TM-5-6115-276-15

DEPARTMENT OF THE ARMY TECHNICAL

OPERATOR, ORGANIZATIONAL, FIELD AND DEPOT MAINTENANCE MANUAL

GENERATOR SET, GASOLINE ENGINE: 2 KW, DC, 15 V, DC; SKID MOUNTED (KECO INDUSTRIES MODEL EG-2 FSN 6115-860-2251

HEADQUARTERS, DEPARTMENT OF THE ARMY

MARCH 1963

AGO 8357A

SAFETY PRECAUTIONS

BEFORE OPERATION

When handling gasoline, always provide a metal-to-metal contact between container and fuel tank. This will prevent a spark being generated as fuel flows over metal surfaces.

Be extremely careful when using a carbon tetrachloride fire extinguisher in an inclosed area due to the formation of poisonous fumes. Provide adequate ventilation before entering an inclosed area where carbon tetrachloride has been used.

Do not operate generator set in an inclosed area unless the exhaust gases are piped to the outside. Inhalation of exhaust fumes will result in serious illness or death.

DURING OPERATION

Do not connect the generator set to any battery while it is installed in a vehicle or unit without first being absolutely certain that the ground polarity of the vehicle or unit is negative and the same as the negative ground polarity of the generator. If any doubt exists, remove battery for charging.

Do not smoke in the vicinity of batteries being charged. Charging batteries generate an explosive and toxic gas.

Do not operate generator set in an inclosed area unless the exhaust gases are piped to the outside. Inhalation of exhaust fumes will result in serious illness or death.

Be extremely careful when using a carbon tetrachloride fire extinguisher in an enclosed area due to the formation of poisonous fumes. Provide adequate ventilation before entering an inclosed area where carbon tetrachloride has been used.

Disconnect all batteries before stopping operation of the generator set.

Shut off engine while replenishing the fuel supply.

To prevent burns, avoid touching the muffler during operation.

AFTER OPERATION

When handling gasoline, always provide a metal-to-metal contact between container and fuel tank. This will prevent a spark being generated as fuel flows over metal surfaces.

Be extremely careful when using a carbon tetrachloride fire extingisher in an enclosed area due to the formation of poisonous fumes. Provide adequate ventilation before entering an inclosed area where carbon tearachloride has been used.

Stop Operation when cleaning, adjusting, or moving the generator set.

GPO 827–096–1

TECHNICAL MANUAL
No. 5-6115-276-15

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C. *19 March 1963*

OPERATOR, ORGANIZATIONAL, FIELD AND DEPOT MAINTENANCE MANUAL

GENERATOR SET, GASOLINE ENGINE: 2 KW, DC, 15 V, DC; SKID MOUNTED (KECO INDUSTRIES MODEL EG-2) FSN 6115-860-2251

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. Scope

a. These instructions are published for the use of the personnel to whom the Keco Industries Model EG–2 Generator Set is issued. Chapters 1 through 3 provide information on the operation, daily preventive maintenance services and organizational maintenance of the equipment, accessories, components, and attachments. Chapter 4 provides information for field and depot maintenance (3d, 4th, and 5th echelons). Chapter 5 provides information on demolition, shipment, and limited storage. This manual also provides descriptions of the main units and their functions in relationship to other components.

b. Appendix I contains a list of publications applicable to this manual. Appendix II contains the maintenance allocation chart. Appendix III contains the list of basic issue items authorized the operator or this equipment and the list of maintenance and operating supplies required for initial operation. The organizational, field, and depot maintenance repair parts are listed in TM 5–6115–276–25P.

c. Report all deficiencies in this manual on DA Form 2028. Submit recommendations for changes, additions, or deletions to the Commanding Officer, U.S. Army Mobility Support Center, ATTN: SMOMS–MS, P.O. Box 119, Columbus 16, Ohio. Direct communication is authorized.

d. Report unsatisfactory equipment performance and suggestions for equipment improvement as specified in AR 700–5.

2. Record and Report Forms

a. DA Form 2258 (Depreservative Guide of Engineer Equipment).

b. For record and report forms applicable to the operator, crew, and organizational maintenance, refer to TM 38–750.

Note. Applicable forms excluding Standard Form 46 which is carried by the operator, shall be kept in a canvas bag with the equipment.

Section II. DESCRIPTION AND DATA

3. Description

a. General. The Keco Industries model EG–2 (fig. 1 and 2) is a 2000-watt 12-volt gasoline engine driven portable generator set, with carrying case. The unit consists of a single-cylinder, air-cooled engine assembly that is directly coupled to the dc (direct-current) generator. The engine may be started by electric or manual means. The control box contains output receptacles, ammeter, and controls necessary for generator set operation. The engine, generator, and control box are frame mounted. The frame is mounted on a solid skid supported wood base.

b. Engine Assembly. The generator set is powered by a Clinton Model 416–1300–009 single-cylinder, air-cooled, four-cycle, gasoline engine. The engine speed is governor controlled at constant 3,600 rpm (revolutions per minute). A muffler and air cleaner are provided.

c. Generator. The generator unit is a Leland Model M–50179 four-pole, stabilizer, shunt-wound, self-excited type. The generator is fan-cooled and permanently lubricated.

d. Control Box. The control box contains controls and instruments necessary for the operation of the generator set. The START switch is located on the control box side panel. The balance of the controls and instruments are located on the control panel in the control box. Access to the control panel is gained by raising the control box cover. (2, fig. 1).

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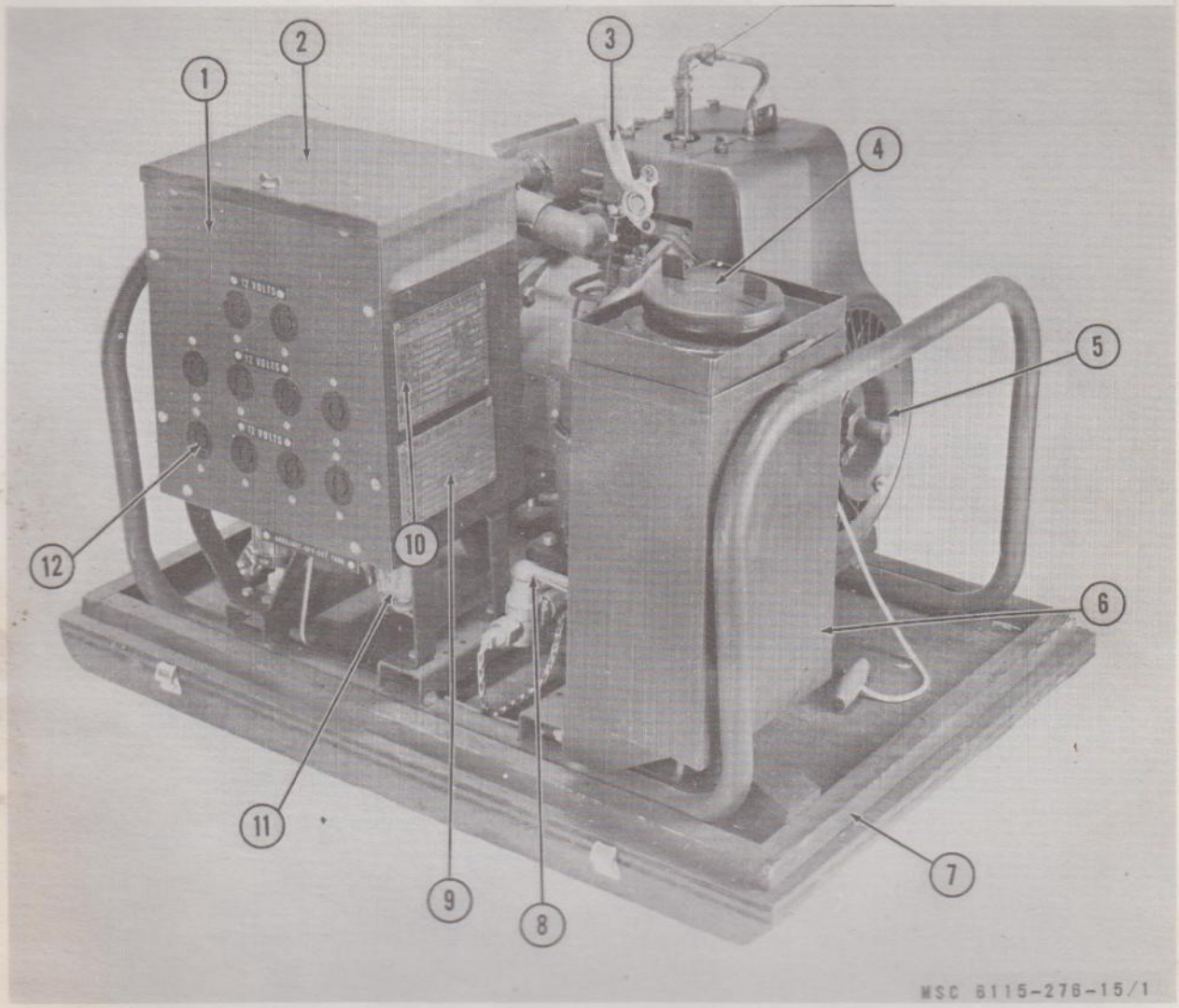


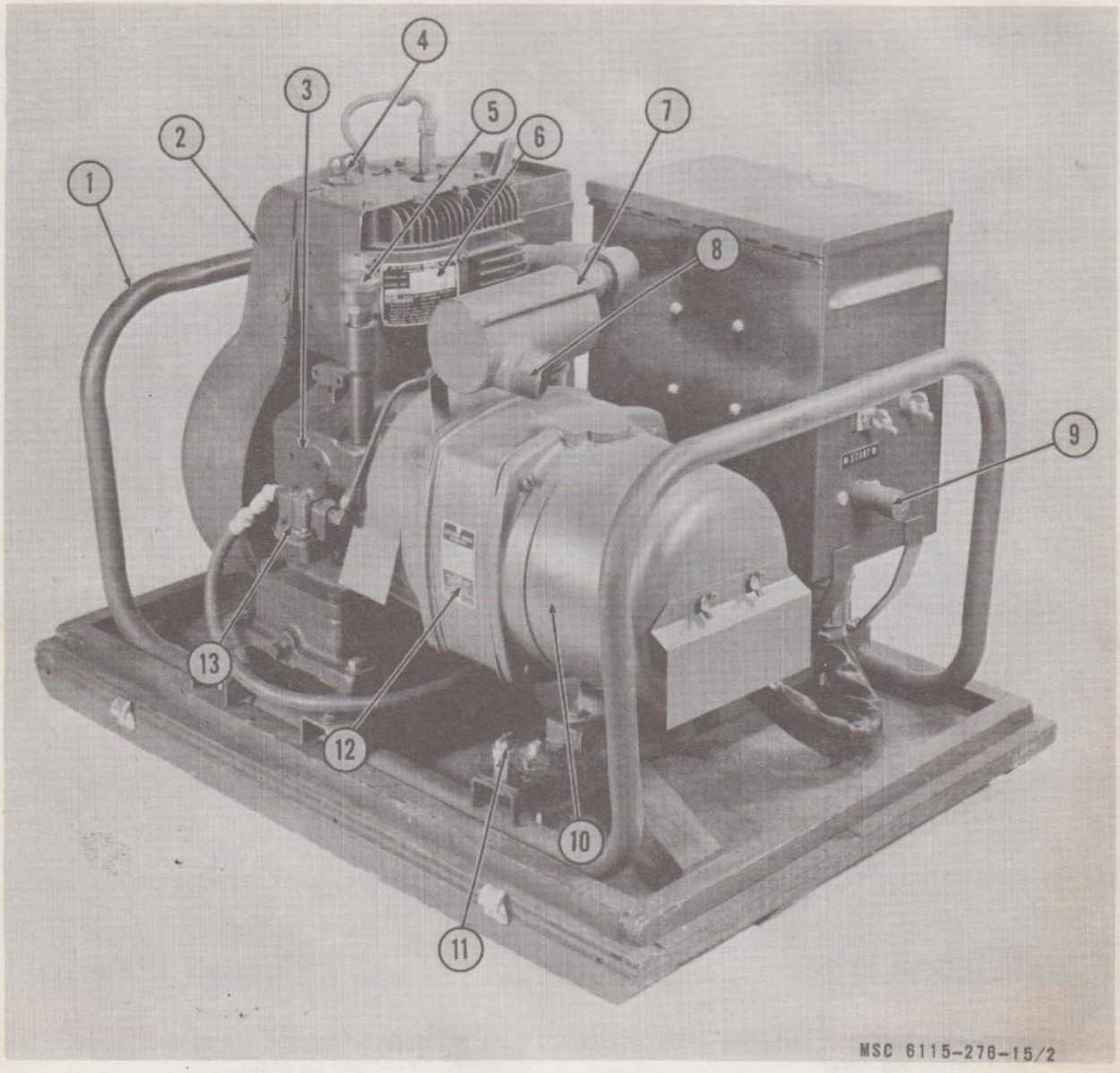
1 Control box
2 Control box cover
3 Throttle
4 Fuel cap
5 Starter pulley
6 Fuel tank
7 Base
9 Crankcase oil drain
9 Corps of engineer plate C
10 Corps of engineer plate A
11 Fuel filter
12 Receptacle connector (10 rqr)

Figure 1. Generator set, three quarter right front view.

e. Carrying Case. The generator set is provided with a carrying case (1, fig. 3). The bottom serves as a base for the unit when the top is removed. A compartment in the top of the carrying case is used for storing tools, electrical leads, auxiliary fuel hose, starter rope (fuel adapter can and oil drain hose. The toolbox lid is hinged on one side and secured in place by lockpins (3, fig. 4).

4. Identification

There are four identification plates on the generator set. The information on these plates will be found in tabulated data (par. 5).



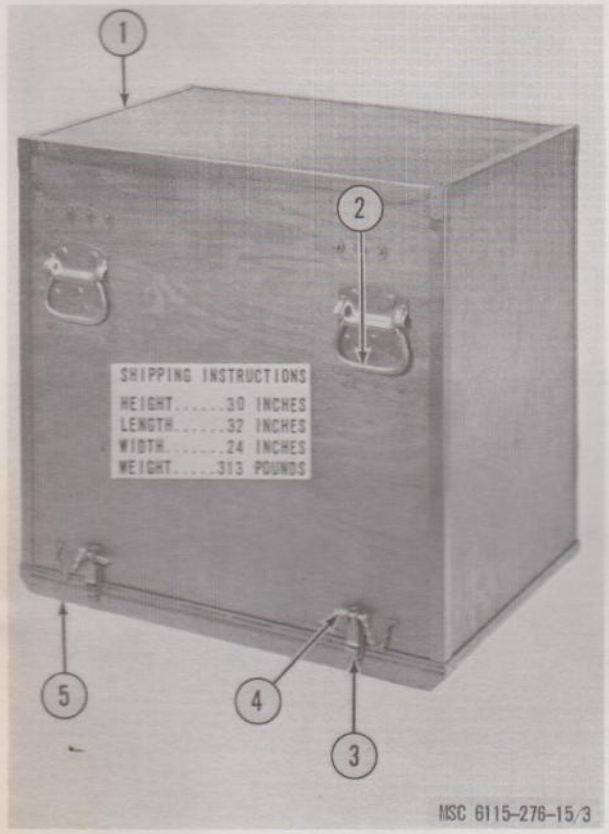
1 Generator set frame
2 Flywheel cooling shroud
3 Engine
4 Engine lifting lug
5 Crankcase breather
6 Engine identification plate
7 Muffler
8 Muffler exhaust adapter
9 Start switch
10 Generator
11 Grounding terminal
12 Generator identification plate
13 Fuel pump

Figure 2. Generator set, three quarter left rear view.

5. Tabulated Data

a. Generator Set.

Manufacturer ---------- Keco Industries, Inc.
Model ---------- EG–2
Volts-rated ---------- 12
Volts-operating ---------- 15
Amperes-maximum ---------- 133
Watts ---------- 2,000



1 Carrying case
2 Lift hand grip (4 rqr)
3 Locking clasp (4 rqr)
4 Lockingpin (4 rqr)
5 Base

Figure 3. Carrying case, removal and installation, with shipping dimensions and weight.

b. Generator.

Manufacturer ---------- Leland Ohio Electric Co.
Model ---------- M–50179

c. Engine.

Manufacturer ---------- Clinton Engines Corp.
Model ---------- 416–1300–009
Type ---------- 4 cycle
Bore ---------- 2 13/16 in. (inches)
Stroke ---------- 2 5/8 in.
Displacement ---------- 16.3 cu. in. (cubic inches)
Speed-governed ---------- 3,600 rpm (revolutions per minute)
Horsepower-rated ---------- 6.3 at governed speed
Lubrication ---------- Splash
Cooling ---------- Air
Rotation ---------- Counterclockwise (viewed from power takeoff shaft side)

d. Carburetor.

Manufacturer ---------- Walpro Corp.
Model ---------- HEW–8
Type ---------- Float feed

e. Fuel Pump.

Manufacturer ---------- Blackstone Manufacturing Co.
Model ---------- LP–1005

f. Air Cleaner.

Manufacturer ---------- Clinton Engines Corp.
Model ---------- 002–0005–99

g. Magneto.

Manufacturer ---------- Clinton Engines Corp.

h. Spark Plug.

Manufacturer ---------- Champion Spark Plug Co.
Number ---------- XMJ–17A

i. Fuel Filter.

Manufacturer ---------- AC Spark Plug Co.
Model ---------- 854914

j. Capacities.

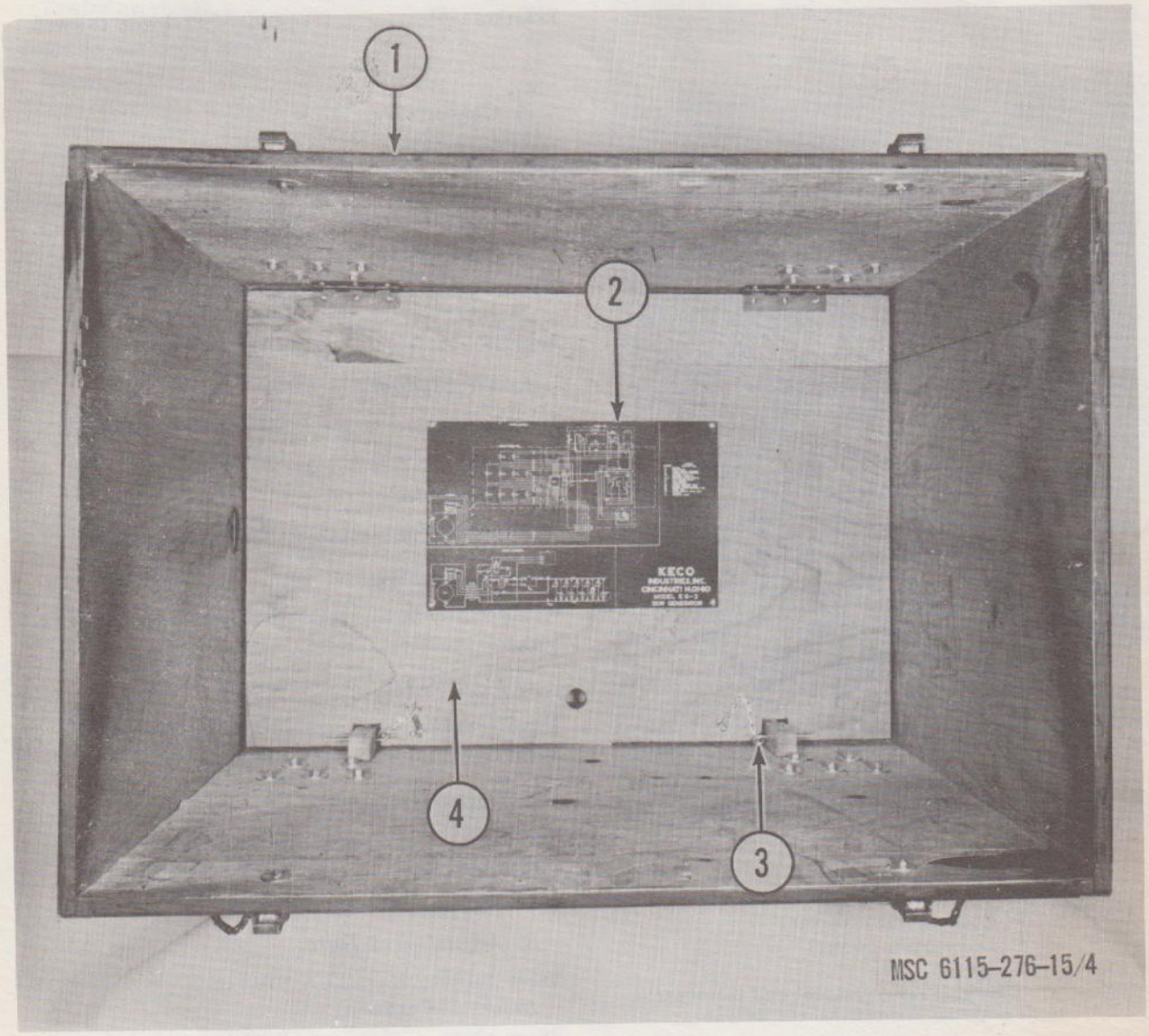
Fuel tank ---------- 2 gal. (gallons)
Crankcase ---------- 1¼ qt. (quarts)
Air cleaner ---------- 3/16 qt.

k. Adjustment Data.

Valve tappet (intake and exhaust) ---------- 0.012 in.
Spark plug ---------- 0.025 in.
Magneto points ---------- 0.030 in.

l. Nut and Bolt Torque Valves (All Torques are in Inch-Pounds).

(1) Spark plug ---------- 275 to 300
(2) Flywheel nut ---------- 100 to 120
(3) Connecting rod screw ---------- 215 to 235
(4) Base to cylinder block screw ---------- 150 to 160
(5) Cylinder head hold down bolt ---------- 200 to 220



1 Carrying case
2 Wiring diagram
3 Toolbox lockpin
4 Toolbox lid

Figure 4. Interior of carrying case.

m. Engine Wiring Diagram.

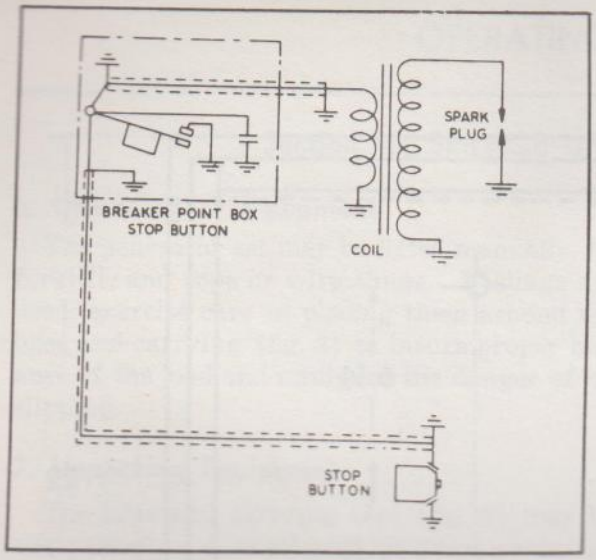


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Figure 5. Engine wiring diagram.

n. Shipping Dimensions.

Height	30 inches
Length	32 inches
Width	24 inches
Weight	313 pounds

o. Engine Repair and Replacement Standards. Table I lists manufacturers' sizes, tolerances, desired clearances, and maximum wear and clearance.

Table I. Engine Repair and Replacement Standards

Component	Manufacturer's dimensions and tolerances in inches		Desired clearance		Maximum allowable wear and clearance
	Minimum	Maximum	Minimum	Maximum	
Clearance between edge of ring and land.	------	------	.009	.009	
Skirt diameter	2.8045	2.8055			
Cylinder bore	2.8125	2.8135			
Ring groove width-compression.	.096	.098			
Ring groove width—oil.	.1875	.1890			
Wrist pin diameter	.6726	.6728			
Rod id wrist pin end	.6730	.6735			
Valve clearance	------	------	.012	.012	
Valve guide—id	.321	.313			
Valve stem diameter	.309	.310			
Tappet guide—id	.473	.438			
Tappet stem diameter.	.434	.435			
Main bearing journal—out of round.	------	------	----	----	.001
Connecting rod journal—out of round.	------	------	----	----	.0005
Rod—id—crankpin end.	1.1265	1.1273			
Crankshaft pin—diameter.	1.1243	1.1250			
Crankshaft—main diameter PTO end.	1.2510	1.2515			
Crankshaft—main diameter flywheel end.	1.2510	1.2515			
Cam axle	.4977	.4980			
Camshaft—bore id	.4995	.5015			
Camshaft—length	3.680	3.682			
Camshaft axle—bore block id.	.4990	.5000			
Camshaft axle—bore id PTO end.	.4964	.4972			

p. Base Plan. If it is required to provide a base for the generator other than that supplied with it, dimensions necessary for installing bolts for locating the generator set are shown on figure 6.

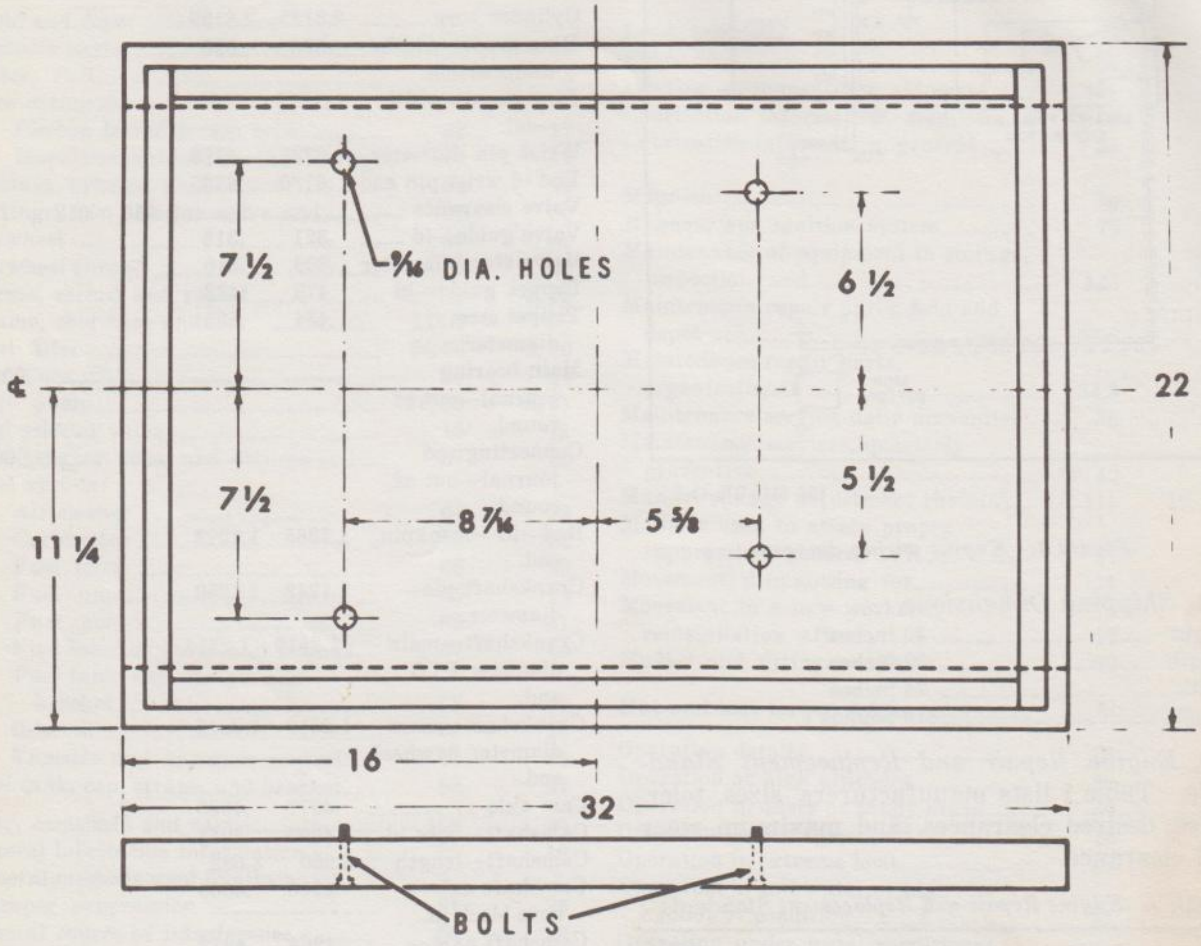


Figure 6. Base plan.

CHAPTER 2
OPERATING INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

6. Unloading of Equipment

The generator set may be lifted manually, by forklift, and rope or wire slings. If slings are used, exercise care in placing them around the base and carrying (fig. 3) to insure proper balance of the load and minimize the danger of its slipping.

7. Unpacking Equipment

The base and carrying case (fig. 3) may be overpacked in a fiberboard or wood container reinforced with strapping. Cut the strapping and remove the box to expose the generator set base and carrying case. Prior to placing the generator set in operation, depreservation will be accomplished in accordance with instructions outlined on DA Form 2258, which is attached to the throttle.

8. Inspection of Equipment

a. Carefully inspect the base and carrying case (1, fig. 3) for cracks, dents, breaks, missing parts, or other evidence of damage, especially damage in transit.

b. To remove the carrying case, remove the lockingpins (4), release the locking clasp (3) and remove the case:

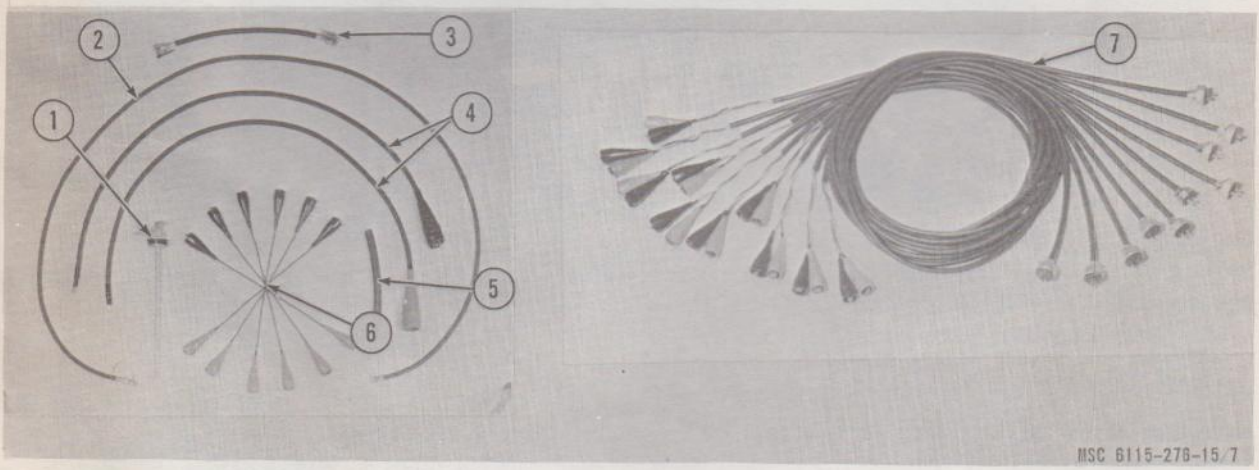
c. Carefully inspect the generator set (fig. 1 and 2) for damage and missing parts.

d. Remove the lockingpins (3, fig. 4) and raise the toolbox lid.

e. Inspect the contents of the toolbox for damage. Refer to figure 7 and appendix III and inspect the toolbox for missing items.

9. Installation or Settingup Instructions

a. Location. Position the generator set on a firm, level foundation of sufficient clear area to accomodate the generator set and base, the removed carrying case, a standard U.S. Army 5-gallon gasoline can, and 10 standard batteries, plus necessary access and work area around each of these items. The location, if outdoors, should provide maximum possible protection from the elements, dust, sand, and mud.



1 Auxiliary fuel adapter
2 Auxiliary fuel line
3 Six volt battery lead
4 Starting and fast charging leads
5 Oil drain hose
6 Inter-battery jumper leads
7 Normal charging leads

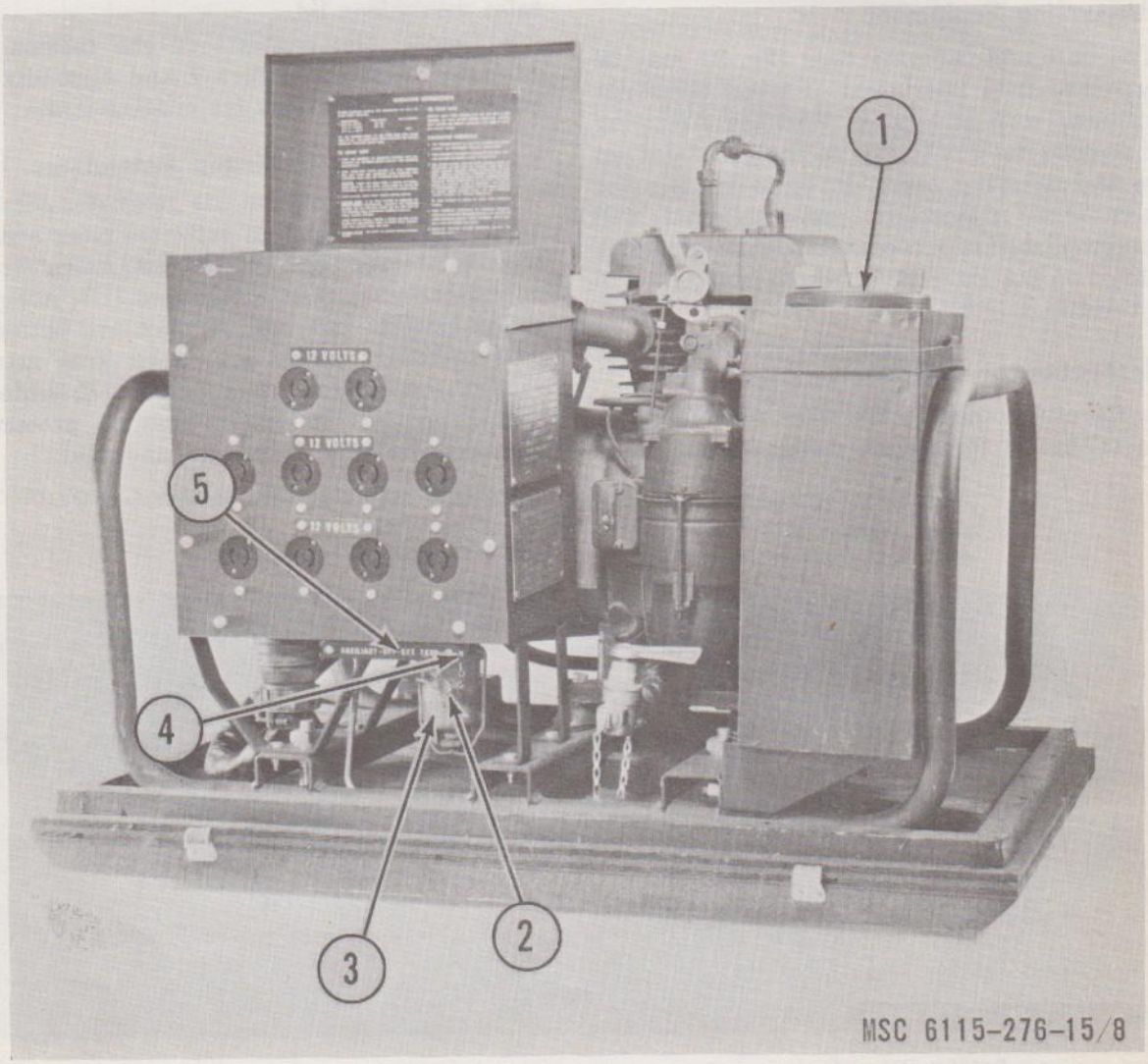
Figure 7. Operating equipment.

b. Leveling. Install the generator set as level as possible.

c. Indoor Installation. If the generator set is installed indoors, adequate ventilation, preferably cross-ventilation, must be provided and the engine exhaust must be piped to the outside. The muffler adapter (8, fig. 2) is threaded to permit a gastight coupling to be installed. The exhaust piping must be constructed with the minimum number of bends possible. Provide metal shields where the pipe passes through flammable walls or material; wrap the pipe with asbestos insulating material where there is danger of personnel coming in contact with it. If the pipe pitches upward from the engine, provide a condensate trap with drain; drain the trap periodically to prevent backflow of condensate into the engine exhaust manifold.

Warning: **Do not operate the generator set in an inclosed area unless the exhaust gases are piped to the outside. Inhalation of exhaust fumes will result in serious illness or death.**

d. Base. The generator set is designed to operate on the wooden base provided with it. If, for permanent installation or other reason, it is desired to provide a different base, refer to figure 6 for mounting dimensions.



1 Fuel cap
2 Fuel selector valve
3 Fuel filter
4 Dust cap
5 Fuel selector indicator plate

Figure 8. Servicing the fuel system.

e. Cable Assemblies, Electrical Leads, and Starter Rope.

(1) Remove the carrying case (fig. 3) and place it, top downward, near the generator set.

(2) Raise the toolbox lid (fig. 4) and remove cable assemblies, electrical leads, starter rope, auxiliary fuel hose, oil and fuel adapter cap.

10. Servicing Equipment

a. General. Perform the daily preventive maintenance services outlined in paragraph 38, the inspection services outlined in paragraph 8, and the fuel system and lubrication services described below to prepare the generator set for operation.

b. Lubrication. The generator does not require lubrication. Lubricate the engine as directed in the current lubrication order.

c. Fuel System. To operate from internal fuel system, remove the fuel cap (1, fig. 8) fill the tank, and replace the fuel cap. To operate from auxiliary fuel supply, remove the dust cap (4), connect the auxiliary fuel line (2, fig. 7) to the fuel selector valve (2, fig. 8) and install the auxiliary fuel can adapter (1, fig. 7) in a suitable can. Position the fuel selector valve to the desired operating source.

Warning: **When filling the gasoline tank on the generator set, always provide a metal-to-metal contact between the container and tank. This will prevent a spark being generated as gasoline flows over the metallic surfaces.**

Section II. MOVEMENT TO NEW WORKSITE

11. Dismantling for Movement

a. Preparation For Movement.

(1) Disconnect any exhaust piping which may have been installed, and the auxiliary fuel hose if used.

(2) If the generator set has been installed on a permanent base, remove it from that base and install the wooden base provided with it. (par. 115).

(3) Place all tools, cables, and leads in toolbox; lower and secure the toolbox lid.

(4) Install the carrying case.

b. Movement. The generator set, being self-contained and lightweight, is readily portable. Lift it manually by the four hand grips on the carrying case or load it onto a carrier by fork-lift or hoist with rope or wire slings. If slings are used, exercise care in placing them to insure proper balance of the load and minimize the danger of its slipping. If the generator set is to be transported by power vehicle, block or tie it to the carrier to prevent damage by shifting during transit.

12. Reinstallation After Movement to a New Worksite

Install the generator set as directed in paragraph 9 and service it as directed in paragraph 10.

Section III. CONTROLS AND INSTRUMENTS

13. General

This section describes, locates illustrates, and furnishes the operator sufficient information pertaining to the various controls and instruments for the proper operation of the generator set.

14. Governor Control

The generator set is designed to operate at a constant governed speed of 3600 RPM. The governed speed is maintained by adjusting the thumb nut, (2, fig. 12) on the speed control rod (1).

15. Fuel Selector Valve

The fuel selector valve (2, fig. 8) has three positions: SET TANK for the self-contained fuel tank, AUXILIARY for drawing fuel from an auxiliary source, and OFF. Positions are shown on the fuel selector indicator plate (5).

16. Transfer Switch

The transfer switch (2, fig. 9) is a double pole, double throw switch used to select either automatic or manual generator voltage control. With the switch in the AUTO position, voltage control of the generator is accomplished

by the automatic voltage regulator. With the switch in the MAN position, voltage is controlled by means of manual voltage control rheostat.

17. Automatic Voltage Adjustment Rheostat

The automatic voltage adjustment rheostat determines the voltage which the voltage regulator will automatically maintain. With the transfer switch (2, fig. 9) in the AUTO position turning rheostat knob (1) in a CW (clockwise) direction will increase the regulated voltage output of the generator. Turning the knob in a CCW (counterclockwise) direction will decrease the regulated voltage output of the generator.

18. Manual Voltage Adjustment Rheostat

The manual voltage adjustment rheostat directly determines the voltage output of the generator. With the transfer switch (2, fig. 9) in the MAN position turning the rheostat knob (5) in a CW direction will increase the voltage output of the generator. Turning the knob in a CCW direction will decrease the voltage output of the generator.

19. Ammeter

The ammeter (4, fig. 9) indicates the amount of the charging current being delivered to the batteries connected to the receptacle panel. The ammeter is a single scale instrument with a range of 0 to 200 amps. Normal operation is between 0 and 133 amps.

20. Voltmeter

The voltmeter (3, fig. 9) indicates the output voltage of the generator. The meter is a single scale meter with a range of 0 to 50 volts. Normal operation is between 12 and 15 volts.

21. Circuit Interrupter

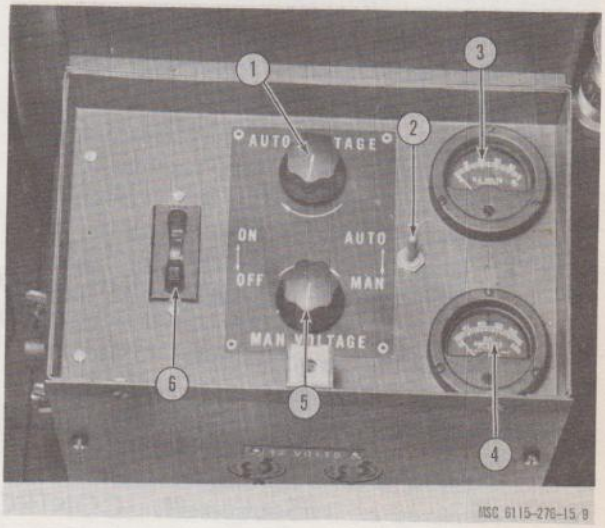
The switch prevents damage to the generator in case of overload. Normal operating position of the switch (6, fig. 9) is ON. In event of an overload on the generator the charging circuit is opened and the switch is automatically positioned OFF. The switch can be reset by positioning to ON.

22. Start Switch

A push button start switch (3, fig. 11) is mounted on the side of the control box. Pressing the switch closes a circuit to a series winding in the generator. During this period the generator acts as a starting motor for the engine.

23. Stop Button

The stop button (5, fig. 12) is a spring loaded button mounted in the breaker assembly box.



1 Automatic voltage adjustment rheostate knob
2 Transfer switch
3 Voltmeter
4 Ammeter
5 Manual voltage adjustment rheostat knob
6 Circuit interrupter switch

Figure 9. Control panel.

Section IV. OPERATION UNDER USUAL CONDITIONS

24. General

a. It is essential that the operator knows how to perform every position of which the generator set is capable. Paragraphs 25 and 26 give starting and stopping instructions. Paragraph 27 gives operating details. Since both the number and voltage of the batteries to be charged, as well as the time available for their

charging, may vary, the operator may have to alter the operating procedures to fit the varying conditions. Four general principles should be observed under all operating conditions:

a. Charge 6- and 12-volt batteries only.

b. To charge individual 6-volt batteries connect them in pairs connected in series only.

c. Batteries must not be charged connected in parallel.

d. The charging rate for the batteries must never exceed 133 amps.

25. Starting

a. General. The generator has a series winding which, with a charged batteriey connected to the control box terminals causes it to act as a motor when the start switch is pushed. In this way, power starting of the generator set is provided. The generator set may also be started manually.

b. Manual Starting.

(1) Position fuel selector valve (2, fig. 8) to allow fuel to flow to the fuel pump (13, fig. 2).

(2) Place the circuit interrupter switch (6, fig. 9) in the OFF position.

(3) Turn the rheostat knobs (1 and 5) fully counterclockwise.

(4) Close the carburetor choke by placing the choke control arm (4, fig. 12) in the closed position.

(5) Position the throttle (3) approximately three-quarters inch towards the open position.

(6) Engage the knot of the starter rope (2, fig. 10) in a notch of the starter pulley (1). Wind the starter rope CW around the groove in the pulley.

(7) Pull the rope with a quick steady motion to spin the flywheel. If the engine fails to start, open the choke slightly before repeating.

Caution: **Do not over-prime the engine. If engine does not start after several attempts refer to troubleshooting (par. 42) and correct the deficiency.**

(8) After the engine starts and warms up, gradually open the choke by moving the choke control arm toward the open position, until the engine runs smoothly with the choke wide open.

(9) Should the carburetor become flooded, open the choke, position the fuel selector valve to OFF and crank the engine until the excess fuel is expelled. Repeat the starting procedures.

c. Electrical Starting.

(1) Repeat steps 1, 2, 3, 4, and 5 in *b*, above.

(2) A 12-volt battery or two 6-volt batteries connected in series are required to crank the engine electrically. Connect the two electrical starting leads (4, fig. 7) to their terminal posts (1, 4, fig. 11) on the side of the control box.

Caution: **Observe proper polarity when connecting the starting leads. If the polarity is reversed, batteries may become completely discharged, their polarity reversed, and the plates destroyed.**

(3) Depress the start switch (3) located on the control box. If the engine fails to start within 5 to 10 seconds, release the start switch, open the choke slightly, and depress the start switch again.

(4) Should the carburetor become flooded, open the choke, position the selector valve to OFF and crank the engine until the excess fuel is expelled. Repeat the starting procedures.

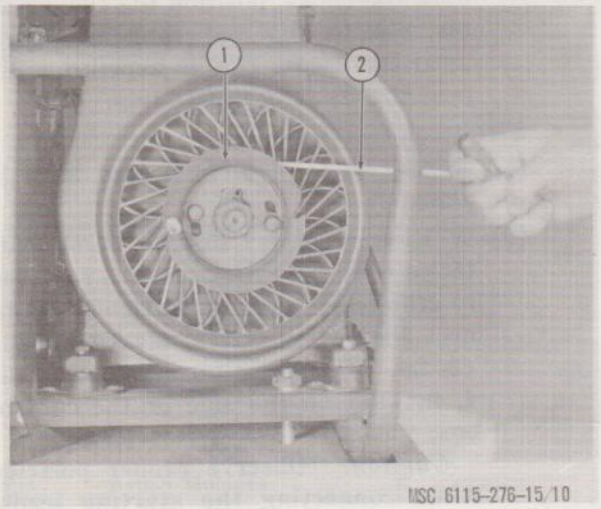
(5) Unless the starting battery is in need of charging, it should be promptly disconnected.

26. Stopping

a. Depress the stop button (5, fig. 12) and hold it until the engine stops completely.

27. Operating Details

a. General. The generator set is designed for charging batteries at both normal and fast charging rates. Charging can be regulated automatically or manually by the position of the transfer switch (2, fig. 9). When the transfer switch is positioned in the AUTO position the generator voltage output is regulated by the voltage regulator and controlled by the position of the rheostat knob (1). To increase the voltage output rotate the rheostat knob in a clockwise direction. To decrease the voltage



1 Starter pulley 2 Starter rope
Figure 10. Manual starting.

output rotate the rheostat knob in counterclockwise direction. When the transfer switch is positioned in the MAN position the generator voltage output is regulated by means of the rheostat knob (5). To increase the voltage output rotate the rheostat knob in a clockwise direction. To decrease the voltage output rotate the rheostat knob in counterclockwise direction. The interrupter switch (6) protects the generator in the event of overloading by breaking the charging circuit. Prior to charging, clean all dirt and corrosion from the terminals of the batteries to be charged. Add distilled water to the batteries to be charged to raise the electrolyte in each cell to the correct level. Do not overfill or the electrolyte will overflow during the charging period. Remove the vent caps while charging the batteries.

Warning: **When servicing batteries do not smoke or use an open flame in the area. Batteries generate a toxic and explosive gas during charging.**

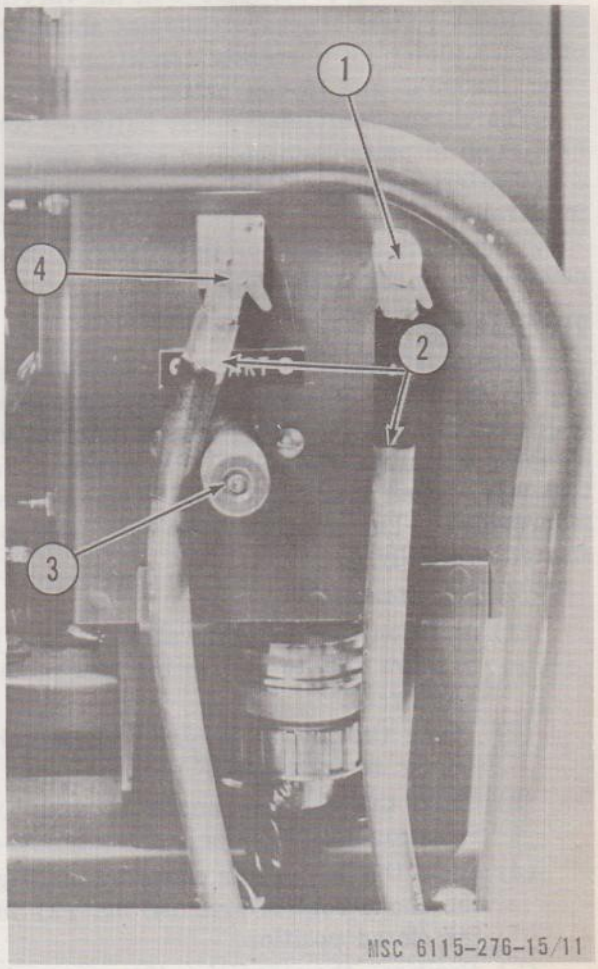
Refer to TM 9-6140-200-15 for battery charging instructions on lead-acid type batteries.

b. Normal Charging.

(1) Start the generator set (par. 25).

(2) Connect batteries as shown in figure 13 and connect plugs to the receptacles (12, fig. 1) in the control box (1).

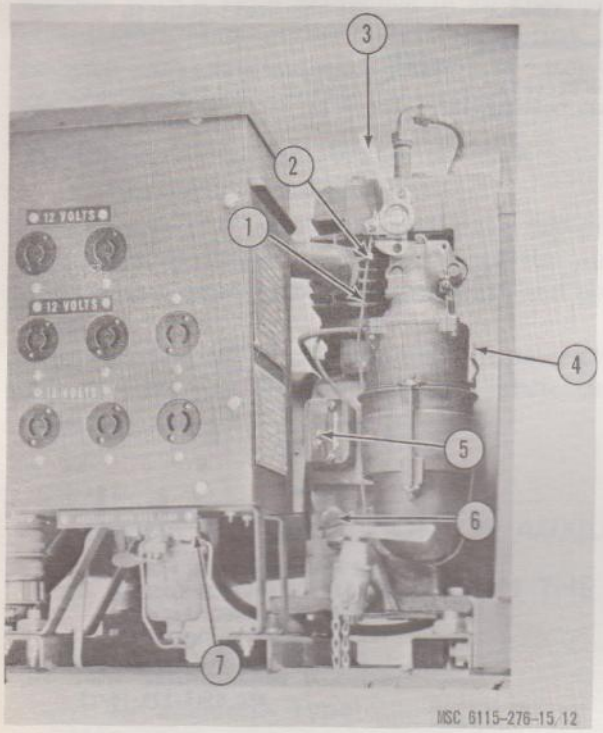
(3) Place circuit interrupter switch (6, fig. 9) to ON position.



1 Terminal post (Negative −)
2 Electric start leads (2 rqr)
3 Start switch
4 Terminal post (Positive +)
Figure 11. Electric starting.

(4) Place transfer switch (2) in AUTO or MAN position.

(5) Adjust charging rate by turning the rheostat knob (1) or rheostat knob (5) to give a reading not over 20 amps on the ammeter (4) for each 12-volt battery being charged. If 6-volt batteries are being charged, connect them in series with the electric lead (6, fig. 7) as shown in figure 13. Count each pair of 6-volt batteries as one 12-volt battery. If more than six 12-volt batteries, or the equivalent of, are being charged, the charging rate will be below maximum.



1 Speed control rod
2 Thumb nut
3 Throttle
4 Choke control arm
5 Stop button
6 Oil filler
7 Auxiliary fuel connection dust cap

Figure 12. Engine and fuel controls.

(6) Disconnect batteries as they become charged and repeat steps 2, 3, 4, and 5 as required.

(7) Turn rheostat knob (1, fig. 9) or rheostat knob (5) fully counterclockwise.

(8) Place circuit interrupter switch (6) in the OFF position.

(9) Stop the generator set (par. 26).

c. Resetting Circuit Interrupter Switch. If the circuit interrupter switch (6) becomes tripped due to an overload, turn selected rheostat knobs (1) or (5) in a counterclockwise direction to reduce current. Wait three minutes and reset the circuit interrupter switch.

d. Fast Charging.

(1) Start the generator set (par. 25).

(2) Disconnect all battery charging leads from the control box receptacles (12, fig. 1).

(3) Attach the starting leads (4, fig. 7) to the terminal posts (1, 4, fig. 11) and to the battery as shown in Fig. 13. The capacity of the starting leads is ample to carry the maximum charging rate of 133 amps.

(4) Repeat steps 3 and 4 in *b.* above.

(5) Adjust charging rate by turning rheostat knob (1, fig. 9) or rheostat knob (5).

Caution: **During charging, if battery temperature exceeds 105° F. reduce charging rate below 133 amperes.**

(6) When battery is fully charged turn rheostat knob (1) or rheostat knob (5) fully counterclockwise.

(7) Place circuit interrupter switch (6) in OFF position.

(8) Disconnect charged battery by removing starting leads from the battery.

(9) Stop the generator (par. 26).

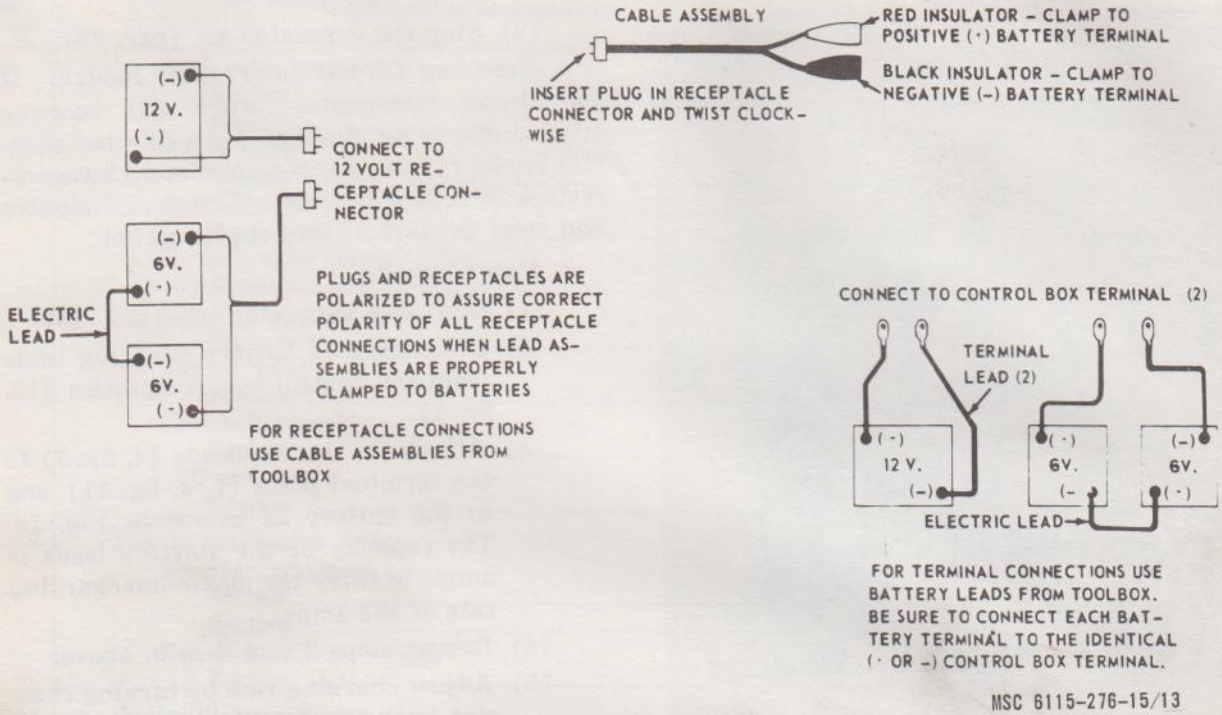


Figure 13. Battery connection schematic.

Section V. OPERATION UNDER UNUSUAL CONDITIONS

28. Operation in Extreme Cold

Warning: **Do not touch metal parts with bare hands in extremely cold weather.**

a. General. In extremely cold weather it may be necessary to reduce the volume of cooling air flowing through the engine. This may be accomplished by obstructing the air inflow at the flywheel. Exercise care not to cause engine overheating by excessively reducing the air flow.

b. Fuel System. Keep the fuel tank or the external fuel container full to reduce condensation of moisture inside the tank or container. Clean the fuel filter bowl more frequently. Keep the fuel cap and tank free of ice and snow.

c. Ignition System. Before starting, remove all accumulated snow and ice from the spark plug, ignition cable and magneto.

d. Lubrication. Refer to the current lubrication order for cold weather lubrication instructions.

e. Operation. Before charging batteries, allow the engine to warm up thoroughly to stabilize its operation.

29. Operation in Extreme Heat

a. General. Accumulated dirt on engine and generator surfaces reduces radiation of heat. Keep the generator set clean to avoid overheating.

b. Cooling System.

(1) Keep engine cooling fins clean.

(2) Keep generator ventilation opening clean.

(3) Keep all expoposed surfaces of generator and engine clean.

(4) Remove all obstructions to the flow of air across the generator and engine.

c. Lubrication. Refer to the current lubrication order and lubricate as instructed.

30. Operation in Dusty or Sandy Areas

a. Protection. In permanent installations, erect a protective shelter for the generator set. In temporary installations, take advantage of natural barriers to prevent the blowing of sand or dust or, if necessary, erect artificial barriers.

b. Air Cleaner. Service the air cleaner frequently. (par. 64).

c. Cleaning. Clean the generator set frequently with a cloth dampened in an approved cleaning solvent, giving special attention to cavities, corners, and partially exposed interior spaces. Dry thoroughly after cleaning.

31. Operation in Salt Water or High Humidity Conditions

a. General. Keep the generator set dry and free from condensed moisture. Wipe the unit daily with a oily cloth to prevent rust and corrosion.

b. Lubrication. Lubricate the unit more frequently than specified in the current lubrication order.

c. Fuel System. Keep the fuel tank and auxiliary fuel cans full and tightly capped to avoid condensation.

d. Electrical System. Keep electrical components and wiring clean and dry. Moisture causes corrosion and deterioration of electrical components.

32. Operation at High Altitudes

The generator set is designed to operate at altitudes up to 5,000 feet above sea level without special adjustments. However, at higher altitudes the carburetor may require adjustment.

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

33. Fire Extinguisher (Corbon Tetrachloride Type)

a. Description. A carbon tetrachloride fire extinguisher may be provided with the equipment. It is a vaporizing liquid-type, pump-operated extinguisher, having a capacity of one quart.

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 flame.

Warning: **Be extemely careful when using a carbon tetracholride fire extinguisher in an inclosed area. A poisonous 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.**

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

34. Fire Extinguisher (Monobromotrifluoromethane 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 fire extinguisher from its location.

(2) Break the seal by pulling the safety pin from the handle.

(3) Point the horn at the base of the flame.

(4) Depress trigger for discharge and direct the stream of contents at the base of the fire.

Warning: **Avoid breathing of smoke.**

(5) Replace with new cylinder immediately after using.

c. Replacement of Cylinder. To replace with new cylinder, perform the following operations:

(1) Press lever to release pressure from old cylinder.

(2) Loosen swivel valve coupling nut and remove the valve assembly from used cylinder.

(3) Remove instruction band from used cylinder.

(4) Place new cylinder through the in- instruction band.

(5) Replace safety pin in valve and seal pin with sealing wire.

(6) Attach valve assembly and tighten swivel coupling nut on the new cylinder and replace fire extinguisher in mountng bracket.

(7) Adjust instruction band on cylinder to show maintenance and operating instructions.

d. Maintenance. Weigh fire extinguisher every 3 months and replace cylinder if gross weight has decreased 4 ounces or more. Lubricate cylinder neck threads with one drop of OE oil before reassembly.

CHAPTER 3

OPERATOR AND ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. OPERATOR AND ORGANIZATIONAL MAINTENANCE TOOLS AND EQUIPMENT

34.1. Special Tools and Equipment

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

34.2. Basic Issue Tools and Equipment

Tools and repair parts issued with or authorized for the generator set are listed in the basic issue items list, appendix III of this manual.

34.3. Organizational Maintenance Repair Parts

Organizational maintenance repair parts are listed and illustrated in TM 5–6115–276–25P.

Section II. LUBRICATION

35. General Lubrication Information

This section contains a reproduction of the lubrication order and lubrication instructions which are supplemental to, and not specifically covered in the lubrication order.

36. Detailed Lubrication Information

a. Care of Lubricants. Keep all lubricants (grease and oil) in closed containers and store in a clean, dry place away from external heat. Allow no dirt, dust, water, or other foreign material of any kind to mix with the lubricants.

b. Points of Lubrication. Refer to figure 14 for illustration of the lubrication points.

c. Cleaning. Keep all external parts not requiring lubrication clear of lubricants. Before lubricating the generator set, wipe all lubricating points clear of dirt and grease. Clean all lubrication points after lubrication to prevent accumulation of foreign matter.

d. Air Cleaner. Service the air cleaner, (par. 64).

LUBRICATION ORDER

LO 5-6115-276-15

GENERATOR SET, GASOLINE ENGINE: 2 KW, DC 15V SKID MOUNTED (KECO INDUSTRIES MODEL EG-2) W/ CLINTON ENGINE MODEL 416 1300 009

Reference: SM 10-1-C4-1

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

Relubricate after washing.

Clean fittings before lubricating.

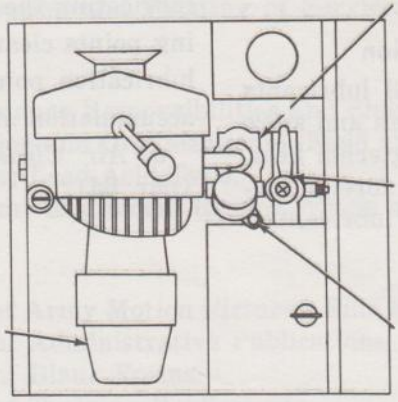
Clean parts with SOLVENT, dry-cleaning, or with OIL, fuel, Diesel. Dry before lubricating.

Drain crankcase when hot. Fill and check level.

– KEY –

LUBRICANT	CAPACITY	EXPECTED TEMPERATURES			INTERVALS
		Above +32°F	+40°F to −10°F	0°F to −65°F	
OE–OIL, Engine, Heavy Duty		**OE** 30 or 9250	**OE** 10 or 9110	**OES**	Intervals given are in hours of normal operation.
Crankcase	1–¼ qt				
Air Cleaner	3/16 qt				
OES –OIL, Engine, Sub-zero					

LUBRICANT • INTERVAL | **INTERVAL • LUBRICANT**



5 OE — Air Cleaner (1) (Refill oil reservoir to level mark; every 25 hours disassemble entire unit, clean, re-oil and reassemble) (See Key)

25 — Crankcase Drain Valve (2) (Remove cap, turn valve to drain) (Drain and refill)

5 OE — Crankcase Oil Fill and Level Cap (3) (See Key) (Check Level)

Main Generator (Sealed bearing, no lubrication required)

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.

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

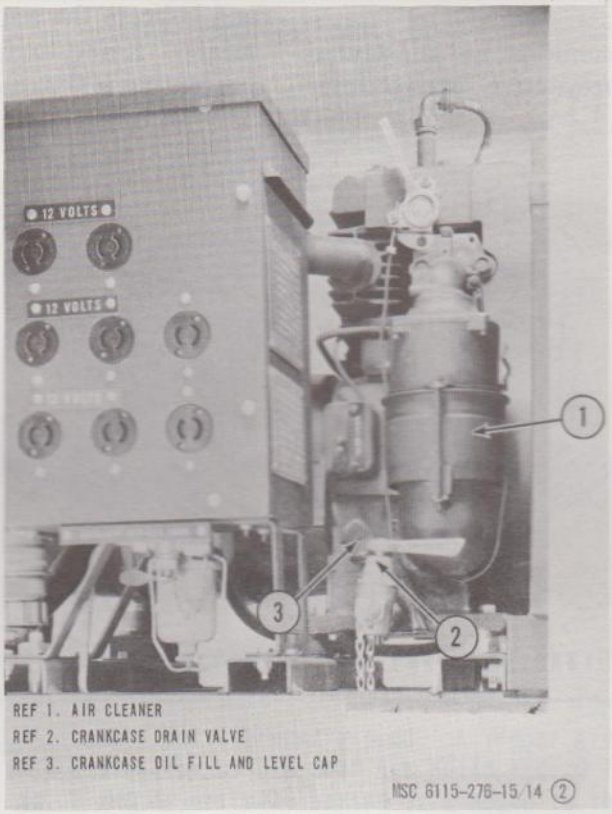
BY ORDER OF THE SECRETARY OF THE ARMY:

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

OFFICIAL:

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

Figure 14. Lubrication order.



Ref 1. Air cleaner Ref 2. Crankcase drain valve Ref 3. Crankcase oil fill and level cap

Figure 14—Continued.

Section III. PREVENTIVE MAINTENANCE SERVICES

37. General

To insure that the generator set is ready for operation 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 services to be performed are listed and described in paragraphs 38 and 39. 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.

38. Daily Preventive Maintenance Services

This paragraph contains an illustrated tabulated listing of preventive maintenance services which must be performed by the operator. Daily services retain the same item numbers used in quaterrly preventive maintenance services. Therefore daily preventive maintenance

services may not be numbered consecutively but should be performed in the numerical sequence as shown to insure complete coverage. Refer to figure 15 for the daily preventive maintenance services.

39–40. Quarterly Preventive Maintenance Services

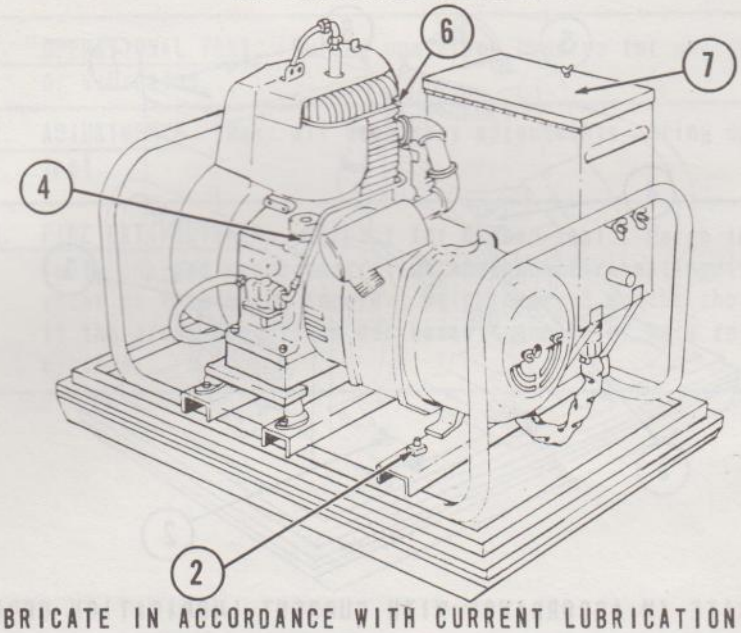
a. This paragraph contains an illustrated tabulated listing of preventive maintenance services which must be performed by organizational maintenance personnel at quarterly intervals. A quarterly interval is equal to 3 calendar months, or 250 hours of operation, whichever occurs first.

b. The item numbers are listed consecutively and indicate the sequence of minimum requirements. Refer to figure 15 for the quarterly preventive maintenance services.

PREVENTIVE MAINTENANCE SERVICES

DAILY

TM 5 6115-276-15 | KECO INDUSTRIES MODEL EG-2 | GENERATOR SET



LUBRICATE IN ACCORDANCE WITH CURRENT LUBRICATION ORDER

ITEM		PAR REF
2	GROUNDING TERMINAL. Inspect for improper ground. A proper ground will consist of a 3/4 inch dia hollow or 5/8 inch dia solid rod, 9 feet long. The cable will be No. 6 AWG copper wire bolted or clamped to the rod and attached to the ground terminal.	
4	CRANKCASE AND BREATHER. Check level of oil. Add oil as required. Reference current L.O.	
6	FUEL TANK AND LINES. Inspect for leaks.	
7	CONTROLS AND INSTRUMENTS. Inspect for damage. With the unit operating, inspect for improper operation. Normal operating readings are as follows: Voltmeter 15 v which is indicated by the red line. Ammeter not to exceed 133 amps.	
	NOTE 1. OPERATION. During operation observe for any unusual noise or vibration.	
	NOTE 3. FIRE EXTINGUISHER. Inspect for broken seal.	

MSC 6115-276-15/15

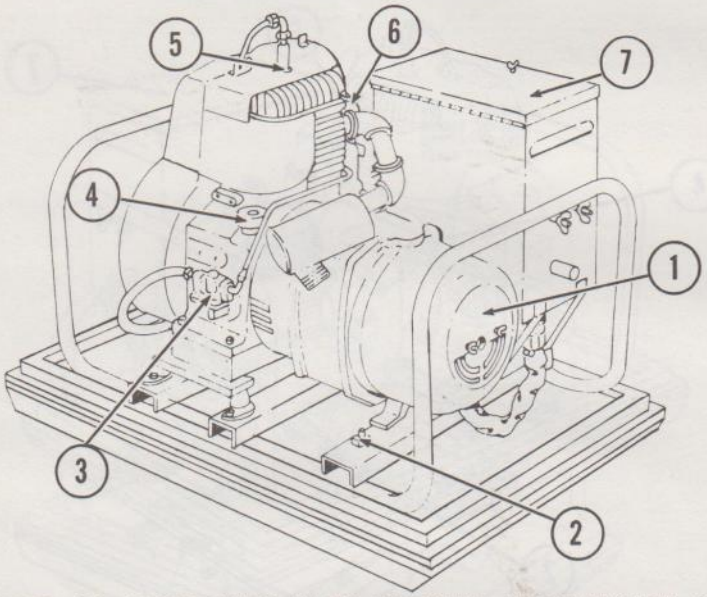
Daily

Figure 15. Preventive maintenance services.

PREVENTIVE MAINTENANCE SERVICES

QUARTERLY

TM 5 6115-276-15 | KECO INDUSTRIES MODEL EG-2 | GENERATOR SET



LUBRICATE IN ACCORDANCE WITH CURRENT LUBRICATION ORDER

ITEM		PAR REF
1	GENERATOR AND BRUSHES. Inspect the generator for insecure mounting and damaged wiring. Inspect brushes for excessive wear and loose connections. Replace brushes if they are worn to less than 1/2 inch in length.	88
2	GROUNDING TERMINAL. Inspect for improper ground. A proper ground will consist of a 3/4 inch dia hollow or 5/8 inch dia solid rod, 9 feet long. The cable will be No. 6 AWG copper wire bolted or clamped to the rod and attached to the ground terminal.	
3	FUEL PUMP. Inspect for leaks, damage and insecure mounting.	
4	CRANKCASE AND BREATHER. Inspect for leaks. Add oil as required. Reference current L.O.	
5	SPARK PLUG. Inspect for dirt and damage. Correct gap is 0.025 inch.	
6	FUEL TANK AND LINES. Inspect for leaks and insecure mounting. Inspect fuel tank strainer. Clean a dirty strainer.	

Quarterly

Figure 15—Continued.

ITEM		PAR REF
7	CONTROLS AND INSTRUMENTS. Inspect for damage. With the unit operating, inspect for improper operation. Normal operating readings are as follows: Voltmeter 15 v which is indicated by the red line. Ammeter not to exceed 133 amps.	
	NOTE 1. OPERATIONAL TEST. During operation observe for any unusual noise or vibration.	
	NOTE 2. ADJUSTMENTS. Make all necessary adjustments during operational test.	
	NOTE 3. FIRE EXTINGUISHER. Inspect for broken seal. Weigh the new and fully charged monobromotrifluoromethane fire extinguisher and enter on inspection record. Weigh every 3 months thereafter. If the gross weight has decreased 4 ounces or more replace cylinder.	

MSC 6115-276-15/15.1

Quarterly

Figure 15—Continued.

Section IV. TROUBLESHOOTING

41. General

This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the generator set and its components. Each trouble sympton 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.

42. Engine Hard To Start or Fails to Start

Probable cause	*Possible remedy*
Fuel tank empty	Fill fuel tank (par. 10).
Fuel selector valve closed	Set valve as required (par. 15).
Fuel line obstructed	Clean fuel lines (par. 65).
Spark plug defective	Replace spark plug (par. 73).
Air cleaner too full of oil	Drain, clean, and properly fill air cleaner (par. 64).
Start switch defective	Replace start switch (par. 95).
Fuel mixture improper	Adjust carburetor (par. 70).
Magneto defective	Replace magneto (par. 75).
Breaker points pitted or improperly adjusted.	Adjust or replace breaker points (par. 76).
Ignition lead defective	Replace ignition lead (par. 74).
Cylinder flooded	Remove spark plug. Ground ignition cable. Crank engine (par. 25).

43. Engine Misses, Operates Erratically, or Losses Power

Probable cause	*Possible remedy*
Fuel mixture improper	Adjust carburetor (par. 70).
Breaker points pitted or improperly adjusted.	Adjust or replace breaker points (par. 76).
Choke partially closed	Fully open choke (par. 25).
Muffler clogged	Clean or replace muffler (par. 82).
Spark plug loose, dirty, or or damaged.	Tighten, clean, or replace spark plug (par. 73).
Governor controls loose or improperly adjusted.	Tighten and adjust governor controls (par. 71).
Carbon accumulation excessive.	Scrape carbon from cylinder head and piston (par. 83).
Cylinder head loose or cylinder head gasket defective.	Tighten cylinder head or replace defective gasket (par. 83).

44. Engine Knocks or Develops Excessive Noise

Probable cause	*Possible remedy*
Engine overheated	Provide proper air circulation. Check that air flow to flywheel is not obstructed.
Oil insufficient	Check oil level. Refill to proper level in accordance with the current lubrication order.
Carbon deposits excessive	Scrape carbon from cylinder head (par. 83).

45. Engine Stops Suddently

Probable cause	*Possible remedy*
Fuel tank empty	Fill fuel tank (par. 10).
Magneto defective	Replace magneto (par. 75).
Fuel line clogged	Clean fuel line (par. 65).
Faulty fuel pump	Replace fuel pump(par. 69).

46. Engine Will Not Idle Smoothly

Probable cause	*Possible remedy*
Spark plug defective	Clean, adjust, or replace spark plug (par. 73).
Idle improperly adjusted	Adjust idle (par. 70).
Choke not set correctly	Set choke (par. 25).

47. Engine Overheats

Probable cause	*Possible remedy*
Ventilation across engine poor.	Provide unobstructed air flow across engine.
Engine dirty	Clean air shroud and engine radiation fins.
Muffler clogged	Clean or replace muffler (par. 83).
Oil insufficient	Check oil level. Refill to proper level in accordance with the current lubrication order.

48. Engine Exhaust Smoke Excessive

Probable cause	*Possible remedy*
Choke partially closed	Fully open choke (par. 25).
Fuel mixture too rich	Adjust carburetor (par. 70).
Carburetor float sticking or leaking.	Replace carburetor (par. 70).
Air cleaner too full of oil	Drain, clean, and properly fill air cleaner (par. 64).

49. Engine Backfires or Produces Explosions Into Carburetor

Probable cause	*Possible remedy*
Fuel mixture too lean	Adjust carburetor (par. 70).

Probable cause	*Possible remedy*
Intake valve sticking	Remove spark plug (par. 73). Pour ½ to 1 ounce of penetrating oil (VV-P-216) into cylinder. Let stand 5 minutes. Manually crank engine. Replace spark plug.

50. Voltage Drops Upon Increase of Generator Load

Probable cause	*Possible remedy*
Electrical connections loose on voltage regulator.	Tighten electrical connections on voltage regulator. If symptoms persist notify field maintenance.

51. Generator Fails To Build up Rated Voltage

Probable cause	*Possible remedy*
Circuit interrupter switch tripped or defective.	Reset or replace switch (par. 94).
Electrical connection loose	Tighten all electrical connections.. If the symptoms persist notify field maintenance.
Residual magnetism too weak.	Electrically start engine (par. 25).
Brushes not contacting commutator.	Clean and reseat, or replace brushes (par. 88).
Circuit interrupter switch tripped or defective.	Reset or replace circuit interrupter switch (par. 94).
Receptacle defective	Replace receptacle (par. 91).
Commutator rough or dirty.	Sand and polish commutator (par. 89).
Short circuit on load line	Locate the short and correct the deficiency.

52. Generator Voltage Too High or Too Low

Probable cause	*Possible remedy*
Rheostat improperly adjusted.	Adjust rheostat to give voltmeter reading of 15 volts (par. 27).
Rheostat defective	Place transfer switch in alternate position and adjust other resistor to give voltmeter reading of 15 volts (par. 27).
Engine speed incorrect	Adjust governor controls (par. 71).

53. Generator Voltage Erratic

Probable cause	*Possible remedy*
Electrical connections loose	Tighten all electrical connections.

54. Generator Noisy

Probable cause	*Possible remedy*
Brushes worn or broken	Replace worn or broken brushes (par. 88).
Commutator rough	Clean and sand commutator (par. 89).

55. Generator Overheats

Probable cause	*Possible remedy*
Ventilation across generator is poor.	Provide unobstructed air flow across generator set.
Brush pressure excessive	Adjust the brush spring tension (par. 88).
Generator dirty	Clean with low pressure air.

56. Brushes Sparking Excessively

Probable cause	*Possible remedy*
Commutator rough or dirty.	Sand and polish commutator (par. 89).
Brushes worn or dirty	Clean and adjust brushes
Brushes sticking in brush holder.	and brush holders (par. 88).

57. Polarity Incorrect

Probable cause	*Possible remedy*
Polarity reversed by improper operation.	Power-start engine with a fully-charged 12-volt battery correctly connected (par. 25).

Section V. RADIO INTERFERENCE SUPPRESSION

58. Definitions

a. Interference. The term "interference" as used herein, applies to electrical disturbances in the radio frequency range which are generated by the generator set and which may interfere with the proper operation of radio receivers or other electronic equipment.

b. Interference Suppression. The term "interference suppression" as used herein, applies to the methods used to eliminate or effectively reduce radio interference generated by the generator set.

59. Purpose of Interference Suppression

The tactical importance of effective interference suppression cannot be stressed too greatly. Since the electrical disturbances generated by the generator set are composed partly of elec-

trical waves in the radio frequency range, they must be suppressed for two important reasons. First, they will interfere with the proper operation of the friendly radio net, and second, they will enable the enemy to locate the equipment and its associated units.

60. General Source of Interference

Generally, radio interference is generated anywhere a spark occurs or where a highfrequency current is present. A spark is a small amount of current jumping an air gap in response to the force of a relatively high voltage. The gasoline engine ignition system is a common source. Magneto breaker points, generator commutators, relay contacts, and static charges collecting on the frame are other common sources which in some way must be suppressed.

61. 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.

62. Replacement of Supression Components

a. To corect faulty interference suppression, successively substitute new and identical interference suppression components until the faulty components are discovered

b. Spark Plug. For removal and installation, refer to paragraph 73.

c. Ignition Lead Assembly. For removal and installation, refer to paragraph 74.

d. Generator Assembly Capacitors.

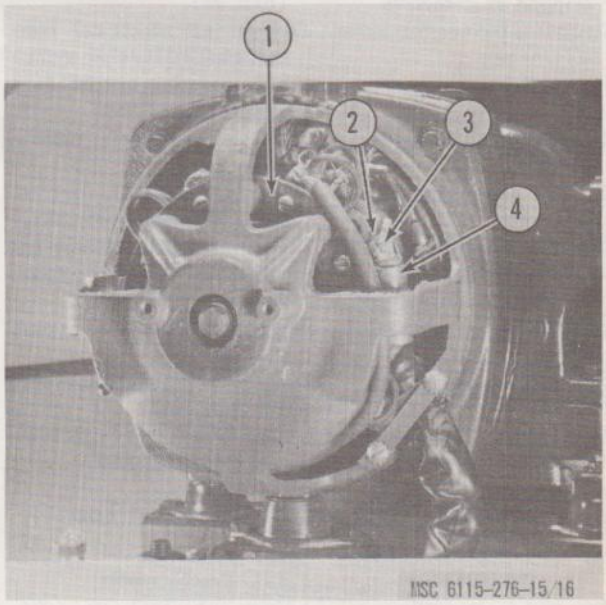
(1) Removal

(*a*) Remove the two thumbscrews (1, fig. 17) that secure the endbell (2) to the generator housing (3) and remove the endbell.

(*b*) Remove the capscrew, lockwasher, and flat washer that secure the capacitor (4, fig. 16) to the brush holder ring (1).

(*c*) Remove the screw (3) and lockwasher that secure the capacitor lead (2) to the capacitor (4) and remove the lead.

(*d*) Remove the other capacitor in the same manner described in steps (*b*) and (*c*) above.



1 Brush holder ring
2 Capacitor lead
3 Capacitor lead screw
4 Capacitor

Figure 16. Generator assembly capacitors.

(2) Installation.

(*a*) Position the capacitor (4) on brush holder ring (1) and secure to the brush holder ring with the flat washer, lockwasher, and capscrew.

(*b*) Position the capacitor lead (2) on the capacitor (4) and secure with the lockwasher and screw (3).

(*c*) Install the other capacitor in the same manner described in steps (*a*) and (*b*) above.

e. Engine-to-Frame Ground Strap.

(1) Removal.

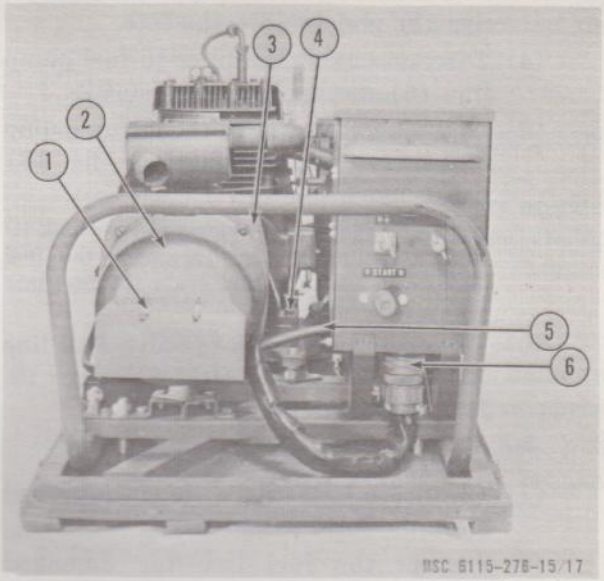
(*a*) Remove the engine mounting bolt (4, fig. 17) and lockwasher and remove one end of the ground strap (5).

(*b*) Remove the control box mounting bolts and washers and remove the ground strap.

(2) Installation.

(*a*) Position one end of the ground strap (5) on the control box mount and install the control box mounting bolts and washers.

(*b*) Position the other end of the ground strap (5) on the engine mount and install the engine mounting bolt (4).



1 Generator endbell thumbscrew (2 rqr)
2 Generator endbell
3 Generator housing
4 Engine mounting bolt
5 Ground strap
6 Control conduit connector

Figure 17. End view of generator and control box.

Section VI. FUEL SYSTEM

63. General

The fuel system consists of the fuel tank, selector valve, fuel pump, strainer, fuel lines, carburetor, and oil bath air cleaner. The selector valve allows fuel to be drawn from the fuel tank mounted on the generator set or an auxiliary fuel source.

Warning: **Do not fill the gasoline tank while the engine is in operation. Gasoline spilled on a hot engine may explode and cause serious injury.**

64. Air Cleaner

a. Removal.

(1) Remove the wing nuts (16, fig. 23) securing the air cleaner to the carburetor. Remove the air cleaner (13) and gasket (12).

(2) Remove the bowl (14) from the air cleaner by swinging the bail (15) to side.

b. Cleaning and Inspection.

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

(2) Inspect the bowl, cleaner, and bail for dents, bends, and tears. Replace defective parts.

(3) Service the air cleaner in accordance with the current lubrication order.

c. Installation.

(1) Position the air cleaner (13) and gasket (12) on the carburetor and secure with two wing nuts (16).

(2) Position the bowl (14) on the air cleaner and position the bail (15).

65. Fuel Lines

a. Removal.

(1) Position fuel selector valve (9, fig. 18) in the OFF position.

(2) Disconnect fuel pump-to-carburetor fuel line (6, fig. 22) from the carburetor elbow (5).

(3) Disconnect the carburetor-to-pump fuel line from the fuel pump elbow (8, fig. 21) and remove the line.

(4) Disconnect the fuel filter-to-fuel pump line (6) at the fuel pump (10).

(5) Disconnect the fuel filter-to-fuel pump fuel line at the fuel filter (8, fig. 18) and remove the line.

Note. Prior to removing the tank-to-valve fuel line (6, fig. 19), open the fuel tank drain cock (5) and drain the fuel into a suitable container.

(6) Disconnect the tank-to-valve fuel line (6) at the fuel selector valve (9, fig. 18) and remove the line.

b. Cleaning, Inspection, and Repair.

(1) Clean the fuel line with an approved cleaning solvent and dry.

(2) Inspect the fuel line for damaged threads and unions, cracks, bends, or breaks. Replace a damaged fuel line.

c. Installation.

(1) Connect the tank-to-valve fuel line (6, fig. 19) to the fuel tank (1) and tighten. Connect the other end to the fitting on the fuel selector valve (9, fig. 18) and tighten.

(2) Connect the fuel filter-to-pump fuel line (6, fig. 21) to the fuel filter (8, fig. 18) and tighten. Connect the other end to the fuel pump elbow (8, fig. 21) and tighten.

(3) Connect the fuel pump-to-carburetor fuel line (6, fig. 22) to the carburetor elbow (5). Connect the other end to the fuel pump elbow and tighten.

(4) Fill the fuel tank, position the fuel selector valve so fuel will flow to the carburetor. Inspect for and correct all leaks.

66. Fuel Filter

a. Removal and Disassembly.

(1) Remove the fuel selector valve (par. 67).

(2) Disconnect the fuel filter-to-fuel pump fuel line (par. 65).

(3) Remove the fuel filter attaching nut and remove the fuel filter (8, fig. 18) from the mounting bracket.

(4) Remove the bowl, gasket, and screen.

b. Cleaning and Inspection. Clean all dirt and foreign material from the bowl, screen, and filter head. Wash the filter in an approved cleaning solvent and shake dry. Inspect the screen for excessive bends, torn or broken mesh. Inspect the sediment bowl for damage. Inspect the bail for damage. Inspect the gasket for tears. Replace all defective parts.

c. Deassembly and Installation.

(1) Install the screen, gasket, and bowl on the fuel filter.

(2) Position the fuel filter in the mounting bracket and secure with the washer and attach nut.

(3) Install the fuel filter to pump fuel line (par. 65).

(4) Install the fuel selector valve (par. 67).

(5) Position the selector valve so fuel will flow to the filter. Inspect for leaks.

67. Fuel Selector Valve and Fittings

a. Removal.

(1) Drain the fuel tank (par. 68).

(2) Disconnect the tank-to-valve fuel line (par. 65).

(3) Remove the fuel selector valve (9, fig. 18) from the fuel filter.

b. Cleaning and Inspection.

(1) Clean the fuel selector valve and fittings with an approved cleaning solvent.

(2) Inspect all threaded portions for stripped or damaged threads and the valve body for cracks or breaks. Replace all defective parts.

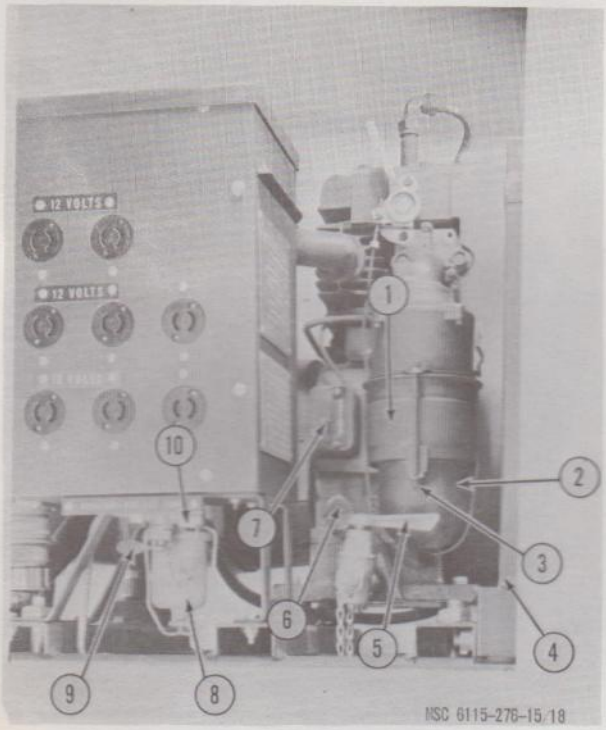
c. Installation.

(1) Install the fuel selector valve in the filter.

(2) Connect the tank-to-valve fuel line (par. 65).

(3) Position the fuel selector valve to the TANK position.

(4) Fill the fuel tank with the proper grade of fuel. Inspect for and correct all leaks.



1 Carburetor air cleaner
2 Cleaner bowl
3 Wing nuts
4 Fuel tank
5 Oil drain valve
6 Oil filler cap
7 Stop button
8 Fuel filter
9 Fuel selector valve
10 Auxiliary fuel adapter dust cover

Figure 18. Fuel and air cleaner section.

68. Fuel Tank, Cap, Straps, and Bracket

a. Removal.

(1) Drain the fuel tank (1, fig. 19) through the drain cock (5) into a suitable container.

(2) Disconnect the tank-to-valve fuel line (par. 65).

(3) Remove the fuel tank support mounting bolts (4, fig. 19).

(4) Loosen the fuel tank attaching strap (2) by removing the strap bolt (3).

(5) Remove the fuel tank.

(6) Remove the fuel filler cap (1, fig. 20).

(7) Remove the fuel filler strainer (4) from the filler neck.

(8) Release the filler cap attach chain (2) from the filler neck by unhooking the chain attach snap (3).

b. Cleaning and Inspection.

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

(2) Inspect the fuel tank, support bracket and strap for cracks, dents, and rusted areas which may cause leaks. Replace a defective tank.

(3) Inspect the fuel tank filler cap, for cracks, bends, and other damage. Straighten or replace defective parts.

(4) Inspect the fuel cap gasket and strainer for wear, cracks, and breaks. Replace defective parts.

c. Installation.

(1) Attach the filler cap attach chain (2) to the filler neck by hooking the chain attach snap (3).

(2) Install the filler strainer (4).

(3) Replace the fuel filler cap (1).

(4) Position the fuel tank (1, fig. 19). Install the tank mounting bolts (4). Install the fuel tank strap bolt (3).

(5) Install the tank-to-valve fuel line (par. 65).

(6) Fill the fuel tank with the correct fuel.

(7) Inspect for leaks.

69. Fuel Pump

a. Removal.

(1) Position the fuel selector valve (9, fig. 18) to the OFF position.

(2) Disconnect the fuel filter-to-pump fuel line and the fuel pump-to-carburetor fuel line (par. 65).

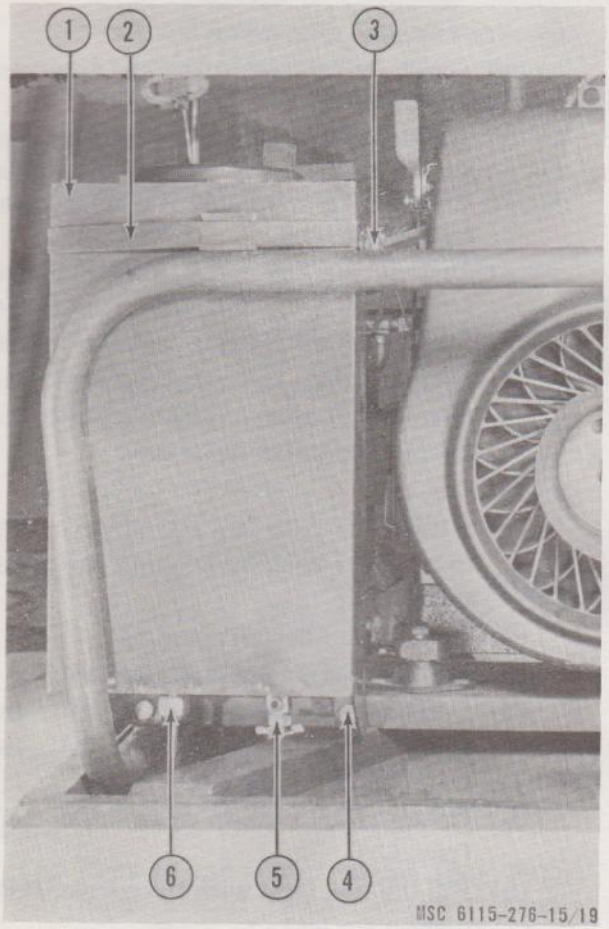
(3) Remove the 2 capscrews (9, fig. 21) and lockwashers that secure fuel pump (10) to the crankcase assembly

(4) Remove the fuel pump (10) and gasket from the crankcase assembly.

(5) Remove the fuel pump elbow (8) from the fuel pump.

b. Cleaning and Inspection.

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



1 Fuel tank
2 Attaching strap
3 Strap bolt
4 Tank mounting bolts
5 Fuel tank drain cock
6 Tank-to-valve fuel line

Figure 19. Fuel tank installation.

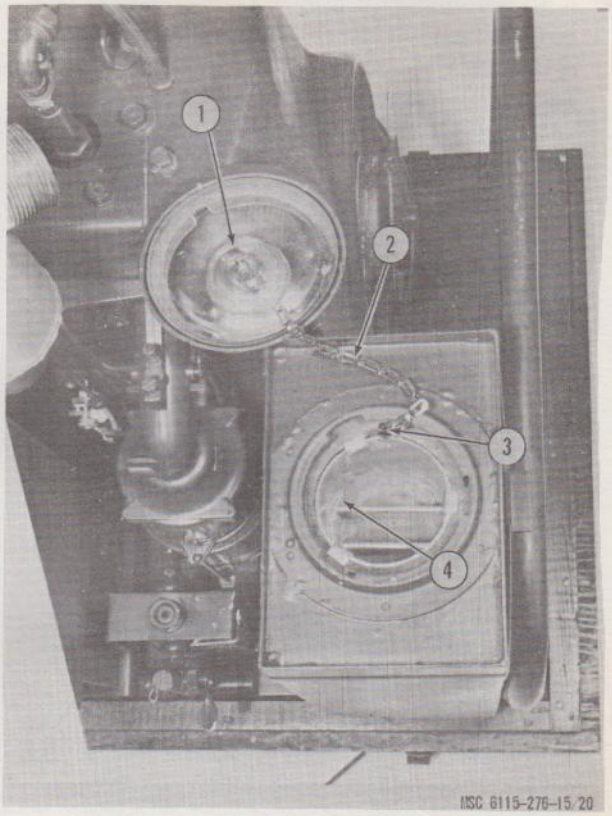
(2) Inspect the fuel pump for cracks, stripped threads, and other damage. Replace a defective pump. Inspect the gasket for tears.

c. Installation.

(1) Install the elbow (8) on the fuel pump (10).

(2) Position the fuel pump gasket and fuel pump (10) on the crankcase assembly.

(3) Install the two lockwashers and capscrews (9) that secure the fuel pump and gasket to the crankcase assembly.



1 Fuel filler cap
2 Cap attach chain
3 Chain attach snap
4 Fuel filler strainer

Figure 20. Fuel filler cap and strainer.

(4) Install the fuel filter-to-pump fuel line and the fuel pump-to-carburetor fuel line (par. 65).

(5) Open the fuel selector valve (9, fig. 18), inspect and correct all leaks.

70. Carburetor

a. Removal.

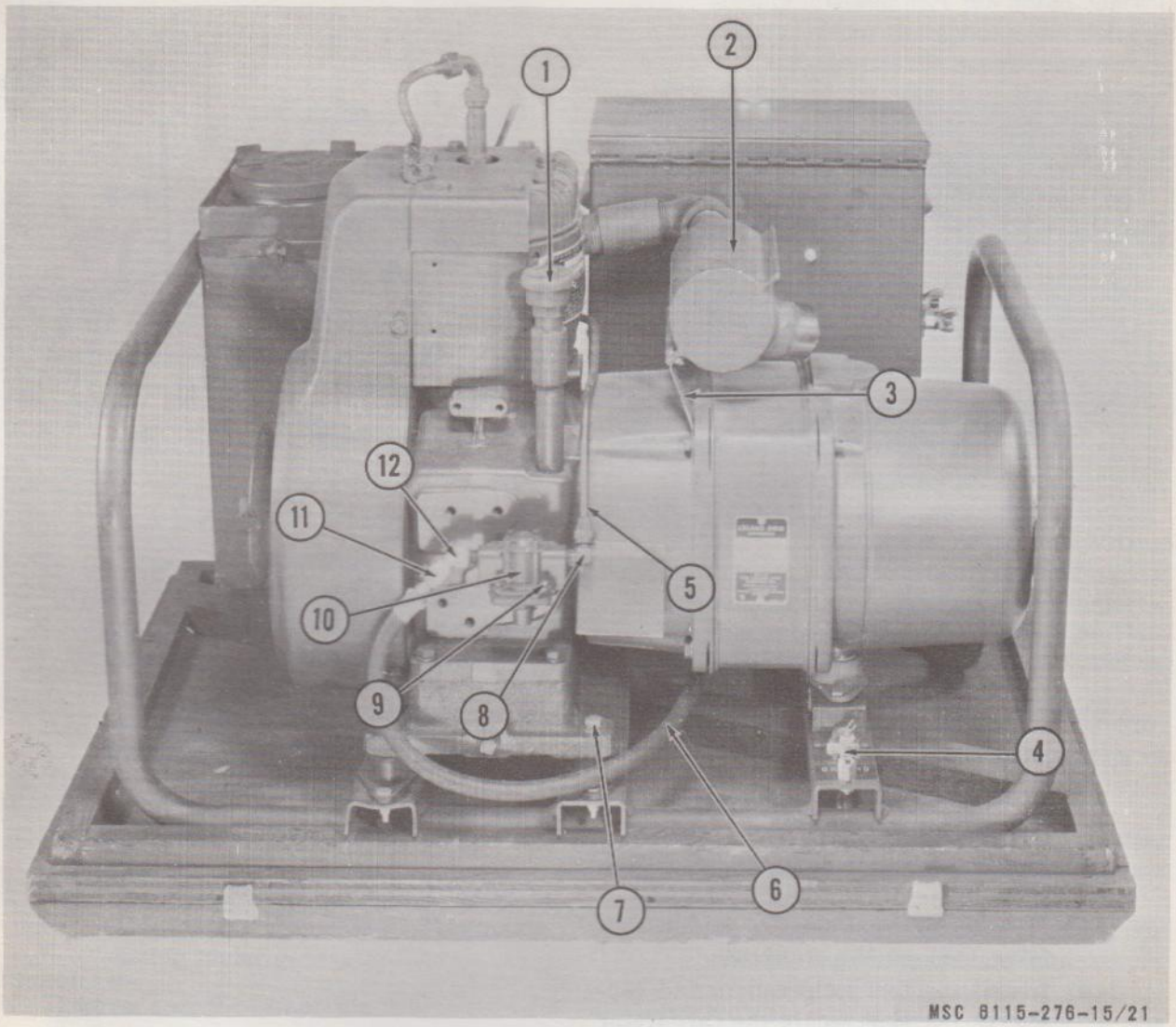
(1) Close the fuel selector valve (9, fig. 18).

(2) Remove the air cleaner assembly (par. 64).

(3) Disconnect the governor throttle link (9, fig. 25) from the throttle shaft (5).

(4) Disconnect the throttle return spring (9, fig. 23) from the throttle shaft.

(5) Disconnect the fuel pump-to-carburetor fuel line (par. 65) from the carburetor elbow (3, fig. 23).



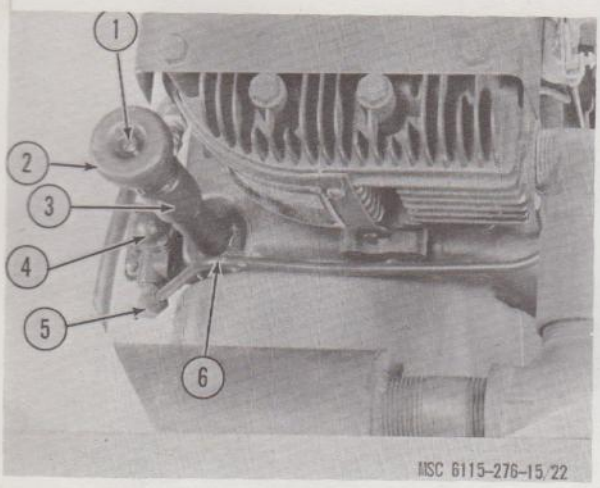
1 Crankcase breather
2 Muffler
3 Muffler support
4 Ground terminal
5 Fuel pump-to-carburetor fuel line
6 Fuel filter-to-fuel pump fuel line
7 Engine attach bolts (4 rqr)
8 Fuel pump elbow, 90°
9 Fuel pump capscrew (2 rqr)
10 Fuel pump
11 Fuel line adapter
12 Fuel line elbow, 45°

Figure 21. Rear view of generator set.

(6) Remove the capscrews (2) and lockwashers that secure the carburetor (18) to the crankcase. Remove the carburetor and gasket (7).
(7) Remove the elbow (3) from the carburetor.
(8) Remove screws (17) and remove air cleaner adapter (11).

b. Cleaning and Inspection.

(1) Drain the carburetor.
(2) Clean the carburetor with an approved cleaning solvent and dry.
(3) Inspect the carburetor for looseness of fit between the body and bowl and for cracks and breaks. Inspect the throttle shaft, choke shaft, and levers for excessive play. Replace a defective carburetor.
(4) Inspect the gasket for tears or breaks. Replace a defective gasket.



1 Breather cap attach screw
2 Breather cap
3 Crankcase breather
4 Fuel pump
5 Carburetor fuel line elbow
6 Fuel pump-to-carburetor fuel line

Figure 22. Fuel line and crankcase breather.

c. Installation.

(1) Position air cleaner adapter (11) and secure with screws (17).

(2) Install the elbow (3) on the carburetor (18).

(3) Position the gasket (7) and carburetor (18) on the crankcase.

(4) Install the two lockwashers and capscrews (2) that secure the carburetor and gasket to the crankcase.

(5) Connect the fuel pump-to-carburetor fuel line (6, fig. 22) to the carburetor elbow (3, fig. 23).

(6) Connect the throttle return spring (9) to the throttle shaft.

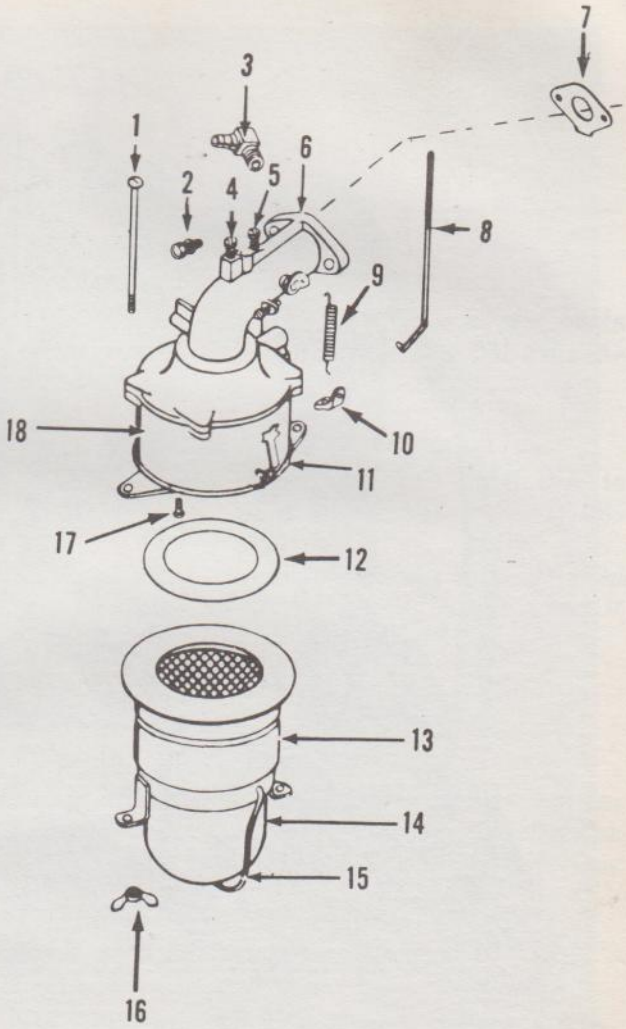
(7) Connect the governor throttle link (9, fig. 25) to the throttle shaft (5).

(8) Install the air cleaner assembly (par. 64).

(9) Position the fuel selector valve so fuel will flow to the carburetor.

d. Adjusting the Carburetor.

(1) Start engine (par. 25) and allow engine to warm up for approximately five minutes.



1 Air cleaner attach screw
2 Carburetor capscrew (2 rqr)
3 Carburetor elbow
4 High speed adjustment needle
5 Idle adjustment screw
6 Carburetor mounting flange
7 Carburetor mounting gasket
8 Governor throttle link
9 Throttle return spring
10 Throttle spring retainer
11 Air cleaner adapter
12 Air cleaner gasket
13 Air cleaner
14 Air cleaner bowl
15 Air cleaner bowl bail
16 Air cleaner attach wing nut (2 rqr)
17 Air cleaner adapter screw (2 rqr)
18 Carburetor

Figure 23. Carburetor and air cleaner.

(2) Close the idle adjustment screw (5, fig. 23) and the high speed adjustment needle (4) by turning them clockwise to a finger tight position.

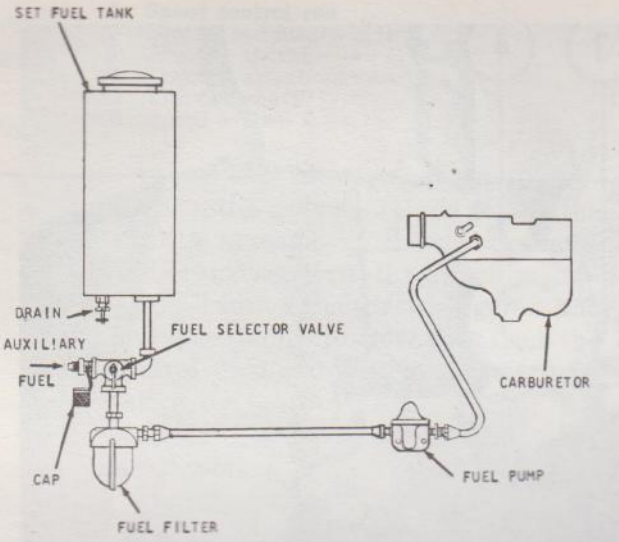


Figure 24. Fuel schematic.

(3) Set the throttle so the motor runs at approximately 1,700 rpm, the slowest speed at which the engine will run smoothly.

(4) Adjust the governor (par. 71) for maximum rpm (3600 rpm).

(5) Set the high speed adjustment needle ¼ to 1¼ turns CCW to the point where the smoothest engine operation occurs.

(6) Final carburetor adjustment must be made at 3600 rpm with the engine operating under generator load.

71. Throttle and Governor Control

a. General. The governor on the engine performs two separate functions:

(1) Maintains constant engine speed under load and no load conditions.

(2) Prevents the engine from exceeding its predetermined maximum speed.

Caution: **Extreme care must be taken to assemble the governor mechanism properly. Failure to do so will allow the engine to overspeed and serious damage will result.**

b. Removal.

(1) Remove the screw (2, fig. 25) securing the speed control rod to the throttle swivel (3). Remove the screws (4) attaching the throttle assembly to the crankcase and cylinder head cooling baffle and remove the throttle assembly. Disconnect the speed control rod (1) from the speed control lever (6) and remove the speed control rod.

(2) Disengage both ends of the governor spring (8) by unhooking the ends from the speed control lever (6) and the governor lever (10).

(3) Remove the speed control lever attach bolt (7) and remove the speed control lever (6).

(4) Loosen the governor lever attach screw (12) and remove the lever (10).

(5) Remove the governor throttle link (9) by unhooking it from the governor lever (10) and the throttle shaft (5).

c. Inspection

(1) Clean all units with a cloth dampened with an approved cleaning solvent.

(2) Inspect the speed control adjusting rod and the governor throttle link for broken ends. Replace defective parts.

(3) Inspect the speed control lever and the governor lever for cracks or excessively enlarged holes.

(4) Inspect the governor spring for tension. Replace the spring if weak or damaged.

d. Installation and Adjustment.

Caution: **For proper operation it is essential that the units are installed in the holes as shown in figure 25.**

(1) Position the speed control lever (6) on the engine crankcase and secure with the attach bolt (7).

(2) To set the governor travel turn the governor shaft (11) CCW.

(3) Position the governor throttle link (9) so the carburetor is in full open position.

(4) Install the governor lever (10) on the governor shaft (11). Install the governor throttle link (9) to the throttle shaft (5) and the governor lever (10) in the holes indicated and tighten the governor lever attach screw (12).

(5) Install the governor spring (8) by hooking the ends in the indicated holes in the governor lever (10) and the speed control lever (6).

(6) Attach the lower end of the speed control rod (1) to the speed control lever (6). Position the other end through

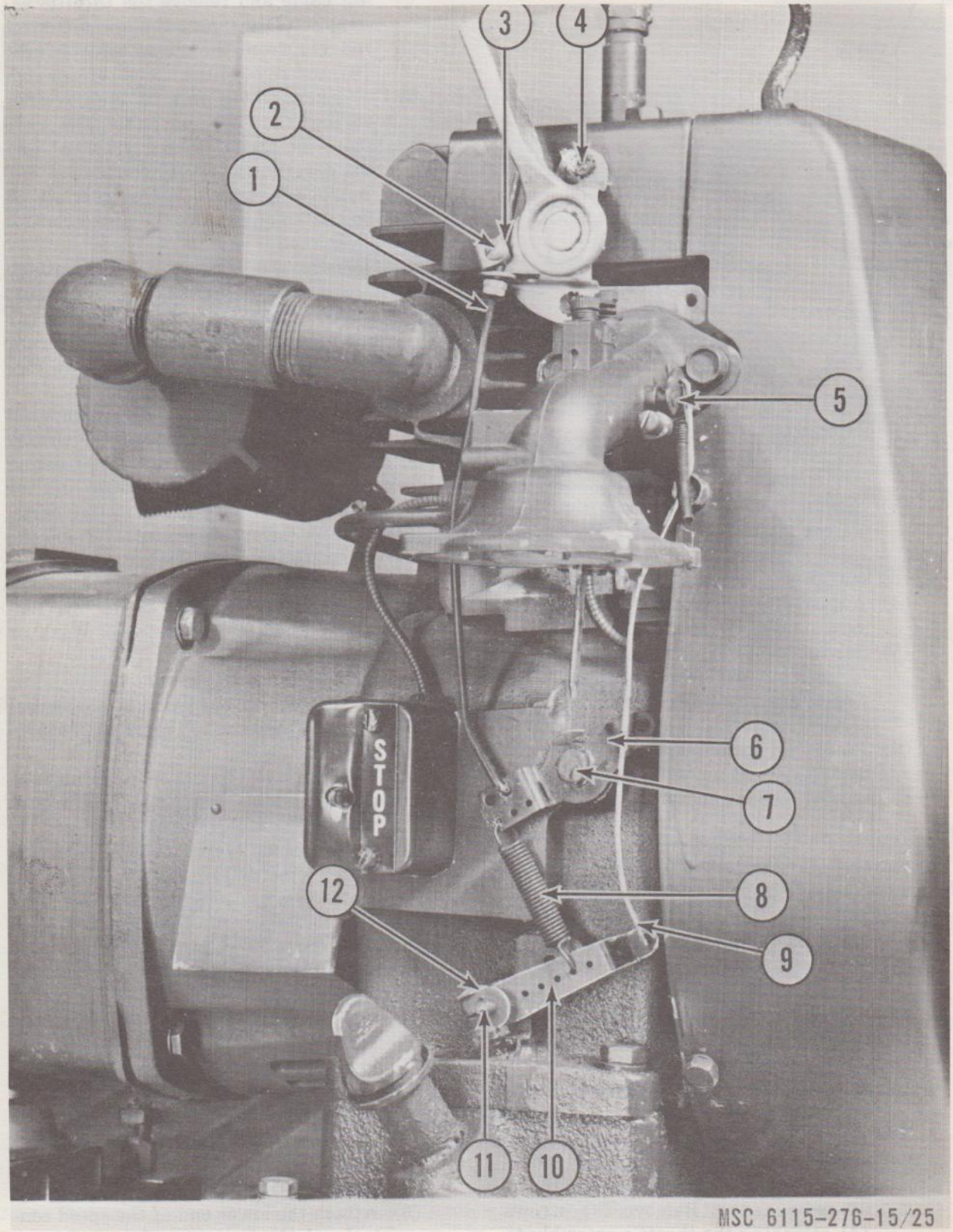


Figure 25. Governor controls.

1 Speed control rod
2 Control rod attach screw
3 Throttle swivel
4 Throttle attach screws
5 Throttle shaft
6 Speed control lever
7 Attach bolt
8 Governor spring
9 Governor throttle link
10 Governor lever
11 Governor shaft
12 Governor lever attach screw

Figure 25—Continued.

the throttle swivel (3) and attach the throttle assembly to the cooling baffle and crankcase with the attach screws (4). Position the throttle against the low speed stop. Remove play from the control linkage by pulling upward on the speed control rod. Install the screw (2) securing the swivel to the speed control.

(7) Install the thumb nut on the speed control rod (1).

(8) Start the engine (par. 25).

(9) Adjust the thumb nut so the governor will maintain 3,600 rpm. To increase the governed rpm turn the thumb nut CW. To decrease governed rpm turn the thumb nut CCW.

Section VII. ENGINE ELECTRICAL SYSTEM

72. General

The engine electrical system consists of the magneto, the spark plug, and the ignition lead. All three parts are shielded to provide radio interference suppression. The current for the ignition is produced by a magneto. The timing of this current is controlled by a set of breaker points.

73. Spark Plug

a. Removal.

(1) Disconnect the ignition lead terminal (3, fig. 30) from the spark plug (4).

(2) Clean dirt and foreign matter from the spark plug.

(3) Remove the spark plug (4) and gasket.

b. Cleaning and Inspection.

(1) Clean the spark plug with a conventional air operated spark plug cleaner. If a cleaner is not available remove the carbon deposits from the electrodes with a knife or a wire brush.

(2) Inspect the spark plug for chipped or cracked installation, burnt or broken electrodes, and damaged threads.

c. Adjusting Spark Plug Gap.

(1) Adjust the gap to 0.025 inch and vertically aline the electrodes. Adjustments are to be made on the outer electrodes only.

d. Installation.

(1) Install the spark plug (4) and gasket in the cylinder head. Torque the spark plug to 275–300 inch-pounds.

(2) Install the ignition lead terminal (3) on the spark plug (4) and tighten.

74. Ignition Lead

a. Removal.

(1) Remove the starter pulley (par. 78).

(2) Remove the flywheel shroud (par. 79).

(3) Remove the flywheel (par. 80).

(4) Remove the spark plug (par. 73).

(5) Remove the screw (18, fig. 36) securing the ground of the ignition shielding.

(6) Remove the clip securing the ignition lead to the blower housing plate (1).

(7) Remove the conductor of the spark plug ignition lead (1, fig. 26) from the coil clip (2).

(8) Remove the ignition lead.

(9) Remove the grommet (15, fig. 36) from ignition lead.

b. Cleaning and Inspection.

(1) Clean the ignition and ground lead assembly with a clean cloth dampened with an approved cleaning solvent.

(2) Inspect the insulation and shielding on the ignition lead and ignition ground lead for breaks, wear, and fraying.

(3) Inspect the terminals for corrosion and broken or cracked insulators.

(4) Inspect threaded parts for damaged threads.

(5) Inspectthe ignition lead insulator for cracks and damaged spring.

(6) Replace a defective ignition lead and ignition ground lead assembly.

c. Installation of Ignition Lead.

(1) Install grommet (15) on ignition lead.

(2) Install the conductor of the spark plug ignition lead (1, fig. 26) to the coil clip (2).

(3) Install clip securing the ignition lead shielding to blower housing plate.

(4) Install screw (18, fig. 36) securing ground of the ignition lead shielding to blower housing plate.

(5) Install the flywheel (par. 80).

(6) Install the flywheel shroud (par. 79), positioning the grommet (2, fig. 30) in the cutout provided in the shroud.

(7) Install the starter pulley (par. 78).

(8) Install the spark plug (par. 73).

75. Magneto and Ignition System

a. General. The magneto (fig. 26) consists of a permanently charged magnet mounted on the flywheel (1, fig. 29), a core—coil assembly, mounted on the stator plate (5, fig. 26), and a breaker point assembly (1, fig. 27) which mounts on the crankcase.

b. Core—Coil Assembly.

(1) *Removal.*

(*a*) Remove the starter pulley (par. 78).

(*b*) Remove the flywheel shroud (par. 79).

(*c*) Remove the flywheel (par. 80).

(*d*) Remove the spark plug lead (1, fig. 26) from the coil clip (2).

(*e*) Remove the screw securing the low tension lead to the terminal.

(*f*) Remove the two screws securing the core—coil assembly to the stator plate (5). Remove the core—coil assembly.

(*g*) To separate the core—coil assembly loosen the screw securing the coil slip terminal to the core and lightly tap the core center post with a soft mallet. This will loosen the core and permit it to be removed from the coil.

(2) *Inspection.*

(*a*) Clean the core—coil assembly, or the separated units with a clean cloth dampened with an approved cleaning solvent.

(*b*) Inspect the coil for holes burned through the insulation and defective leads.

(*c*) Inspect the core for cracked or separated laminations.

(3) *Installation.*

(*a*) Position the coil on the center post of the core and gently tap in place with a soft mallet.

(*b*) Position the coil slip terminal on the core and secure.

(*c*) Position the core—coil assembly on the stator plate and secure with the attach screws.

(*d*) Position the low tension lead on the terminal and secure with attach screw.

(*e*) Install the spark plug lead in the coil.

(*f*) Install the flywheel (par. 80).

(*g*) Install the flywheel shroud (par. 79).

(*h*) Install the starter pulley (par. 78).

c. Flywheel Magnet

(1) *Removal.*

(*a*) Remove the flywheel (par. 80).

(*b*) Remove the two screws securing the magnet to the flywheel. Remove the magnet.

(2) *Inspection.*

(*a*) Clean the magnet with a clean cloth dampened with an approved cleaning solvent.

(*b*) Inspect the magnet for cracks and damaged threads.

(3) *Installation.*

(*a*) Position the magnet on the inside rim of the flywheel and secure with the two mounting screws.

(*b*) Install the flywheel on the chankshaft (par. 80).

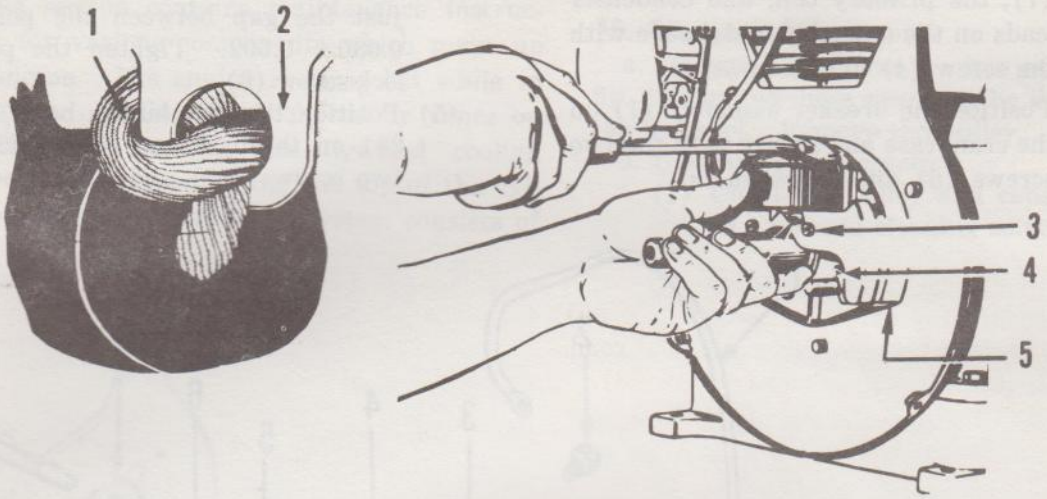
76. Breaker Points and Condensers

a. Removal.

(1) Remove the two screws (15, fig. 28) and lockwashers attaching the breaker stop button box (14) to the breaker plate (4).

(2) Remove the two screws (6, fig. 27) and lockwashers attaching the breaker assembly (1) to the crankcase.

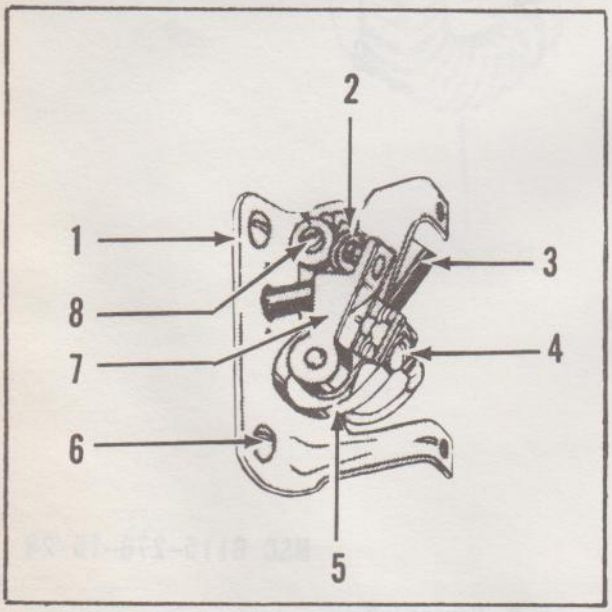
(3) Remove the screw (4) and lockwashers attaching the condenser and



MSC 6115-276-15/26

1 Spark plug ignition lead
2 Coil clip
3 Laminations mounting screw (2 rqr)
4 Magneto laminations
5 Stator plate

Figure 26. Magneto.



MSC 6115-276-15/27

1 Breaker assembly
2 Fixed breaker point section
3 Condenser
4 Screw
5 Breaker spring
6 Breaker mounting screw
7 Movable breaker point
8 Position lockscrew

Figure 27. Adjustment of breaker points.

primary coil leads and the breaker spring (5) to the assembly.

(4) Remove the movable breaker point (7) of the points from the assembly.

(5) Remove the position lockscrew, (8), lockwasher and nut attaching the fixed breaker point section (2) and the condenser (3) to the assembly. Remove the fixed breaker point section and the condenser from the assembly.

b. Inspection.

(1) Clean the parts of the assembly with a cloth dampened with an approved cleaning solvent.

(2) Inspect the breaker points for pits and burned areas. If the points are pitted or burned replace both the breaker points and the condenser.

c. Installation.

(1) Position the fixed breaker point section (2) and the condenser (3) on the

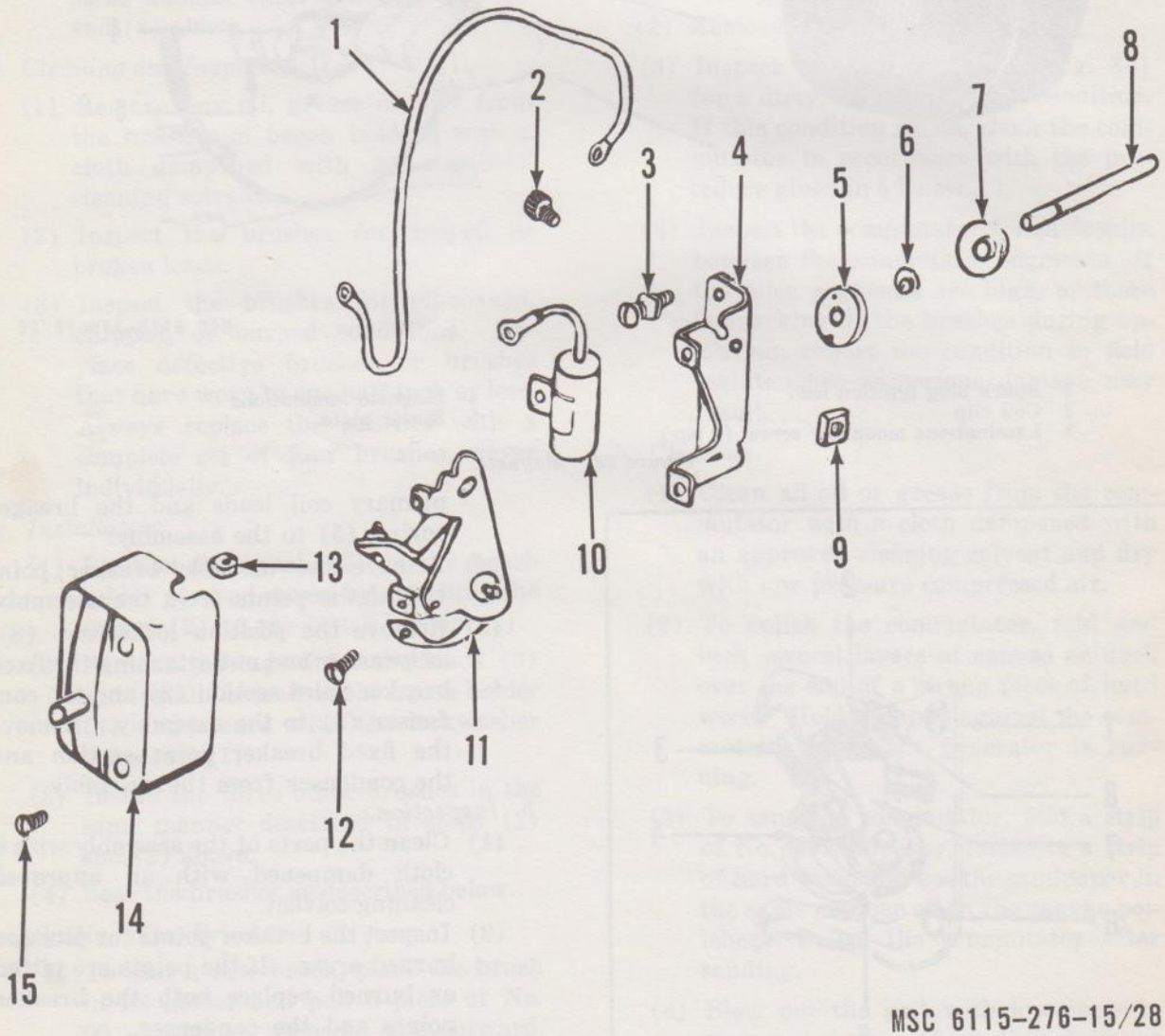
assembly and secure with the lockscrew (8), lockwasher, and nut.

(2) Position the movable breaker point (7), the primary coil, and condenser leads on the assembly and secure with the screw (4) and lockwasher.

(3) Position the breaker assembly (1) on the crankcase and secure with the two screws (6) and lockwashers.

(4) Adjust the gap on the breaker points to 0.030 as follows: Rotate the engine by hand until the breaker points are opened to the widest position. Adjust the gap between the points to 0.030± 0.002. Tighten the position lock screw (8).

(5) Position the stop button box (14, fig. 28) on the base and secure with the two screws (15) and lockwasher.



1 Primary magneto cable
2 Screw
3 Screw
4 Breaker plate
5 Oil seal
6 Spring
7 Disc
8 Point plunger
9 Square nut
10 Condenser
11 Breaker points
12 Screw
13 Rubber grommet
14 Stop button box
15 Screw

Figure 28. Breaker assembly.

77. General

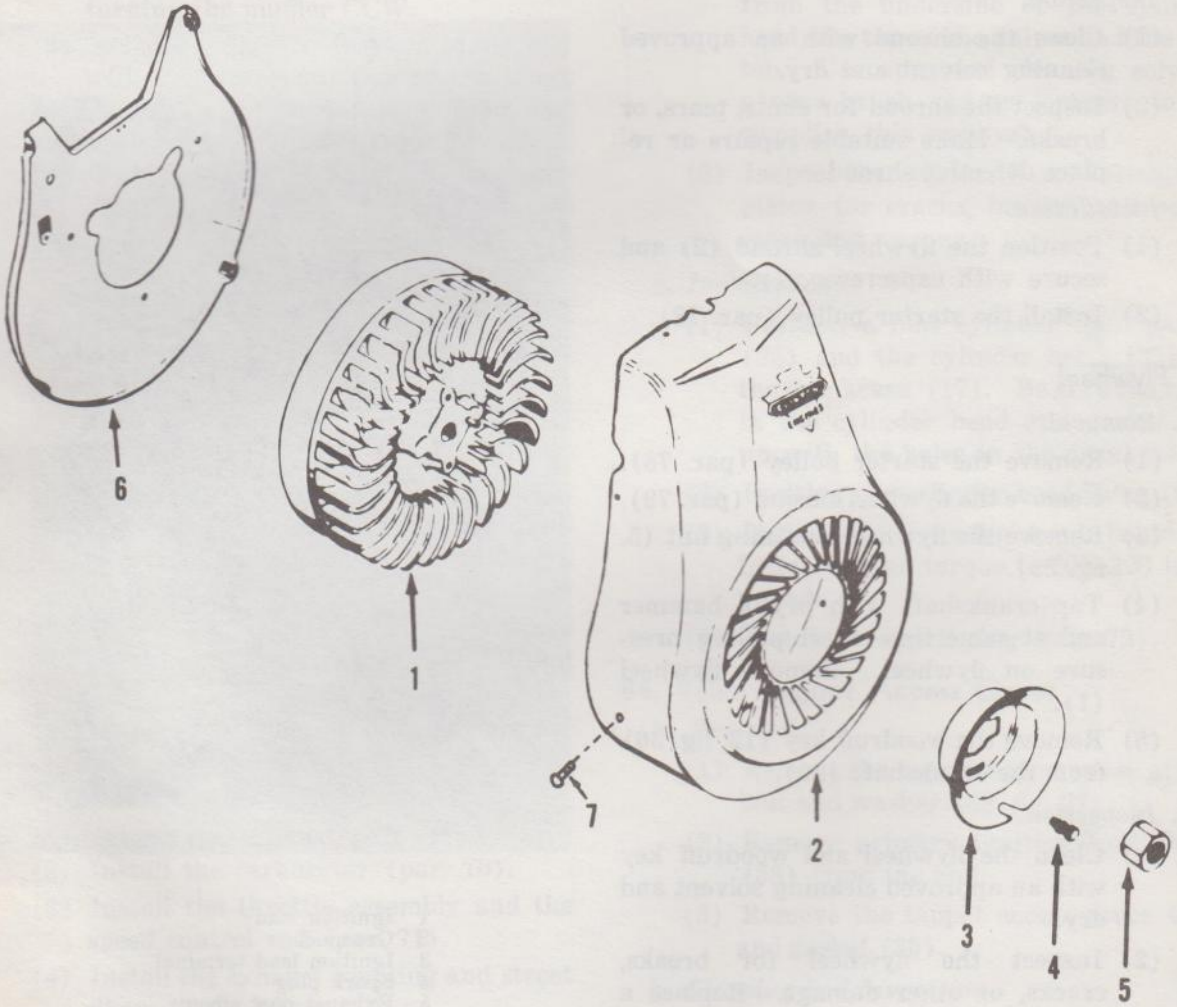
This section contains maintenance instructions for various components which make up the engine. The engine is aircooled while in operation. Cooling air is forced by vanes on the flywheel through the flywheel cooling shroud along two sides and the top of the cylinder. The engine exhaust system consists of a muffler and fittings connecting it to the exhaust port of the engine.

78. Starter Pulley

a. Removal. Remove the two capscrews (4, fig. 29) and washers securing the pulley (3) to the flywheel. Remove the pulley.

b. Cleaning and Inspection.

(1) Clean the pulley and capscrews with an approved cleaning solvent.



MSC 6115-276-15/29

1 Flywheel
2 Flywheel shroud
3 Starter pulley
4 Capscrew (2 rqr)
5 Flywheel retaining nut
6 Plate
7 Shroud attach screws (7 rqr)

Figure 29. Flywheel air shroud and starter pulley.

(2) Inspect the pulley for burrs, cracks, or breaks. Replace a defective pulley.

c. Installation. Position the pulley (3) on the flywheel (1) and install the two capscrews (4).

79. Flywheel Shroud

a. Removal.

(1) Remove the starter pulley (par. 78).

(2) Remove the flywheel shroud attach capscrews (7, fig. 29) and washers and remove shroud (2).

b. Inspection.

(1) Clean the shroud with an approved cleaning solvent and dry.

(2) Inspect the shroud for dents, tears, or breaks. Make suitable repairs or replace defective shroud.

c. Installation.

(1) Position the flywheel shroud (2) and secure with capscrews (7).

(2) Install the starter pulley (par. 78).

80. Flywheel

a. Removal.

(1) Remove the starter pulley (par. 78).

(2) Remove the flywheel shroud (par. 79).

(3) Remove the flywheel retaining nut (5, fig. 29).

(4) Tap crankshaft with prylin hammer and at same time exert pulling pressure on flywheel. Remove flywheel (1).

(5) Remove the woodruff key (12, fig. 36) from the crankshaft (29).

b. Inspection.

(1) Clean the flywheel and woodruff key with an approved cleaning solvent and dry.

(2) Inspect the flywheel for breaks, cracks, or other damage. Replace a defective part.

(3) Remove all burrs from the key, the flywheel bore keyway, and the keyseat of the crankshaft.

(4) Clean the tapered bore of the flywheel, the key, and the tapered shoulder and keyseat of the crankshaft.

c. Installation.

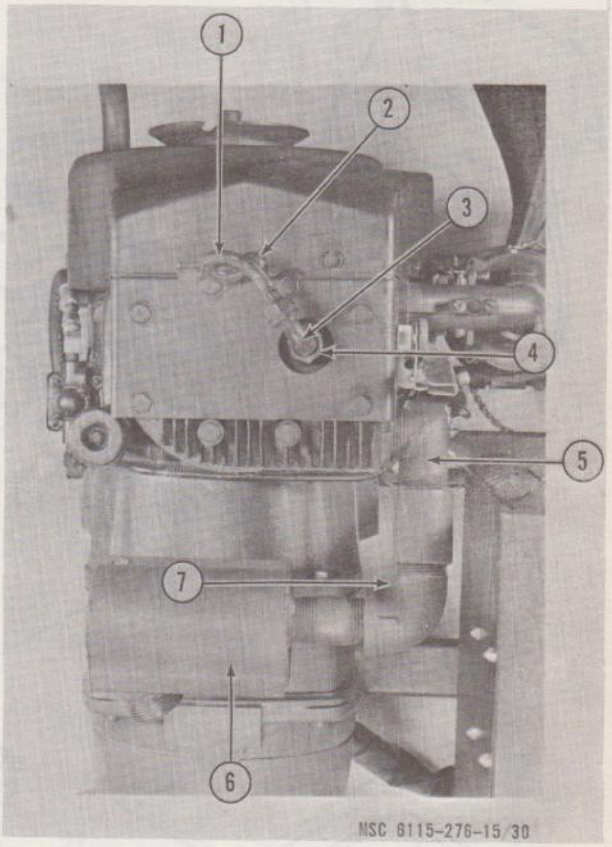
(1) Install the woodruff key (12) in the crankshaft (29).

(2) Position the flywheel (1, fig. 29) on the crankshaft and push hand tight. Be sure the key fits in the keyway on the flywheel.

(3) Install the flywheel retaining nut. Torque the nut to 100–120 inch pounds.

(4) Install the flywheel shroud (par. 79).

(5) Install the starter pulley (par. 78).



1 Ignition lead
2 Grommet
3 Ignition lead terminal
4 Spark plug
5 Exhaust port elbow
6 Muffler
7 Street elbow

Figure 30. Cylinder head and muffler.

81. Cylinder Head Baffle

a. Removal. Remove the cylinder head holddown bolts (1, fig. 31) and remove the cylinder head baffle (6).

b. Inspection. Clean the baffle and inspect for tears and cracks. Replace defective baffle.

c. Installation. Position the cylinder head baffle and install the cylinder head holddown bolts (1) and torque to 200–220 inch-pounds.

82. Exhaust Muffler and Fittings

a. Removal.

(1) Remove the screw securing the muffler (6, fig. 30) to muffler support (3, fig. 21).

(2) Remove muffler by inserting a bar in the exhaust adapter (8, fig. 2) and turning the muffler CCW.

(3) Remove control box screws (4, fig. 33) and position control box so the street elbow (7, fig. 30) can be removed without striking the control box. It is not necessary to disconnect any electrical connections to do this. Remove the elbow.

(4) Remove the exhaust coupling.

(5) Remove the throttle assembly and the speed control rod (par. 71).

(6) Remove the carburetor (par. 70).

(7) Remove the exhaust port elbow (5).

b. Inspection.

(1) Clean muffler with an approved cleaning solvent, inspect for cracks, damaged spot welds, and rust. Replace a defective muffler.

(2) Clean the engine-to-muffler fittings with an approved cleaning solvent and inspect for damaged threads.

(3) Inspect the cylinder exhaust port for damaged threads.

c. Installation.

(1) Install the exhaust port elbow (5).

(2) Install the carburetor (par. 70).

(3) Install the throttle assembly and the speed control rod (par. 71).

(4) Install the exhaust coupling and street elbow (7, fig. 30).

(5) Position the control box and install the screws (4, fig. 33).

(6) Install the muffler (6, fig. 30) and position it so the attach hole lines up with the muffler support (3, fig. 21). Install the screw securing the muffler to the muffler support.

83. Cylinder Head

a. Removal.

(1) Remove the spark plug (par. 73).

(2) Remove the cylinder head holddown bolts (1, fig. 31).

(3) Remove the cylinder head baffle (6), cylinder head (37) and cylinder head gasket (36).

b. Inspection.

(1) Clean all accumulated dirt and grease from the cylinder head cooling fins.

(2) Clean and remove all carbon deposits from the underside of the cylinder head, the top of the valves and the piston. Use approved cleaning solvent, a wire brush and/or scrapers to accomplish this removal.

(3) Inspect the cylinder head, valves, and piston for cracks, burned and pitted areas, and warpage.

c. Installation.

(1) Position a new cylinder head gasket (36) and the cylinder head (37) on the crankcase, (17). Be sure the holes in the cylinder head and gasket line up with the holes in the crankcase.

(2) Position the cylinder head baffle (6).

(3) Install the cylinder head holddown bolts (1) and torque to 200–220 inch-pounds.

(4) Install the spark plug (par. 73).

84. Valve Tappet Access Cover

a. Removal.

(1) Remove the tappet access cover attach bolt and washer (32, fig. 31).

(2) Remove primary ignition lead clamp (33) from the bolt.

(3) Remove the tappet access cover (34) and gasket (35).

b. Cleaning and Inspection.

(1) Clean the tappet access cover and gasket with approved cleaning solvent and dry.

(2) Inspect the tappet access cover for dents, bends, and cracks. Replace a defective tappet access cover.

(3) Replace all gaskets.

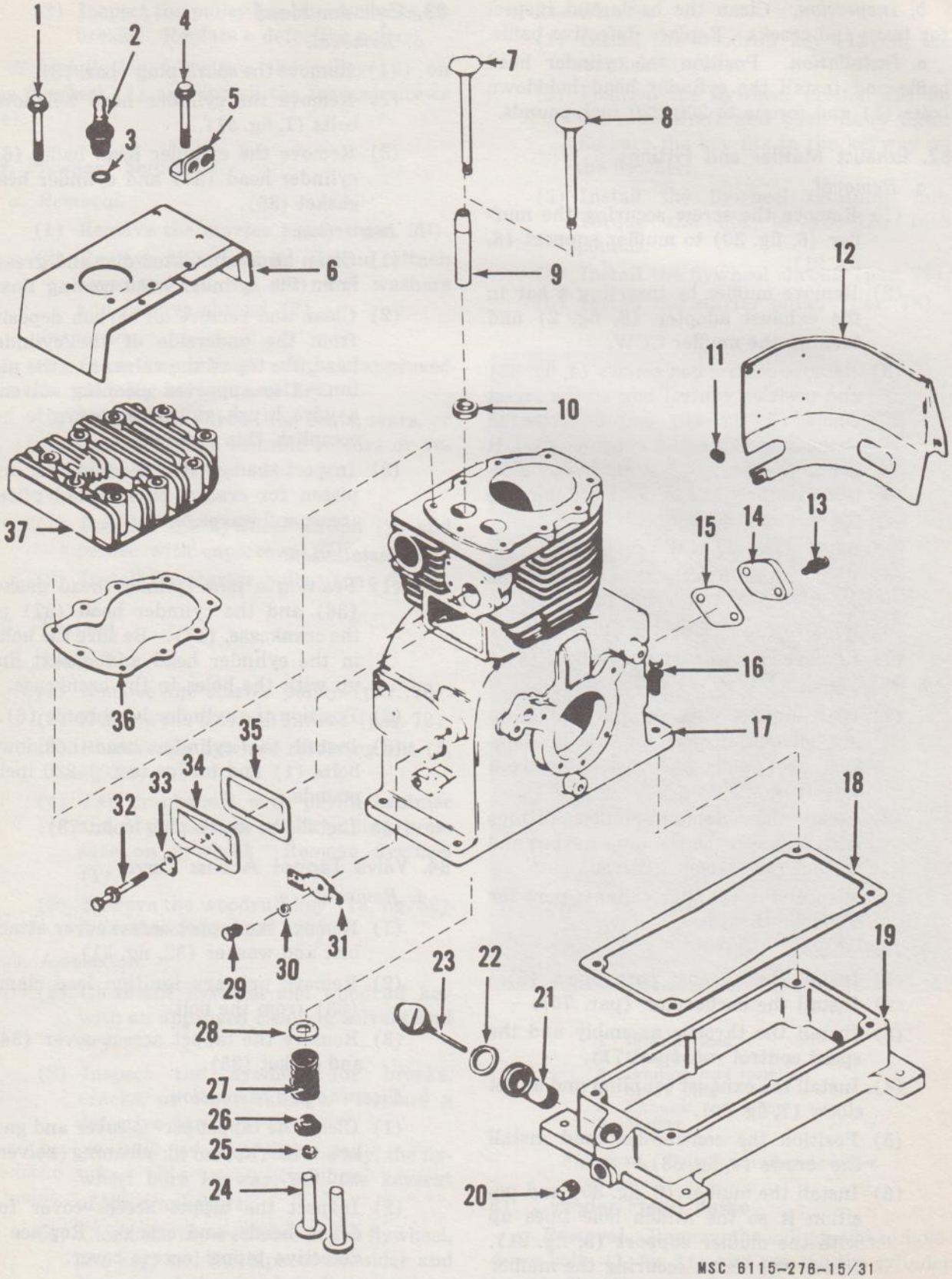


Figure 31. Engine crankcase, base, and head assembly.

1 Cylinder head hold down bolt hex HD 5/16—18 x 2 3/8 in. (7 rqr)
2 Spark plug
3 Spark plug gasket
4 Cylinder head hold down bolt hex HD 5/16—18 x 2 3/8 in. (2 rqr)
5 Engine lifting lug
6 Cylinder head baffle
7 Exhaust valve
8 Intake valve
9 Valve guide (2 rqr)
10 Valve seat (2 rqr)
11 Screw RD HD 10—32 x 3/8 in.
12 Cylinder cooling baffle
13 Screw hex HD 1/4–20 x 3/8 in. (2 rqr)
14 Fuel pump blanking plate
15 Fuel pump gasket
16 Bolt and lockwasher assembly hex HD 3/8–16 x 1 1/2 in.
17 Crankcase
18 Crankcase engine base gasket
19 Engine base
20 Engine drain pipe plug
21 Oil filler neck
22 Oil filler gasket
23 Oil filler cap
24 Valve tappet (2 rqr)
25 Valve keeper (4 rqr)
26 Valve retainer
27 Valve spring
28 Valve spring cup
29 Screw and lockwasher 1/4–20 x 1/2 in.
30 Bushing
31 Speed control lever
32 Bolt and lockwasher assembly hex HD 1/4–20 x 2 3/8 in.
33 Primary ignition lead clamp
34 Valve tappet access cover
35 Gasket
36 Cylinder head gasket
37 Cylinder head

Figure 31—Continued.

(4) Inspect the access cover attach bolt for worn or stripped threads. Replace a damaged bolt.

c. Installation.

(1) Install gasket (35) and tappet access cover (34).

(2) Install primary ignition lead clamp (33) on bolt (32).

(3) Install the tappet access cover bolt and washer (32).

85. Stop Button

a. Removal.

(1) Remove the 2 screws (15, fig. 28) and washers that secure the stop button box (14) to the breaker plate (4).

(2) Remove the stop button box (14).

b. Inspection.

(1) Clean the stop button box with approved cleaning solvent. Dry thoroughly.

(2) Inspect the stop button box assembly for dents, cracks and tension of stop button spring. Replace defective stop button box.

c. Installation.

(1) Position the stop button box (14) on the breaker plate (4).

(2) Place the 2 screws (15) and lockwashers through the stop button box and secure to the breaker plate.

86. Crankcase Breather

a. Removal.

(1) Remove the screw (1, fig. 22) securing the breather cap (2) to the breather (3). Remove the breather cap.

(2) Remove the breather filter.

b. Cleaning and Inspection.

(1) Wash the breather filter in an approved cleaning solvent and dry with low pressure air.

(2) Inspect the filter for tears.

c. Installation.

(1) Position the breather filter in the breather (3).

(2) Position the cap (2) on the breather (3) and secure with the attach screw (1).

Section IX. GENERATOR

87. General

The generator is an air-cooled, shunt-wound 4-pole, self-excited unit that supplies 133 amperes direct current at 15 volts. It has a series winding which enables it to operate as a start-motor for the engine when connected to a fully charged, 12-volt battery.

88. Generator Brushes

Warning: **Disconnect the ignition lead from the spark plug before working on the brushes. This precaution will guard against accidental starting and possible injury to personnel.**

a. Removal.

(1) Remove the thumbscrews (1, fig. 17) securing the endbell (2) to the gen-

erator housing (3) and remove the endbell.

(2) Tag the leads and remove the screw (1, fig. 32) and lockwasher that secure the leads (3) of the brush to the brush holder (4).

(3) Disconnect the spring (2) from the brush holder (4) and remove the brush (5).

(4) Remove the other three brushes in the same manner described in steps (2) and (3) above.

b. Cleaning and Inspection.

(1) Remove any oil, grease or dirt from the brush and brush holders with a cloth dampened with an approved cleaning solvent.

(2) Inspect the brushes for frayed or broken leads.

(3) Inspect the brushes for oil-soaked, chipped, or burned conditions. Replace defective brushes or brushes that have worn to one half inch or less. Always replace the brushes with a complete set of four brushes, never individually.

c. Installation.

(1) Position the brush (5) in the brush holder (4) and secure by attaching the spring (2) to the brush holder (4).

(2) Remove the tags from the leads (3) and install the lead on the brush holder (4) and secure with the lockwasher and screw (1).

(3) Install the three other brushes in the same manner described in steps (1) and (2) above.

(4) Seat the brushes as described below.

d. Seating New Brushes.

(1) To seat a new brush, place the brush in its holder and pull a piece of No. 00 sandpaper, abrasive side outward, back and forth around the commutator (6) surface beneath the brush. Apply spring pressure to the brush when the sandpaper is being pulled in the direction of rotation and release the spring pressure on the return stroke of the sandpaper. Continue until the brush is shaped to the contour of the commutator.

(2) Seat the other 3 brushes in the same manner described in step (1) above.

(3) Position enbell (2, fig. 17) on this generator housing (3) and secure with thumbscrews (1).

89. Commutator

a. Inspection.

(1) Remove the endbell (par. 88).

(2) Remove the brushes (par. 88).

(3) Inspect the commutator (6, fig. 32) for a dirty, rough, or pitted condition. If this condition exists, clean the commutator in accordance with the procedure given in *b* below.

(4) Inspect the commutator for high mica between the commutator segments. If the mica segments are high, or there is sparking at the brushes during operation, report the condition to field maintenance as serious damage may result.

b. Cleaning.

(1) Clean all oil or grease from the commutator with a cloth dampened with an approved cleaning solvent and dry with low pressure compressed air.

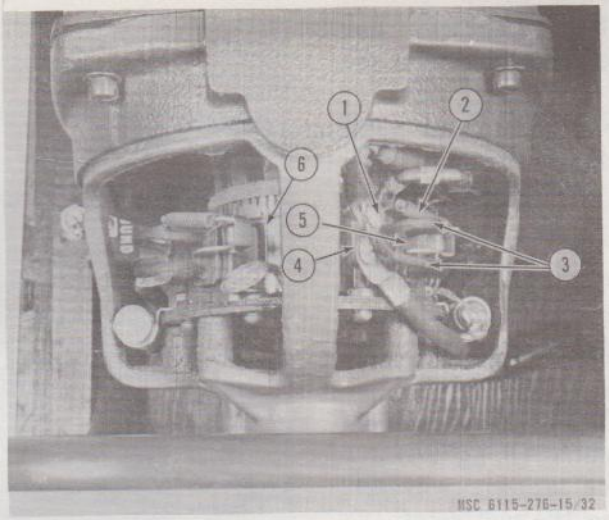
(2) To polish the commutator, fold and tack several layers of canvas or duck over the end of a strong piece of hard wood. Hold this pad against the commutator while the generator is running.

(3) To sand the commutator, fold a strip of No. 00 sandpaper, fasten to a strip of hard wood and use the sandpaper in the same manner as on the canvas polisher. Polish the commutator after sanding.

(4) Blow out the grit with low-pressure compressed air. If sanding does not remove the rough or pitted condition, report this condition to field maintenance.

(5) Install the generator brushes (par. 88).

(6) Install the endbell (par. 88).



1 Screw
2 Brush spring
3 Brush leads
4 Brush holder (4 rqr)
5 Generator brush (4 rqr)
6 Generator commutator

Figure 32. Generator brushes and commutator.

Section X. CONTROL BOX COMPONENTS

90. General

The generator output is controlled and distributed through the control box components. Maintenance instructions for such components, as are organizational maintenance responsibility, are contained in this section.

91. Outlet Receptacle Panel and Receptacle

a. Removal and Disassembly.

(1) Open the control box cover (2, fig. 1).

(2) Remove the screws (1, fig. 33) and lockwashers securing the panel to the control box.

(3) Remove the screws (2), lockwashers, and nuts securing the panel to the control box. Remove the panel.

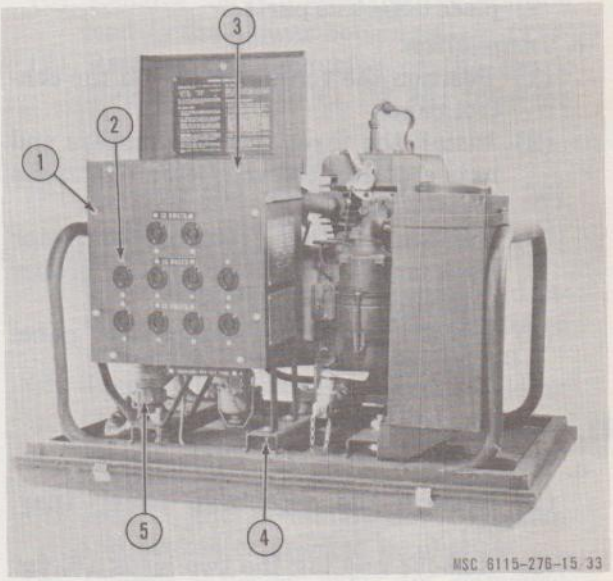
(4) Remove the twenty screws and nuts securing the outlet receptacles to the panel.

b. Cleaning and Inspection.

(1) Clean the receptacle panel with an approved cleaning solvent.

(2) Inspect the panel for dents and breaks. Replace a defective panel.

(3) Inspect the outlet receptacle for cracks and burned spots.



1 Screw pan-hd 10–32 x ⅜ in.
2 Screw pan-hd 6–32 x ⅜ in.
3 Screw flat-hd 10–32 x ⅜ in.
4 Screw hex-hd ¼–20 x ⅝ in.
5 Connector

Figure 33. Control box.

c. Reassembly and Installation.

(1) Position the outlet receptacles and secure to the panel with 20 screws and nuts.

(2) Position the panel on the control box and install the six screws (1), lockwashers and two screws (2) and lockwashers.

92. Voltmeter

a. Removal.

(1) Remove the outlet receptacle panel (par. 91).

(2) Remove and tag the three leads from the voltmeter terminal (5, fig. 34).

(3) Remove the three screws, washers, and nuts attaching the voltmeter (2) to the control panel.

(4) Remove the voltmeter.

b. Cleaning and Inspection.

(1) Clean the voltmeter, using a cloth dampened with an approved cleaning solvent and dry thoroughly.

(2) Inspect the voltmeter for broken glass, cracks, breaks, loose terminals and evidence of arcing. Replace a defective voltmeter.

(3) Inspect the screws and nuts for stripped or damaged threads. Replace defective parts.

c. Installation.

(1) Position the voltmeter (2) on the control panel.

(2) Install the three screws, washers and nuts securing the voltmeter (2) to the control panel.

(3) Remove the tags from the voltmeter leads and secure them to the proper voltmeter terminals (5).

(4) Install the outlet receptacle panel (par. 91).

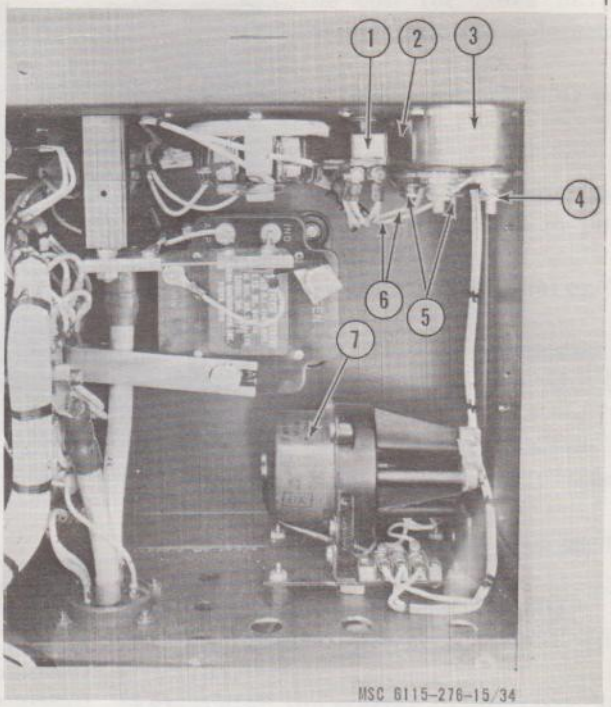
93. Ammeter

a. Removal.

(1) Remove the receptacle panel (par. 91).

(2) Remove and tag the two leads (6, fig. 34) from the ammeter (3).

(3) Remove the three screws, washers, and nuts (4) from the ammeter (3). Remove the ammeter from the control panel (fig. 9).



1 Transfer switch
2 Voltmeter
3 Ammeter
4 Nut
5 Voltmeter terminal
6 Ammeter leads
7 Voltage regulator

Figure 34. Control box.

b. Cleaning and Inspection.

(1) Clean the ammeter, using a cloth dampened with an approved cleaning solvent and dry thoroughly.

(2) Inspect the ammeter for broken glass, cracks, breaks, loose terminals and evidence of arcing. Replace a defective ammeter.

(3) Inspect the screws and nuts for stripped or damaged threads. Replace defective parts.

c. Installation.

(1) Position the ammeter (3, fig. 34) on the control panel (fig. 9).

(2) Install the three screws, washers and nuts securing the ammeter to the control panel.

(3) Remove the tags from the ammeter leads and secure them to the proper ammeter terminals.

(4) Install the receptacle panel (par. 91).

94. Circuit Interrupter Switch

a. Removal.

(1) Remove the receptacle panel (par. 91).

(2) Disconnect the electrical lead (2, fig. 35) from the circuit interrupter switch (1).

(3) Disconnect the electrical bus bar (12) from the circuit interrupter switch terminal (11).

(4) Remove the two circuit interrupter switch attach screws and lockwashers and remove the circuit interrupter switch (1) from the control panel (fig. 9).

b. Cleaning and Inspection.

(1) Clean the interrupter switch using a cloth dampened with an approved cleaning solvent and dry thoroughly.

(2) Inspect the interrupter switch for cracks, loose terminals, lack of spring tension on switch, stripped or damaged threads, and evidence of arcing. Replace defective interrupter switch.

c. Installation.

(1) Position the circuit interrupter switch in the control panel (fig. 9) and install the two circuits interrupter switch attach screws and lockwashers.

(2) Position the bus bar (12, fig. 35) on the interrupter switch terminal and secure with the flatwasher, lock washer and nut.

(3) Position the electrical lead (2) on the interrupter switch terminal and secure with lockwasher and hex nut.

(4) Install the receptacle panel (par. 91).

95. Start Switch

a. Removal.

(1) Remove the receptacle panel (par. 91).

(2) Remove and tag leads from starter terminal (7, fig. 35).

(3) Loosen nut attaching slotted bus bar (10) to upper terminal of start switch (9).

(4) Remove two nuts (8), lockwashers and start switch (9) from the control box.

(5) Remove starter button assembly.

b. Inspection.

(1) Clean the start switch with an approved cleaning solvent and dry thoroughly.

(2) Inspect the start switch for loose terminals, weak spring tension, cracks, dents and corrosion, and evidence of burning. Replace a defective start switch.

c. Installation.

(1) Position start switch (9) on control box.

(2) Install two nuts (8) and lockwashers attaching start switch to control box and tighten screws.

(3) Position slotted bus bar (10) on upper terminal of start switch and tighten attach nut.

(4) Remove tags from leads and connect to lower start switch terminal (7).

(5) Install receptacle panel (par. 91).

96. Transfer Switch

a. Removal.

(1) Remove the receptacle panel (par. 91).

(2) Remove and tag the leads from the transfer switch (1, fig. 34).

(3) Remove the two nuts and remove the transfer switch (1) from the control box.

b. Inspection.

(1) Clean the transfer switch with an approved cleaning solvent.

(2) Inspect the transfer switch for loose termnials, cracks, or faulty throw.

c. Installation.

(1) Position the transfer switch (1) in the control box and install two nuts.

(2) Remove tags from leads and connect the leads on transfer switch (1).

(3) Install the receptacle panel (par. 91).

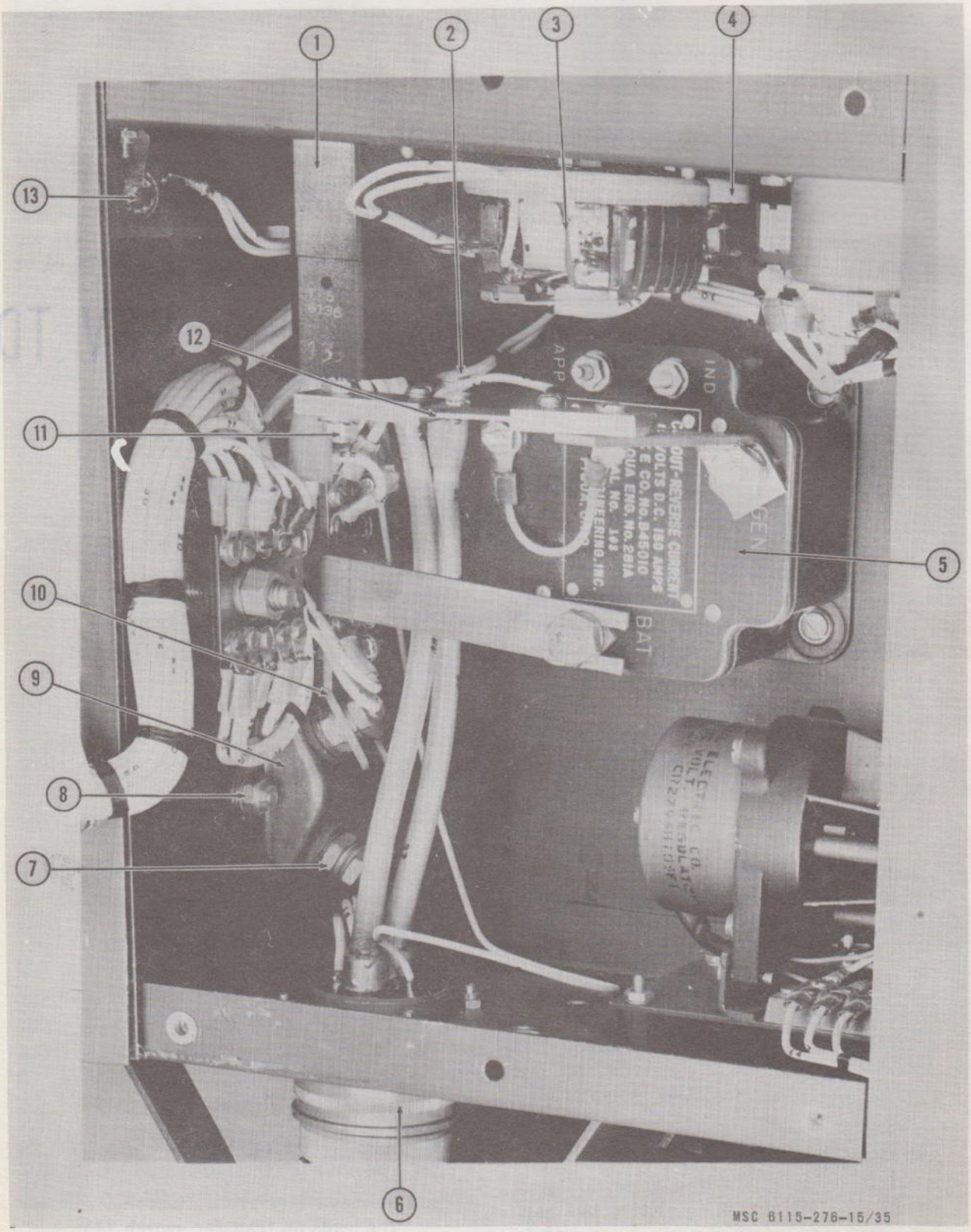


Figure 35. Control box.

GPO 827-096-7

1 Circuit interrupter
2 Circuit interrupter lead
3 Man. voltage rheostat
4 Auto. voltage rheostat
5 Reverse current relay
6 Connector
7 Starter terminal
8 Starter nut
9 Start switch
10 Starter terminal bus bar
11 Circuit interrupter terminal
12 Bus bar
13 Resistor

Figure 35—Continued.

CHAPTER 4

FIELD AND DEPOT MAINTENANCE INSTRUCTIONS

Section I. OVERHAUL

97. Scope

a. The following instructions are for field and depot maintenance personnel. They contain information on equipment maintenance that is beyond the scope of the tools, equipment, personnel, or supplies normally available to organizational maintenance.

b. Appendix I includes the publications applicable to field and depot maintenance. Appendix II contains the maintenance allocation chart. The field and depot maintenance repair parts and special tool lists are listed in TM 5–6115–276–25P.

97.1. Record and Report Forms

For record and report forms applicable to field and depot maintenance, refer to TM 38–750.

Note. Applicable forms, excluding Standard Form 46 which is carried by the operator, shall be kept in a canvas bag mounted on the equipment.

Section II. DESCRIPTION AND DATA

97.2. Description

For a complete description of the generator set, see paragraph 3.

97.3. Tabulated Data

For tabulated data applicable to field and depot maintenance, refer to paragraph 4. Refer to figure 44 for wiring diagram of generator set.

Section III. SPECIAL TOOLS AND EQUIPMENT

97.4. Special Tools and Equipment

No special tools or equipment are required by field and depot maintenance personnel for maintenance of this generator set.

97.5. Field and Depot Maintenance

Field and depot maintenance repair parts are listed and illustrated in TM 5–6115–276–25P.

97.6. Specially Designed Tools and Equipment

No specially designed tools or equipment are required by field and depot maintenance personnel for maintenance of this generator set.

Section IV. TROUBLESHOOTING

Troubleshooting applicable to field and depot maintenance is contained in paragraphs 42–54.

Section V. REMOVAL AND INSTALLATION OF ENGINE, GENERATOR, AND CONTROL BOX

98. General

This section gives removal and installation instructions for the major components of the EG–2 generator set.

99. Engine

a. Removal.

(1) Position the fuel selector valve in the OFF position (par. 15).

(2) Disconnect the fuel filter-to-fuel pump fuel line at the fuel pump (par. 65).

(3) Remove the four engine mount attach bolts (7, fig. 21), nuts and lockwashers.

(4) Turn the through-bolt (1, fig. 41) four turns CCW and strike sharply with a prylin hammer to separate the engine and generator. Remove engine from frame.

b. Installation.

(1) Position engine on the four engine supports.

(2) Position the ground strap (5, fig. 17).

(3) Install the four engine mount attach bolts (7, fig. 21), nuts and lockwashers. Do not tighten.

(4) Install the through-bolt (1, fig. 41) and secure to the engine shaft by turning CW four turns.

(5) Tighten the four engine mount attach bolts (7, fig. 21).

(6) Connect the fuel filter-to-fuel pump fuel line at the fuel pump (par. 65).

100. Generator

a. Removal.

(1) Turn the through-bolt (1, fig. 41) four turns CCW and strike sharply with a prylin hammer.

(2) Remove the two bolts attaching the generator support to the frame.

(3) Disconnect the electrical lead at the control box by removing the electrical connector (5, fig. 33). Remove the generator.

(4) Remove the generator mount from the base of the generator by turning the mount CCW.

b. Installation.

(1) Install the generator mount on the base of the generator by turning it CW.

(2) Position the generator on the generator support. Install the two generator support attach bolts.

(3) Install the through-bolt (1, fig. 41) and secure to the engine shaft by turning CW four turns.

(4) Connect the electrical connector (5, fig. 33) to the control box.

101. Control Box

a. Removal.

(1) Disconnect the electrical connector (5, fig. 33) at the control box.

(2) Remove the six screws (4) attaching the control box to the frame. Remove the control box from the frame.

b. Installation.

(1) Position the control box on the frame, install the six control box attaching screws (4).

(2) Connect the electrical connector (5) to the control box.

Section VI. ENGINE OVERHAUL

102. Valves, Valve Seats, Guides and Springs

a. Remove and install the following:

(1) Remove and install carburetor (par. 70).

(2) Remove and install muffler (par. 82).

(3) Remove and install tappet access cover (par. 84).

(4) Remove and install cylinder head (par. 83).

(5) Remove, install, disassemble, and reassemble the valves, valve seats, guides, and springs as shown by figure 31.

(6) Clean, inspect and repair.

b. To grind the valves and valve seats, grind both the valves and valve seats to an angle of 45°. After grinding, use a reciprocating advancing tool to rotate the valves back and forth on the valve seats in a suitable lapping compound; occasionally lift the valves and reseat them in a different position to insure a uniform seat entirely around the valve. Lap the valves until a full seat shows around the entire valve. Seats should be $\frac{1}{32}$ inch wide, and under no circumstances more than $\frac{1}{16}$ inch in width. After lapping, remove the valves and clean the valves, valve seats, valve guides, tappets, and crankcase assembly with approved cleaning solvent. Dry thoroughly.

(1) Valve clearance may be measured without removing the valves or after replacement or grinding. Accessibility for measurement prior to removal is gained by performance of 1 through 3 above. Measurement after removal requires the valve to be held firmly by hand, against its valve seat during measurement.

(2) Measure and adjust valve clearance as follows:

(*a*) Manually crank engine to place tappet in lowest position.

(*b*) Use feeler gage to measure clearance between valve and tappet. Correct clearance for both intake and exhaust valves is 0.012 in. between the end of the push rod and the valve stem.

(*c*) If clearance is more than it should be, replace the valve.

(*d*) If clearance is less than it should be remove valve and grind end of stem.

(*e*) Measure clearance again and regrind as necessary.

103. Engine, Base, and Crankcase

a. Remove and Install Engine, Base, and Crankcase.

(1) Remove and install engine (par. 99).

(2) Remove and install cylinder head (par. 83).

(3) Remove and install muffler (par. 82).

(4) Remove and install fuel pump (par. 69).

(5) Remove and install carburetor (par. 70).

(6) Remove and install flywheel (par. 80).

(7) Remove and install blower housing plate (6, fig. 29).

(8) Remove and install four bolts and lockwashers (16, fig. 31) attaching the crankcase (17) to the engine (18) on reassembly.

b. Clean, Inspect, and Repair.

104. Pistons and Connecting Rods

a. Remove and install piston and connecting rods.

(1) Separate the engine crankcase and base (par. 103).

(2) Place the crankcase upside-down on a flat surface. Bend the connecting rod screw lock flaps (26, fig. 36) outward. Remove the oil distributor (27) and connecting rod cap (28). Push the connecting rod and piston through the top of the crankcase.

(3) Piston rings, one compression (7), one scraper (8), and one oil (9), must be replaced whenever the piston is removed.

(4) The piston should be replaced if it shows signs of score marks, worn ring lands, or oversized piston pin holes. The connecting rod should be replaced if the bearing surfaces are scored or worn excessively.

(5) Install new piston rings on the piston in such a manner that the openings are staggered. Position the piston of the connecting rod. Use a piston ring compressor (fig. 39) while installing the piston in the cylinder bore.

(6) Lugs on the connecting rod cap must line up with lugs on the connecting rod.

Note. The face of the connecting rod cap is scarfed on one side. The scarfed face must be installed toward the valve side of the engine.

b. Clean, Inspect, and Repair.

105. Crankcase

a. Remove and Install Crankshaft.

(1) Remove and install the piston and connecting rods (par. 104).

(2) Remove and install the flywheel (par. 80).

(3) Remove the stator plate (24, fig. 36) and oil seal (22) from the engine.

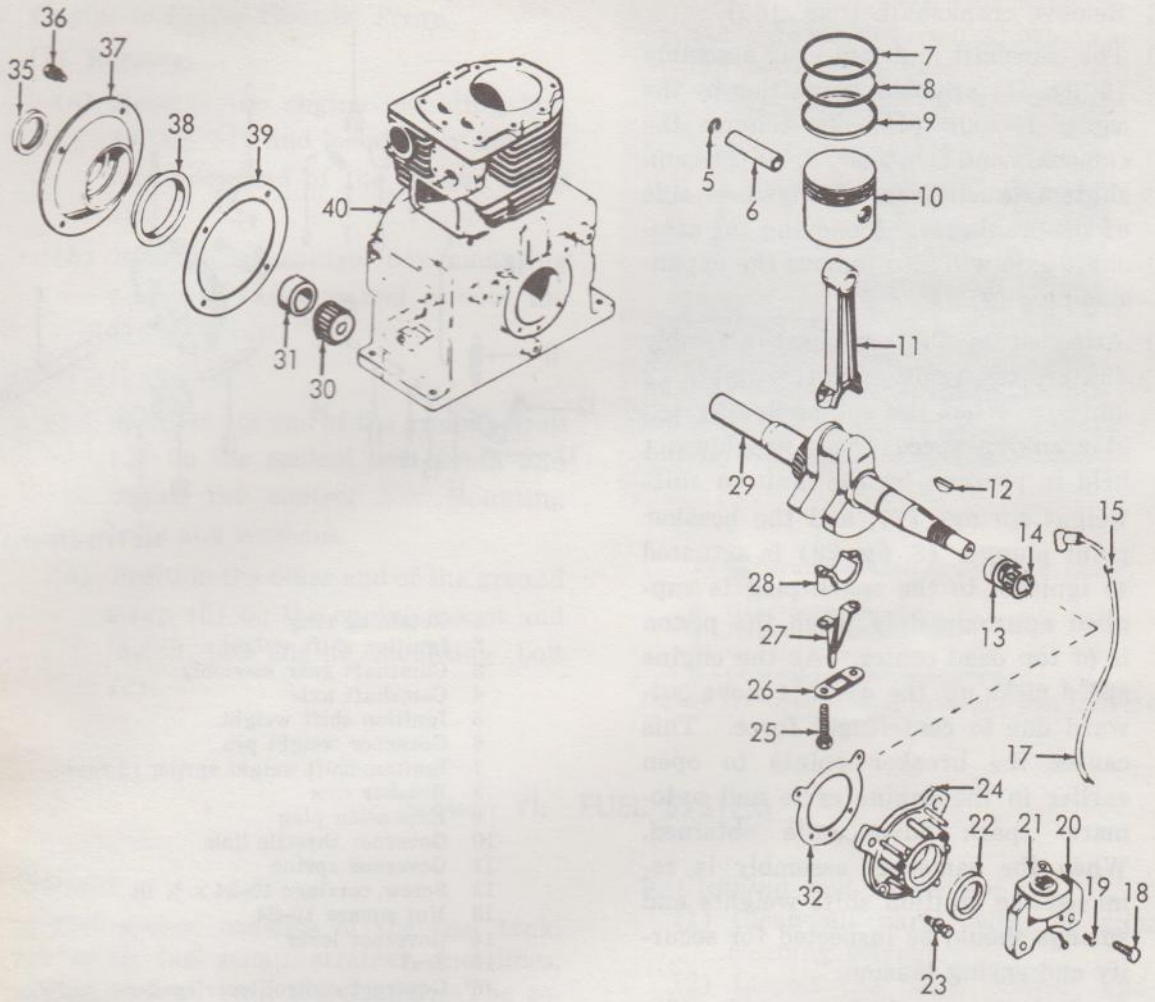
(4) Position the crankshaft so the counterweights of the crankshaft will clear the cam gear.

(5) Tap the crankshaft lightly on the drive end and remove the crankshaft.

(6) Ball bearings (30 and 13) are press fitted on the crankshaft. To remove them, use a bearing or wheel puller; to install them, use a bearing driver.

(7) Inspect the crankshaft journal for score marks or excessive wear.

b. Clean, Inspect, and Repair.



MSC 6115-276-15/38

1 Blower housing shroud plate *
2 Bolts * (4 rqr)
3 Ignition lead clamp *
4 Screw * (2 rqr)
5 Piston pin retainer
6 Piston pin
7 Piston ring—compression
8 Piston ring—scraper
9 Piston ring—oil
10 Piston
11 Connecting rod
12 Key, woodruff
13 Bearing cup
14 Bearing
15 Grommet
16 Ignition lead clamp *
17 Ignition lead
18 Screw hex HD
19 Screw RD HD
20 Magneto laminations
21 Magneto coil
22 Oil seal
23 Screw
24 Stator plate
25 Connecting rod capscrew
26 Connecting rod screw lock
27 Oil distributor
28 Connecting rod cap
29 Crankshaft
30 Bearing
31 Bearing cup
32 Stator plate gasket
33 Screw and washer hex nut *
34 Screw RD HD *
35 Oil seal
36 Screw hex HD
37 Bearing flange
38 Oil seal retainer
39 Gasket
40 Crankcase

Figure 36. Engine assembly.

106. Camshaft and Cam Gear

a. Remove and Install Camshaft and Cam Gear.

(1) Remove crankshaft (par. 105).

(2) The camshaft and cam gear assembly (3, fig. 37) are held in position by the camshaft axle (4). To remove the camshaft and cam gear, drive the camshaft axle out from the flywheel side of the crankcase. Removing the camshaft axle will also remove the expansion plug (9).

(3) Attached to the camshaft assembly (3) are two ignition shift weights (2 and 5). When the engine is operated at cranking speed, these weights are held in position by the ignition shift weight springs (7), and the breaker point plunger (8, fig. 28) is actuated so ignition to the spark plug is supplied approximately when the piston is at top dead center. As the engine speed picks up, the weights move outward due to centrifugal force. This causes the breaker points to open earlier in the engine cycle and automatic spark advance is obtained. When the camshaft assembly is removed the ignition shift weights and springs should be inspected for security and spring tension.

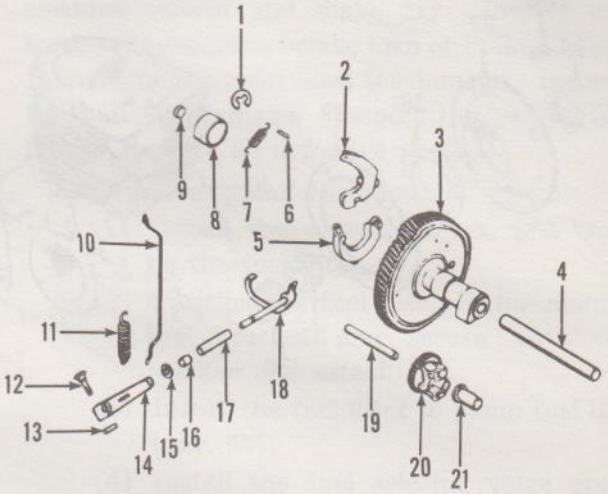
(4) Replace the camshaft assembly (fig. 38) by positioning it in the engine crankcase so the timing marks of the camshaft gear and the crankshaft mesh as shown in figure 40. Drive the camshaft axle in the crankcase from the drive end. Replace the expansion plug.

b. Clean, Inspect, and Repair.

107. Governor

a. The governor shaft, (18, fig. 37) governor weights, gear (20), governor thimble (21), and governor axle (19) are assembled as shown in fig. 38.

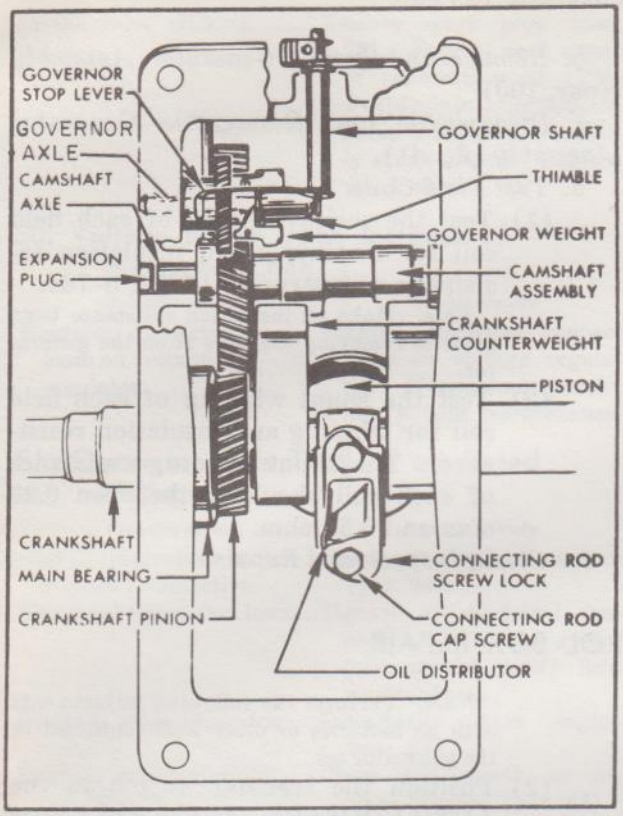
b. The governor gear slides on the governor axle and engages with the teeth of the cam gear. As the speed of the engine increases the governor weights spread causing the governor shaft to close the carburetor butterfly. As the engine speed decreases, this action is reversed. The governor shaft is installed as a unit. The shaft goes through the crankcase and is connected with the carburetor linkage. The long arm of the governor gear acts as a limit stop. The short side of the governor shaft is the actuating lever for the thimble. For governor adjustments, see paragraph 71.



MSC 6115-276-15/37

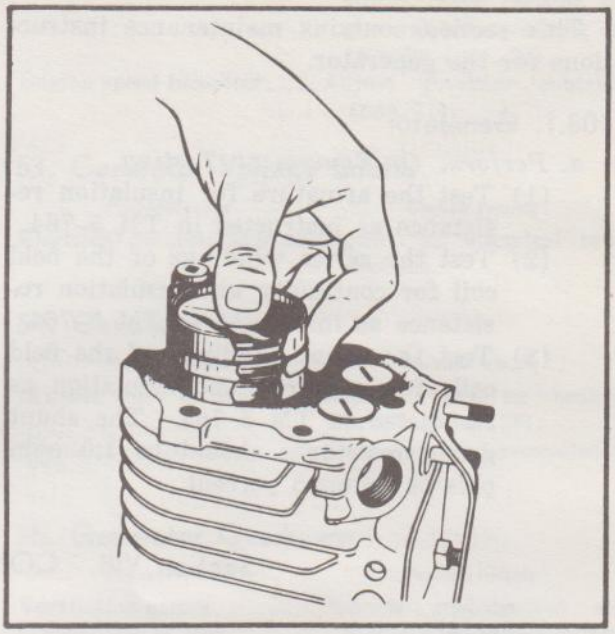
1 Retaining ring
2 Ignition shift weight
3 Camshaft gear assembly
4 Camshaft axle
5 Ignition shift weight
6 Governor weight pin
7 Ignition shift weight spring (2 rqr)
8 Breaker cam
9 Expansion plug
10 Governor throttle link
11 Governor spring
12 Screw, carriage 10–24 x ¾ in.
13 Nut square 10–24
14 Governor lever
15 Seal
16 Governor control lever spacer
17 Governor shaft housing
18 Governor shaft
19 Governor weight axle
20 Governor gear
21 Governor thimble

Figure 37. Governor and camshaft assembly.



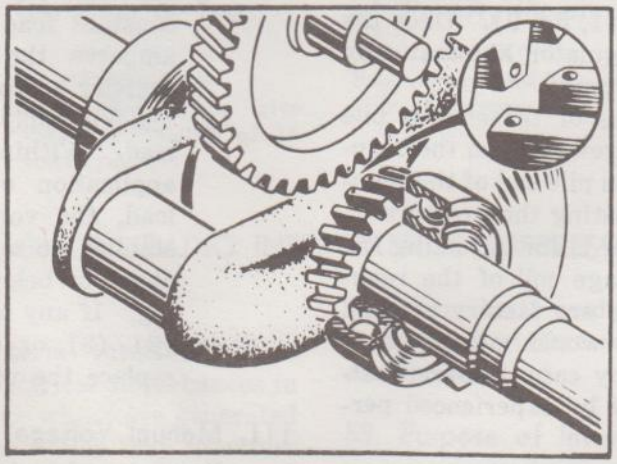
MSC 6115-276-15/38

Figure 38. Connecting rod, camshaft, and governor assembly.



MSC 6115-276-15/39

Figure 39. Installing piston assembly.



MSC 6115-276-15/40

Figure 40. Timing marks.

Section VII. GENERATOR REPAIR

108. General

This section contains maintenance instructions for the generator.

108.1. Generator

a. Perform On-Equipment Testing.

(1) Test the armature for insulation resistance as instructed in TM 5–764.

(2) Test the series windings of the field coil for continuity and insulation resistance as instructed in TM 5–764.

(3) Test the shunt windings of the field coils for windings and insulation as instructed in TM 5–764. The shunt group resistance should be 1.0 ohm plus or minus 5 percent.

b. Remove and Install Generator Assembly (par. 100).

c. Disassemble and Reassemble Generator Assembly (fig. 41).

d. Test Field Coils.

(1) Test the series winding of each field coil for continuity and insulation resistance as instructed in TM 5–764.

Note. Make all insulation resistance tests prior to removing the coils from the generator.

(2) Test the shunt winding of each field coil for winding and insulation resistance. The shunt winding resistance of each coil should be between 0.25 ohm and 0.50 ohm.

e. Clean, Inspect, and Repair.

Section VIII. CONTROL BOX REPAIR

109. General

All electrical controls and regulating elements are contained in the control box. It is not necessary to remove the control box for maintenance service on any part.

110. Voltage Regulator

a. General. The function of the voltage regulator (7, fig. 34) is to hold the generator output voltage within specified limits. When the engine is operating at 3,600 rpm the desired voltage output may be selected by adjusting the automatic rheostat knob (1, fig. 9). Once the voltage is selected the regulator automatically maintains the selected output.

The voltage regulator is of the carbon pile type. Two adjustment screws are on the regulator. One is on the carbon pile end of the regulator and is used for adjusting the pressure on the carbon disc. The other is for adjusting the magnetic pull of the voltage coil of the regulator. These adjustments are factory set and under normal conditions would not be readjusted in the field. In any case, these adjustments must be made only by experienced personnel.

b. Preliminary Testing. The following steps outline the procedure for testing a voltage regulator.

(1) Start the generator set (par. 25).

Note. Perform the following adjustments with no batteries or other load connected to the generator set.

(2) Position the transfer switch to the AUTO VOLTAGE position and adjust the AUTO VOLTAGE knob to mid position. Allow regulator to reach operating temperature by operating for 10 minutes. The voltmeter should assume a steady position between 12 and 16 volts.

(3) Using a load bank gradually increase the load on the generator. At any constant load between zero and 133 amperes the voltmeter should not register a drop below 14.5 volts.

(4) Quickly apply and remove a maximum load. Within 4 seconds after either application or disconnection of the load, the voltmeter readings should stablize at a reading within ½ volt above or below average voltage reading. If any of the tests performed in (2), (3), or (4) above were adverse, replace the voltage regulator.

111. Manual Voltage Adjustment Rheostat

a. Remove and install knob (5, fig. 9) from control panel.

b. Remove and install nut attaching rheostat to control panel.

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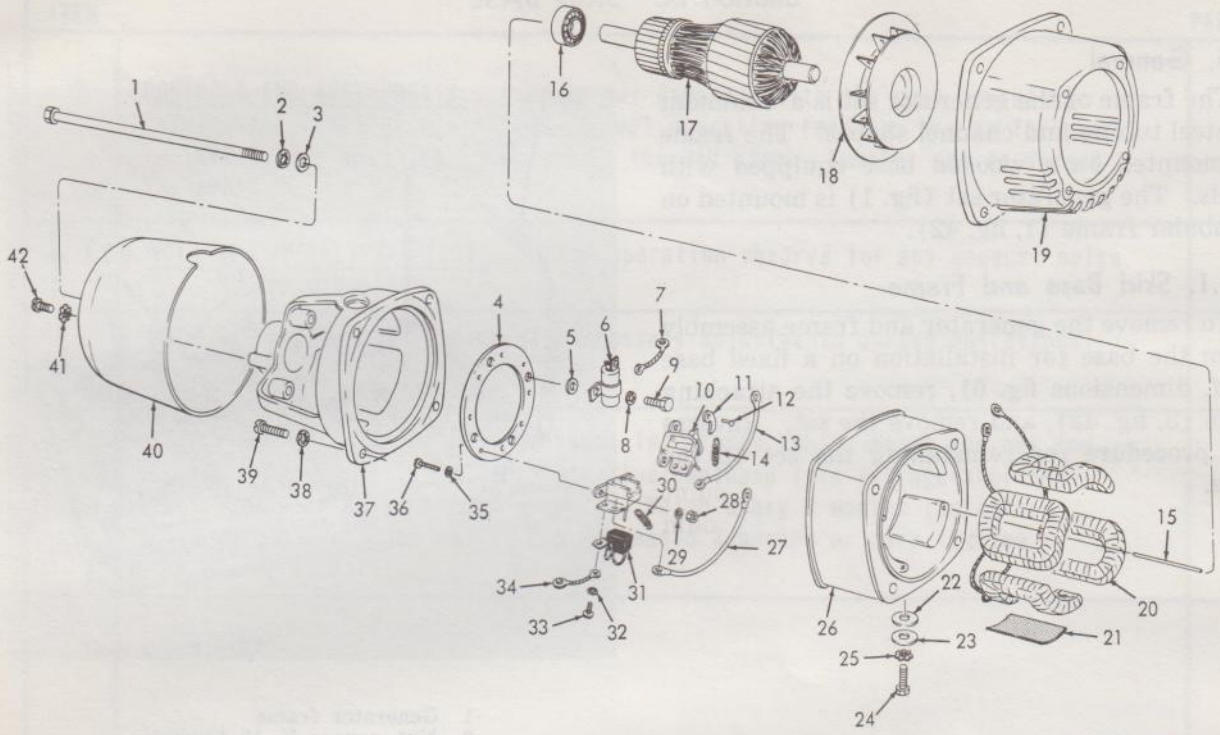


1 Through-bolt (spec)
2 Washer, lock, IT, ⅜ in.
3 Flat washer (spec)
4 Brush holder plate
5 Washer, flat, ⅜ in. (2 rqr)
6 Capacitor, 0.25 mf. 100 V (2 rqr)
7 Electrical lead (2 rqr)
8 Washer, lock, IT, ⅜ in. (2 rqr)
9 Screw, hex-HD-⅜-16 x 13/16 in.
10 Brush holder (4 rqr)
11 Tension arm (4 rqr)
12 Pin (4 rqr)
13 Electrical lead
14 Spring (4 rqr)
15 Pin (spec) (4 rqr)
16 Bearing
17 Armature
18 Fan
19 Generator engine adapter
20 Coil (4 rqr)
21 Insulator (4 rqr)
22 Rubber washer
23 Flat washer (spec)
24 Screw, hex-HD, 5/16-24 x ¼ in.
25 Washer, lock, IET, ⅜ in.
26 Frame
27 Electrical lead
28 Nut, hex, No. 10 (8 rqr)
29 Washer, lock, IT, No. 10 (8 rqr)
30 Spring (4 rqr)
31 Brush (4 rqr)
32 Washer, lock, No. 10 (4 rqr)
33 Screw, RD-HD, No. 10 32 x 5/16 (4 rqr)
34 Electrical lead (2 rqr)
35 Washer, flat, No. 10 (8 rqr)
36 Screw, RD-HD, No. 10 32 x ¾ in. (8 rqr)
37 Endbell frame
38 Washer, lock, IT 5/16 in. (4 rqr)
39 Screw, RD-HD, 5/16-24 x 1⅛ in. (4 rqr)
40 Endbell cover
41 Washer, lock, IET, No. 10 (2 rqr)
42 Thumbscrew, 10-32 x ⅜ in. (2 rqr)

Figure 41. Generator assembly.

c. Remove and install rheostat from control box.

112. Automatic Voltage Adjustment Rheostat

a. Remove and install knob (1, fig. 9) from control panel.

b. Remove and install nut attaching rheostat to control panel.

c. Remove and install rheostat from control box.

113. Cutout—Reverse Current Relay

The cutout—reverse current relay (5, fig. 35) is a sealed unit. If a malfunction is traced to this unit it must be replaced.

114. Resistor

A resistor (13, fig. 35) is mounted on the top panel of the control box. This resistor protects the unit against excessive voltage surges. In the event of malfunction the resistor must be replaced.

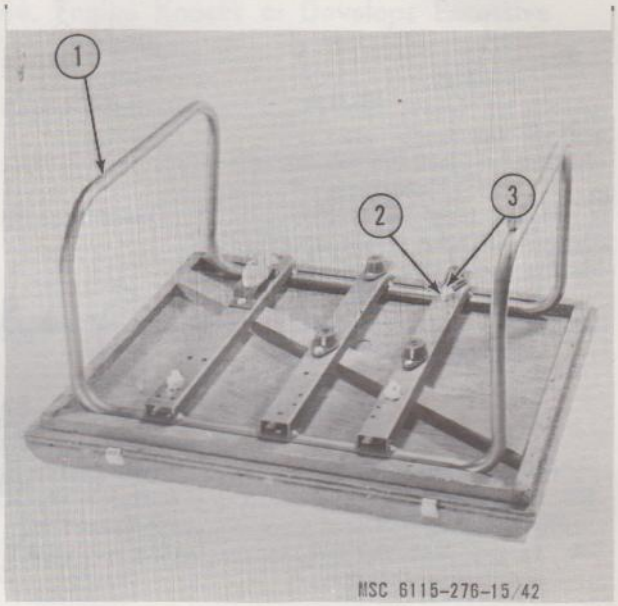
Section IX. SKID BASE

115. General

The frame of the generator set is a weldment of steel tubing and channel shapes. The frame is mounted on a wooden base equipped with skids. The generator set (fig. 1) is mounted on a tubular frame (1, fig. 42).

115.1. Skid Base and Frame

To remove the generator and frame assembly from the base for installation on a fixed base (ref. dimensions fig. 6), remove the attaching bolts (3, fig. 42), and remove the set. Reverse the procedure for reinstalling the set on the base.



1 Generator frame
2 Nut, square ½–13 (4 rqr)
3 Bolt, ½–13 x 3½ in. (4 rqr)

Figure 42. Generator frame, base and shockmount assembly.

CHAPTER 5

DEMOLITION, SHIPMENT, AND LIMITED STORAGE

Section I. DEMOLITION OF THE GENERATOR SET TO PREVENT ENEMY USE

116. 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.

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

(1) The generator endbell cover, brushes, brush holders, and endbell.

(2) The engine carburetor, magneto, and cylinder head.

Note. The above procedures are minimum requirement for this method.

(3) All wires, switches, meters, resistors, and so forth in the control box.

(4) The fuel tank, engine governor controls, and engine base.

(5) The generator armature and stator.

b. Misuse. Perform the operations listed below to render the generator set inoperative:

(1) Drain the engine base. Replace the drain plug.

(2) Start the generator set.

(3) Operate the generator set until it fails.

117. Demolition by Explosives or Weapons' Fire

a. Explosives. Place both the charges as shown by figure 43 and detonate them simultaneously with a suitable detonator and detonating cord.

b. Weapons Fire. Fire on the generator set with the heaviest practical weapons available.

118. Other Demolition Methods

a. Scattering and Concealment. Remove all easily accessible parts such as spark plug, air cleaner, carburetor and generator brushes and scatter them through dense foliage, bury them in dirt or sand, or throw them in a lake, stream, well or other body of water.

b. Burning. Pack rags, clothing, or canvas under and around the generator set. Saturate this packing with gasoline, oil, or diesel fuel and ignite it.

c. Submersion. Totally submerge the generator set in water to provide water damage and concealment. Salt water does greater damage to metal parts than fresh water.

119. 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.

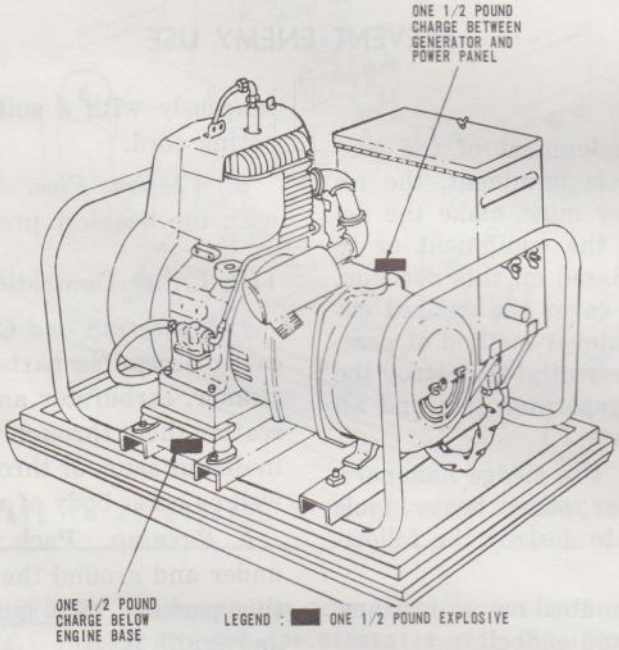
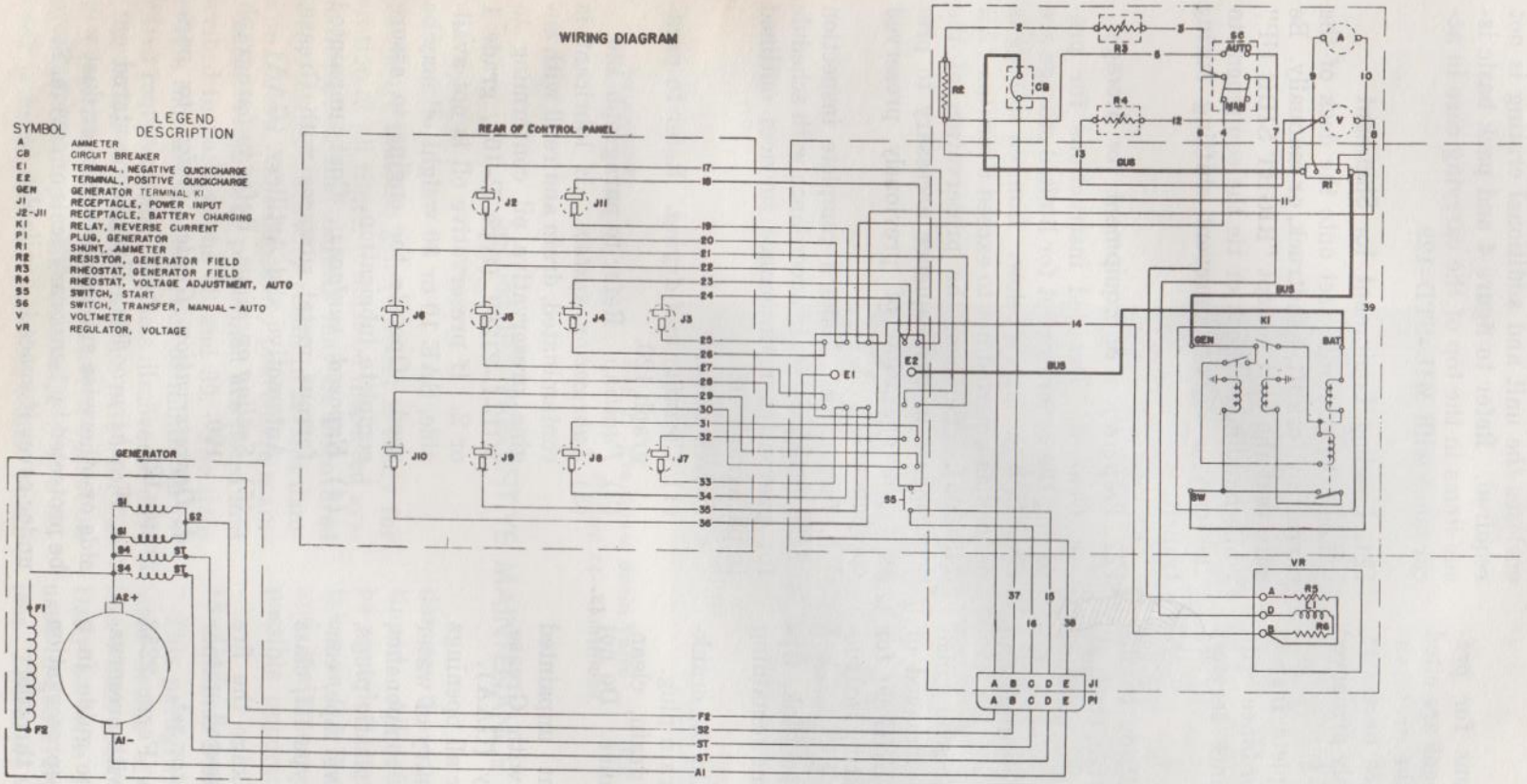


Figure 43. Demolition.

WIRING DIAGRAM

LEGEND

SYMBOL	DESCRIPTION
A	AMMETER
CB	CIRCUIT BREAKER
E1	TERMINAL, NEGATIVE QUICKCHARGE
E2	TERMINAL, POSITIVE QUICKCHARGE
GEN	GENERATOR TERMINAL K1
J1	RECEPTACLE, POWER INPUT
J2-J11	RECEPTACLE, BATTERY CHARGING
K1	RELAY, REVERSE CURRENT
P1	PLUG, GENERATOR
R1	SHUNT, AMMETER
R2	RESISTOR, GENERATOR FIELD
R3	RHEOSTAT, GENERATOR FIELD
R4	RHEOSTAT, VOLTAGE ADJUSTMENT, AUTO
S5	SWITCH, START
S6	SWITCH, TRANSFER, MANUAL - AUTO
V	VOLTMETER
VR	REGULATOR, VOLTAGE



WIRING SCHEMATIC

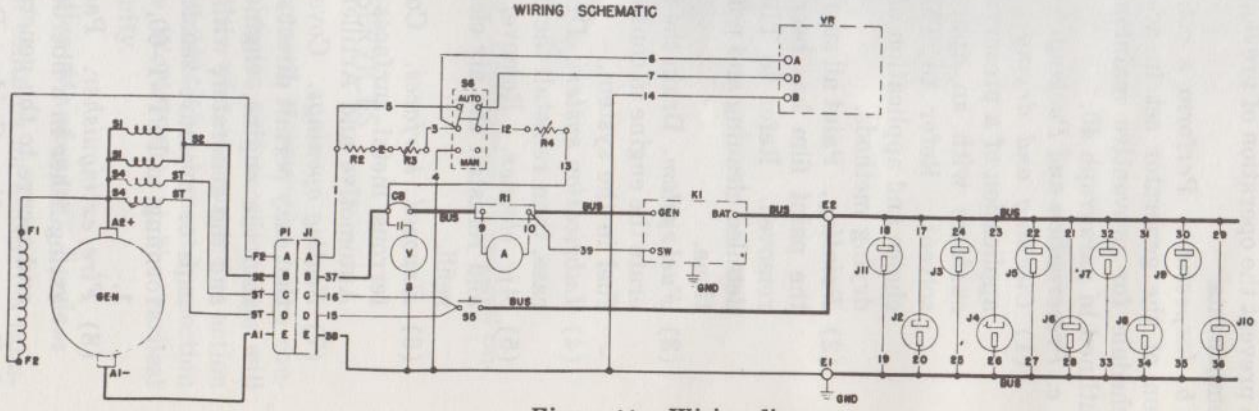


Figure 44. Wiring diagram.

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Section II. SHIPMENT AND LIMITED STORAGE

120. Preparation of Equipment for Shipment

a. General. Detailed instructions for preparing the generator set for shipment are cited in *b.* through *e.* below. Perform the preservation of components in the sequence necessary to prevent the operation of previously preserved components.

b. Inspection. Perform a complete inspection of the generator set in accordance with schedule for preventive maintenance services outlined in paragraph 40.

c. Preservation and Packing.

(1) *Cleaning and drying.* Prior to the application of a preservative, clean all surfaces with an approved cleaning solvent. Refer to TM 38–230 for choice and application of cleaning and drying methods.

(2) *Painting.* Paint all surfaces on which the paint film has been damaged or removed. Refer to TB ENG 60 for detailed cleaning and painting instructions.

(3) *Fuel system.* Drain the fuel tank. Operate the engine to consume remaining fuel in the system.

(4) *Lubrication system.* Drain the crankcase, then reinstall the drain plug.

(5) *Air cleaner.* Remove, drain, clean, and reinstall the air cleaner. Do not refill.

(6) *Exposed surfaces.* Coat unpainted ferrous metal surfaces with Grease, Automotive and Artillery (GAA).

(7) *Sealing openings.* Cover all openings that may permit direct entry of water into the engine, engine components, and the generator, with plastic plugs, caps or pressure sensitive tape, conforming to PPP–T–60, type III, class 1.

(8) *Fire extinguisher.* Package the fire extinguisher in a fiberboard container and secure to the generator set.

d. Depreservation Guide. DA Form 2258 will be completed simultaneously with preservation of the equipment. Place the guide in a waterproof envelope, marked "Depreservation Guide", and secure to the gasoline throttle.

e. Crating for Shipment. The carrying case encloses the unit and additional crating is not required. Refer to figure 4 and pack basic issue items in the top of the carrying case in accordance with MIL–STD–129.

121. Loading Equipment for Shipment

Load the generator set onto the deck of the carrier by forklift, handtruck, or manually. Be sure that the unit is kept "RIGHT SIDE UP" while handling. Block or tie the equipment to the carrier deck to prevent shifting during transit.

122. Preparation of Equipment for Storage

a. General. Detailed instructions for preparing the generator set for limited storage are cited in *b* through *e* below. Limited storage is defined as a period not to exceed 6 months (AR 743–505). Perform the preservation of the components in the sequence necessary to prevent the operation of previously preserved components.

b. Inspection. Make a complete inspection of the generator set in accordance with schedule for preventive maintenance services outlined in paragraph 40.

c. Preservation.

(1) *Cleaning and drying.* Refer to paragraph 120.

(2) *Painting.* Refer to paragraph 120.

(3) *Lubrication system.* If lubricant is contaminated, drain and refill with engine preservative oil conforming to MIL–L–21260 (type P–10), grade 1 or 2. If preservative oil is not available, SAE 10 or 30 weight oil may be used. Operate the engine to assure complete lubrication.

(4) *Exposed surfaces.* Coat unpainted ferrous metal surfaces with Grease, Automotive and Artillery (GAA).

(5) *Sealing openings.* Refer to paragraph 120.

d. Depreservation Guide. Refer to paragraph 120.

e. Weatherproofing Equipment stored outside or otherwise subjected to rain or dust will be protected by temporary seals or covers. Store under cover if space is available.

123. Inspection and Maintenance of Equipment 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 2404 (Equipment Inspection and Maintenance Worksheet) will be executed on each major item of equipment when equipment is initially placed in storage and every 90 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, etc., at least every 90 days. Equipment must be serviced and in satisfactory operation condition before it is operated.

d. Represervation. At completion of inspection and operation, the generator set shall be represerved to meet the requirmnts of paragraph 122.

APPENDIX I

REFERENCES

1. Dictionaries of Terms and Abbreviations

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

2. Field Maintenance

TM 5–764	Electric Motor and Generator Repair.

3. Fire Protection

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

4. Lubrication

LO 5–6115–276–15	Generator Set, Gasoline Engine: 2 Kw, Dc, 15 V, Skid Mounted Model EG–2, W/Clinton Engine Model 416–1300–009.

5. Painting

TB ENG 60	Preservation and Painting of Serviceable Corps of Engineer Equipment.

6. Preventive Maintenance

AR 750–5	Maintenance Responsibilities and Shop Operation.
TM 9–6140–200–15	Operation and Organizational, Field and Depot Maintenance: Storage Batteries; Lead-Acid Type.
TM 38–750	The Army Equipment Record System and Procedures.

7. Publication Indexes

DA Pam 108–1	Index of Army Motion Pictures, Film Strips, Slides, and Phono-Recordings.
DA Pam 310–1	Index of Administrative Publications.
DA Pam 310–2	Index of Blank Forms.
DA Pam 310–3	Index of Training Publications.
DA Pam 310–4	Index of Technical Manuals, Technical Bulletins, Lubrication Orders, and Modification Work Orders.
DA Pam 310–5	Index of Graphic Training Aids and Devices.
DA Pam 310–25	Index of Supply Manuals—Corps of Engineers.

8. Radio Interference Suppression

TM 11–483	Radio Interference Suppression.

9. Shipment and Limited Storage

AR 743–505	Limited Storage of Engineer Mechanical Equipment.
TM 38–230	Preservation, Packaging, and Packing of Military Supplies and Equipment.

GPO 827–096–5

10. Supply Publications

SM 10–1–C4–1	Petroleum, Petroleum-Base Products, and Related Material.
TM 5–6115–276–25P	Organizational, Field, and Depot Maintenance Repair parts and Special Tool Lists: Generator Set, Gasoline Engine: 2 Kw, Dc, 15 V, Skid Mounted (Keco Industries, Inc. Model EG–2) FSN 6115–860–2251.
SB 38–100	Preservation, Packaging, and Packing Materials, Supplies, and Equipment Used by the Army.

11. Training Aids

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

APPENDIX II

MAINTENANCE ALLOCATION CHART

1. General

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

d. To verify serviceability and to detect incipient failure by use of special equipment such as gages, meters, and so on.

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

f. Repair. To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function includes but is not limited to, inspecting, cleaning, preserving, adjusting replacing, welding, riveting, and straightening.

g. Overhaul. To restore an item to completely serviceable condition as prescribed by serviceability standards developed and published by heads of technical services. This accomplished through employment of the technique of "Inspect and Repair Only As Necessary" (IROAN). Maximum utilization of diagnostic and test equipment is combined with minimum disassembly of the item during the overhaul process.

3. Explanation of Columns

a. Functional Group. The functional group is a numerical group set up on a functional basis. The applicable functional grouping 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 be performed such as service, adjust, inspect, test, replace, repair, and overhaul.

c. Echelon Maintenance.

Column 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.

Column 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.

Column 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 items in column 2 and 3, repair assemblies, components, and end items, and fabricate parts from bulk material.

Column 4. Fourth echelon: Fourth echelon maintenance is that maintenance performed by units organized as semi-fixed or permanent shops to serve lower echelon maintenance within a geographical area, such as replacement of items in column 2, 3, and 4, repair and items, overhaul assemblies, components, and fabricate general use common hardware and parts.

Column 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.

Maintenance Allocation Chart

Functional group	Components and related operation	Echelons of maintenance					Remarks
		1	2	3	4	5	
01	ENGINE						
0100	Engine Assembly						
	Engine, gasoline						
	Inspect	X					
	Service	X	--	--	--	--	Compression.
	Test	--	X				
	Replace	--	--	X			
	Repair	--	--	X			
	Overhaul	--	--	--	X		
	Mount, vibration						
	Replace	--	--	X			
0101	Crankcase, Cylinder Head						
	Cylinder head						
	Replace	--	X				
0102	Crankshaft						
	Crankshaft						
	Replace	--	--	X			
	Bearings						
	Replace	--	--	X			
	Gaskets						
	Replace	--	--	X			
0103	Flywheel Assembly						
	Flywheel						
	Replace	--	X				
0104	Pistons, Connecting Rods						
	Piston						
	Replace	--	--	X			
	Repair	--	--	X	--	--	Replace rings
	Rod assembly, connecting						
	Replace	--	--	X			
	Repair	--	--	X			
0105	Valves, Camshafts and Timing System						
	Valves, intake and exhaust						
	Adjust	--	--	X	--	--	Grind stems
	Replace	--	--	X			
	Repair	--	--	X	--	--	Reface

Functional group	Components and related operation	Echelons of maintenance 1	2	3	4	5	Remarks
	Seat, valve spring						
	Replace	--	--	X			
	Repair	--	--	X	--	--	Reface
	Guide, valve						
	Replace	--	--	X			
	Spring, valve						
	Replace	--	--	X			
	Rotator, valve spring						
	Replace	--	--	X			
	Gasket, inspection plate						
	Replace	--	X				
	Tappet, valve						
	Replace	--	--	X			
	Camshaft assembly						
	Replace	--	--	X			
	Gears, timing						
	Replace	--	--	X			
0108	Engine Lubrication System						
	Breather, crankcase						
	Service	X					
	Replace	--	X				
	Gasket, base						
	Replace	--	X				
0114	Engine Starting System						
	Rope starting						
	Replace	X	--	--	--	--	Fabricate
03	FUEL SYSTEM						
0301	Carburetor						
	Carburetor assembly						
	Adjust	X					
	Replace	--	X				
0302	Fuel Pumps						
	Pump, fuel						
	Replace	--	X				
0304	Air Cleaner						
	Filter and bracket						
	Service	X					
0306	Tanks, Lines, Fittings						
	Line assembly, fuel						
	Replace	--	X	--	--	--	Fabricate
	Cap, fuel tank						
	Replace	X					
	Tank, fuel						
	Service	X					
	Strainer						
	Service	X	--	--	--	--	Clean
	Replace	--	X				
	Valves, fuel and drain						
	Replace	--	X				
0308	Engine Speed Governor						
	Flyweight assembly						
	Replace	--	--	X			
	Control assembly						
	Replace	--	X				

Functional group	Components and related operation	Echelons of maintenance					Remarks
		1	2	3	4	5	
0309	Fuel Filters						
	Filter, fuel						
	Service	X					
	Replace	--	X	--	--	--	Replace bowl and gasket.
04	EXHAUST SYSTEM						
0401	Muffler and Pipes						
	Muffler						
	Replace	--	X				
05	COOLING SYSTEM						
0502	Cowling, Deflectors, Air Duct, Shroud						
	Shroud, air						
	Replace	--	X				
06	ELECTRICAL SYSTEM						
0603	Starter						
	Switch, starter						
	Replace	--	X				
0604	Ignition Components						
	Magneto						
	Adjust	--	X				
	Replace	--	X				
	Repair	--	--	X			
	Cable assembly						
	Replace	--	X				
	Spark plug						
	Service	--	X				
	Adjust	--	X				
	Replace	--	X				
0615	Radio Interference Suppression						
	Strap, bonding						
	Replace	--	X				
15	FRAME						
1501	Frame Assembly						
	Frame						
	Replace	--	--	X			
17	BODY; CAB; HOOD; HULL						
1708	Carrying Cases						
	Case, carrying						
	Replace	X					
22	MISCELLANEOUS BODY, CHASSIS OR HULL, AND ACCESSORY ITEMS						
2210	Data Plates						
	Plates, identification (C. O. E.)						
	Replace	--	--	X			
	Plates, instruction and name						
	Replace	--	X				
40	ELECTRIC GENERATORS						
4000	Generator Assembly						
	Generator assembly						
	Inspect	X					
	Test	--	--	X			
	Replace	--	--	X			
	Repair	--	--	X			
	Overhaul	--	--	--	X		
	Mount, vibration						
	Replace	--	--	X			

Functional group	Components and related operation	Echelons of maintenance					Remarks
		1	2	3	4	5	
4001	Rotor Assemblies						
	Armature assembly						
	Test	--	--	X			
	Replace	--	--	X			
	Repair	--	--	X			
	Overhaul	--	--	--	--	X	
4002	Stator Assemblies						
	Stator assembly						
	Test	--	--	X			
	Replace	--	--	X			
	Repair	--	--	X			
	Overhaul	--	--	--	--	X	
	Coil, stator						
	Replace	--	--	X			
	Test	--	--	X			
4003	Brush Holders						
	Brush, contact						
	Adjust	--	X				
	Replace	--	X				
4004	Ventilating System						
	Fan assembly						
	Replace	--	--	X			
4005	Frame Supports and Housing						
	Bearings, ball						
	Replace	--	--	X			
4009	Control Panels, Housing, Cubicles						
	Ammeter						
	Replace	--	X				
	Voltmeter						
	Replace	--	X				
	Wiring						
	Replace	--	--	X	--	--	Fabricate
4011	Circuit Breakers						
	Circuit breaker						
	Replace	--	X				
4012	Switches						
	Switch						
	Replace	--	X				
4013	Regulator: Voltage or Current						
	Regulator, voltage						
	Adjust	--	--	X			
	Replace	--	--	X			
4014	Resistors						
	Rheostat						
	Test	--	--	X			
	Replace	--	--	X			
	Resistors						
	Test	--	--	X			
	Replace	--	--	X			
4015	Relay or Assembly						
	Relay, cutout						
	Replace	--	--	X			
4018	Terminal Blocks: Junction Boxes						
	Box, connection						
	Replace	--	--	X			

Functional group	Components and related operation	Echelons of maintenance					Remarks
		1	2	3	4	5	
4019	Radio Interference Suppression						
	Capacitor (brushes)						
	Replace	--	X				
76	FIRE FIGHTING EQUIPMENT						
7603	Fire Extinguishers						
	Extinguisher, fire						
	Replace	X					

APPENDIX III

BASIC ISSUE ITEMS AND MAINTENANCE AND OPERATING SUPPLIES

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. Section III lists the maintenance and operating supplies required for initial operation.

2. Explanation of Columns Contained in Section III

a. Source Codes.

(1) *Technical services.* The basic number of 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:

10—Quartermaster 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; produced 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 maintenance 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 Echelon)

b. Federal Stock Numbers. This column lists the 11-digit Federal stock number which is used for requisitioning purposes.

c. Description.

(1) 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. Quantity Authorized. This column lists the quantities of repair parts, accessories, tools,

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or publication authorized for issue to the equipment operator or crew as required.

f. Quantity Issued with Equipment. This column lists the quantities for 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.

g. Illustrations. Not used.

3. Index to Federal Supply Code for Manufacturers

10391----------Clinton Engines Corp. Clinton Mich.
94833----------KECO Industries, Inc.

4. Explanation of Columns Contained in Section III

a. Item. This column contains numerical sequenced item numbers, assigned to each component application, to facilitate reference.

b. Component Application. This column identifies the component application of each maintenance or operating supply item.

c. Source of Supply. This column lists the basic number of the technical service assigned supply responsibility for the item. Those spaces left blank denote Corps of Engineers supply responsibility. Other technical services basic numbers are:

10—Quartermaster Corps
12—Adjutant General's Corps

d. Federal Stock Number. When a Federal stock number is available, it shall be shown in this column and used for requisitioning purposes.

e. Description. The item name and a brief description are shown.

f. Quantity Required for Initial Operation. This column lists the quantity of each maintenance or operating supply item required for initial operation of the equipment.

g. Quantity Required for 8 Hours Operation. Quantities listed represent the estimated requirements for an average 8 hours of operation.

h. Notes. This column contains informative notes keyed to data appearing in the preceding columns.

5. Comments and Suggestions

Suggestions and recommendations for changes to the basic issue items list and/or maintenance and operating supplies table shall be submitted on DA Form 2028 to the Commanding Officer, U. S. Army Mobility Support Center, ATTN: SMOMS-MS, P. O. Box 119, Columbus 16, Ohio. Direct communication is authorized.

Section II. BASIC ISSUE ITEMS LIST

Source codes				Federal stock No.	Description	Unit of issue	Expendability	Quantity authorized	Quantity issued with equipment
Technical service	Source	Maintenance	Recoverability						
					GROUP 01—ENGINE				
					0108—ENGINE LUBRICATION SYSTEM				
	M	O	--	----------	HOSE ASSEMBLY, OIL DRAIN (94833) A51766				
					Manufacture from:				
	P	O	--	----------	HOSE, RUBBER ⅝ in. id (1 ft. required) MIL-H-154440--	ft.	--	--	*
					0114—ENGINE STARTING SYSTEM				
	M	O	--	----------	ROPE, STARTING 246-0013-50 (10391)----------	--	--	1	1
					Manufacture from:				
10	P	O	--	4020-240-2146	CORD, NYLON (4 ft. required)----------	yd.	--	--	*
					GROUP 03—FUEL SYSTEM				
					0306—TANKS, LINES, FITTINGS				
	P1	O	--	2910-870-6055	HOSE, AUXILIARY FUEL (94833) B51757----------	--	--	1	1
	P1	O	--	2910-870-6053	CAP ASSEMBLY, GAS (94833) A51763----------	--	--	1	1
					GROUP 17—BODY; CAB; HOOD; HULL				
					1708—CARRYING CASES				
	X2	O	--	----------	CASE, CARRYING (94833) D45026----------	--	--	1	1

Source codes				Federal stock No.	Description	Unit of issue	Expendability	Quantity authorized	Quantity issued with equipment
Technical service	Source	Maintenance	Recoverability						
					GROUP 26—ACCESSORIES, PUBLICATIONS, TEST EQUIPMENT, AND TOOLS				
					2602—ACCESSORIES				
	P	O	--	7520-599-9618	CASE, MAINTENANCE AND OPERATIONAL MANUALS cotton duck, water-repellent, mildew-resistant.	--	--	1	1
	P1	O	--	6115-870-9588	LEAD, ELECTRICAL	--	--	1	1
	P1	O	--	6115-870-9594	LEAD, ELECTRICAL	--	--	1	1
	P1	O	--	6115-870-9591	LEAD, ELECTRICAL	--	--	1	1
	P1	O	--	6115-870-9593	LEAD, ELECTRICAL	--	--	6	6
	P1	O	--	6115-870-9592	LEAD, ELECTRICAL	--	--	10	10
					2603—COMMON TOOLS				
10	P	O	--	5120-277-9491	SCREWDRIVER, FLAT TIP: flared tip, ¼ in. w, 4 in. lg blade.	--	--	1	*
10	P	O	--	5120-240-5328	WRENCH, OPEN END ADJUSTABLE: single head, 15/16 in. jaw opening, 8 in. lg.	--	--	1	*
					2605—PUBLICATIONS				
12	--	--	--	----------	DEPARTMENT OF THE ARMY OPERATOR, ORGANIZATIONAL, FIELD AND DEPOT MAINTENANCE MANUAL TM 5-6115-276-15.	--	--	2	2
12	--	--	--	----------	DEPARTMENT OF THE ARMY ORGANIZATIONAL, FIELD AND DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOL LISTS TM 5-6115-276-25P.	--	--	2	2
12	--	--	--	----------	DEPARTMENT OF THE ARMY LUBRICATION ORDER LO 5-6115-276-15.	--	--	1	1
					GROUP 76—FIRE FIGHTING EQUIPMENT				
					7603—FIRE EXTINGUISHERS				
	P1	O	--	4210-288-8269	EXTINGUISHER, FIRE, VAPORIZING LIQUID: ¼ gal. capacity w/wall bracket (GE). *Note.* Requisition CTC/CO_2 extinguishers until Depot stocks are exhausted.				
	P1	O	--	4210-555-8837	EXTINGUISHER, FIRE, MONOBROMOTRIFLUOROMETHANE: charged, hand shatterable cylinder, penetrating seal valve, stored pressure, w/bracket, 2.75 lb. (HALON-1301) MIL SPEC E-52031 (GE).	--	--	1	*

Section III. MAINTENANCE AND OPERATING SUPPLIES

Item	Component application	Source of supply	Federal stock No.	Description	Quantity required for initial operation	Quantity required for 8 hours operation	Notes
1	0101 CRANKCASE, ENGINE.	--	----------	OIL, LUBRICATING: 1 qt. can as follows:	----	----	(1) Includes quantity of oil to fill engine as follows: 3 pt.—crankcase 3/16 qt.—air cleaner
		10	9150-231-6656	Grade 9250 or	3 pt.		
		10	9150-265-9433	OE-30	3 pt.		
		10	9150-231-9040	Grade 9110 or	3 pt.		
		10	9150-265-9425	OE-10	3 pt.		
		10	9150-242-7602	OES	3 pt.		(2) Use oil as prescribed in item (1) above.
2	0304 Air Cleaner	--	----------	OIL, LUBRICATING:	3/16 qt.		
3	0306 Tank	--	----------	FUEL, GASOLINE: 5 gal. pail.			(3) Tank capacity.
		10	9130-160-1817	91A	2 gal.	5 gal.	(4) Average fuel consumption is ¾ gph of continuous operation.
							(5) See current LO for grade application and replenishment intervals.

INDEX

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  5–237 (5)
  5–262 (5)
  5–267 (1)
  5–278 (5)
  5–279 (2)
  55–38 (2)

NG: State AG (3).

USAR: Units—same as Active Army except allowance is one copy to each unit.

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

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