and corrosion. Paint all parts on which the paint film has been damaged or removed. Refer to TM 9-2851.
- c. Lubrication. Lubricate the generator set in accordance with the current lubrication order.
 - d. Protection.
 - (1) Cooling system. Drain and flush the cooling system (par. 93). Add antifreeze in accordance with table II. Make sure that the antifreeze will protect the unit to 15° below the lowest expected temperature.
 - (2) Batteries. In extremely cold climates, disconnect and remove the batteries. Clean the battery terminals and cable connectors and apply a coating of grease or vaseline. Pack or store the batteries

separately in a warm, dry place. If the batteries must remain in the unit, keep them filled and fully charged at all times.

141. Inspection and Maintenance of Epuipment in Storage

- a. Inspection. When equipment has been placed in storage, all scheduled preventive maintenance services, including inspection, will be suspended and preventive maintenance inspection will be performed as specified herein. Refer to AR 743-505.
- b. Worksheet and Preventive Maintenance. DA Form 464 will be executed on each major item of equipment when equipment is initially placed in limited storage and every 30 days thereafter. Required maintenance will be performed promptly to insure that the equipment is mechanically sound and ready for immediate use
- c. Operation. Equipment in limited storage must be operated long enough to bring it up to operating temperature and for complete lubrication of all bearings, gears, and so on, at least every 30 days. Equipment must be serviced and in satisfactory operating condition before it is operated.

AGO 5804A 99

APPENDIX I REFERENCES

1. Dictionaries of	Terms and Abbreviations	DA Pam 310-1	Index of Administrative Pub-
AR 320-5	Dictionaries of United States	DA Pam 310-2	lications. Index of Blank Forms.
	Army Terms.	DA Pam 310-3	Index of Training Publica-
AR 320–50	Authorized Abbreviations and Brevity Codes.		tions.
2. Fire Protection	•	DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Sup-
TM 5–687	Repairs and Utilities: Fire Protection Equipment and Appliances; Inspections,		ply Bulletins, Lubrication Orders, and Modification Work Orders.
	Operations, and Preventive Maintenance.	DA Pam 310-5	Index of Graphic Training Aids and Devices.
TM 9-1799	Ordnance Maintenance: Fire Extinguishers.	DA Pam 310-25	Index of Supply Manuals— Corps of Engineers.
	Dating united.	7. Radio Interfere	nce Suppression
3. Lubrication		TM 11-483	Radio Interference Suppres-
LO 5-6115-293-12	Generator Set, Diesel Engine:	1 11 100	sion.
20 0 0110 200 1-	Precise Power; 100 Kw, Ac,	8. Shipment and	Limited Storage
	120/208V, 240/416V, 3 Phase, 60 Cycle, At 1800	AR 743–505	Limited Storage of Engineer Mechanical Equipment.
	Rpm, 83.3 Kw, 120/208V, 240/416V, 3 Phase 50 Cycle At 1,500 Rpm; Skid	TM 9-200	General Packaging Instruc- tions for Ordnance General Supplies.
	Mounted (Detroit Diesel Divn. General Motors	9. Supply Publice	ations
	Corp. Model 6910A) W/ General Motors Engine Model 6910A, Series 6-71.	SM 10-1-C4-1	Petroleum, Petroleum-Base Products, and Related Ma- terial.
4. Painting		TM 5-6115-293-20P	_
TM 9-2851	Painting Instructions for Field		Repair Parts and Special
1W1 5-2001	Use.		Tool Lists Generator Set, Diesel Engine:
5. Preventive Mo	nintenance		Precise Power; 100 Kw, Ac,
	Unsatisfactory Equipment		120/208V, 240/416V, 3
AR 700–38	Report.		Phase, 60 Cycle, At 1,800
AR 750-5	Maintenance Responsibilities and Shop Operations.		Rpm, 83.3 Kw, 120/208V, 240/416V, 3 Phase 50 Cycle
TB ENG 347	Winterization Techniques for Engineer Equipment.		At 1,500 Rpm; Skid Mounted (Detroit Diese Divn. General Motors Corp.
TM 5-505	Maintenance of Engineer Equipment.		Model 6910A) FSN 6115-798-3444.
TM 9-6140-200-15	Storage Batteries, Lead-Acid		
	Type.	10. Training Aid	
6. Publication In	dexes	FM 5-25	Explosives and Demolition.
		FM 21-5 FM 21-6	Military Training. Techniques of Military In-
DA Pam 108-1	Index of Army Motion Pictures, Film Strips, Slides,		struction.
	and Phono-recordings.	FM 21-30	Military Symbols.

Digitized by Google

APPENDIX II

MAINTENANCE ALLOCATION

1. General

This appendix contains a maintenance allocation chart listing all maintenance and repair operations authorized for various echelons.

2. Maintenance

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

- a. Service. To clean, to preserve, and to replenish fuel and lubricants.
- b. Adjust. To regulate periodically to prevent malfunction.
- c. Inspect. To verify serviceability and to detect incipient mechanical failure by scrutiny.
- b. Test. To verify serviceability and to detect incipient mechanical failure by use of special equipment such as gages, meters, and so on.
- e. Replace. To substitute serviceable assemblies, sub assemblies, and parts for unserviceable components.
- f. Repair. To restore to a serviceable condition by replacing unserviceable parts or by any other action required utilizing tools, equipment and skills available; to include welding, grinding, riveting, straightening, adjusting, and so on.
- g. Overhaul. To restore an item to a completely serviceable condition by inspecting, disassembling its assemblies and subassemblies as necessary, replacing parts, and necessary boring, grinding or machining operations, followed by reassembly and final inspection.

3. Explanation of Columns

- a. Functional Group. The functional group is a numerical group set up on a functional basis. The applicable functional group indexes are taken from the Corps of Engineers functional grouping indexes, and appear on the maintenance allocation chart in their correct numerical sequence. These indexes are normally set up according to their proximity to each other and their function.
- b. Components and Related Operation. This column contains the functional index grouping heading, subgroup headings, and a brief description of the part starting with the noun name. It also designates the operation to the performed such as service, adjust, inspect, test, replace, repair, and overhaul.

c. Echelon of Maintenance.

- (1) First echelon. First echelon maintenance is that maintenance performed by the user or operator of the equipment, such as servicing, cleaning, lubricating, and limited adjustments. It also includes removal and replacement of items to accomplish servicing and lubrication.
- (2) Second echelon. Second echelon maintenance is that maintenance performed by trained personnel provided for that purpose in the using organization, such as replacement of all items in column 2, limited parts fabrication from bulk material, adjustments, and repair of assemblies, components, and end items that can be accomplished without extensive disassembly.
- (3) Third echelon. Third echelon maintenance is that maintenance performed by specially trained units in direct support of the using organization, such as replacement of all times in columns 2 and 3, repair assemblies, components, and end items, and fabricate parts from bulk material.
- (4) Fourth echelon. Fourth echelon maintenance is that maintenance performed by units organized as semifixed or permanent shops to serve lower echelon maintenance within a geographical area, such as replacement of items in columns 2, 3, and 4, repair end items, overhaul assemblies, components, and fabricate general use common hardware and parts.
- (5) Fifth echelon. Fifth echelon maintenance is that maintenance authorized to overhaul assemblies, components, end items, and replacement of all parts in columns 2, 3, 4, and 5.
- d. Symbol X. The symbol X placed in the appropriate column indicates the lowest echelon responsible for performing that particular maintenance operation, but does not necessarily indicate repair parts will be stocked at that level.
- e. Remarks. The remarks column is used to explain why maintenance that would normally be done at a lower echelon, is moved to a higher echelon because of some peculiarity in the construction of the end item.

Digitized by Google

101

Maintenance Allocation Chart

Functional	Components and related operation	Ec	helons	of ma	intena	nce	Remarks
group		1	2	3	4	5	
1	ENGINE						
0100	Engine Assembly.					!	
	Engine, diesel:						
	Service	x					
	Inspect	ł		İ			
	Test	!		\mathbf{x}			Compression
	Replace				х		
	Repair				x		
	Overhaul				X		
0101	Crankcase, Block, Cylinder Head.						
0101	Tube, air box drain:		1				
	Replace		x				
	Head assembly:		i				
	Replace			\mathbf{x}			
	Repair						
	Sleeve, cylinder:						
	Replace				x		
0102	Crankshaft.					1	
0102	Bearings:	1				ł	
	Replace	ļ			x	į	
	Crankshaft assembly:				**	-	
	Replace				x	Į.	
	Repair		1		1	\mathbf{x}	Metalize, aline, resise, e
	Seal, crankshaft:					1	Micoanizo, anne, robise, e
	Replace	İ			x	ļ	
0103	Flywheel Assembly.				1		
0103	Repair	1			x	1	Ring Gear
0104	Pistons, Connecting Rods.				^		Temg Gear
0104	Piston assembly:			1	l	1	
	Replace			1	x		
	Repair				x		
	Rod assembly:				^		
	Replace	İ		į	x		
	Repair		1	I .	X		
0105.1	Valves.				A	}	
0100.1	Guides and springs:		1	1			
	Replace Replace			x			
	Insert valve:			^			
	Replace	1	l	x			
	Repair			X			Reface
				^			Terace
	Valve, poppet: Replace		ł	x			
	Repair			$\mathbf{\hat{x}}$	1		Reface
0105.2				^			Relace
0105.2	Rocker Arms, Tappets.		1	1	1		
	Rocker arm assembly:		\mathbf{x}		ł		
	Adjust			·	į		
	Replace	1	1	X	ŀ		
	Repair			A			
	Rod assembly, push:						
0105 0	Replace			X	1	1	
0105.3	Camshafts.						
	Bearing, sleeve:		1		-		
	Replace				X		
	Camshaft:		i	1	!		
	Replace				X		
	Shaft, balance:						

102 AGO 5806A

Functional	Components and related operation	Ec	helons	of ma	intena	nce	Remark
group		1	2	3	4	5	
0105.5	Timing Gears.						
0.00.0	Gears, timing:						
	Replace				X		
0106.1	Oil Pump.						
	Pump, oil:						
	Replace				X		
	Repair				X		
	Gear, drive:						
	Replace			¦	X		
0106.2	Oil Filters.						
	Filter assembly, oil:	v					T21
0104 2	ServiceOil Cooler.	X					Element
0106.3	Core assembly, oil:						
	Service		\mathbf{x}	l			
	Valve, bypass:		A				
	Replace		x				•
0106.5	Crankcase Ventilation.						
3.00.0	Separator, oil:						
,	Service			\mathbf{x}			
	Replace			X			
0106.6	Oil Pan, Lines, Level Gage.	1		1			
	Cap, filler:						
	Replace		X				Chained
	Pan, oil:						
	Service	X					
	Tube assembly, oil drain:						
	Replace		X				
	Lines:						n
0100	Replace		X				Fabricate
0108	Manifolds.						
	Manifold w/muffler: Replace		x				
	1		1				
	Gasket, manifold: Replace		$ \mathbf{x} $				
0109.1	Accessory drive:		1				
0109.1	Coupling, blower drive	,			į		
	Repair			X			
)3	FUEL SYSTEM						
0301	Fuel injector.				l		
	Injector assembly, fuel:			ĺ		,	
	Replace			X			
	Repair			X			
0302.1	Fuel Transfer Pump.					ĺ	
	Pump assembly, fuel transfer:		1	ļ			
	Replace		.}	X			
	Repair			X		1	
0302.2	Diesel Injection Pump.						
	Pump assembly, fuel:					ļ.	
	Replace	- 1	1	4,			T
	Repair			X			Install kit
0304	Air Cleaner.		!				
	Air cleaner:	_ x		1			
	Service	^					

unctional	Components and related operation	Ec	helons	of ma	intena	nce	Remarks
group		1	2	3	4	5	
0305	Supercharger, Blower, or Turbocharger	•		•			
	Blower assembly:	1					
	Replace	.]		X			
	Repair	.			X]	
	()verhaul		!		X	į.	
	Coupling, half, shaft:	1				1	
	Replace			X			
0306	Tanks, Lines, Fittings.		İ				
	Cap, fuel:				ì		
	Replace	-}	X				Chained
	Hose, flexible:						
	Replace	- i	X			!	Fabricate
	Line assemblies:	1	!				
	Replace		X		¦		Fabricate
	Valves, 3 way:				i		
	Replace	-	X		ł		
	Tank assembly, fuel:		1		1		
	Service	1					
	Repair	-		X	1		
	Screen, fuel tank neck:						- Fabricate
	Service		1	İ	ĺ		
	Replace	-	X		1	ŀ	Chained Fabricate Fabricate Element Clean Element
	Line assemblies, injector:		İ				
	Replace	-	X				Chained Fabricate Fabricate Clean Element Drain 1/4 pint daily
0308	Engine Speed Governor.			ŀ	İ	l	
1	Governor assembly:		Ì		İ		
	Adjust	1	1	l			
	Replace	1	1	X			
	Repair		1		X	1	
	Overhaul	-			X	İ	
	Valve, solenoid:						
	Replace	-	X				
	Filter assembly, governor:			١.			771
0000	Service	- X					Element
0308.2	Governor Drive.			i			
	Drive assembly:						
	Replace			X			
0000	Repair	-		X			
0309	Fuel Filters.						
	Filter assembly, primary:						Class
	Service	-	X				Clean
	Filter assembly, secondary: Service	\mathbf{x}					Florent
							Liement
	Cock, drain:	\mathbf{x}					Drain 1/ nint dayler
	Service Lines:	1					Practing pint carily
	Replace	.	\mathbf{x}	1			
0311	Priming System.		^				
0011	Tank, bulk fluid:	1					
	Service	$\int_{\mathbf{X}}$	İ				
	Replace		x				
	Tank, air:		1				
	Replace		x				
1	Reservoir, metering:		1				
	Service	\mathbf{x}	L				Filter
	Adjust	i					
	Replace		X			l	1

Functional	Components and related operation	Ecl	elons	of mai	intena	nce	Re
group		1	2	3	4	5	
	Nozzle, spray:						
	Replace		X				
	Hose and lines:						
	Replace		\mathbf{X}				Fabricate
	Pump, priming:						
	Replace		X				
	Repair		X				
0312	Accelerator, Throttle or Choke Controls.						
	Tube assembly injector control:						1
	Adjust		X			i	!
4	EXHAUST SYSTEM						
0401	Muffler and Pipes.						
	Pipe and rain cap:						
	Replace		X				
)5	COOLING SYSTEM						
0501	Radiator.						
	Radiator assembly:					1	
	Service	X					
	Repair			X			
	Cap, radiator:						
	Replace	X			l		
	Valve, Overflow:						
	Replace		X			1	
	Shutter Assembly:					,	}
	Repair			X			l
0503	Lines and Fittings, Hoses, Pipes, Clamps.						1
	Hoses and pipes:						
	Replace		X	i			1
	Valve, check:						
	Replace		X				
	Cock, drain:						l
	Replace		X				1
	Clamps:			ŀ			
	Replace		X	ŀ			
0504	Water Pump.						
	Pump assembly, water:						
	Replace			X			
	Repair			X			Install kit
0505	Fan Assembly.						
	Belts, V, engine cooling:						
	Adjust	1	X				
	Replace		X	1			
	Pulley and hub assembly:					1	
	Repair			X			
0506	Water Manifolds, Headers, Thermostats and Housing,		1			1	1
	Gaskets.						1
	Thermostat, flow control:						
	Test	1	I .				
	Replace		X				
	Thermostat, shutter:				1		
	Test			X	1		
00	Replace			X	1		1
06	ELECTRICAL SYSTEM (ENGINE AND VEHICULAR)						1
0601	Generator.		1				
	Generator assembly:			1	1	ł	
	Test	L	l				
	Replace	ı	1				Install kit
	Repair	1	1	l X	1	i	I I MOTALI IVIÈ

Functional	Components and related operation	Ec	helons	of ma	intena	nce	Remarks
Ktonb	· · · · · · · · · · · · · · · · · · ·	1	2	3	4	5	
İ	Dale Ma						
	Belt, V:		- V				
ł	Adjust		X				
	Replace		X				
	Cables, electrical:			į.			
	Replace		X				
0602	Generator Regulator.	ĺ		l	!		
	Regulator, voltage:		i				
	Adjust				X		Carbon pile
	Replace	1	X				
	Repair				\mathbf{X}		
ł	Rectifier:	Ì					
ľ	Replace		X		ł		
0603	Starter.				1		
	Starter, engine, electrical:				l		
	Service		X	{	1		
i	Test		X		i		
	Replace		X			1	
	Repair	1		X			Install kit
	Relay, solenoid:						
	Replace		x			1	
	Strap, ground:				1	1	
	Replace		\mathbf{x}		ŀ		
	Lead, electrical:		1		ł	ł	
	Replace		x			ŀ	Fabricate
0606	Engine Controls.		1				T autica vo
0000	Governor, overspeed:					ŀ	
	Replace		ļ	x		}	
	•	1	1	$\hat{\mathbf{x}}$			
	Repair.			^			
	Switches, safety:						
	Replace		X		ļ	Ì	
	Solenoid, shutdown:			·			
	Replace		X	1	ŀ		
	Relay, time delay:						
	Replace		X			ł	
0607	Instrument or Engine Control Panel.				ļ	1	
	Meters:			1			
	Replace		X				
	Switches:			1	l		
1	Replace		X		ŀ		
0608	Miscellaneous Items.				l		
	Receptacle, battery charging:	l	1		ì		
	Replace		· X				
	Cubles:						
l	Replace		X				Fabricate
	Receptacle, 24v:						
	Replace		X		!		
j	Harness, wiring:	1			1		
	Replace			X	1		
0612	Batteries.				1	1	
	Buttery, storage:			1	1	1	
	Service	X	ł			1	
	Test		\mathbf{x}			}	
ı	Replace	l	**				
	Cable assembly:	^				1	
]	Replace		x		1	i	Fabricate
ļ	· · · · · · · · · · · · · · · · · · ·		^				r auricate
ļ	Hose assembly, drain:		₹.				
ı	Replace		X	i	ı	I	1

Functional	Components and related operation	Ec	helona	of m	ainten	ance	Remarks
group	Composition and related operation	1	2	3	4	5	Telliai as
0615	Radio Suppression.						Control 1
0010	Strap, bonding:						and the second
	Replace		X				A section of
5	FRAME				-		Freezist.
1501	Frame Assembly.					110	No. of the last of
	Stud, ground:						not pull
	Replace		X				of Street,
7	BODY; CAB; HOOD; HULL		1				and the same of th
1708	Stowage Racks, Boxes, Straps.						
	Cover assembly, tool box:						
	Replace		X			1	
2	MISCELLANEOUS BODY, CHASSIS OR HULL, AND						
2201	ACCESSORY ITEMS. Canvas Items.				1		
2201	Cover, cable:					-	
	Replace		x				
2207	Winterization Equipment.		1				
2201	Heater assembly:						
	Test.				X		Bench test
	Replace			X			
	Repair			X			
	Overhaul				X		
	Switches:						
	Replace		X				
	Receptacle, outside source:						
	Replace		X				
	Fuse:						
	Replace	X					
	Holder, fuse:		v				
	Replace		X				
	Valves, heater shutoff: Replace		x				
	Tank, fuel:		^				
	Service	x					
	Pump, fuel:	1					
	Service		x				
	Replace	11 - 1					
	Strainer, fuel:						
	Service		X				
	Replace		X				
	Valves:						
	Replace		X				
	Hose:						
	Replace		X				(i)
	Lines, pump to oil pan:						
	Replace			X			
	Tube, heater:			x			Debalanta
	Replace			А			Fabricate
	Element, battery heater:		x				
	ReplaceSwitch, battery box:		A.				
	Replace		x				
	Pump, circulating:						
	Replace			X			
	Repair			X			
	Element:						
	Replace			X			

AGO 5804A 107

Functional group	Thermostats, water:	1	2	3	4	5		arks
	Replace		x					
	Cook steem:		^					
	Cock, steam: Replace.		x					
	Transformer:		^					
	Replace			x				
	Relay, heater 220 v:			^				
	Replace			x				
	Harness, wiring:			1				
	Replace			x				
	Burner assembly:			21			, ,	
	Replace				x			
	Igniter:				**			
	Replace			x				
	Blower assembly:			^				
	Replace			x				
	Lines, fuel:			22				
	Replace		x				Fabricate	
2210	Data Plates and Instruction Holders.		4				T abileate	
2210	Plates, instruction:							
	Replace		x				14	
1	Plates, identification (C.O.E.):		1	4				
	Replace	2		x			1	
1	ELECTRIC GENERATORS							
4100	Generator Assembly						100	
4100	Generator assembly:							
	Service	x						
- 1	Inspect							
	Test				X			
1	Replace							
	Repair							
1	Overhaul.				X			
4100.1	Rotor Assemblies:							
1100.1	Rotor, generator:						14 3	
	Test				X	1		
	Replace	1	1	1000	1		100	7 T
	Repair							
	Overhaul					X		
4100.2	Stator Assemblies.		1 = 3 X			5		
1100.2	Stator, generator:							
	Test				X			
	Replace				X		100	
	Repair				X		5	
	Overhaul					X		
4100.3	Brush Holders.					1		
1100.0	Brush, electrical:				1		St 11-121	
	Replace		X				of time?	
	Holder, brush:						of family	
	Adjust		X	- to to	1.00			
	Replace			**	1	0.00	William Charles	
4100.4	Ventilating System.	1	1	1			Hagas	
1100.1	Cover, ventilation:				1	100	Europa Thomas	
	Replace	1		x				
	Cover, brush:				1	di juli	adadi.	
	Replace		X		1 -		100	
	replace				1		Appliful.	

108 AGO BONA



Functional	Components and related operation	Ec	helons	of mai	intena	nce	Remarks
group		1	2	3	4	*5	
4100.5	Frame Supports and Housings.						
4100.5	Bearing:		i				
	Replace				X		
4100.6	Drive Components.				44		
4100.6	Fan and driving fan:						
	Replace				x		
4100 7	Control Panels, Housings, Cubicles.				1		
4100.7							
	Lamp: Replace	v					
	Meter, frequency and kilowatt:	1					
	Replace			X			
	Meter, current and volt:			A			
	Replace		v				
			1				
	Harness, wiring:			x			
4100 0	Replace			Λ			
4100.8	Master or Auxiliary Control Assembly.						
	Computer assembly, governor:			x			
	Test						
1	Adjust						
	Replace				v		
	Repair				X		
4100.9	Circuit Breaker Assembly.						
	Circuit breaker assembly:		-	w			
	Replace			X			
4100.10	Switches.						
	Switches:		37				
	Replace		X			1	
4100.12	Resistors.						
	Resistors:						
	Replace			X			
	Rheostats:						
	Replace			X			10.00
4100.14	Fuse and Fuse Holders.	-					-0.0
	Fuse:				10		0.00
	Replace	X				100	
4100.16	Transformers; Rectifiers.						
	Transformers:						
	Replace			X			
4100.17	Terminal Blocks; Junction Boxes.						
	Receptacle, 125 v:						
	Replace		X				
	Receptacle, power:						
	Replace			X			
4100.18	Housing or Hull Panels and Attaching Parts.						
	Doors and hood:						
	Replace		X				
1.0	Supports and panels:						
	Replace			. X			
	Support, control cabinet:		1	1			
	Replace			X			
	Panela side		Jan 1				
	Replace		X.	1		1	
	Doors, access:						
	Replace	X			100	1	
	Cover, access brush:						
	Replace		X	1	1	1	

AGO 5866A 109



Functional	Components and related operation	Ec	helons	of ma	intens	nce	Remarks
group		1	2	3	4	5	
4100.19	Radio Interference Suppression.						
	Capacitors:						
	Replace		X				
	Leads, electrical:						
	Replace		X				Fabricate
4107	Static Exciter.						
	Exciter, static:						
	Test			X			
	Replace				X		
	Repair				X		
	Overhaul				X		
4107.1	Exciter Components; Rectifiers, Diodes, Reactors, In-						-
	auctors, Transformers, Etc.						
	Resistors, rectifiers, transformers:						
	Replace				X		
	Regulator assembly:						
	Test			X		1 1	
	Replace				X		
	Repair				X		
	Overhaul				X		
7	GAGES (NONELECTRICAL) WEIGHING AND MEA-						
	SURING DEVICES.						
4703.1	Oil Pressure Gages.						
	Gage, oil pressure:						
	Replace		X				
	Line, oil:						
	Replace		X				Fabricate
4705	Fuel Gages (Quantity).						
	Gage, fuel:						
	Replace		X				
4708	Temperature Gages.						
	Thermometer, temperature:						
	Replace		X				
6	FIREFIGHTING EQUIPMENT						
7603	Fire Extinguishers.						
	Extinguisher, fire:						
	Replace	X					

110 AGO SHMA



APPENDIX III

BASIC ISSUE ITEMS

Section I. INTRODUCTION

1. General

Section II lists the accessories, tools, and publications required in 1st echelon maintenance and operation, initially issued with, or authorized for the generator set.

2. Explanation of Columns

- a. Source Codes. The information provided in each column is as follows:
 - Technical services. The basic number of the technical service assigned supply responsibility for the item is shown. Those spaces with no number shown are Corps of Engineers supply responsibility. Other Technical service basic numbers are—
 - 9-Ordnance Corps
 - 10-Quartermaster Corps
 - 11-Signal Corps
 - 12—Adjutant General's Corps
 - (2) Source. The selection status and method of supply are indicated by the following code symbols:
 - (a) P—applied to repair parts which are high mortality parts; procured by technical services, stocked in and supplied from the technical service depot system; and authorized for use at indicated maintenance echelons.
 - (b) P1—applied to repair parts which are low mortality parts; procured by technical services, stocked only in and supplied from technical service key depots, and authorized for installation at indicated maintenance echelons.
 - (c) M—applied to repair parts which are not procured or stocked but are to be manufactured by using units at indicated echelons.
 - (d) X2—applied to repair parts which are not stocked. The indicated maintenance echelon requiring such repair parts will attempt to obtain from salvage; if not obtainable from salvage, such repair parts will be requisitioned with supporting justification through normal supply channels.

- (3) Maintenance. The lowest maintenance echelon authorized to use, stock, install or manufacture the part is indicated by the following code symbol:
 - O-Organizational Maintenance (1st and 2d Echelons)
- b. Federal Stock Numbers. This column lists the 11-digit Federal stock number which is used for requisitioning purposes.
 - c. Description.
 - The item name and a brief description of the part are shown.
 - (2) A five-digit Federal supply code for manufacturers and/or other technical services is shown in parentheses followed by the manufacturer's part number. This number will be used for requisitioning purposes when no Federal stock number is indicated. Example: (08645) 86453.
 - (3) The letters GE, shown in parentheses immediately following the description, indicate General Engineer supply responsibility for the part.
- d. Unit of Issue. Where no abbreviation is shown in this column, the unit of issue is "each."
- e. Expendability. Those items classified as non-expendable are indicated by letters NX. Items not indicated by NX are expendable.
- f. Quantity Authorized. This column lists the quantities of repair parts, accessories, tools, or publications authorized for issue to the equipment operator or crew as required.
- g. Quantity Issued With Equipment. This column lists the quantities of repair parts, accessories, tools, or publications that are initially issued with each item of equipment. Those indicated by an asterisk are to be requisitioned through normal supply channels as required.
 - h. Illustrations.
 - (1) Figure number. Provides the identifying number of the illustration.
 - (2) Item number. Provides the referenced number for the part shown in the illustration.

3. Federal Supply Code For Manufacturers

72582—Detroit Diesel Engine Division of General Motors Corp.

4. Cemments and Suggestiens

Suggestions and recommendations for changes to the basic issue items list will be submitted on DA Form 2028 to the Commanding General, U.S. Army Engineer Maintenance Center, Corps of Engineers, ATTN: EMCDM, P.O. Box 119, Columbus 16, Ohio. Direct communication is authorized.

Section II. BASIC ISSUE ITEMS LIST

nical Source te-		00000				Unit	Ex-	Quan-	Quan- tity	Illust	ration
nical	Source	Main- te- nance	Re- cover- ability	Federal stock No.	Description	of issue	pend- ability	tity au- thorised	with equip- ment	Fig. No.	Iten No.
					GROUP 03—FUEL SYSTEM						
					0306—TANKS, LINES, FITTINGS						
	P1	0			HOSE ASSEMBLY, FUEL (72582) 5120401.			2	2		:
					GROUP 06—ELECTRICAL SYSTEM (ENGINE AND VEHICULAR)						
					0608—MISCELLANEOUS ITEMS						
	X2	0			RECEPTACLE AND CABLE ASSEMBLY, SLAVE (72582) 5122215.			1	(*)		
					0612—BATTERIES						
1	P	O			BATTERY, STORAGE: 12 V (72582) 1980345.		NX	2	2		
Ð	P	0		6810-249-9354	SULPHURIC ACID: electrolyte_	gal		6	6		
					GROUP 26—ACCESSORIES, PUBLICATIONS, TEST EQUIPMENT AND TOOLS						
					2602.1—ACCESSORIES						
0	P	0		7520-599-9618	CASE, MAINTENANCE AND OPERATIONAL MANUALS: cotton duck, water repellent,			1	1		
	X2	o			mildew resistant. HANDLE, STARTING (72582)			1	(*)		
	P1	0		5975-642-8937	5121523. ROD, GROUND: 9 ft lg, ½ in.			1	(*)		
	P1	0		5975-243-5861	dia, cone point, 3 sections (GE). CLAMP, ELECTRICAL: ground			1	(*)		
	M	0			rod, 1/2 to 1 in. id. WIRE, ELECTRICAL:						
	P	O		6145-189-6695	Manufacture from: WIRE, ELECTRICAL: No. 6 AWG (10 ft required) (GE).	ft			(*)		

	Source	codes				Unit	Ex-	Quan-	Quan- tity	Illust	ration
Tech- nical service	Source	Main- te- nance	Re- cover- ability	Federal stock No.	Description	of issue	pend- ability	tity au- thorised	issued with equip- ment	Fig. No.	Iten No.
					2602.2—COMMON TOOLS						
0	P	0		5120-240-5328	WRENCH, OPEN END, AD- JUSTABLE: single head, 15/6			1	(*)		
0	P	o		5120-423-6728	in. jaw opening, 8 in. lg. WRENCH, OPEN END, AD- JUSTABLE: single head, 0 to 1.698 in. jaw opening, 15 in. lg.			1	(*)		
					2602.4—PUBLICATIONS						
12					DEPARTMENT OF THE ARMY OPERATOR AND ORGANIZATIONAL MAIN- TENANCE MANUAL TM	·		2	2		
2					5-6115-293-12. DEPARTMENT OF THE ARMY LUBRICATION ORDER LO 5-6115-293-12.			1	1		
					GROUP 42—ELECTRICAL EQUIPMENT, TRANSMISSION AND DISTRIBUTION						
					4214—MISCELLANEOUS WIRING; FITTINGS						
	M	o			CABLE ASSEMBLY, PARAL- LEL (72582) 5120509 Manufacture from:						
	P1	0			PLUG, AMPHENOL			2	(*)		
	P1	0			CLAMP, AMPHENOL (72582) 5120347.			2	(*)		
	P	O			WIRE, ELECTRICAL No. 16 AWG (25 ft required).	ft					
					GROUP 76—FIREFIGHTING EQUIPMENT-						
					7603—FIRE EXTINGUISHERS						
	P1	O		4210-288-8269	EXTINGUISHER, FIRE VA- PORIZING LIQUID: ¼ gal capacity, w/wall bracket (GE).		(See	note)			
	P1	O		4210-555-8837	EXTINGUISHER, FIRE MONOBROMOTRIFLUORO- METHANE: charged, hand- shatterable cylinder, penetrat- ing seal valve, stored pressure, w/bracket, 2.75 lbs (Halon 1301) Mil-Spec E52031 (GE).			1	1		
		1			Note: Requisition CTC/CO2 extinguisher until depot stocks are exhausted.						

INDEX

P	aragraph	Page	Pe	ragraph	Pag
Ac ammeter or voltmeter registers incor-			Controls and control box, winterization		
rectly		42	system	124	8
Access panel, generator	. 114	84	Controls and instruments and operation		
Adjustment data	. 6 <i>x</i>	5	under usual conditions	16	1
Air box drain hoses and fittings	. 112	82	Controls and instruments, engine and gen-		•
Air cleaners	6d, 80	3, 54	erator	31 132	9
Field expedient repairs	. 80 <i>c</i>	54	Conversion, equipment.		10
Ammeter, battery-charging. (See Battery-			Coolant heater fails to operate, electric		4
charging ammeter.)			Coolant heater, gasoline	27	2
Ammeter shunt, battery-charging	107	82	Coolant heaters, electric	28	2
Arm cover, rocker		82	Coolant shutoff valve	100	_
Arms, rocker		82	Coolant temperature switch, high		8
Auxiliary fuel connectors and diesel fuel		02			8
control valves.	. 77	51	Field expedient repair		8
Control Valver	• • •	01	Testing		89
Base plan	6ab	2	Cooler and bypass valve, oil	. 88	6
Butteries, cables, and trays		72	Cover:		
Batteries data		5	Ground stud and cable		8
Batteries discharge when engine is stopped.	-	41	Rocker arm	109	8
Battery box heater fails to operate		42			_
Battery-charging ammeter:	. 00	42	Daily services, operator's		30
. 0 0			Data plate (50 cycles), generator		
Fails to show charge when batteries	4-	4.	Data plate (60 cycles), generator	. 6 <i>v</i>	
are low or discharged	. 47	41	Data, tabulated. (See Tabulated data.)		
Shows charge when batteries are fully	40		Demolition:		
charged		41	By explosives or weapons' fire		9
Shunt	. 107	82	General	. 133	9
Battery-charging generator:			Other demolition methods	136	9
Data		5	To render the generator set inopera-		
Overheats	. 49	41	tive	134	9
Receptacle	. 99	72	Training	137	9
Battery compartment electric heating ele-			Description		-
ments	. 126	89	Diesel fuel:		•
Belt guards and fan	. 96	72	Control valves and auxiliary fuel con-		
Breather pipe, engine	. 111	82	nectors	77	5
Brush and brush holders, generator		84	Injection pump		5.
Bypass check valve, thermostat	. 94	69	Differences in models.	. 5	
Bypass valve and oil cooler		61	Dimensions and weight		Ċ
••			Dismantling for movement		1
Cable cover and ground stud	. 115	87	Doors, hood, and panels.		
Cables, trays, and batteries	. 100	72			40
Capacities	. 6 <i>y</i>	5	Drain hose, engine oil		6
Cap, fuel tank	. 76	51	Drain hoses and fittings, air box	112	8
Cap, gage, and oil filler neck	. 87	61	Electric:		
Cap, overflow valve, hoses, and radiator		67	Coolant heater fails to operate	. 66	4
Check valve, thermostat bypass		69	Coolant heaters		2
Circuit breaker trips or fails to close, main		42			-
Circulation pump data		5	Elements, battery compartment electric		
Cleaners, air		54	heating	126	89
Field expedient repairs		54	Engine:	120	0
Components:	. 600	74	•	112	0
	. 10	٥	Air box drain hoses and fittings	112	8
Installation of separately packed		8 12	And generator controls and instru-	21 120	^-
Interference suppression		43	ments		93
Computer, governor	. 6 <i>q</i>	5	Breather pipe		8
Connector:			Data		
Heater receptacle		89	Exhaust smoke excessive		4
Paralleling receptacle		87	General		8:
Connectors, auxiliary fuel		51	Hard to start or fails to start		40
Control panel, gasoline heater	129	93	Lacks power	44	4
Control tube and lever assembly, fuel	82	54	Misses or runs erratically	39	40

Digitized by Google

	Paragraph	Page	Pe	aragraph	Page
Engine—Continued			Low oil pressure switch	119d	89
Oil drain hose		62	Lubricating oil filters and mounting		00
Oil filter data		4	bracket	89c	61
Oil pressure low		41 41	Radiator, cap, overflow valve, and		
Rocker arm cover		82	hoses		67
Rocker arms		82 82	Troubleshooting	67	43
Starting instructions		15	Water outlet manifold, thermostat		
Stopping instructions		15	and housing, and shutoff valve	95 <i>f</i>	72
Stops suddenly		40	Filler neck, oil	87	61
Engine electrical system:			Filler neck, screen, and fuel tank cap	76	51
Batteries, cables, and trays	_ 100	72	•	10	31
Battery-charging receptacle		72	Filter:		
Engine shutdown solenoid		77	Engine oil		4
Testing		82	Field amodical arrains		52
Engine start switch solenoid and bat-			Field expedient repairs		52
tery-charging ammeter shunt	_ 107	82	Governor oilLubricating oil	61, 91 89	4, 62
Fuel pressure switch		77	Field expedient repairs	89c	61 61
Testing	_ 105c	77	•	OOL	01
General	- 98	72	Fire extinguisher:		
Generator regulator and bracket		74	Carbon tetrachloride type	29	24
Generator V-belts, generator, adjust-			Monobromotrifluoromethane type	30	24
ing straps, and bracket		74	Fire extinguisher bracket, hood, doors, and		
On-engine testing	- 102a	74	panels:		
Rectifier and bracket		74 72	Fire extinguisher bracket	71	46
•	- 101	12	General		46
Equipment:	10	10	Hood, doors, and panels		46
Conversion		10	Forms, record and report	2	2
Dismantling for movement		11	Fuel:		
age		99	Pressure switch		77
Inspection of new and used		8	Testing		77
Installation of separately packed com-		•	Transfer pump data	6e	4
ponents		8	Fuel system:		
Installation or setting-up instructions		8	Air cleaners		54
Loading for shipment		99	Field expedient repairs	80c	54
Preparation for shipment	. 138	99	Diesel fuel control valves and auxili-	~~	
Preparation for storage	_ 140	99	ary fuel connectors	77 81	51
Reinstallation after movement to a			Diesel fuel injection pump Ether primer assembly		54 56
new worksite		11	Fuel control tube and lever assembly	82	54
Servicing new and used		10	Fuel filter		52
Unloading of		8	Field expedient repairs		52
Unpacking new	. 8	8	Fuel quantity gage	84	56
Ether primer:	O.E	20	Fuel strainer	78	52
Assembly		56	Field expedient repairs		52
Data		5 42	Fuel tank cap, filler neck, and screen.	76	51
Exciter, static		42 5	Fuel tank vent line	83	56
Exhaust system:	- 3/	J	General	75	51
Exhaust manifold and muffler, ex-			Fuses, and fuse holders	117	87
haust pipe, and weathercap		49	Fuses, fuse holders, and heater receptacle		
General		49	connector	123	89
Exhaust weathercap, heater		93			
Expedient repairs, field. (See Field expedi-	•		Gage, cap, and oil filler neck	87	61
ent repairs.)			Gage, fuel quantity	84	56
For and halt guards	. 96	72	Gasoline:	٠.	•
Fan and belt guards		72 72	Control panel, heater	129	93
Field expedient repairs:		12	Coolant heater	27	93 24
Air cleaners	80c	54	Heater data	64	5
Fuel filter		52	Heater fails to ignite	64	42
Fuel strainer		52	Heater safety relief valve	127	89
High coolant temperature switch		89	Pump	129	93
- ·					
AGO 5806A					115

_	Paragraph	Page	Pas	ragraph	rage
Generator:			Line, fuel tank vent	83	56
And engine controls and instru-			Loading equipment for shipment	139	99
ments.		93	Low oil pressure switch.	119	88
Battery-charging		5	Field expedient repairs	119d	89
Brushes, brush holders, access panel			Testing.	119c	88
and screens		84	Lubrication:	1190	00
Data		3	Detailed information	20	07
Data plate (50 cycles)	. 6w	5	General information	32	27
Data plate (60 cycles)	. 6v	5		31	27
Main. (See Main generator.)			Lubrication system:	00	
Regulator and bracket	. 103	74	Engine oil drain hose	92	62
Regulator, data	_ 60	5	General	86	61
V-belts, generator, adjusting straps,	,		Governor oil filter and output solenoid		
and brackets		74	valve	91	62
On-engine testing	_ 102a	74	Governor oil reservoir and input sole-		
Governor:			noid valve	90	62
Computer data	_ 6q	5	Lubricating oil filters and mounting		
Data		4	bracket	89	61
Oil filter data		4	Field expedient repair	89c	61
			Oil cooler and bypass valve	88	61
Oil filter and output solenoid valve.		62	Oil filler neck, cap, and gage	87	61
Oil reservoir and input solenoid valve		62			
Overspeed data		4	Main circuit breaker trips or fails to close.	58	42
Ground stud and cable cover		87	Main generator:		
Guards and fan, belt	- 96	72	Fails to build up rated voltage	51	41
Houter aybourt weetheres	_ 130	93	Fails to maintain kilowatt load divi-		
Heater exhaust weathercap		42	sion during parallel operation	62	42
Heater fails to operate, electric coolant		42	Fails to maintain reactive load divi-		
Heater fails to ignite, gasoline			sion during parallel operation	63	42
Heater fails to operate, battery box		42	Fails to supply power to the load	57	42
Heater, gasoline		5	Frequency drops under load	56	42
Heater gasoline control panel, three-way			Frequency fluctuates or drifts	55	42
valve, strainer, and gasoline pump		93	General	113	84
Heater, gasoline coolant		24	Generator brushes, brush holders, ac-	110	0-1
Heater receptacle connector, fuses and			cess panels, and screens	114	84
fuse holders		89	Ground stud and cable cover	115	_
Heater safety relief valve, gasoline	. 127	89			87
Heaters, electric coolant	. 28	24	Noisy.	61	42
Heating elements, battery component			115-V receptacle, fuses, and fuse hold-		
electric	_ 126	89	ers	117	87
High coolant temperature switch	_ 120	89	Overheats	60	42
Field expedient repair		89	Paralleling receptacle connector, 24-		
Testing	. 120c	89	volt receptacle, and remote-start		
Hose, engine oil drain		69	receptacle	116	87
Hoses and fittings, air box drain		84	Regulator	6e	5
Hoses, radiator, cap, and overflow valve.		67	Voltage drops under increase of load	52	41
1200cb, radiator, cap, and overnow varve:	. 00	•	Voltage erratic	54	42
Identification	. 4	2	Maintenance and operating supplies data.	62	5
Injection pump, diesel fuel		54	Maintenance, organizational	35	36
Injector pump		4	Maintenance services, preventive. (See		
Input solenoid valve and governor oil res-			Preventive maintenance services.)		
ervoir		62	Maintenance services, quarterly preven-		
Inspection and maintenance of equipment			tive	36	36
in storage		99	Manifold and muffler, exhaust	74	49
Inspection of new and used equipment		8	Manifold, water outlet	95	69
Installation of separately packed com-		3	Models, differences in	5	2
ponents	_	8	Movement:	•	-
Installation or setting-up instructions		8	Dismantling	1.4	11
		_		14	11
Instruments and controls		11	Reinstallation after movement to a	1 2	
Instruments and controls, engine and gen-		00	new worksite	15	11
erator	131, 132	9 3	Neck, filler	76	E 1
Interference suppression, radio. (See Radio			Nut and bolt torque data	6ac	51 2 2
interference suppression.)			was and boss wique unus	Juc	2, 8
Lever and tube assembly, fuel control	. 82	84	Oil cooler and bypass valve	88	61

AGO SSOCA

P	aragraph	Page	Pau	ragraph	Page
Oil drain hose, engine	. 92	62	Quarterly preventive maintenance services_	36	36
Oil filler neck, cap, and gage	. 87	61			
Oil filters and mounting bracket, lubri-			Radiator, cap, overflow valve, and hoses.	93	67
cating.	. 89	61	Field expedient repair	93e	67
Field expedient repairs	. 89 c	61	Radio interference suppression:		•
Oil filter and output solenoid valve, gov-			General methods used to attain proper		
ernor		62	suppression	68	43
Oil filter, engine		4	Interference suppression components.	69	43
Oil filter, governor		4	Receptacle connector, heater	123	89
Oil pressure switch, low		88	Receptacle connector, paralleling	116	87
Field expedient repairs Testing	. 1196	89 88	Receptacle, 115-V	117	87
Oil reservoir and input solenoid valve,	. 1190	00	Receptacle, remote start and 24-volt	116	87
governor	. 90	62	Record and report forms	2	2
115-V receptacle, fuses, and fuse holders.		87	Rectifier and bracket	104	74
Operating details		0.	Rectifier data	6 <i>p</i>	5
Operation:		15	Regulator and bracket, generator	103	74
At high altitudes	. 26	24	Regulator data, generator	60	5
In dusty or sandy areas		23	Regulator, main generator	6s	5
In extreme cold (delow 0° F.)		23		1.8	
In extreme heat		23	worksite Relay, starter and solenoid	15	11
In salt water areas		24		101 121	72
Under rainy or humid conditions		24	Relay, time delay	121 121 <i>c</i>	89 89
Under usual conditions		11	Relief valve, gasoline heater safety	1216	89
Operator's daily services	. 34	36	Remote start receptacle.	116	87
Organisational maintenance		36	Repairs, field expedient. (See Field expedi-	110	01
Outlet manifold, water	. 95	69	ent repairs.)		
Output solenoid valve and governor oil			Rocker:		
filter		62	Arm cover	109	82
Overflow valve, hoses, radiator, and cap.		67	Arms	110	82
Overspeed governor data	. 6 <i>j</i>	4			
Panel:			Safety devices:		
Gasoline heater control	. 129	93	General	118	88
Generator access	. 114	84	High coolant temperature switch	120	89
Panels, hood, and doors		46	Field expedient repair	120d	89
Paralleling receptacle connector, 24-volt			Testing	120c	89
receptacle, and remote start-receptacle.	. 116	87	Low oil pressure switch	119	88
Pipe, engine breather	. 111	82	Field expedient repair	119d	89
Plate (50 cycles), generator data	. 6w	5	Testing	119c	88
Plate (60 cycles), generator data	. 6 <i>v</i>	5	Time delay relay	121	89
Preparation of equipment:			Testing.	121c	89
Shipment		99	Safety relief valve, gasoline heater	127	89
Storage		99	Scope	1	2
Pressure switch, fuel		77	Screen, filler neck, and fuel tank cap	76	51
Testing		77	Screens, generator	114	84
Pressure switch, low oil		88	Services, preventive maintenance. (See		
Field expedient repairs		89	Preventive maintenance services.)		
Testing Preventive maintenance services:	. 119c	88	Services, quarterly preventive mainte-	20	90
General	. 33	33	nance	36 12	36 10
Operator's daily services		36	Servicing new and used equipment Shipment:	12	10
Organisational maintenance		36	Loading equipment	139	99
Quarterly preventive maintenance	. 50	30	Preparation of equipment	138	99
services	. 36	36	Shunt, battery-charging ammeter	107	82
Primer assembly, ether		56	Shutdown solenoid, engine	106	77
Primer data, ether		5	Testing.	106c	82
Pulley and hub.		72	Shutoff valve	95	69
Pump data, circulation	. 61	5	Shutoff valve, coolant	128	89
Pump, diesel fuel injection		54	Solenoid and starter relay	101	72
Pump, fuel transfer		4	Solenoid, engine shutdown	106	77
Pump, gasoline		93	Testing	106c	82
Pump, injector		4	Solenoid, engine start switch	107	82

AGO 5806A



117

P	aragraph	Page	Pan	agraph	Page
Solenoid valve and governor oil filter,			Training, demolition	137	97
output	. 91	62	Transfer pump data, fuel	6e	4
Solenoid valve and governor oil reservoir,			Trays, batteries, and cables	100	72
input	. 90	62	Troubleshooting:		
Starter:			Batteries discharge when engine is		
And solenoid relay	101	72	stopped	50	41
Data	. 6m	5	Battery box heater fails to operate	65	42
Fails to crank engine	. 46	41	Battery-charging ammeter:		
Starting instructions, engine	. 18	15	Fails to show charge when batter-		
Start-receptacle, remote		87	ies are low or discharged	47	41
Start switch solenoid, engine	107	82	Shows charge when batteries are		
Static exciter data	. 6 <i>r</i>	5	fully charged	48	41
Stopping instructions, engine	. 19	15	Battery-charging generator overheats.	49	41
Storage:			Electric coolant heater fails to operate.	66	42
Inspection and maintenance of equip-			Engine:		
ment.	141	99	Exhaust smoke excessive	42	41
Preparation of equipment	140	99	Hard to start or fails to start	38	40
Strainer, fuel		52	Lacks power	44	41
Field expedient repairs		52	Misses or runs erratically	39	40
Strainer, gasoline pump	129	93	Noisy	45	41
Stud and cable cover, ground		87	Oil pressure low	43	41
Switch:			Overheats	41	41
Fuel pressure	105	77	Stops suddenly	40	40
Testing		7 7	Excessive sparking at generator		
High coolant temperature		89	brushes	59	42
Field expedient repairs		89	Field expedient repairs	67	43
Testing		89	Gasoline heater fails to ignite	64	43
Low oil pressure		88	General	37	40
Field expedient repairs		89	Main circuit breaker trips or fails to	•	
Testing		88	olose	58	42
Switches, winterization system thermostat_		89	Main generator:		-
Switch solenoid, engine start		82	Fails to build up rated voltage	51	41
			Fails to maintain kilowatt load		
Table I. Maintenance and operating			division during parallel opera-		
supplies		6	tion	62	42
II. Freezing points, composition,			Fails to maintain reactive load		
and specific gravities of mil-		10	division during parallel opera-		
itary antifreeze materials	_	10 2	tion	63	42
Tabulated data Tank cap, fuel		51	Fails to supply power to the load.	57	42
Tank cap, ruel		56	Frequency drops under load	56	42
Temperature switch, high coolant		89	Frequency fluctuates or drifts	55	42
Field expedient repairs	7.7.2.4	89	Noisy	61	42
Testing.	120c	89	Overheats	60	42
_	1200	09	Voltage drops under increase of		
Testing: Engine shutdown solenoid	106c	82	load	52	41
Fuel pressure switch	105c	77	Voltage erratic	54	41
High coolant temperature switch	120c	89	Starter fails to crank engine	46	41
Low oil pressure switch	119c	88	Voltmeter or ac ammeter registers		
Thermostat		72	incorrectly	53	42
Time delay relay	121 <i>c</i>	89	Tube and lever assembly, fuel control	82	54
Testing, on-engine:	1210	OF	24-volt receptacle	116	87
Generator V-belts, generator, adjust-					
ing straps, and bracket	102a	74	Unloading of equipment.	7	8
• • •	95	69	Unpacking new equipment	8	8
Thermostat and housing	95 95f	72	Valve:		
Field expedient repairs Testing	95e	69	Coolant shutoff	128	89
Thermostat bypass check valve	94	69	Diesel fuel control	128 77	51
	125	89	Gasoline heater safety relief	127	89
Thermostat switches, winterisation system.	129	93	Overflow (cooling system)	93	67
Three-way valve Time delay relay	129	89	Shutoff.	95	69
	121 121c	89	Thermostat bypass check	93 94	69
Testing Torque data, nut and bolt	6ac	2, 3	Three-way	129	93
Lorque unos, nuv and bolv	•	-, •	_ =====================================		•

Paragraph		Page	Pi	ragraph	Page
Valve and governor oil filter, output sole-			Weathercap (exhaust system)	74	49
noid	91	62	Weathercap, heater exhaust	130	93
Valve and governor oil reservoir, input			Weight and dimensions	6 aa	6
solenoid	90	62	Winterisation system:		
V-belts, fan	97	72	Battery compartment electric heating		
V-belts, generator, adjusting straps, and			elements	126	89
brackets	102	74	Controls and control box	124	89
On-engine testing	102a	74	Coolant shutoff valve	128	89
Vent line, fuel tank	83	56	Gasoline heater safety relief valve		89
Voltage drops under increase of load, main			General	122	89
generator	52	41	Heater exhaust weathercap	130	93
Voltmeter or ac ammeter registers incor-			Heater gasoline control panel, three-		•-
rectly	53	42	way valve, strainer, and gasoline		
			pump	129	93
Water outlet manifold, thermostat and			Heater receptacle connector, fuses,		
housing, and shutoff valve	95	69	and fuse holders	123	89
Field expedient repairs	95f	72	Thermostat switches	125	89
Thermostat testing	95e	69	Wiring diagram	. 6ad	2, 3

By order of the Secretaries of the Army and the Air Force:

G. H. DECKER,

General, United States Army,

Chief of Staff

OFFICIAL:

R. V. LEE,

Major General, United States Army, The Adjutant General.

OFFICIAL:

THOMAS D. WHITE, Chief of Staff, United States Air Force.

J. L. TARR, Colonel, United States Air Force, Director of Administrative Services.

Distribution:

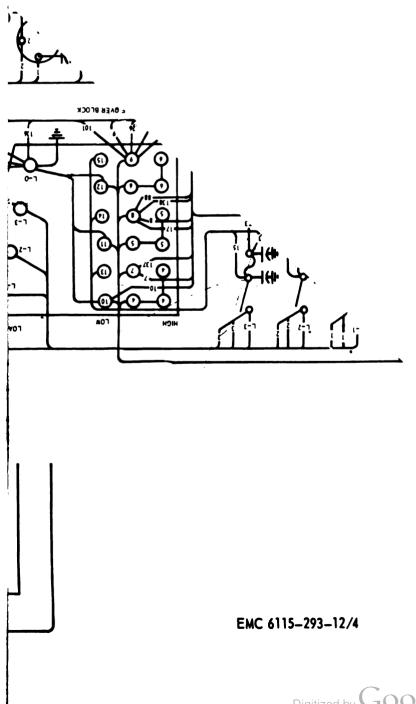
Active Army: To be distributed in accordance with DA Form 12-7 requirements for TM 5-series (Unclas) plus the following formula:

DC8LOG (1)	USAES (100)
USASA (2)	JBUSMC (1)
CNGB (1)	AMS (3)
Tech Stf, DA (1) except	AOMC (15)
CofEngra (3)	Units org under fol TOE:
ARADCOM (2)	5-48 (2)
ARADCOM Rgn (2)	5-237 (5)
MDW (1)	5-262 (5)
Seventh US Army (2)	5-267 (1)
EUSA (2)	5-278 (5)
Corps (2)	5–279 (2)
Div (2)	44-57 (2)
Engr Bde (1)	

NG: State AG (3).

USAR: Same as Active Army except allowance is one copy to each unit.

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



nx 005 5JP 099