TM 5-4310-338-15

TECHNICAL MANUAL

OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE MANUAL

COMPRESSOR, ROTARY, AIR, DIESEL ENGINE DRIVEN, TRAILER MOUNTED, 4-WHEEL PNEUMATIC TIRED; 600 CFM, 100 PSI

(DAVEY MODEL 1M600RPV)
FSN 4310-136-4369

HEADQUARTERS, DEPARTMENT OF THE ARMY
October 1970

TECHNICAL MANUAL
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WASHINGTON, D. C., *16 October 1970*

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COMPRESSOR, ROTARY, AIR, DIESEL ENGINE DRIVEN, TRAILER MOUNTED, 4-Wheel Pneumatic Tired, 600 CFM, 100 PS1 (Davey Model 1M600RPV) FSN 4310-136-4369

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CHAPTER 1
INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manual contains information for installing, operating, and maintaining the Model 1M600RPV Rotary Air Compressor. Also included are physical and functional descriptions of each major assembly.

b. Chapter 1 is the introduction and contains a brief description of the unit, tabulated data, and other general information. Chapters 2 and 3 contain installation, operating, and organizational maintenance instructions. Chapter 4 contains shipping, limited storage, and demolition information. Chapter 5 contains Direct Support, General Support, and Depot maintenance instructions. Chapters 6 through 8 contain repair instructions authorized by the Maintenance Allocation Chart (MAC).

c. The appendices contain documentation references, a list of basic issue items, and the Maintenance Allocation Chart (MAC). In addition, an index is supplied to assist in locating specific data throughout the manual.

1-2. Forms and Records

a. DA forms and records used for equipment maintenance will be only those prescribed in TM 38-750, Army Equipment Record Procedures.

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

Section II. DESCRIPTION AND DATA

1-3. Description

The air compressor unit is a trailer mounted, four-wheel pneumatic tired, diesel engine driven, sliding blade type, rotary air compressor. The unit supplies 600 cubic feet of air per minute (CFM) at a discharge pressure of 100 pounds per square inch (PSI). This equipment is manufactured by the Davey Compressor Company, Kent, Ohio, as their Model 1M600RPV, Part Number 61438 (fig. 1-1 and 1-2). The compressor unit is enclosed in a sheet metal housing fastened to a frame and axle combination. The unit has an air brake system operated from the towing vehicle. When the unit is parked, the brakes are set manually using a hand lever provided. The compressor unit is self contained and capable of continuous operation, under normal conditions, for a period of eight hours without refueling. The unit is employed for general construction work in conjunction with pneumatic tools and other equipment.

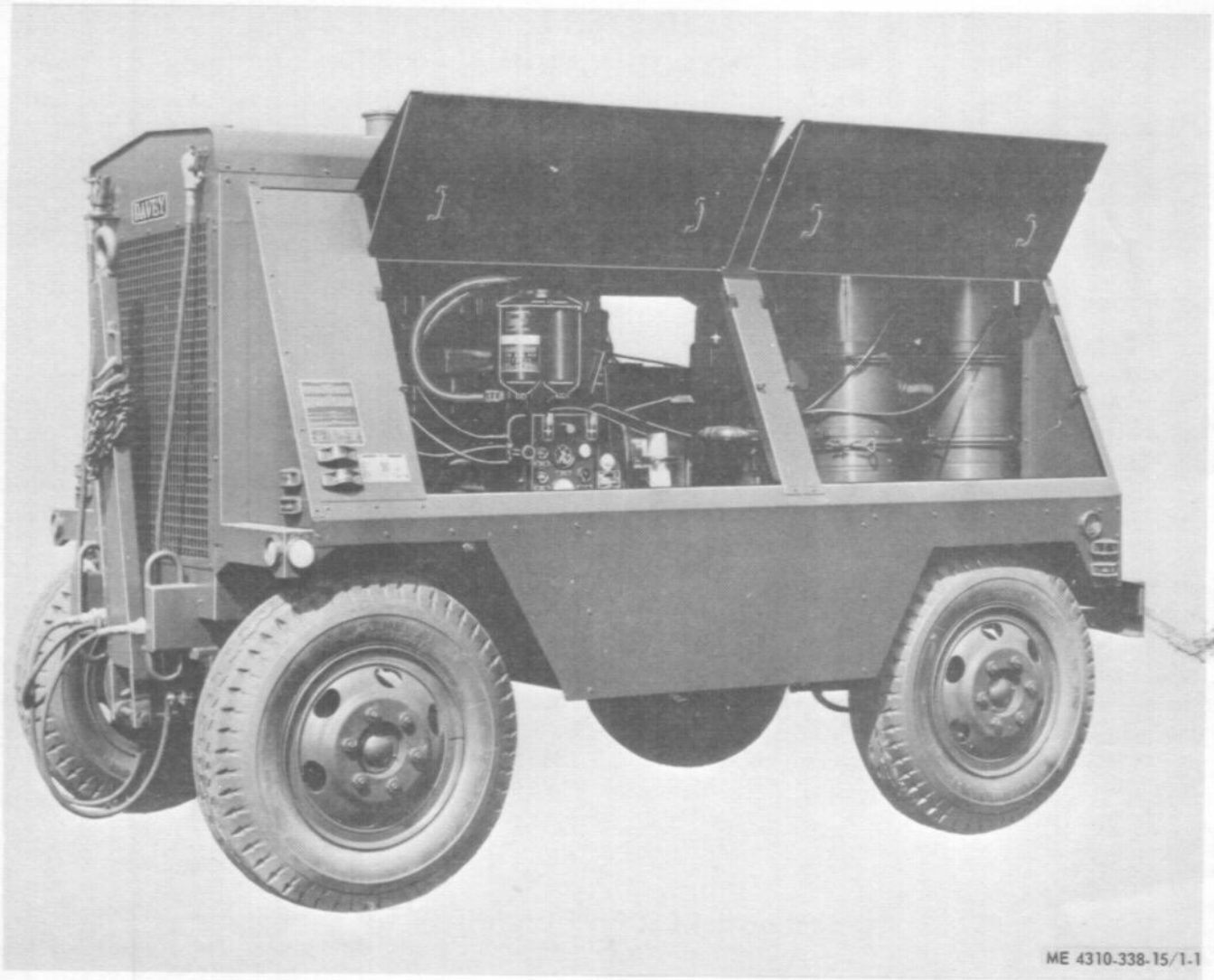


Figure 1-1. Model 1M600RPV Rotary Air Compressor, left front, three-quarter view.

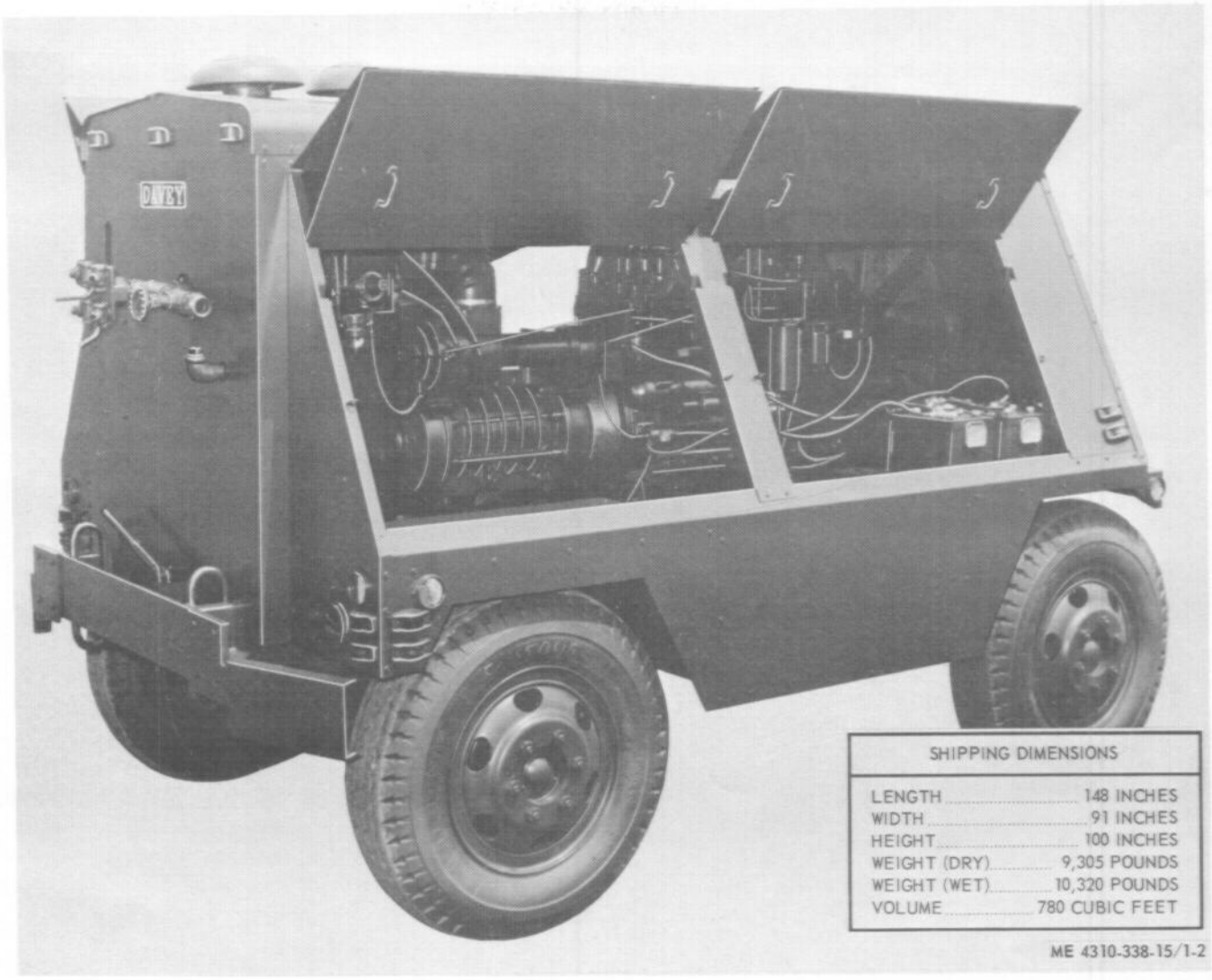


Figure 1-2. Model 1M600RPV Rotary Air Compressor, right rear, three-quarter view.

1-4. Identification and Tabulated Data

a. Identification. The air compressor unit has five major identification and data plates. The information contained on these plates is listed below.

(1) *U. S. Army plate.* Located on the left front housing side panel. Specifies nomenclature, stock number, serial numbers, manufacturer, model, contract number, dimensions, capacity, weights, inspection information, and warranty data.

(2) *Transportation data plate.* Located on the left front housing side panel. Illustrates prescribed lifting method, location of lifting and tie-down eyes, and center-of-gravity. Specifies dimensions, shipping weight and cubage, towing speeds, and tire pressure.

(3) *Operating instruction plate.* Located on the left front housing side panel. Specifies how to start, operate, and stop the unit. Also includes lubrication specifications.

(4) *Rotary compressor plate.* Located on the top left side of the compressor stator. Specifies compressor model and serial number.

(5) *Engine data plate.* Located on the left side of the engine flywheel housing. Specifies engine model, number os cylinders, bore and stroke, serial number, fuel rack setting, horsepower, RPM data, and altitude information.

b. Tabulated Data.

(1) *1M600RPV rotary air compressor.*

Manufacturer	Davey Compressor Company
Model	1M600RPV
Type	Sliding Blade, Air, Rotary, DED
Part Number	61438
Serial Numbers	5P408-15349 through 5P408-15385
Air Volume	600 CFM
Air Pressure	100 PSI
Stages	One
Prime Mover	Diesel Engine
Oil Filter	Marvel Engineering Company No. 255241-1500-576366-1110
Air Cleaner	Donaldson Company, Inc., Dry type, Model SBG14-0042 (Element FSN No. 2940-878-0133)
Mounting	Trailer mounted, 4-wheel, pneumatic tires
Brakes	Air actuated wedge type; Mechanical Hand Brake
Tire Size	9:00 x 20
Tire Pressure	45 PSI
Towing Speeds (Max.)	Unpaved Roads; 25 MPH Paved Roads: 35 MPH Open Field: 5 MPH
Turning Angle	40 Degrees
Electrical System	24 Volts, D. C.
Federal Stock Number (FSN)	4310-136-4369

(2) *Engine.*

Manufacturer	Caterpillar Tractor Company
Model	D333C-T
Type	Four-cycle Reciprocating Turbocharged Diesel
Number of Cylinders	6
Bore and Stroke	4.75 Inches x 6.0 Inches
Displacement	638 Cubic Inches
Oil Pressure Normal at 1800 RPM	60—70 PSI
Fuel Pressure at 1800 RPM	25 PSI Minimum
Governed Speed	1800 RPM
Low Idle Speed	1000 RPM
High Idle Speed	2050 RPM
Brake Horsepower without Fan	190@ 1800 RPM
Firing Order	1—5—3—6—2—4
Recommended Fuel Oil	No. 2 (ASTM Spec. No. D396)

(3) *Engine accessories.*

(*a*) *Starting motor.*

Manufacturer	Prestolite Division of Eltra Corporation
Part Number	MFY-6101-BUT
Type	Heavy Duty; Positork Drive
Rating	24 Volts, D. C.

(*b*) *Generator.*

Manufacturer	Prestolite Division of Eltra Corporation
Part Number	GHS-6002-TS
Type	Ventilated
Rated Output	24 Volts, D. C.; 18 Amperes

(*c*) *Generator regulator.*

Manufacturer	Prestolite Division of Eltra Corporation
Part Number	VBU-4002-UT
Rating	24 Volts, D. C.

(*d*) Air Cleaner.

Manufacturer	Donaldson Company, Inc.
Type	Dry
Model Number	SBG14-0042
Element	FSN No. 2940-878-0133

(*e*) *Primary fuel filter.*

Manufacturer	Fram Corporation
Model Number	FBM 1824
Element Number	C 1824

(*f*) *Overspeed governor switch.*

Manufacturer	Pierce Governor Company
Type	Centrifugal
Trip Speed (Engine RPM)	2050 + 50 RPM
Part Number	GC-11009A-R1

(4) *Capacities.*

Fuel Tanks (2)	59-1/2 Gallons each (Approx.)
Engine Crankcase	29 Quarts
Compressor Oil Separator	26 Gallons
Engine Cooling System	16-1/2 Gallons (approx.)
Air Brake Reservoir Tank	1080 Cubic Inches

(5) *Overall dimensions and weights (fig. 1-2).*

Overall Length (Tow Bar Up)	148 Inches
Overall Length (Tow Bar Down)	206 Inches
Overall Width	91 Inches
Overall Height	100 Inches
Net Weight Empty	9,305 Lbs. Approx.
Net Weight Filled	10,320 Lbs.
Shipping Volume	780 Cubic Feet
Shipping Weight	9,305 Lbs. Approx.

(6) *Adjustment data.* For adjustment data, refer to specific equipment maintenance paragraphs.

(7) *Nut and bolt torque data.*

(*a*) Torque screws, bolts, nuts, and taperlock studs on engine assembly as indicated in table 1-1.

(*b*) Torque screws, bolts, and nuts on compressor assembly as indicated in table 1-2.

(8) *Wiring diagram.* See figure 1-3.

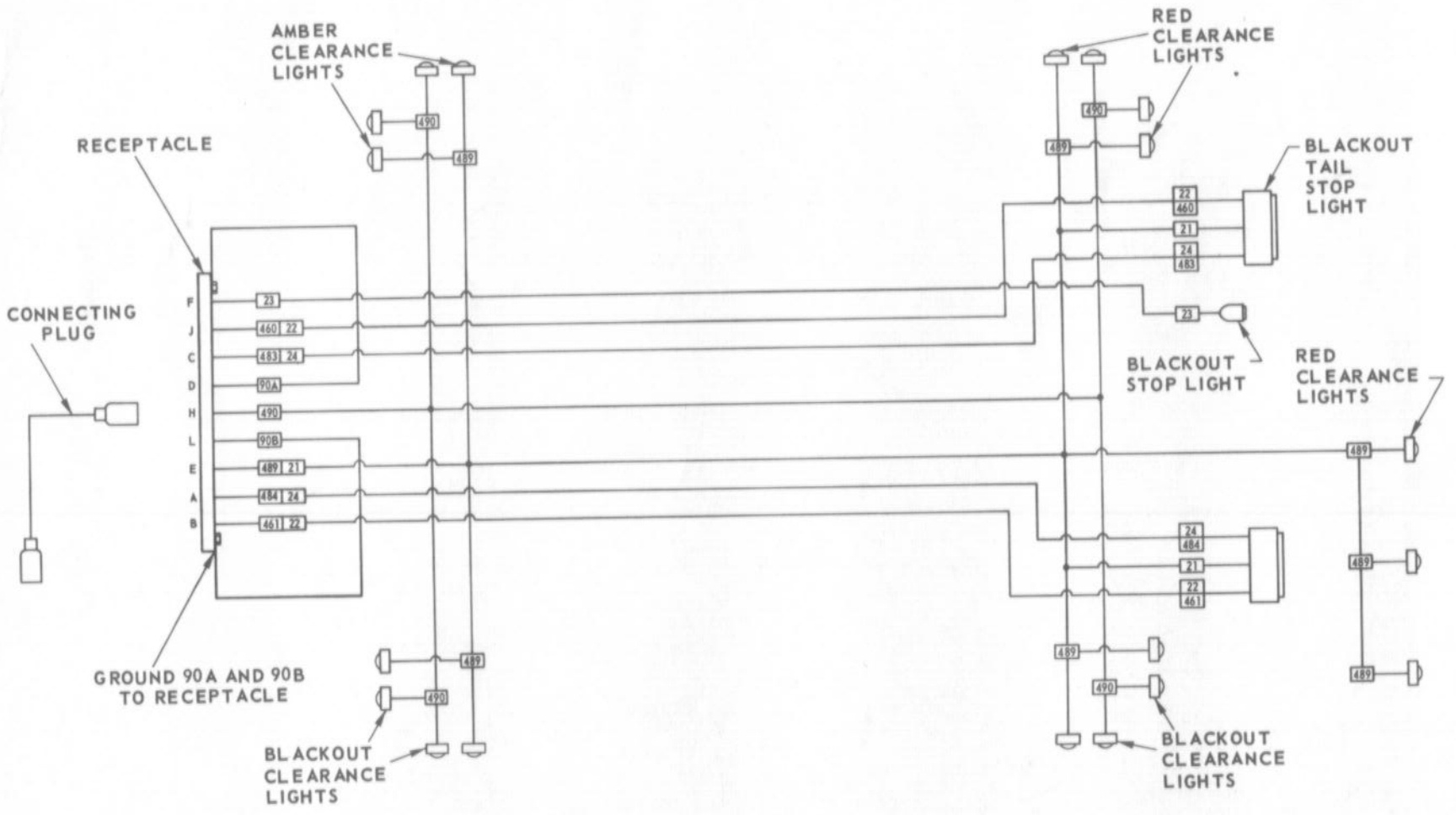
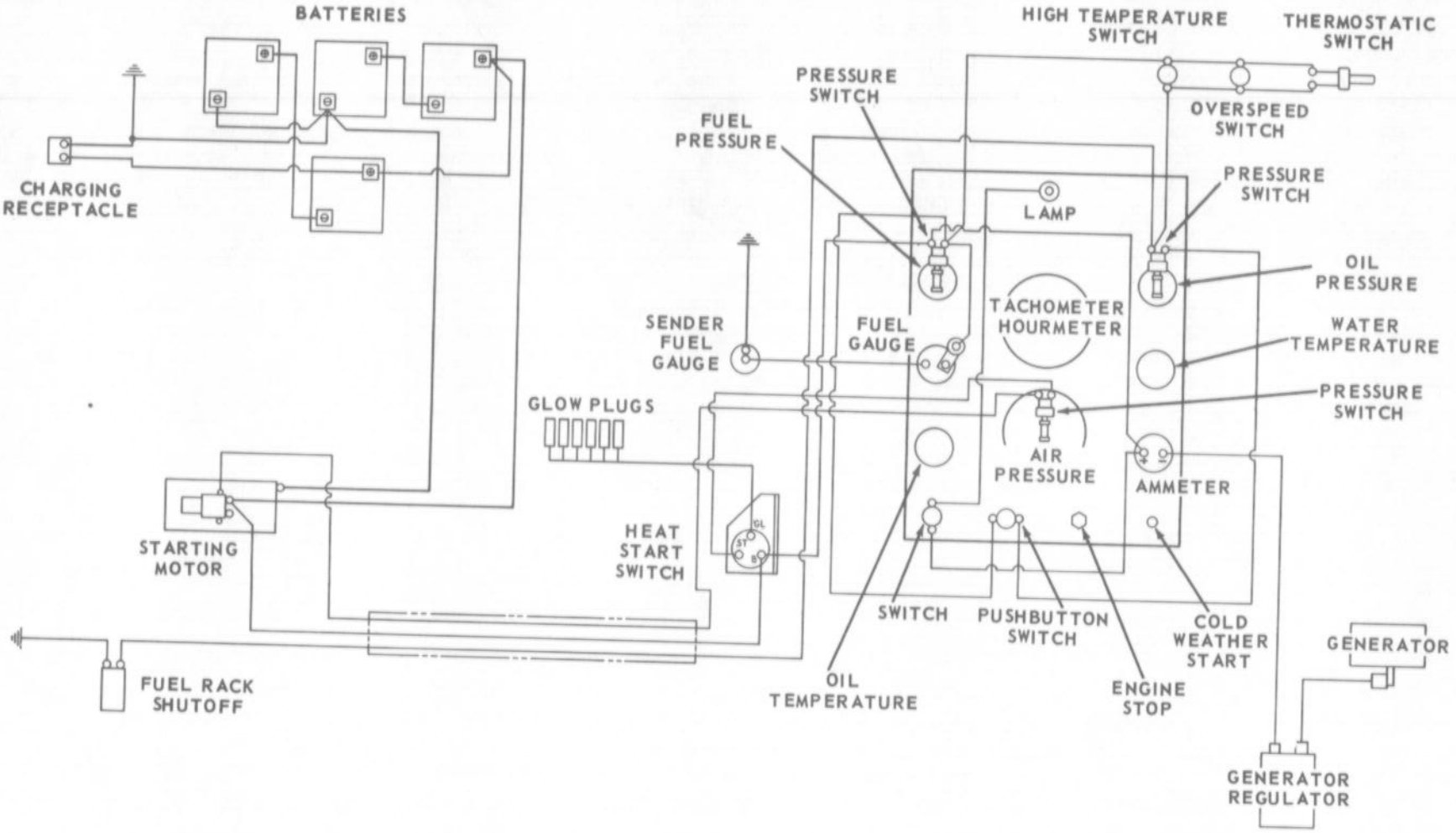


Figure 1-3. Wiring diagram (Sheet 1 of 2).



B COMPRESSOR AND ENGINE WIRING

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Figure 1-3. Wiring Diagram (Sheet 2 of 2).

(9) *Pneumatic diagram.* See figure 1-4.

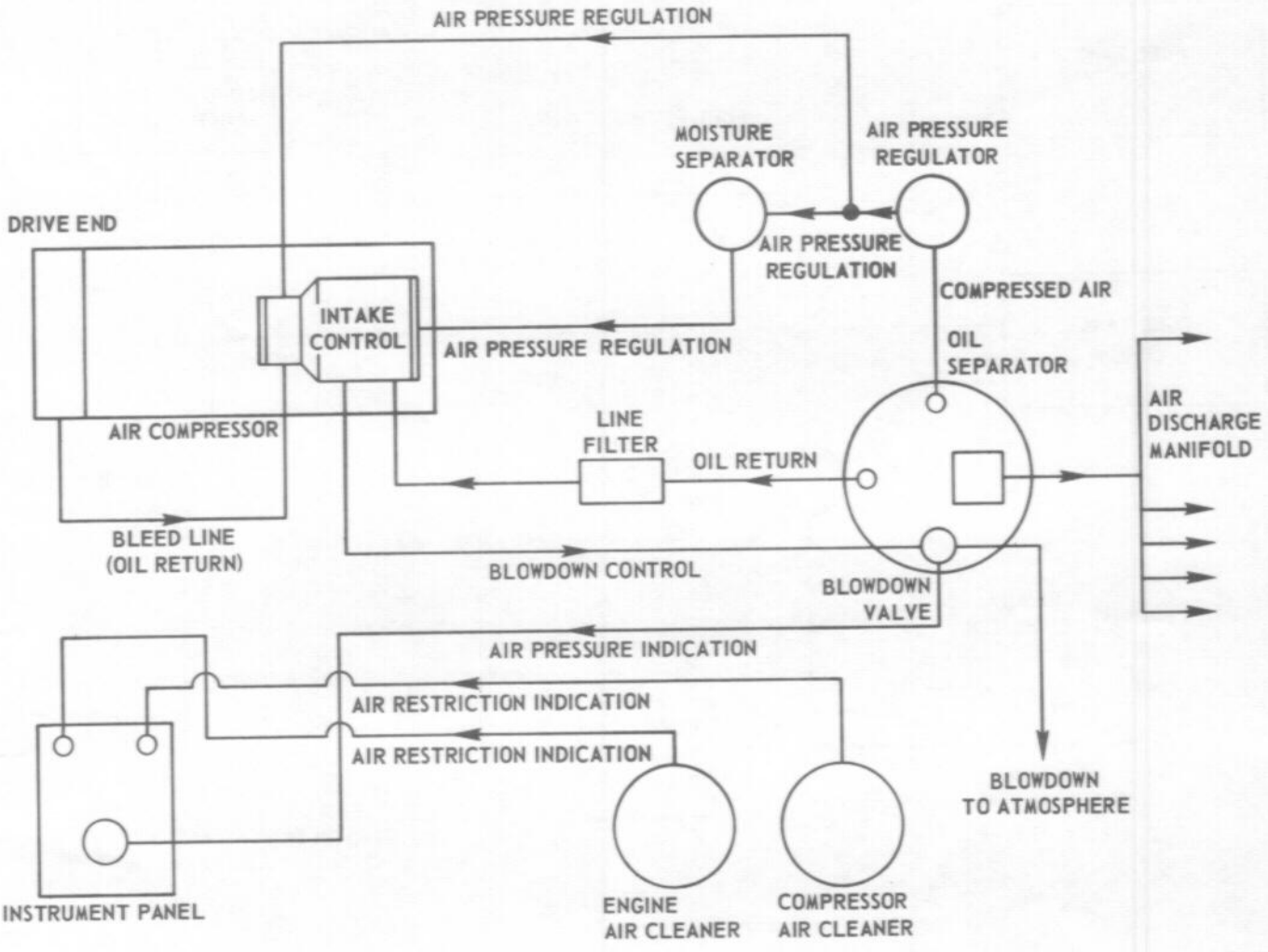

Figure 1-4. Pneumatic diagram.

(10) *Fuel distribution diagram.* See figure 1-5.

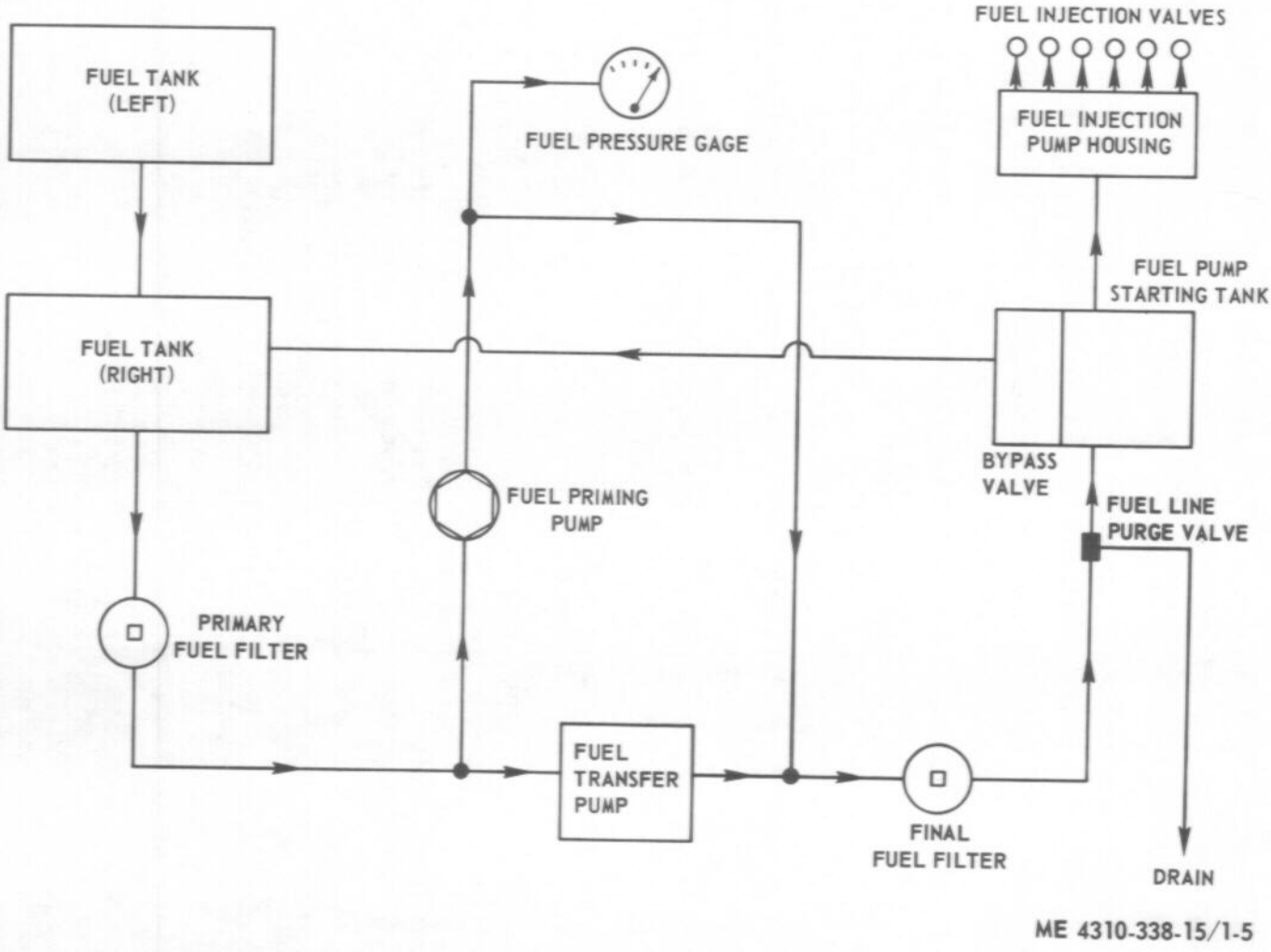

Figure 1-5. Fuel distribution diagram.

(11) *Air brake diagram.* See figure 1-6.

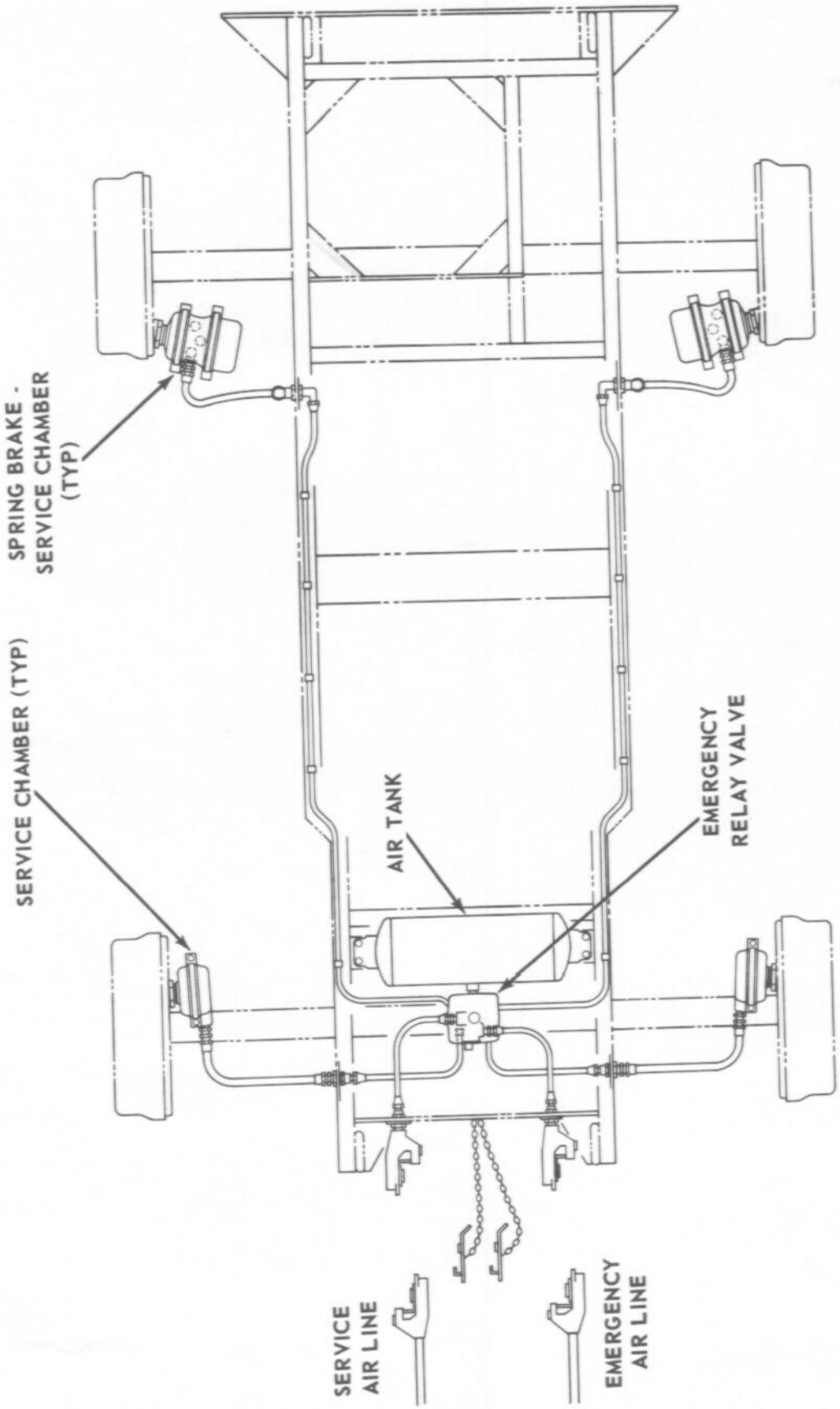

Figure 1-6. Air brake diagram.

(12) *Safety wiring diagram.* See figure 1-7.

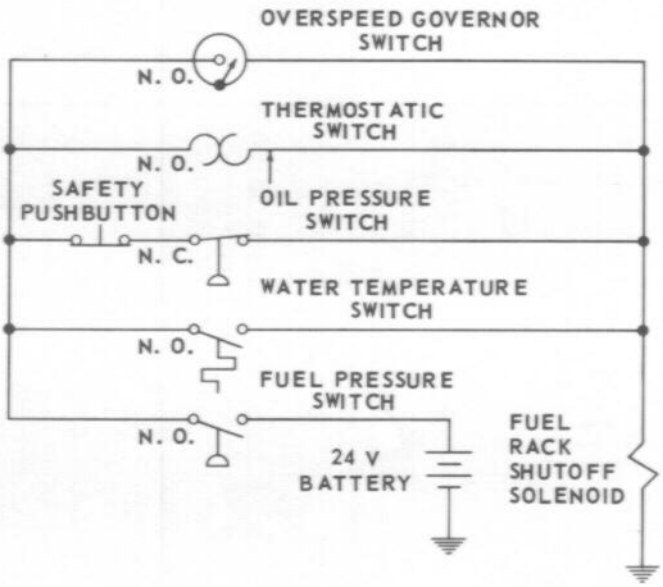

Figure 1-7. Safety wiring diagram.

1-5. Difference in Models

This manual covers only the Davey Compressor Company Model 1M600RPV Rotary Air Compressor. No known differences exist for the model covered by this manual.

Table 1-1. Engine Assembly Torque Table

Size	Foot-pounds	Taperlock studs	Foot-pounds
1/4"	6-12	1/4"	3-7
5/16"	13-23	5/16"	7-13
3/8"	27-37	3/8"	17-23
7/16"	40-60	7/16"	25-35
1/2"	65-85	1/2"	35-45
9/16"	95-125	9/16"	50-70
5/8"	130-170	5/8"	65-85
3/4"	230-300	3/4"	95-125
7/8"	360-480	7/8"	150-190
1"	560-720	1"	230-290
1-1/8"	700-900	1-1/8"	290-350
1-1/4"	880-1120	1-1/4"	360-440
1-3/8"	1050-1350	1-3/8"	440-520
1-1/2"	1300-1700	1-1/2"	500-600

Table 1-2. Air Compressor Unit Torque Table

Size	Foot-pounds	Size	Foot-pounds	Size	Foot-pounds
1/4"	6	3/4"	150	1-5/8"	1448
5/16"	11	7/8"	202	1-3/4"	1884
3/8"	19	1"	300	1-7/8"	2336
7/16"	30	1-1/8"	474	2"	2721
1/2"	45	1-1/4"	659	2-1/4"	3417
9/16"	66	1-3/8"	884	2-1/2"	4380
5/8"	93	1-1/2"	1057	2-3/4"	7319

CHAPTER 2
INSTALLATION AND OPERATING INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

2-1. Inspecting and Servicing Equipment

This Model 1M600RPV Rotary Air Compressor is shipped by the manufacturer as a completely assembled four-wheel, trailer mounted unit. Lifting provisions are incorporated on the compressor unit as shown in figure 2-1.

a. Unloading. The air compressor unit can be unloaded by a lifting device or towed from the carrier.

WARNING

The lifting device used must be capable of lifting a minimum of 12,000 pounds.

(1) If a lifting device is to be used, connect the device to the air compressor unit as shown in figure 2-1.

(2) Remove all blocks and tie downs that secure air compressor unit to carrier. Release parking brakes.

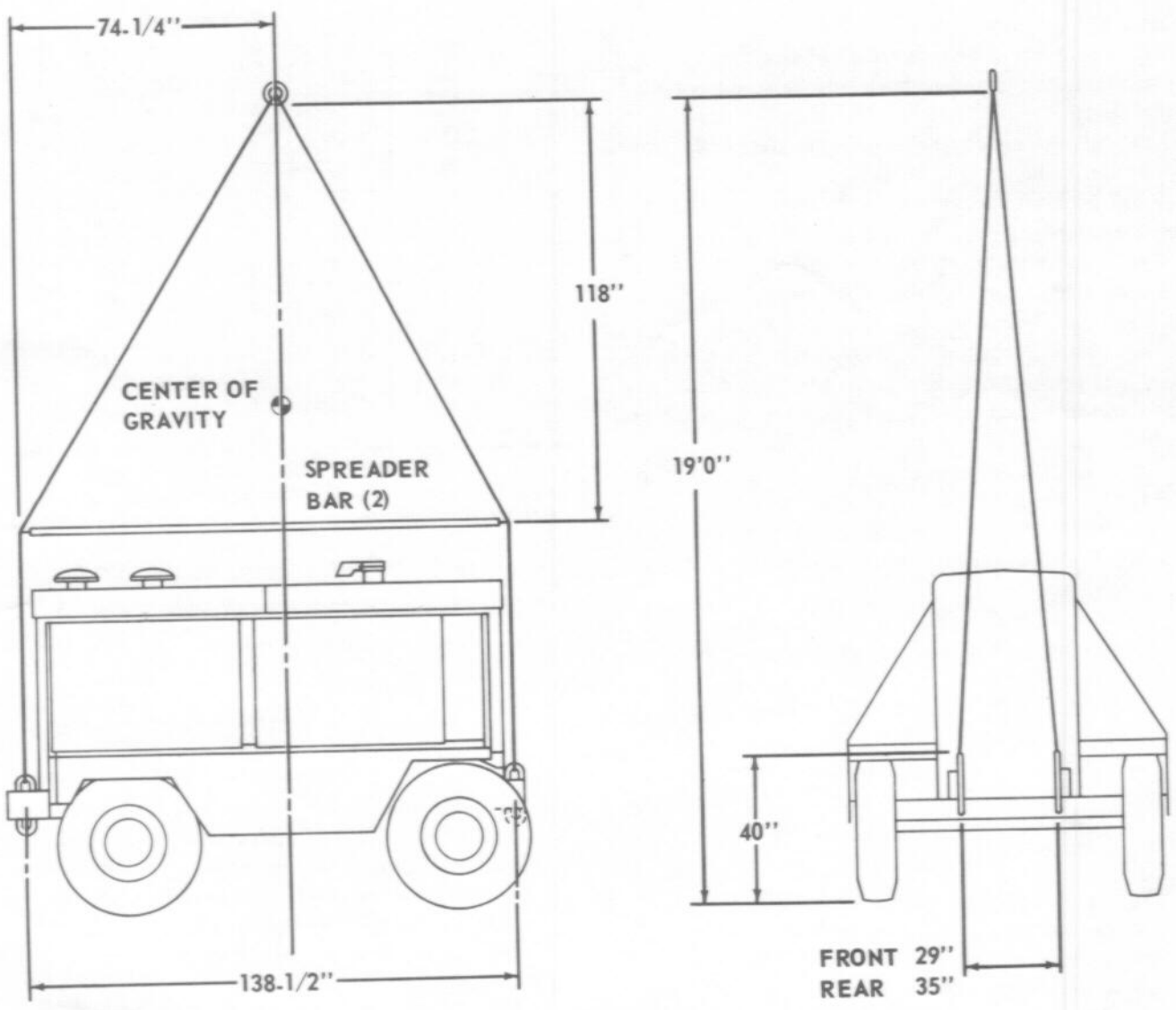

Figure 2-1. Lifting instructions.

CAUTION

After unloading and parking the unit, be sure to lock parking brakes.

(3) Lift or tow air compressor unit off carrier.

b. Unpacking and Deprocessing.

(1) Remove all crating, blocking, and protective material.

(2) Remove separately packed components from air compressor unit.

(3) Carefully unpack components and inspect for any damage. Refer to paragraph 2-2 for instructions on installing separately packed components.

(4) Refer to DA Form 2258 (Depreservation Guide for Vehicles and Equipment) furnished with unit and complete deprocessing before any servicing is attempted.

c. Inspecting Equipment.

(1) Check identification plates for positive identification of equipment.

(2) Check equipment against packing list.

(3) Inspect for and tighten any loose nuts, bolts, and screws.

(4) Inspect all controls, instruments, and gages for damage or loose mountings.

(5) Check all accessories for damage and loose or missing hardware.

(6) Inspect all electrical wiring for frayed insulation or other damage. See wiring diagram, figure 1-3.

(7) Check condition of fan drive belts. Check drive belt tension (fig. 3-47). Ensure that fan is securely mounted and that there is clearance between fan blades and radiator core.

(8) Inspect all piping, air tubing, and hose assemblies for loose connections or damage.

(9) Check tires for slow leaks or damage.

(10) Check external lights for broken glass or other damage.

d. Servicing Equipment.

(1) Perform daily and before operation maintenance services (para 3-6).

(2) Lubricate equipment in accordance with Lubrication Order (LO) 5-4310-338-12.

(3) Fill fuel tanks and engine cooling system. Refer to tabulated data, paragraph 1-4, for capacities. Refer to table 2-1 for antifreeze data.

WARNING

To prevent serious burns when filling batteries, take precautions against spilling electrolyte on clothing or allowing it to come in contact with skin or eyes. Use rubber gloves.

(4) Fill batteries with electrolyte to a level of approximately 3/8-inch above plates. Specific gravity must be 1.250 or higher when checked with a hydrometer.

(5) For cold weather operation, lubricate equipment in accordance with Lubrication Order (LO) 5-4310-338-12. Refer to table 2-1 for antifreeze data.

2-2. Installation of Separately Packed Components

a. Remove and unpack the intervehicular air brake hoses. Connect hoses to SERVICE and EMERGENCY couplings, and to dummy couplings.

b. Remove and unpack intervehicular electrical cable. Connect cable to receptacle on front of unit and place loose end in cable hanger.

c. Fill batteries with electrolyte as described in paragraph 2-1. Observe the warning.

Table 2-1. Freezing Points, Composition, and Specific Gravities of Military Antifreeze Materials

Lowest expected ambient temp. °F	Pints of inhibited glycol per gallon of coolant [1]	Compound, antifreeze arctic [2]	Ethylene glycol solution specific gravity at 68°F [3]
+20	1-1/2	Issued full strength and ready mixed for 0° to -65°F temperatures for both initial installation and replenishment of losses.	1.022
+10	2		1.036
0	2-3/4		1.047
-10	3-1/4		1.055
-20	3-1/2		1.062
-30	4		1.067
-40	4-1/4		1.073
-50	Arctic Anti-freeze preferred	DO NOT DILUTE WITH WATER OR ANY OTHER SUBSTANCE	
-60			
-75			

[1] **Maximum protection is obtained at 60 percent by volume (4.8 pints of ethylene glycol per gallon of solution).**

[2] Military Specification MIL-C-11755 Arctic type, nonvolatile antifreeze compound is intended for use in the cooling system of liquid-cooled internal combustion engines. It is used for protection against freezing primarily in Arctic regions where ambient temperature remains for extended periods close to —40°F or drops below, to as low as —90°F.

[3] **Use an accurate hydrometer. To test hydrometer, use 1 part ethylene glycol antifreeze to 2 parts water. This should produce a hydrometer reading of 0°F.**

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

2-3. Installation or Setting Up Instructions

CAUTION

The air compressor unit should be located in an area as free of dust and dirt as possible. A highly contaminated atmosphere places an abnormal load on air cleaner, oil filter, and compressor, and can result in an increase in maintenance problems.

a. Tow air compressor unit to worksite and select a location as near level as possible. Out-of-level shall not exceed 15 degrees in any direction.

b. Lock parking brakes.

c. Disconnect air brake hoses, intervehicular wiring, safety chains, and towbar from towing vehicle. Secure air hoses to dummy couplings. Secure intervehicular electrical cable in hanger.

CAUTION

When open, ensure that side doors are fully secured.

d. Open side doors.

e. Connect air hoses and tools to air discharge connections as required.

WARNING

Do not operate air compressor unit in a building or any enclosed area unless exhaust gases are piped outside. Inhalation of exhaust gases can result in serious illness or death.

f. The indoor setup procedure is the same as that described in steps *a* through *e* above except observe above warning.

Section II. MOVEMENT TO A NEW WORKSITE

2-4. Dismantling for Movement

a. Stop air compressor unit (para 2-10).

b. Remove air hoses and tools from air discharge connections.

c. Close and secure side doors.

NOTE

The air compressor unit is self-contained and requires no disassembly for movement.

d. Attach tow bar to towing vehicle. Attach and secure safety chains to towing vehicle.

e. Connect air brake intervehicular hoses to towing vehicle.

f. Connect intervehicular electrical cable between air compressor unit and towing vehicle.

g. Release parking brakes.

CAUTION

Maximum towing speed is 25 miles per hour over unpaved roads and 5 miles per hour over uneven surfaced open fields.

h. Test air brakes and lights to ensure proper operation.

2-5. Reinstallation After Movement

Refer to paragraph 2-3 for installation or setting-up instructions after movement to a new worksite.

Section III. CONTROLS AND INSTRUMENTS

2-6. General

This section contains the description of the various controls and instruments on the Model 1M600RPV Rotary Air Compressor. This data provides operating and maintenance personnel with sufficient information to ensure proper operation of the air compressor.

2-7. Controls and Instruments

a. Instrument Panel Controls and Instruments (fig. 2-2).

(1) *Oil pressure gage.* This gage indicates engine lubricating oil pressure. Normal oil pressure is 60 to 70 PSI at 1800 RPM.

(2) *Fuel gage.* This gage indicates the level of fuel in the fuel tanks.

(3) *Ammeter.* This gage indicates rate of battery charge or discharge.

(4) *Water temperature gage.* This gage indicates the engine water temperature. The normal operating range after warmup is 170° to 190° F.

(5) *Compressor oil temperature gage.* This gage indicates the compressor oil temperature. The normal operating range after warmup is 170 ° to 220 °F.

(6) *Tachometer-hourmeter.* This gage indicates the speed of the engine in revolutions per minute (RPM). The normal operating range is from 1000 to 1800 RPM. The gage also records elapsed engine running time in hours and tenths of hours.

(7) *Fuel pressure gage.* This gage indicates engine fuel pressure. Normal fuel pressure is 25 PSI minimum at 1800 RPM.

(8) *Air pressure gage.* This gage indicates the air pressure in the oil separator tank. The normal operating range is 80 to 105 PSI when the air compressor is running loaded and 115 to 120 PSI when running unloaded.

(9) *Air cleaner restriction indicators.* These indicators monitor the air pressure drop through the air cleaners. When the pressure drop of air is satisfactory, the indicators show green. When air is re-

structed by dirt or any other reason, the indicators show red. After the restriction is cleared, reset the indicators by pressing down on top of the cap until green is showing.

(10) *Lamp switch.* This switch controls the illuminating and extinguishing of the instrument panel lamp. A switch plate shows the ON and OFF positions.

(11) *HEAT-START switch.* This is a three-position, springloaded, return-to-center type switch. The HEAT position applies power to the cylinder head glow plugs (table 2-2). The START position energizes the starting motor solenoid for cranking the engine.

(12) *Safety pushbutton switch.* This pushbutton type switch overrides the engine oil pressure safety switch to allow starting of the engine.

(13) *Engine stop control cable.* This control cable, when pulled all the way out, shuts down the engine by mechanically moving the fuel rack to the extreme "fuel off" position.

(14) *Cold weather starting aid control cable.* This control cable is used to inject cold weather starting aid fuel into the engine air intake (table 2-2).

b. Safety Circuit Switches. (fig. 2-3).

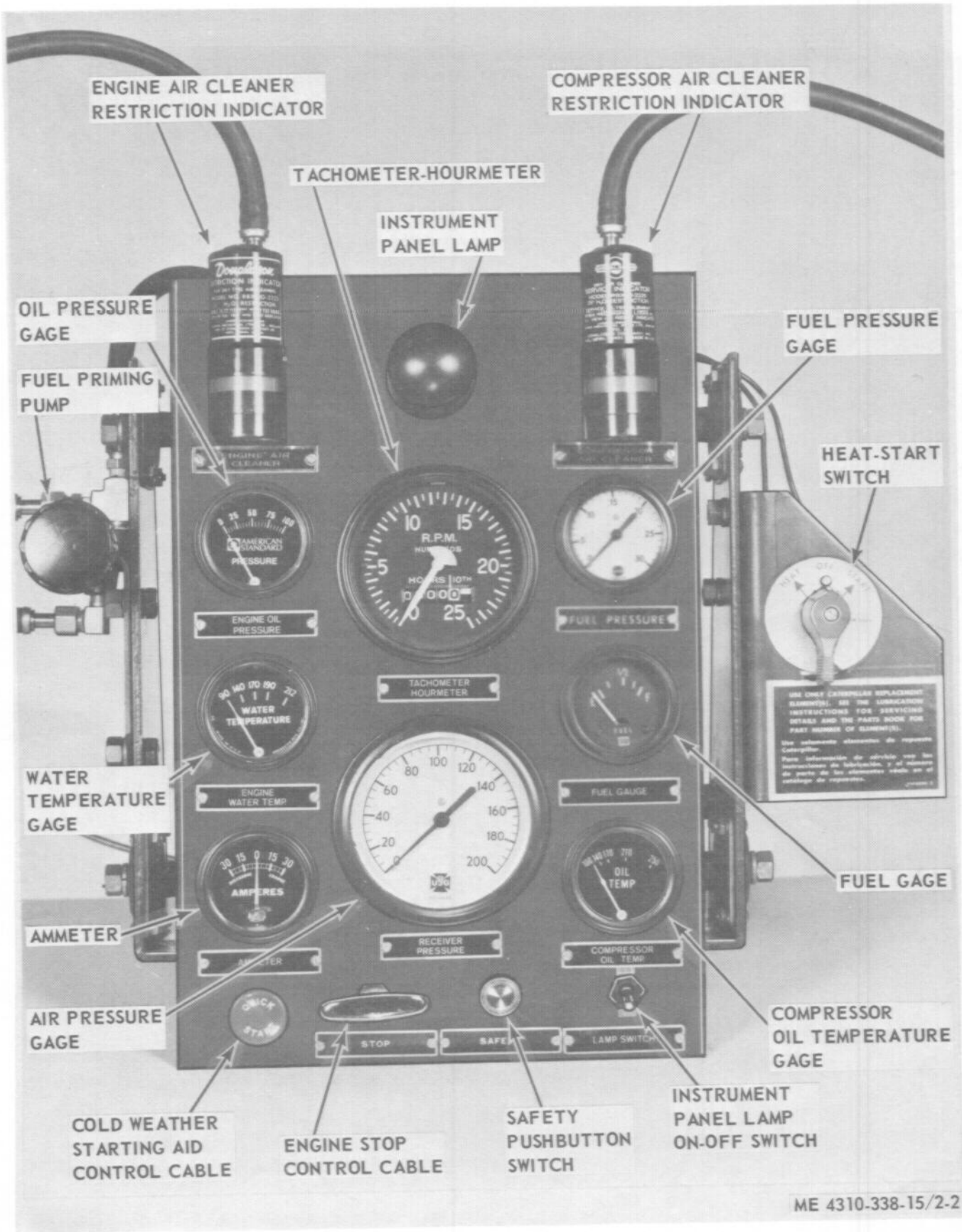

Figure 2-2. Intrument panel, controls and instruments.

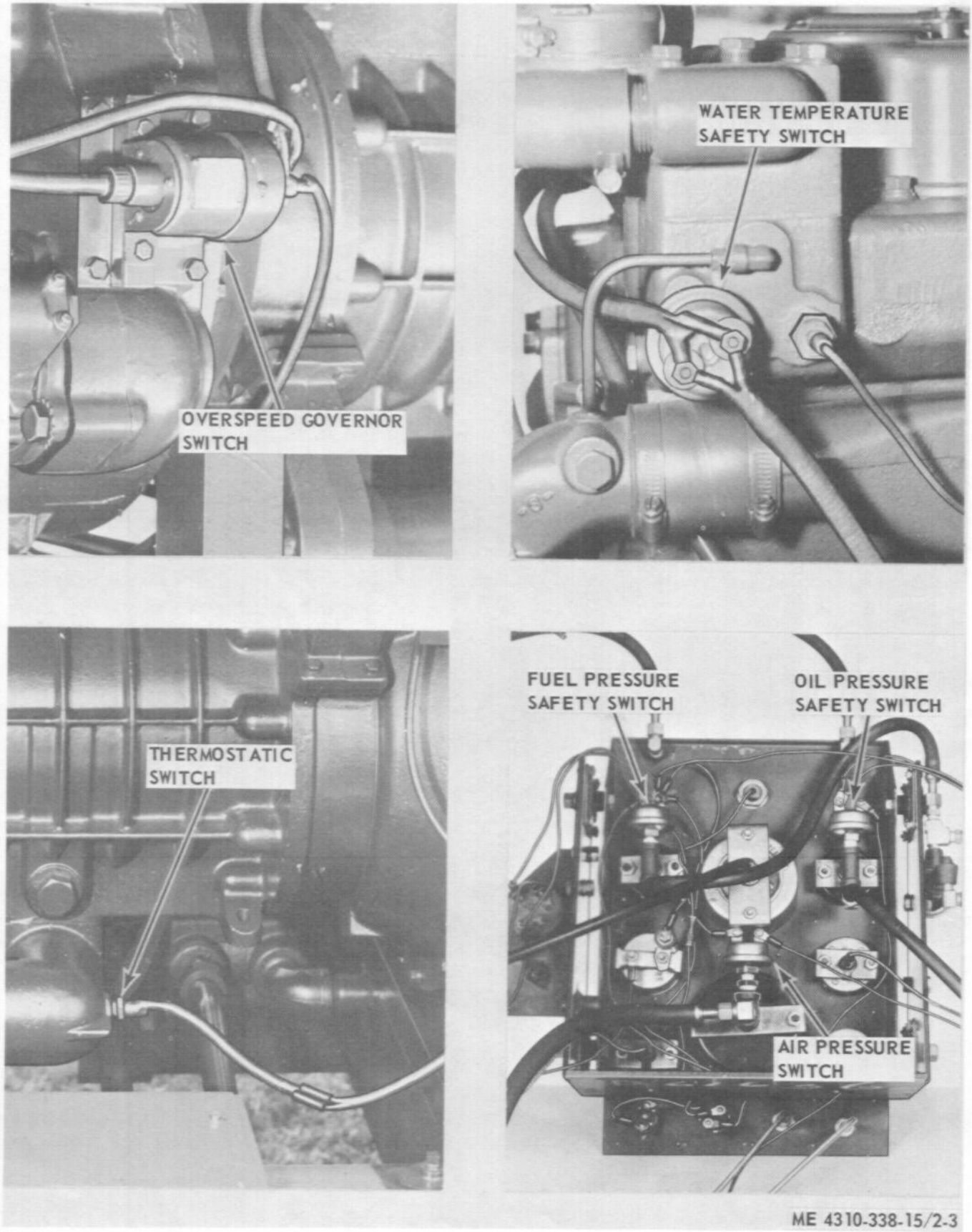

Figure 2-3. Air Compressor unit safety circuit switches.

(1) *Thermostatic switch.* This switch is a temperature sensing device which shuts down the engine if compressed air reaches an unsafe temperature of 230°F to 240°F. The switch is connected to the fuel rack shutoff solenoid.

(2) *Engine oil pressure safety switch.* This switch is a pressure sensing device which shuts down the engine if oil pressure drops to an unsafe level. The switch is connected to the fuel rack shutoff solenoid.

(3) *Engine water temperature safety switch.* This switch is a temperature sensing device which shuts down the engine if engine coolant reaches an unsafe high level. The switch is connected to the fuel rack shutoff solenoid.

(4) *Engine overspeed governor switch.* This is a centrifugal type switch which shuts down the engine if the RPM rate reaches an unsafe high level. The switch is connected to the fuel rack shutoff solenoid.

(5) *Fuel pressure switch.* This switch energizes when fuel pressure reaches 4 PSI, and actuates the engine shutdown safety circuit. See figure 1-7.

(6) *Air pressure switch.* This switch is connected in series between the starting motor solenoid and HEAT-START switch. The switch prevents the engine from being started when air pressure in the system exceeds 10 PSI. See figure 1-7.

c. Fuel Tank Sending Unit (fig. 2-4). This sending unit transmits to the fuel gage a signal which deflects the gage needle to a reading corresponding to the fuel level in the tanks.

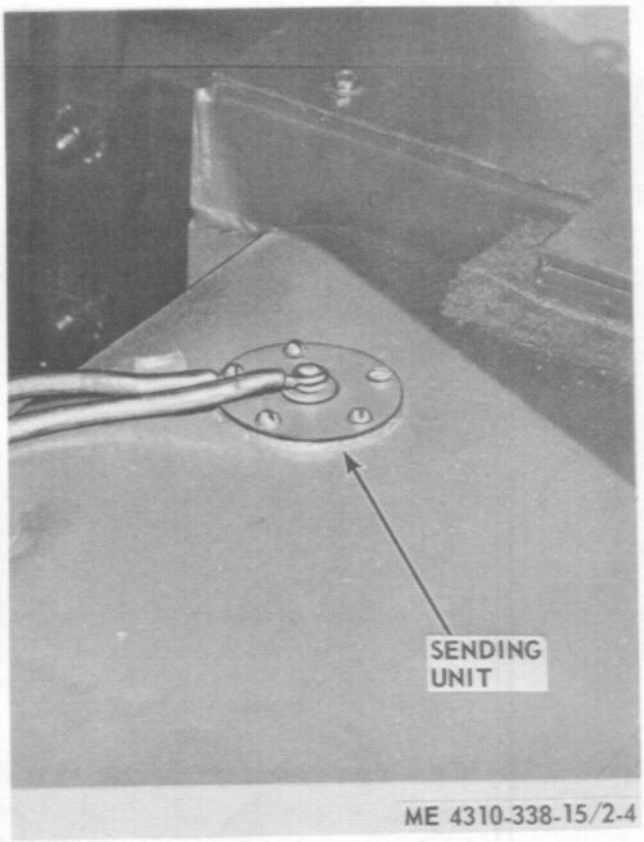

Figure 2-4. Fuel tank sending unit.

d. Compressor Oil Level Gage (fig. 2-5). This gage indicates the level of compressor oil in the oil separator tank. Normal oil level indication is at high end of white area between LOW and HIGH or just into the red HIGH area.

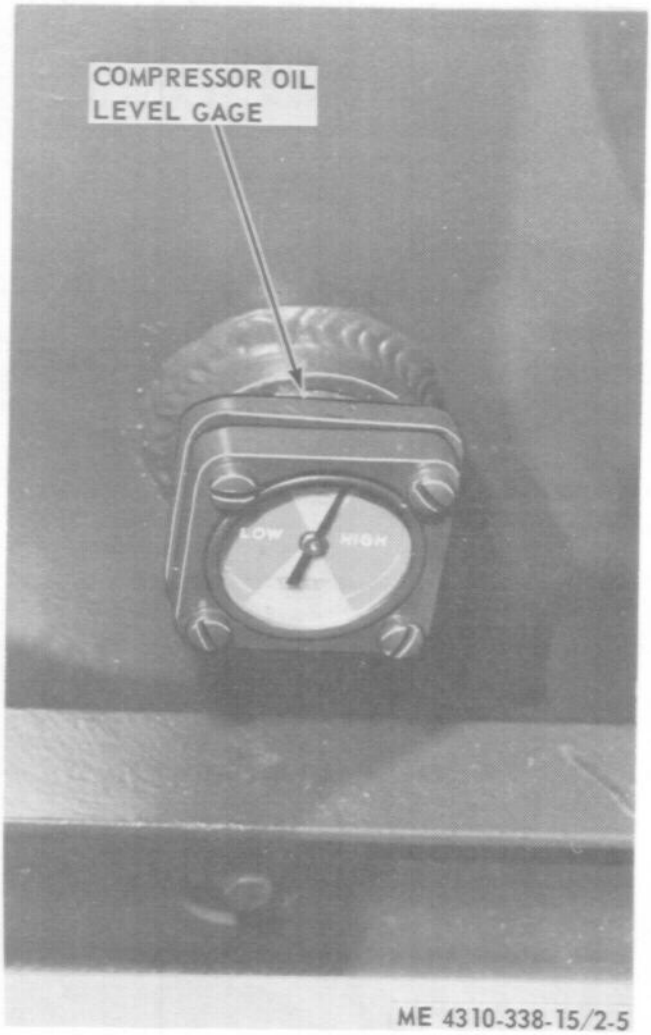

Figure 2-5. Compressor oil level gage.

e. Engine Oil Level Gage (fig. 2-6). This gage is a bayonet type dipstick which indicates the oil level within the engine. The gage is graduated on both sides so that the oil can be checked with the engine stopped or idling.

f. Air Discharge Service Valves (fig. 2-7). These in-line valves control the output of air from the air discharge manifold to the service tools.

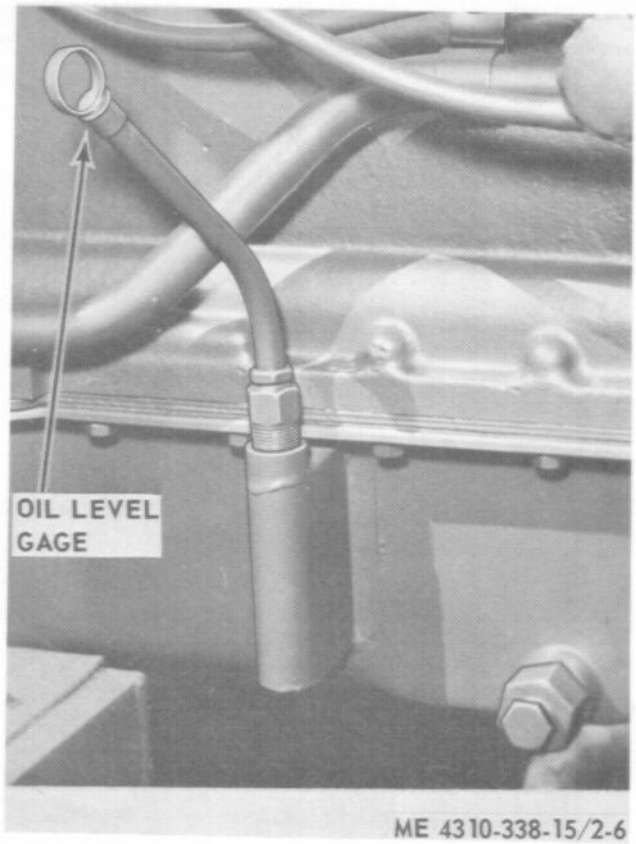

Figure 2-6. Engine oil level gage.

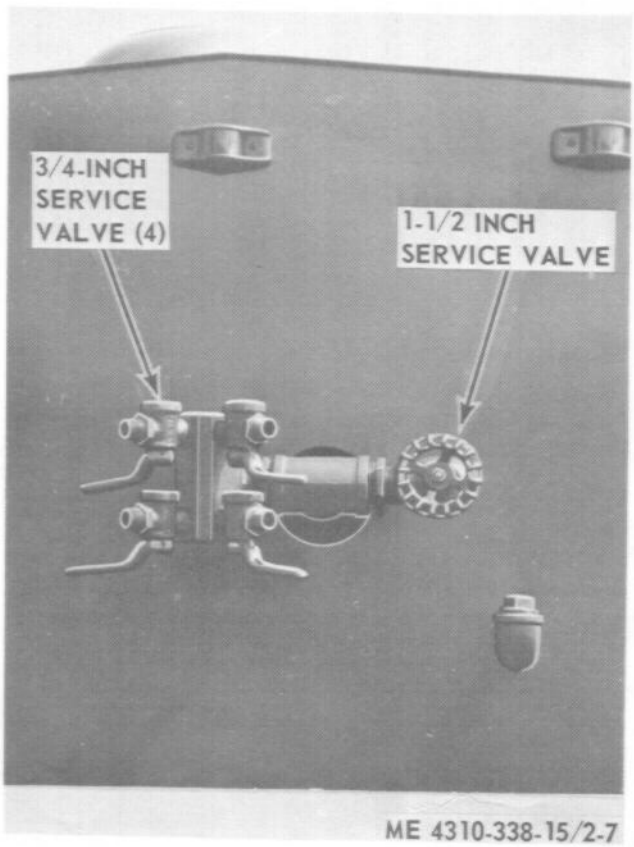

Figure 2-7. Air discharge service valves.

2-8. General

a. The instructions in this section are published for the information and guidance of personnel responsible for operating the Model 1M600RPV Rotary Air Compressor.

b. The operator must know how to perform every operation of which the air compressor unit is capable. This section contains instructions on starting, operating, and stopping the air compressor unit, and coordinating the basic motions to perform the specific tasks for which the equipment is designed. Since nearly every job presents a different problem, the operator may have to vary given procedures to fit the individual job.

2-9. Starting

a. Preparation for Starting.

(1) Perform the necessary daily preventive maintenance services (para 3-6).

(2) Check air demand requirements.

b. Starting. Refer to figure 2-8 and start the air compressor unit.

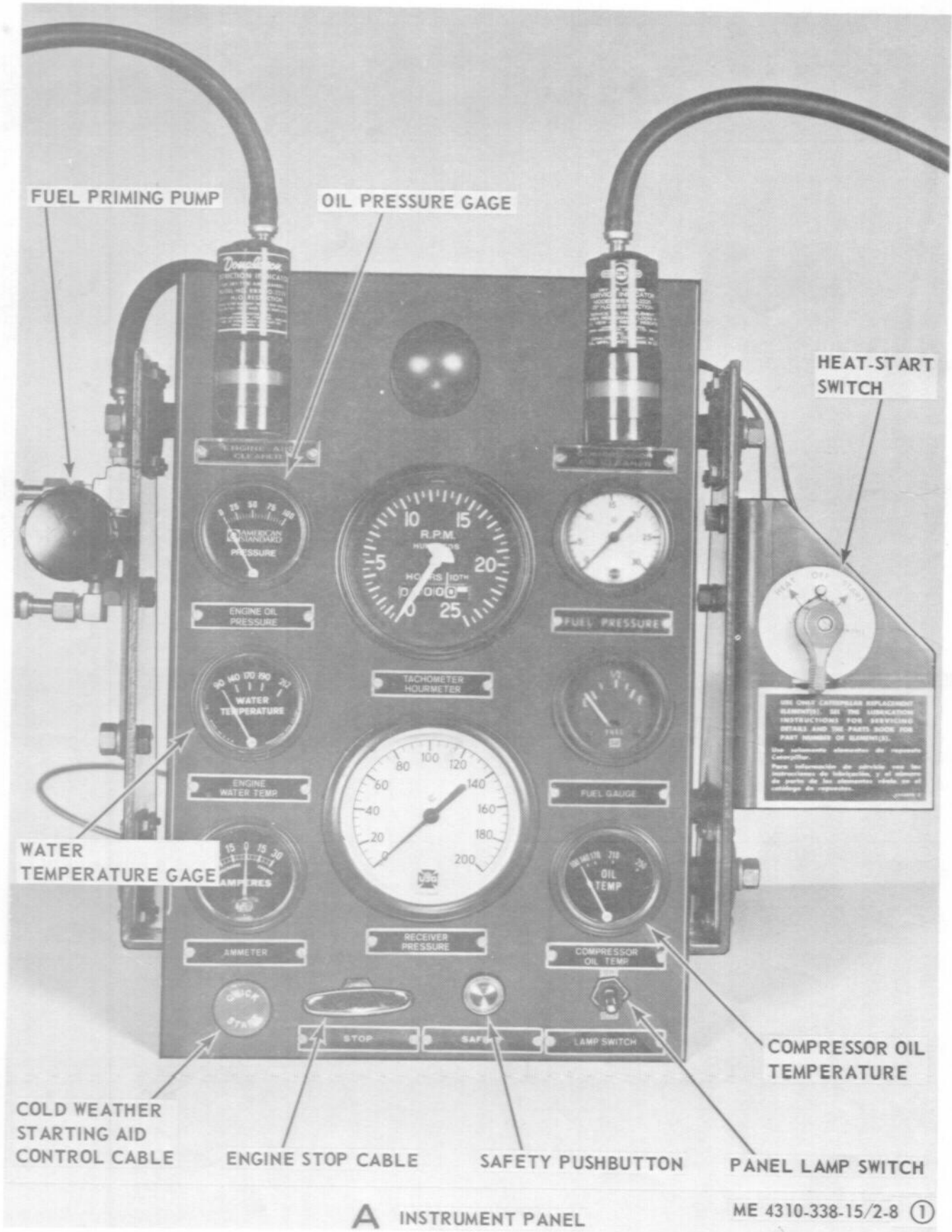

Figure 2-8. Air compressor unit starting procedure (sheet 1 of 3).

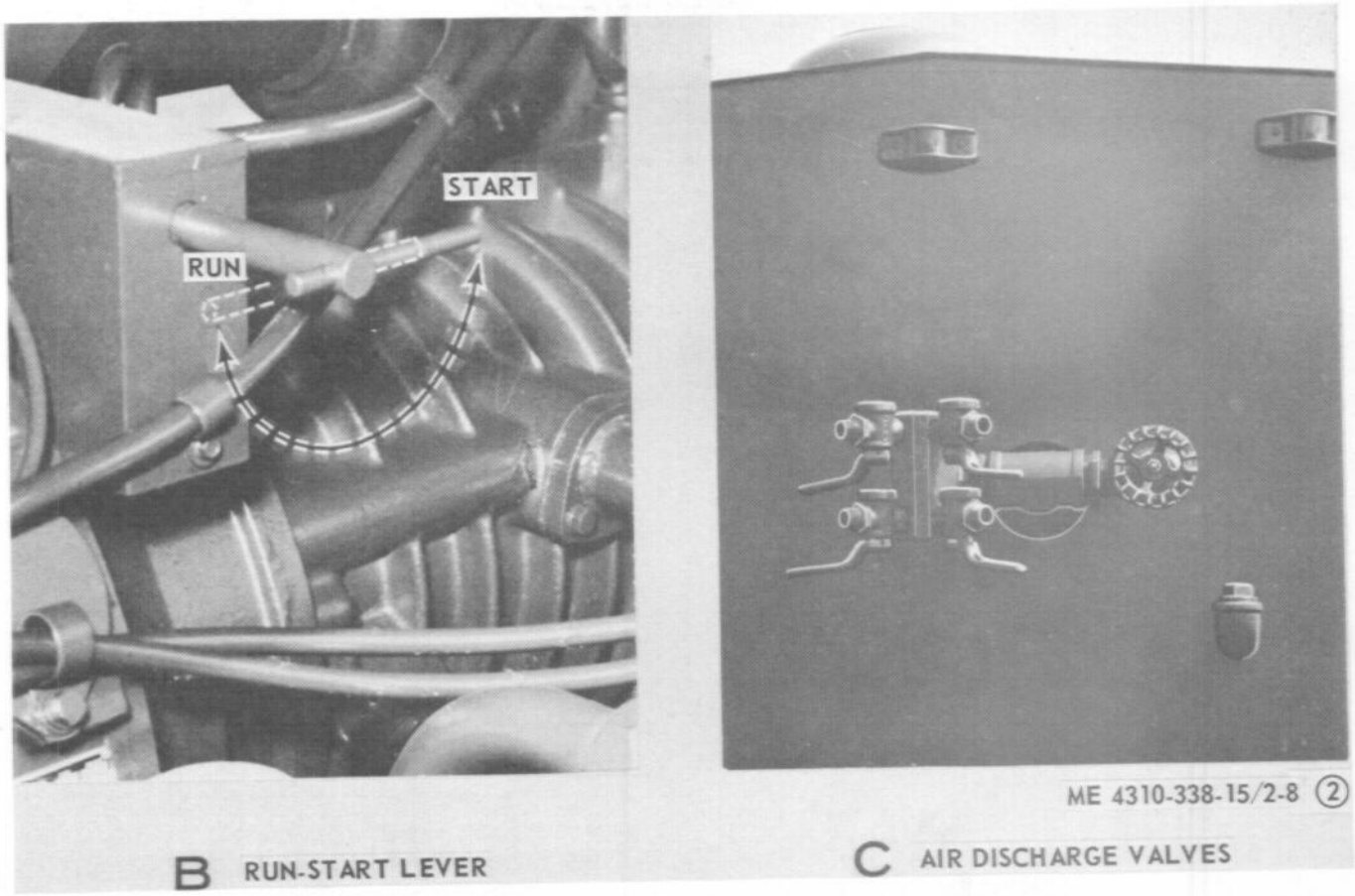

Figure 2-8. Air compressir unit starting procedure (sheet 2 of 3).

CAUTION

DO NOT OPERATE COMPRESSOR WITH LESS THAN 80 PSI IN SEPARATOR TANK. IF END USE ALLOWS PRESSURE TO FALL BELOW 80 PSI, PARTIALLY CLOSE AIR DISCHARGE VALVE. EQUIPMENT OPERATION BELOW 80 PSI CAUSES OVERHEATING OF COMPRESSOR AND EXCESSIVE OIL CONSUMPTION.

STEP 1. BE CERTAIN THAT ALL AIR DISCHARGE VALVES ARE CLOSED.

STEP 2. PULL ENGINE STOP CABLE ALL THE WAY OUT. PLACE HEAT-START SWITCH IN START POSITION AND ALLOW ENGINE TO TURN OVER FOR THREE SECONDS. RELEASE HEAT-START SWITCH TO OFF POSITION.

STEP 3. PUSH ENGINE STOP CABLE ALL THE WAY IN. PLACE SPEED CONTROL RUN-START LEVER IN START POSITION.

STEP 4. PRIOR TO STARTING, THE FUEL SYSTEM MUST BE PURGED OF AIR AND PRESSURIZED. OPEN VENT VALVE AND OPERATE FUEL PRIMING PUMP UNTIL A STREAM OF FUEL, WITHOUT AIR BUBBLES, FLOWS FROM VENT LINE. CLOSE VENT VALVE. LOCK PUMP HANDLE.

STEP 5. IF AMBIENT AIR TEMPERATURE IS BELOW +60°F., PLACE HEAT-START SWITCH IN HEAT POSITION AS RECOMMENDED IN TABLE 2-2.

CAUTION

IF AMBIENT AIR TEMPERATURE IS +32°F. OR BELOW, USE ONLY ONE SHOT OF STARTING AID FUEL. EXCESSIVE STARTING AID FUEL CAN CAUSE SEVERE ENGINE DAMAGE. INJECT STARTING AID FUEL ONLY WHEN ENGINE IS CRANKING.

STEP 6. AFTER INDICATED HEAT TIME HAS ELAPSED, MOVE SWITCH TO START POSITION AND DEPRESS AND HOLD SAFETY SWITCH. IF AMBIENT AIR TEMPERATURE IS +32°F. OR BELOW, USE COLD WEATHER STARTING AID.

CAUTION

DO NOT HEAT GLOW PLUGS AFTER ENGINE IS RUNNING SMOOTHLY OR HAS REACHED OPERATING TEMPERATURE. IF ENGINE DOES NOT START AFTER CRANKING FOR 30 SECONDS, RELEASE START SWITCH AND LET STARTING MOTOR COOL FOR TWO MINUTES BEFORE ATTEMPTING ANOTHER START.

STEP 7. WHEN ENGINE STARTS, PLACE HEAT-START SWITCH IN HEAT POSITION UNTIL ENGINE IS RUNNING SMOOTHLY, THEN RELEASE TO OFF POSITION. RELEASE SAFETY SWITCH WHEN ENGINE OIL PRESSURE IS NORMAL.

STEP 8. CHECK ALL GAGES DURING WARMUP PERIOD TO ENSURE EQUIPMENT IS OPERATING PROPERLY.

STEP 9. WHEN ALL SYSTEMS REACH OPERATING TEMPERATURES, PLACE SPEED CONTROL RUN-START LEVER IN RUN POSITION.

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Figure 2-8. Air compressor unit starting procedure (sheet 3 of 3).

Table 2-2. Starting Aid Chart

Starting temperature	Glow plug heat time	Cold weather starting aid
Above +60°F.	None	No
+60°F. to +32°F.	1 to 2 Minutes	No
+32°F. to 0°F.	1 to 2 Minutes	Yes*
Below 0°F.	1 to 3 Minutes	Yes*

***CAUTION:* To prevent serious damage to the engine, inject starting aid fuel *only* when engine is cranking. Use only one shot per start.**

2-10. Stopping

a. Refer to figure 2-9 and stop the air compressor unit.

d. Perform the necessary daily preventive maintenance services (para 3-6).

2-11. Operation of Equipment

a. General. The air compressor unit is used in general construction work for any purpose that requires continuous compressed air. The air discharge manifold provides five connections for attaching pneumatic tools and accessories to the air compressor.

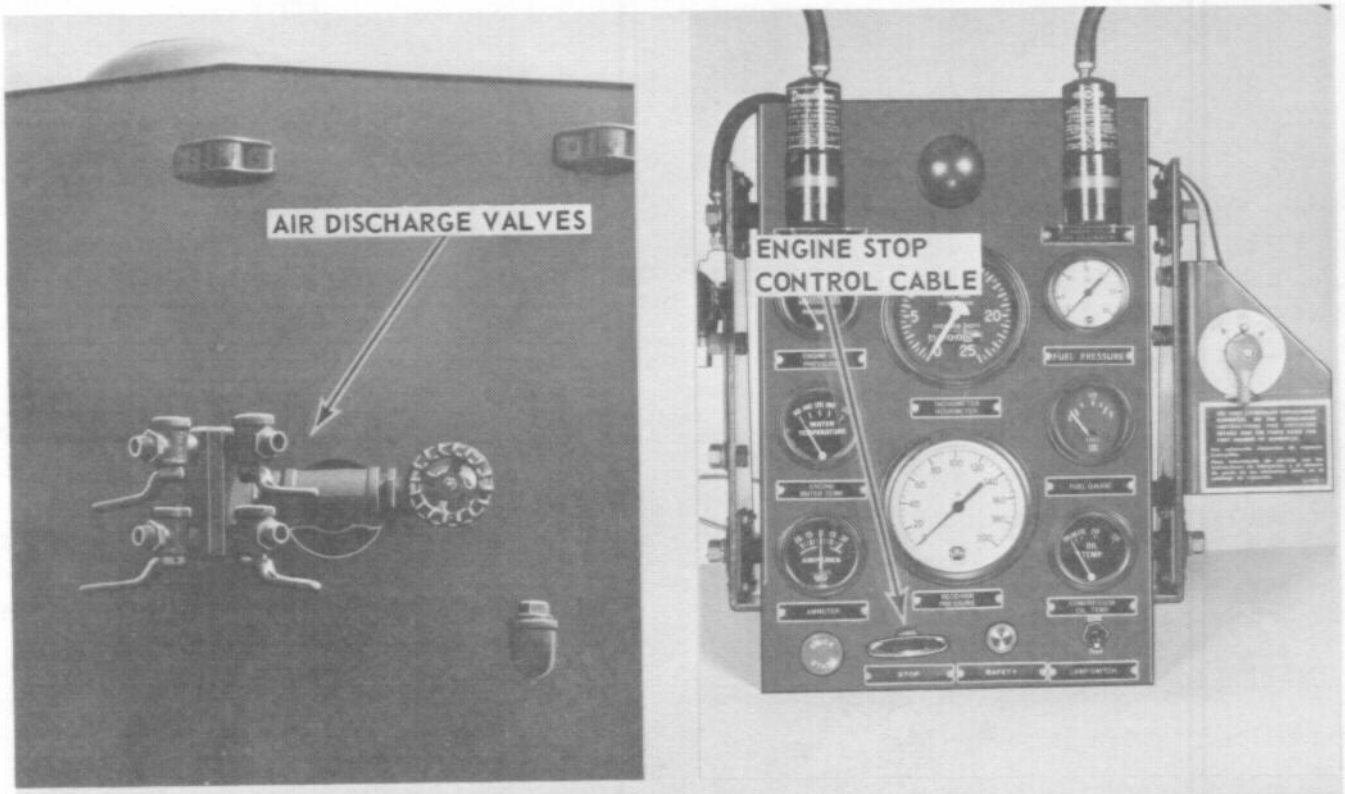


Figure 2-9. Air Compressor Unit Stopping Procedure.

b. Operating Air Compressor Unit. Basically, the air compressor unit is automatically operated after initial starting and warm-up and requires only periodic inspection and servicing during the operating cycle. As the air output demand increaes, the compressor unit speeds up to maintain a continuous supply of compressed air. The operator should periodically observe the various gages to ensure that no malfunction exists and that the unit is operating at its fullest capabilities. The air supply to each pneumatic tool is controlled by service valves on the air discharge manifold.

CAUTION

Do not operate compressor with less than 80 PSI in separator tank. If end use allows pressure to fall below 80 PSI, partially close air discharge valve. Equipment operation below 80 PSI causes overheating of compressor and excessive oil consumption.

Section V. OPERATION UNDER UNUSUAL CONDITIONS

2-12. Operation in Extreme Cold (below 0 °F.)

a. Ensure that antifreeze solution is correct for lowest temperature anticipated. Refer to table 2-1 for antifreeze data.

b. Inspect cooling system for leaks or blockage. Correct or report any defects.

c. Keep batteries fully charged. After adding water to batteries, run engine for at least one hour.

d. Keep fuel tanks full when unit is not in operation. Refer to tabulated data, paragraph 1-4, for fuel type and tank capacity.

e. Drain and service fuel filter (para 3-12).

f. Lubricate air compressor unit in accordance with Lubrication Order (LO) 5-4310-338-12.

2-13. Operation in Extreme Heat

a. Keep engine cooling system clean and full of coolant. Inspect cooling system often and correct or report any leaks or other malfunction.

b. Locate the air compressor unit in a well ventilated area. Keep side doors open during operation to promote good air circulation.

c. Keep air compressor unit lubricated in accordance with Lubrication Order (LO) 5-4310-338-12.

2-14. Operation in Dusty or Sandy Areas

A highly contaminated dusty or sandy area places an extra load on the air cleaners, oil filters, engine and compressor with the possibility of increased wear and maintenance. Therefore, servicing of the unit must be performed at much shorter intervals as inspection reveals the presence of contamination in the oil supplies and air cleaners. The following steps outline the operating procedures.

WARNING

Do not operate air compressor unit in an enclosed or sheltered area unless the exhaust gases are piped outside. Inhalation of gases will result in serious illness or death.

a. Locate air compressor in a sheltered area, if possible.

b. Keep entire unit as clean as possible.

c. Lubricate unit in accordance with Lubrication Order (LO) 5-4310-338-12 except intervals should be more frequent when inspections indicate service should be performed.

d. Repeatedly check air cleaner restriction indicators and service air filters as required.

e. Periodically wet down surrounding area to help keep down dust.

2-15. Operation Under Rainy or Humid Conditions

a. Wipe all exposed areas frequently.

b. Cover air compressor unit when not in operation.

c. Keep electrical components clean and dry.

d. Inspect air cleaners and oil supplies frequently for contamination. Service in accordance with Lubrication Order (LO) 5-4310-338-12.

2-16. Operation in Salt Water Areas

Follow same procedure described in paragraph 2-15, above.

2-17. Operation in Snow

Follow same procedure described in paragraph 2-15, above.

2-18. Operation in Mud

a. Position air compressor unit as level as possible. Out-of-level is not to exceed 15° in any directional plane.

b. If ground is very soft or miry, place blocks, boards, or the equivalent under each wheel to prevent air compressor unit from settling.

c. Take necessary precautions to prevent mud or water from getting inside air discharge hoses and fittings.

d. Thoroughly clean air compressor unit after use.

2-19. Operation in High Altitudes

CAUTION

Check unit frequently for overheating of engine during high-altitude operation.

This air compressor unit operates satisfactorily at high altitudes. However, since barometric pressure (air density) decreases as altitude increaes, a slight loss of compressor efficiency may be noticed at higher altitudes. This ia a normal condition and cannot be prevented.

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

2-20. Diesel Engine Cold Weather Starting Aid

a. Description. The cold weather starting aid is a measured-shot system which contains an ether base fuel mixture. This fuel mixture, which is highly combustible, is manually injected into the engine air intake manifold. The cold weather starting aid consists of the measured-shot valve, cylinder mounting clamp, atomizer, control cable, and replaceable fuel cylinder.

b. Operation.

WARNING

Do not operate cold weather starting aid at temperatures above 40° F. Do not puncture or mishandle fuel cylinder. The cylinder contains an either base mixture which is extremely toxic, volatile, and combustible.

(1) Pull out control cable (fig. 2-2) for one to two seconds to fill chamber in valve body.

CAUTION

Use only one shot of starting aid fuel for each engine start. Excessive use of starting aid fuel can seriously damage engine.

(2) When engine is cranking, push in control cable to release starting aid fuel into engine air intake manifold.

c. Replacement.

(1) Weigh cylinder to determine remaining fuel capacity. A full cylinder weights 37 ounces; an empty cylinder weights 17 ounces. To determine approximately how many starts are left in a cylinder, allow 5 cc's per shot (39 cc's per ounce).

(2) To replace an empty fuel cylinder, loosen clamp that attaches cylinder to housing and unscrew cylinder from valve. Place new cylinder in valve, screw right, and secure cylinder in place with attaching clamp.

d. Maintenance. Refer to paragraph 3-43 for maintenance instructions.

2-21. Fire Extinguisher (Monobromotrifluoromethane Type)

The monobromotrifluoromethane type fire extinguisher is generally suitable for all types of fire, except fires involved with LOX (liquid oxygen) generating equipment. Refer to TB 5-4200-200-10 for the operation and maintenance of the fire extinguisher.

CHAPTER 3
OPERATOR'S AND ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. OPERATOR'S AND ORGANIZATIONAL MAINTENANCE REPAIR PARTS, TOOLS, AND EQUIPMENT

3-1. Tools and Equipment

a. Basic issue tools and repair parts issued with or authorized for the Model 1M600RPV Rotary Air Compressor are listed in the Basic Issue Items List, Appendix B.

b. No special tools or equipment are required by the operator or organizational maintenance personnel for maintaining the Model 1M600RPV Rotary Air Compressor.

3-2. Organizational Maintenance Repair Parts

Organizational maintenance repair parts are listed and illustrated in TM 5-4310-338-20P (when printed).

Section II. LUBRICATION

3-3. General Lubrication Information

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

b. For the current lubrication order, refer to LO 5-4310-338-12.

Figure 3-1. Not used.

3-4. Detailed Lubrication Information

a. General. Keep all lubricants in closed containers and store in a cool, clean, dry place. Allow no dust, dirt, or other foreign matter to mix with lubricants. Keep all lubrication equipment clean and ready for use.

b. Cleaning. Keep all external parts not requiring lubrication free of lubricants. Before lubricating the equipment, wipe all lubrication points free of dirt and grease. After lubricating the equipment, clean all lubrication points to prevent accumulation of foreign matter.

c. Points of Lubrication.

CAUTION

Overlubrication may cause equipment failure or damage to working parts.

Service the lubrication points at intervals specified in Table 3-1.

d. Operation Immediately After Lubrication. Inspect all oil lines, fittings and filters for leaks immediately after lubrication and during operation.

e. HDO, OE and OES Oil.

(1) The crankcase oil level must be checked frequently since oil consumption may increase at any time.

(2) The oil may require changing more frequently than usual during cold weather operating conditions, extreme heat conditions, and dusty or sandy conditions. These extreme conditions cause oil contamination by dilution and an increase in sludge formation.

(3) The oil must be changed at least every 50 hours if the fuel used has a sulphur content of more than 0.4 percent. The filter change period can remain at the normal specified time.

(4) The engine crankcase oil used must be a superior lubricant, series three, which conforms to military specification MIL-L-45199.

f. Oil Filter Service. Service engine oil filter and air compressor oil filter at intervals specified in table 3-1.

g. Starting Motor and Generator Service. The starting motor and generator assemblies have sealed bearings and require no service.

Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

3-5. General

To ensure that the air compressor unit 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 checks and services that are to be performed are described in paragraph 3-6. 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. Shut down air compressor unit immediately if a malfunction occurs which would damage the equipment if operation were continued. At the earliest possible opportunity, all malfunctions and deficiencies encountered and corrective actions taken shall be recorded on DA Form 2404 (Equipment Inspection and Maintenance Worksheet).

3-6. Preventive Maintenance Checks and Services

Preventive maintenance checks and services which must be performed by operating personnel are listed in table 3-1. The steps are in a sequence which allows personnel to proceed systematically from part to part. Information necessary to accomplish a given step, including mechanical tolerances, minimum/maximum adjustment limits, normal gage or instrument readings, when applicable, are included. These are realistic standards and limitations by which maintenance personnel can readily determine the overall operational condition of the air compressor unit. Where applicable, procedures are referenced for accomplishing the preventive maintenance checks or services. If a preventive maintenance check or service is required at an interval other than daily, weekly, monthly, or quarterly, the correct interval is noted in the procedure column. When the interval is indicated in hours, they denote service hours. Such expressions as "replace as necessary" or "fill as necessary" are not used in the procedure column. It is understood that whenever inspection reveals the need of an adjustment, replacement, or refill, the necessary action will be taken.

Section IV. OPERATOR'S MAINTENANCE

3-7. General

This section contains maintenance procedures that are the responsibility of the operator in accordance with the Maintenance Allocation Chart.

Table 3-1. Preventive Maintenance Checks and Services

Item number	Interval						B — Before operation D — During operation	A — After operation W — Weekly	M — Monthly Q — Quarterly
	Operator				Org.				
	Daily			W	M	Q	Item to be inspected	Procedure	Reference
	B	D	A						
1	X			X	X	X	Radiator and oil cooler assembly	Check engine coolant level; proper level is 2 " below filler neck.	Fig. 3-8
	X			X	X	X		Check radiator, hoses, and connections for leaks or defects.	Para 3-71
	X			X	X	X		Check antifreeze level when operating in temperatures below +32°F.	Table 2-1
2	X		X	X	X	X	Fuel tank	Check fuel level. Use gage on instrument panel.	Fig. 2-2

Table 3-1. Preventive Maintenance Checks and Services —Continued.

B — Before operation D — During operation | A — After operation W — Weekly | M — Monthly Q — Quarterly

Item number	Interval: Operator Daily B	Operator Daily D	Operator Daily A	Operator W	Org. M	Org. Q	Item to be inspected	Procedure	Reference
3	X		X	X	X	X	Engine crankcase	Check oil level. Use dipstick gage.	Fig. 2-6, LO 5-4310-338-12
				X				Change oil.	Fig. 3-2, LO 5-4310-338-12
								Note. If sulphur content of diesel fuel being used is greater than 0.4 percent, change oil every 50 hours.	
					X	X		Clean crankcase breather. Wash with clean kerosene or diesel fuel.	Fig. 3-4
4	X		X	X	X	X	Oil separator	Check oil level. Use oil level gage on tank.	Fig. 2-5
					X			Change oil (every 500 hours).	Fig. 3-16, LO 5-4310-338-12
5	X		X	X	X	X	Moisture	Drain bolw.	
					X	X	separator	Inspect element.	Para 3-90
6				X		X	Engine oil filter	Change filter elements.	Fig. 3-3, LO 5-4310-338-12
7				X		X	Compressor oil filter	Change filter element.	Fig. 3-3
8				X	X	X	Primary fuel filter	Clean and inspect filter element every 50 hours.	Fig. 3-6
9				X	X	X	Final fuel filter	Drain every 50 hours when operating in temperatures of +32°F. and above.	Fig. 3-6
								Drain every 10 hours when operating in temperatures below +32°F.	Fig. 3-6
					X			Change filter element and gaskets.	Fig. 3-6
10	X				X	X	Drive belts	Check for worn, frayed, or cracked belts.	Para 3-72
				X	X	X		Check for proper belt adjustment.	Fig. 3-47
11				X	X	X	Batteries	Check battery mountings and cable connections.	Para 3-106
				X	X	X		Check electrolyte level. Correct level is 3/8" above plates.	Fig. 3-10
				X	X	X		Remove corrosion from battery terminals and lubricate.	LO 5-4310-338-12
				X				Clean filler cap vent holes.	Fig. 3-10
	X							Check general condition of battery.	
				X				Make hydrometer test.	Para 2-1
12	X	X				X	Speed control linkage	Check linkage for freedom of movement.	
				X	X	X		Lubricate linkage.	Fig. 3-18, LO 5-4310-338-12
					X	X		Check linkage for proper adjustment.	Fig. 3-69
13	X	X	X	X	X	X	Air cleaners	Check restriction indicators.	Fig. 2-2
				X	X	X		Clean element and body Inspect element.	Fig. 3-5
					X	X		Replace element. Clean air cleaner.	Para 3-79
14	X		X		X	X	Controls and instruments	Check for damaged instruments.	Fig. 2-2
	X				X	X		Check for loose mountings.	
		X			X	X		Check instruments for proper operation. Normal instrument readings are: Engine oil press.: 60 to 70 PSI at 1800 RPM Tachometer RPM low idle 1000 RPM governed speed 1800 Water temperature 170–190°F. Oil temperature 170–220°F. Air pressure 80–105 PSI Fuel pressure 25 PSI minimum at 1800 RPM	

Table 3-1. Preventive Maintenance Checks and Services — Continued.

B — Before operation W — Weekly M — Monthly
D — During operation A — After operation Q — Quarterly

Item number	Interval						Item to be inspected	Procedure	Reference
	Operator				Org.				
	Daily			W	M	Q			
	B	D	A						
15					X	X	Engine assembly	Check fuel injection pump timing dimensions.	Para 6-20
					X	X		Check fuel rack setting.	Para 6-17
						X		Check valve clearances.	Para 3-117
		X			X	X		Check for even running and exhaust smoke for improper combustion.	Table 3-2
					X	X		Check engine mounting.	
					X	X		Check cylinder head bolt torque.	Table 5-4
					X	X		Check and clean fuel injection valves.	Para 3-94
16		X		X	X	X	Tires	Check inflation, for missing valve caps, and wear.	Para 3-121
17					X	X	Brake system	Check lining wear. Check for cracks or defects.	Para 8-4
						X		Make brake adjustment.	Para 3-125
	X			X	X	X		Check all air lines and connections.	Para 3-128
				X	X	X		Check parking brake operation and adjustment.	Para 3-129
					X	X		Lubricate parking brake mechanism.	LO 5-4310-338-12
18					X	X	Axles and steering	Check tierod adjustment, and axles for damage.	Fig. 3-123
					X	X		Lubricate steering components.	Fig. 3-14
19				X	X	X	Springs	Check for broken mounting hardware or spring leafs.	
					X	X		Lubricate springs.	Fig. 3-15, LO 5-4310-338-12
20						X	Wheel bearings	Remove, clean, inspect, reinstall, and pack bearings.	Fig. 3-11, LO 5-4310-338-12
21	X		X	X	X	X	Lighting system	Check operation of all taillights, stoplights, clearance lights, and panel lights.	Fig. 3-7
22	X			X	X	X	Cold weather starting aid	Weigh cylinder. Full cylinder weighs 37 ounces. Fuel consumption is 5CC per shot.	Para 2-20 Fig. 3-19
				X	X	X		Clean orifice.	Fig. 3-19
	X		X	X	X	X		Check cylinder for hand tightness.	

3-8. Engine Crankcase Service

Service engine crankcase as shown in figure 3-2.

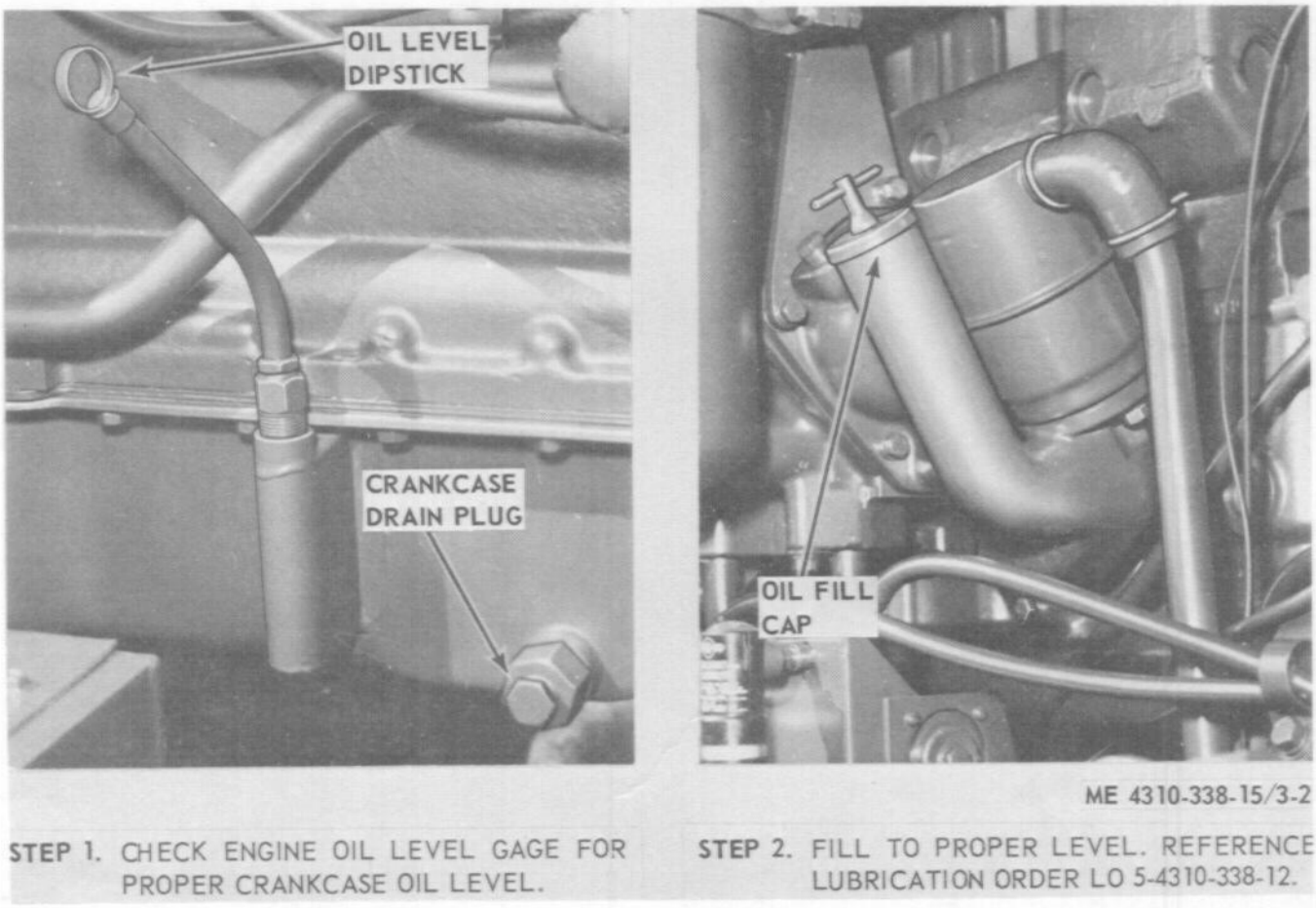
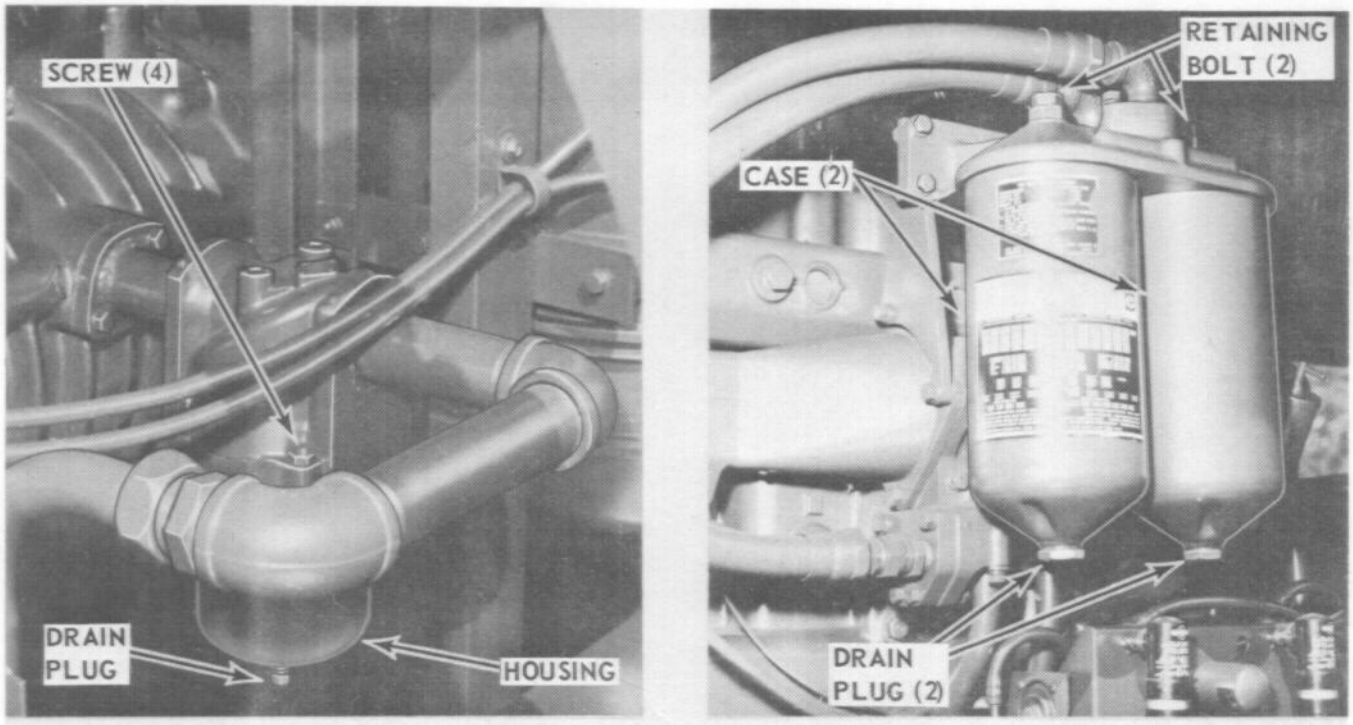


Figure 3-2. Engine crankcase service.

3-9. Oil Filter Service

Service engine and compressor oil filters and replace elements as shown in figure 3-3.



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A COMPRESSOR OIL FILTER

NOTE

STOP ENGINE BEFORE SERVICING COMPRESSOR OIL FILTER. SERVICE AFTER EACH 100 HOURS OF OPERATION.

STEP 1. REMOVE DRAIN PLUG AND DRAIN OIL FROM HOUSING. REPLACE DRAIN PLUG.

STEP 2. REMOVE SCREWS. REMOVE HOUSING AND ELEMENT.

STEP 3. CLEAN HOUSING AND HEAD ASSEMBLY USING A CLEANING SOLVENT THAT IS IN ACCORDANCE WITH FEDERAL SPECIFICATION P-D-680.

STEP 4. INSTALL A NEW ELEMENT AND GASKET. INSTALL HOUSING AND SECURE WITH SCREWS.

B ENGINE OIL FILTER

NOTE

STOP ENGINE BEFORE SERVICING ENGINE OIL FILTER ASSEMBLY. SERVICE AFTER EACH 100 HOURS OF OPERATION.

STEP 1. REMOVE DRAIN PLUGS AND DRAIN OIL FROM CASES. REPLACE DRAIN PLUGS.

STEP 2. UNSCREW CASE RETAINING BOLT AND REMOVE CASES AND ELEMENTS.

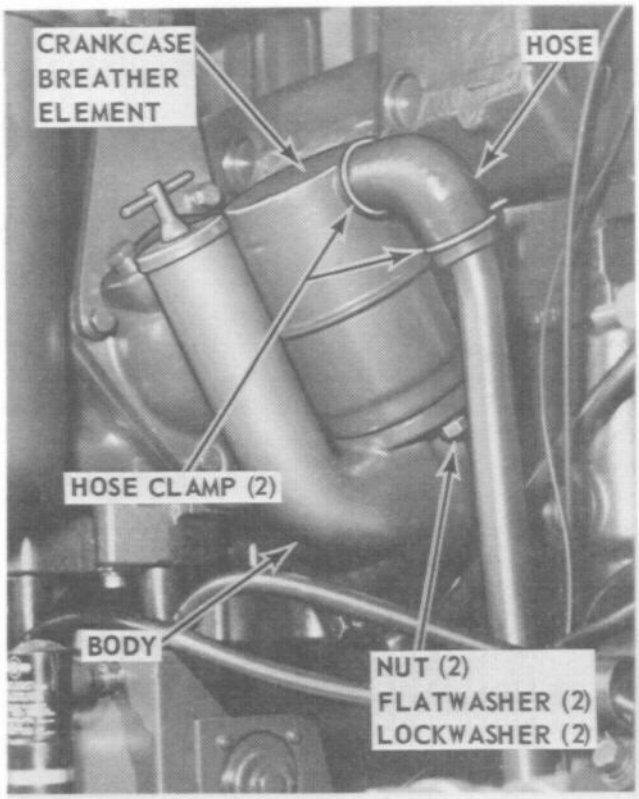
STEP 3. CLEAN CASES AND HEAD ASSEMBLY USING A CLEANING SOLVENT THAT IS IN ACCORDANCE WITH FEDERAL SPECIFICATION P-D-680.

STEP 4. INSTALL NEW ELEMENTS AND GASKETS. INSTALL CASES AND RETAINING BOLTS. TIGHTEN BOLTS.

Figure 3-3. Oil filter service.

3-10. Engine Crankcase Breather Service

Service engine crankcase breather and replace filter as shown in figure 3-4.



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STEP 1. LOOSEN HOSE CLAMP AND DISCONNECT HOSE FROM BREATHER ELEMENT.

STEP 2. REMOVE NUTS AND LOCKWASHERS. REMOVE BREATHER ELEMENT AND GASKET.

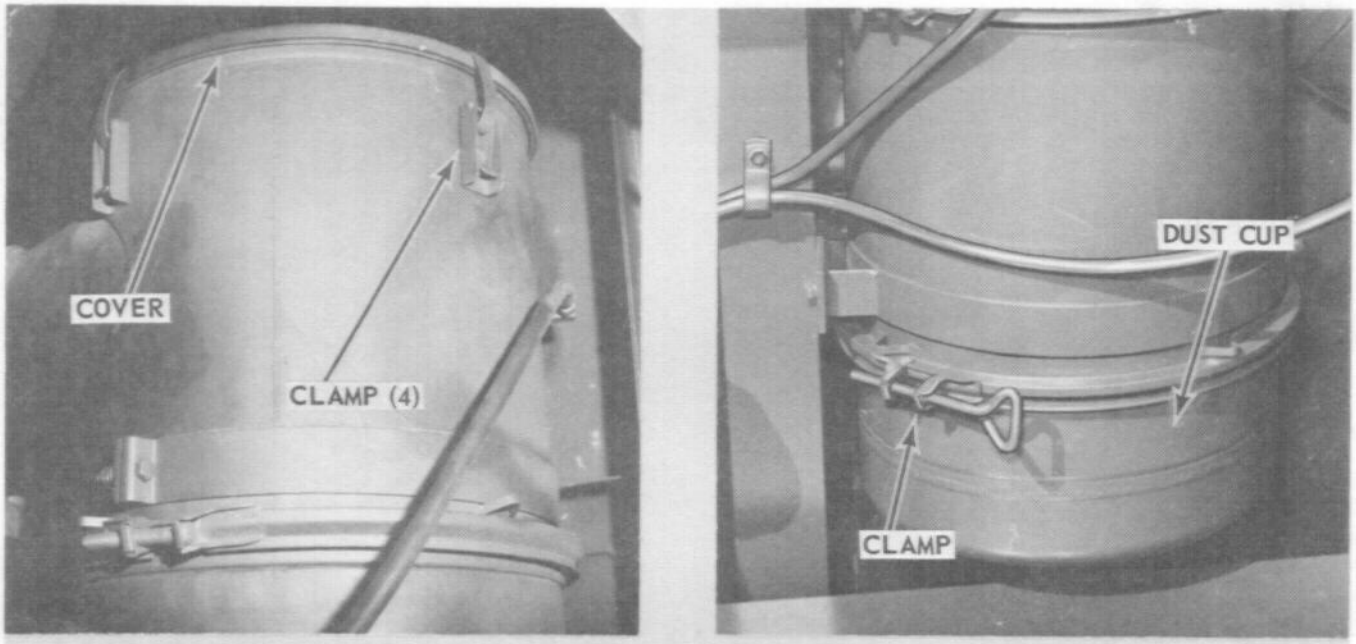
STEP 3. CLEAN BODY USING A CLEANING SOLVENT THAT IS IN ACCORDANCE WITH FEDERAL SPECIFICATION P-D-680.

STEP 4. INSTALL A NEW BREATHER ELEMENT AND GASKET. SECURE WITH NUTS AND LOCKWASHERS.

Figure 3-4. Engine crankcase breather service.

3-11. Air Cleaner Service

Service engine and compressor air cleaners and replace elements as shown in figure 3-5.



NOTE

THE FOLLOWING SERVICE INSTRUCTIONS ARE APPLICABLE FOR BOTH AIR CLEANERS.

STEP 1. UNFASTEN CLAMPS FROM COVER. REMOVE COVER AND GASKET FROM AIR CLEANER BODY.

STEP 2. REMOVE SCREW, GASKETS, AND COVER FROM TOP OF ELEMENT. LIFT ELEMENT AND LOWER GASKET OUT OF BODY. (SEE FIG. 3-57.)

STEP 3. LOOSEN BOTTOM CLAMP AND REMOVE DUST CUP AND GASKET.

STEP 4. CLEAN INSIDE BODY AND DUST CUP USING A CLEANING SOLVENT THAT IS IN ACCORDANCE WITH FEDERAL SPECIFICATION P-D-680. WASH AND INSPECT ELEMENT OR REPLACE (PARA 3-79). REPLACE ALL GASKETS.

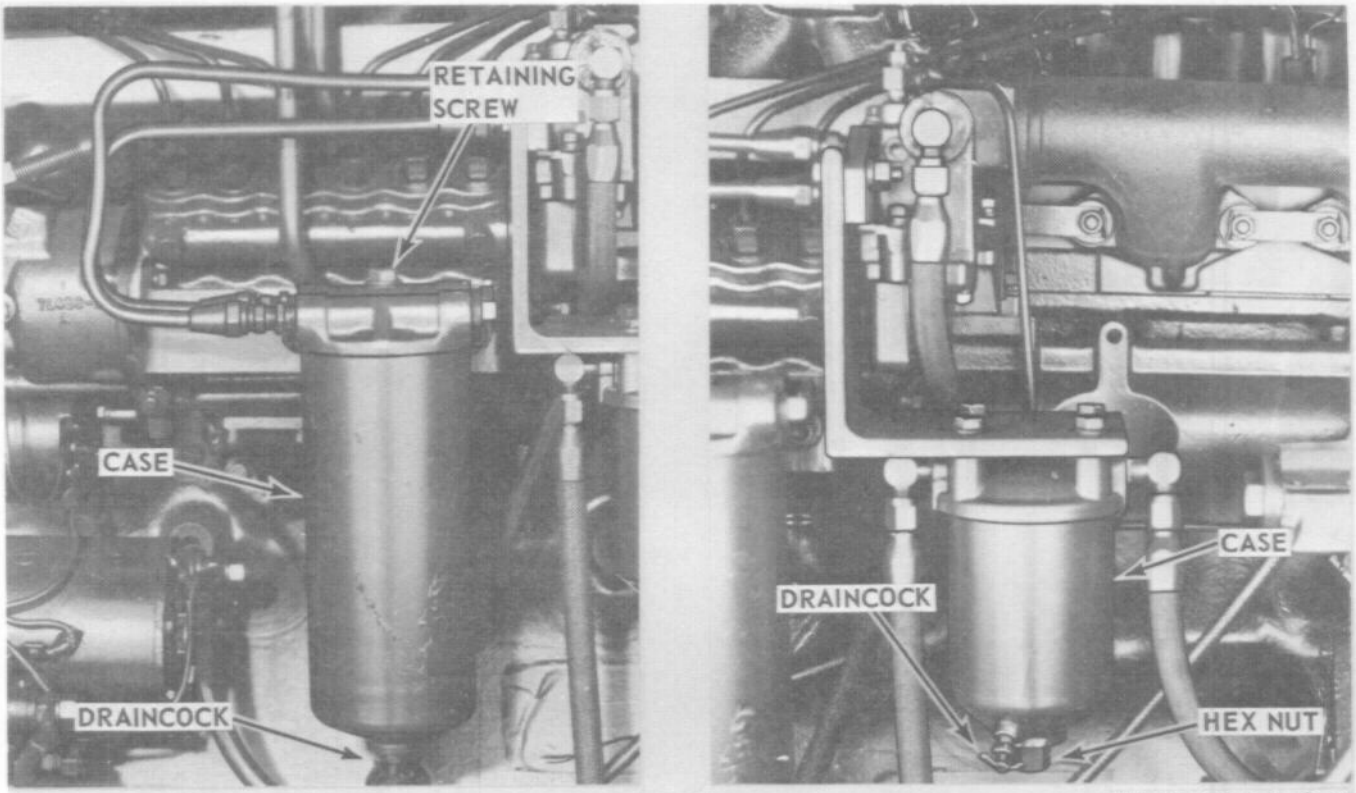
STEP 5. REASSEMBLE AIR CLEANER. BE SURE THAT ELEMENT IS SEATED PROPERLY, THAT GASKETS ARE NOT TWISTED, AND THAT DUST CUP AND BOTH COVERS ARE FIRMLY SECURED.

STEP 6. RESET AIR CLEANER RESTRICTION INDICATOR ON INSTRUMENT PANEL (FIG. 2-2).

Figure 3-5. Air cleaner service.

3-12. Fuel Filter Service

Service fuel filters and replace or clean elements as shown in figure 3-6.



A FINAL FUEL FILTER

STEP 1. OPEN DRAINCOCK AND DRAIN ALL FUEL OUT OF FILTER CASE. CLOSE DRAINCOCK.

STEP 2. REMOVE RETAINING SCREW. REMOVE CASE AND ELEMENT.

STEP 3. CLEAN CASE AND HEAD ASSEMBLY USING A CLEANING SOLVENT THAT IS IN ACCORDANCE WITH FEDERAL SPECIFICATION P-D-680.

STEP 4. INSTALL A NEW ELEMENT AND GASKET. INSTALL CASE AND SECURE WITH RETAINING SCREW.

B PRIMARY FUEL FILTER

STEP 1. OPEN DRAINCOCK AND DRAIN ALL FUEL FROM CASE. CLOSE DRAINCOCK.

STEP 2. REMOVE HEX NUT. REMOVE CASE AND ELEMENT.

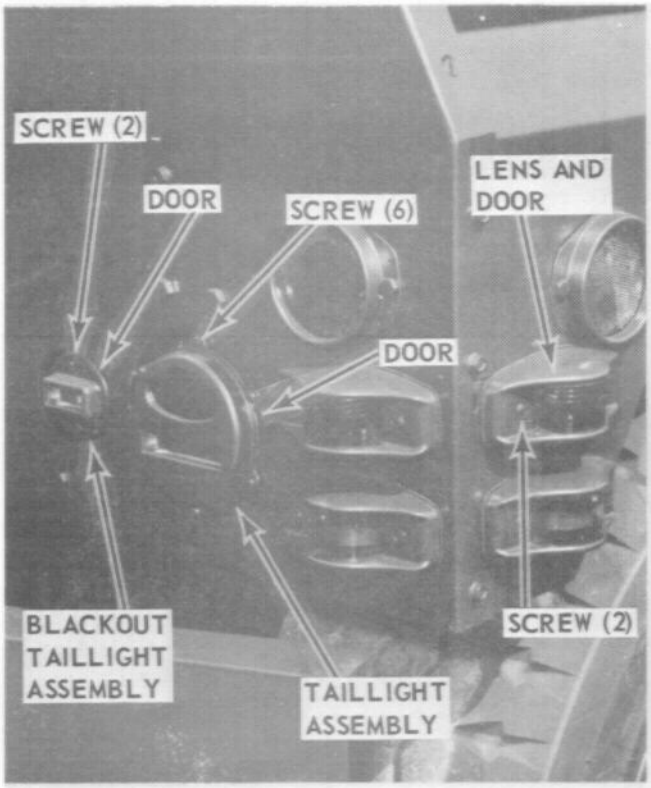
STEP 3. CLEAN CASE, HEAD, AND ELEMENT USING A CLEANING SOLVENT THAT IS IN ACCORDANCE WITH FEDERAL SPECIFICATION P-D-680.

STEP 4. REPLACE GASKET. INSTALL ELEMENT AND CASE AND SECURE WITH HEX NUT.

Figure 3-6. Fuel filter service.

3-13. Lamp Replacement

Replace control panel, taillight, and clearance lamps as shown in figure 3-7.



STEP 1. REMOVE SCREWS AND DOOR FROM TAILLIGHT ASSEMBLY BEING SERVICED. REPLACE BULBS AS REQUIRED.

NOTE

BE SURE GASKET IS SEATED PROPERLY WHEN DOOR IS INSTALLED.

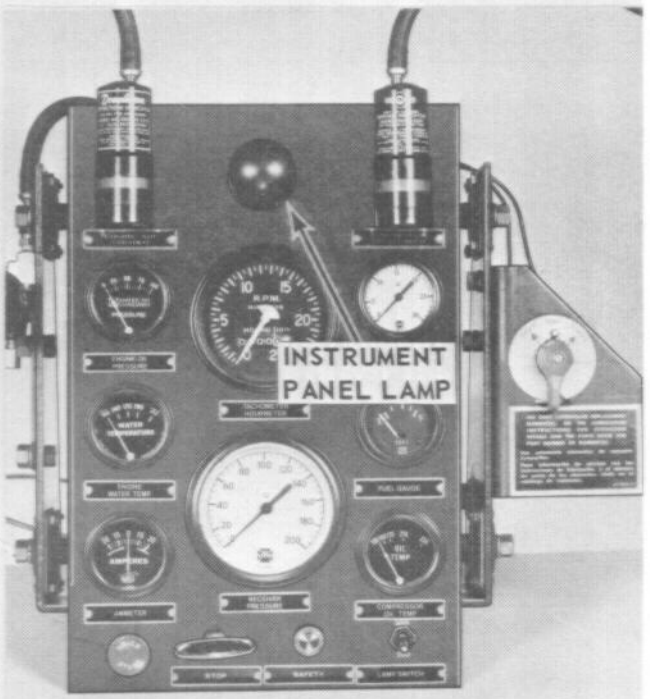
STEP 2. REINSTALL DOOR AND SCREWS. TIGHTEN SCREWS.

A CLEARANCE LIGHTS (TYP)

STEP 1. REMOVE SCREWS. REMOVE LENS AND DOOR AS A UNIT.

STEP 2. REPLACE BULB AND REINSTALL LENS AND DOOR. INSTALL SCREWS.

B TAILLIGHT ASSEMBLIES



ME 4310-338-15/3-7

STEP 1. TURN PANEL LAMP CAP COUNTERCLOCKWISE TO REMOVE.

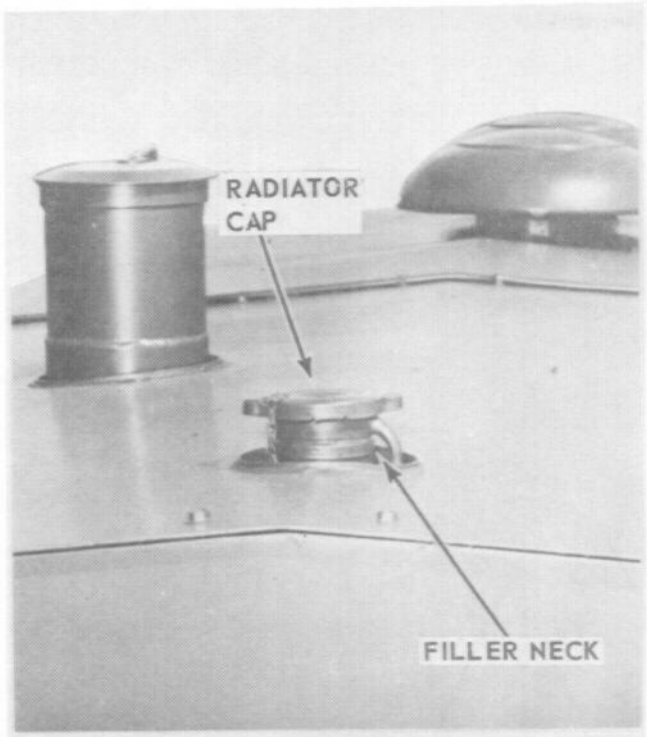
STEP 2. REPLACE BULB AND REINSTALL PANEL LAMP CAP.

C INSTRUMENT PANEL LAMP

Figure 3-7. Lamp replacement.

3-14. Engine Radiator Service

Service engine radiator and replace radiator cap as shown in figure 3-8.



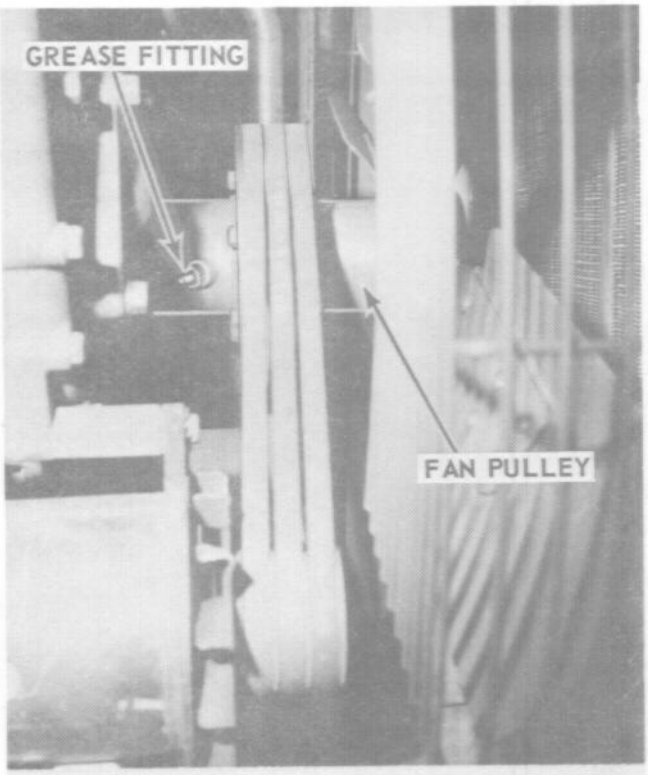
ME 4310-338-15/3-8

CHECK ENGINE COOLANT LEVEL. PROPER LEVEL IS TWO INCHES BELOW FILLER NECK.

Figure 3-8. Engine radiator service.

3-15. Fan Drive Group Service

Service fan drive group as shown in figure 3-9.



ME 4310-338-15/3-9

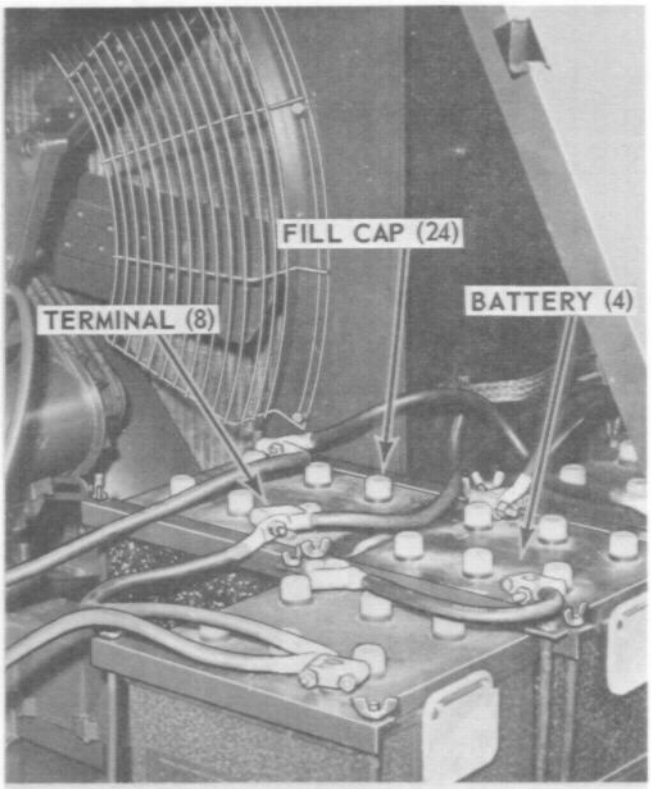
STEP 1. WIPE GREASE FITTING CLEAN USING A CLEANING SOLVENT THAT IS IN ACCORDANCE WITH FEDERAL SPECIFICATION P-D-680.

STEP 2. LUBRICATE FAN PULLEY. REFERENCE LUBRICATION ORDER LO 5-4310-338-12.

Figure 3-9. Fan drive group service.

3-16. Battery Service

Service batteries as shown in figure 3-10.



ME 4310-338-15/3-10

STEP 1. REMOVE FILL CAP (24). CLEAN VENT HOLE.

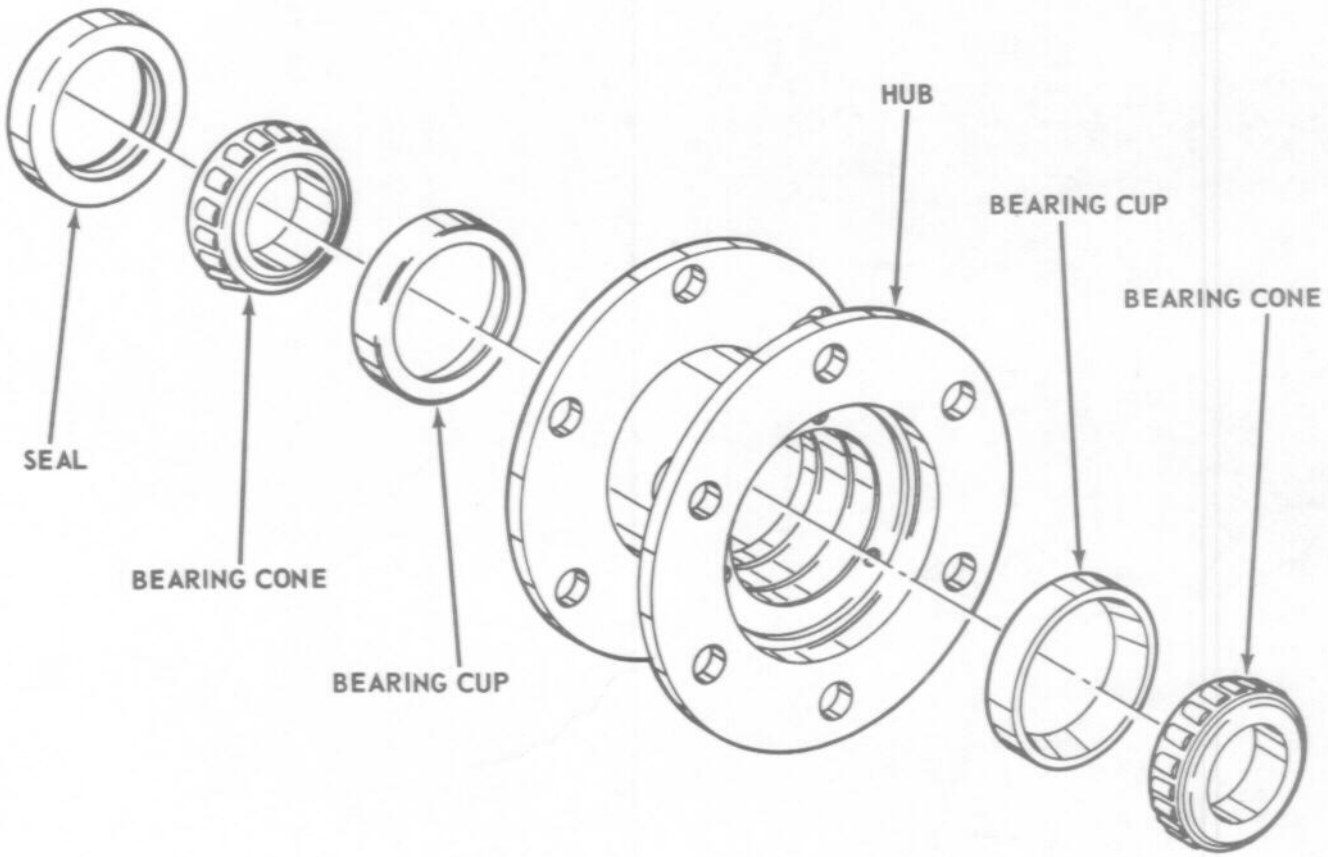
STEP 2. FILL CELLS WITH DISTILLED WATER TO 3/8-INCH ABOVE PLATES.

STEP 3. CLEAN TERMINALS AND COAT LIGHTLY WITH LUBRICANT. CLEAN BATTERIES WITH A CLEANING SOLVENT THAT IS IN ACCORDANCE WITH FEDERAL SPECIFICATION P-D-680. INSPECT FOR DAMAGE.

Figure 3-10. Battery service.

3-17. Wheel Bearing Service

Service front and rear wheel bearings as shown in figure 3-11.



ME 4310-338-15/3-11

STEP 1. REMOVE WHEEL ASSEMBLY (PARA 3-121).

STEP 2. REMOVE HUB AND BRAKE DRUM ASSEMBLY (PARA 3-122).

STEP 3. REMOVE BEARING CONES FROM HUB (PARA 3-122).

STEP 4. CLEAN BEARINGS USING A CLEANING SOLVENT THAT IS IN ACCORDANCE WITH FEDERAL SPECIFICATION P-D-680. WIPE GREASE SEAL CLEAN. INSPECT PARTS FOR DEFECTS.

STEP 5. REASSEMBLE HUB AND LUBRICATE BEARINGS. REFERENCE LUBRICATION ORDER LO 5-4310-338-12.

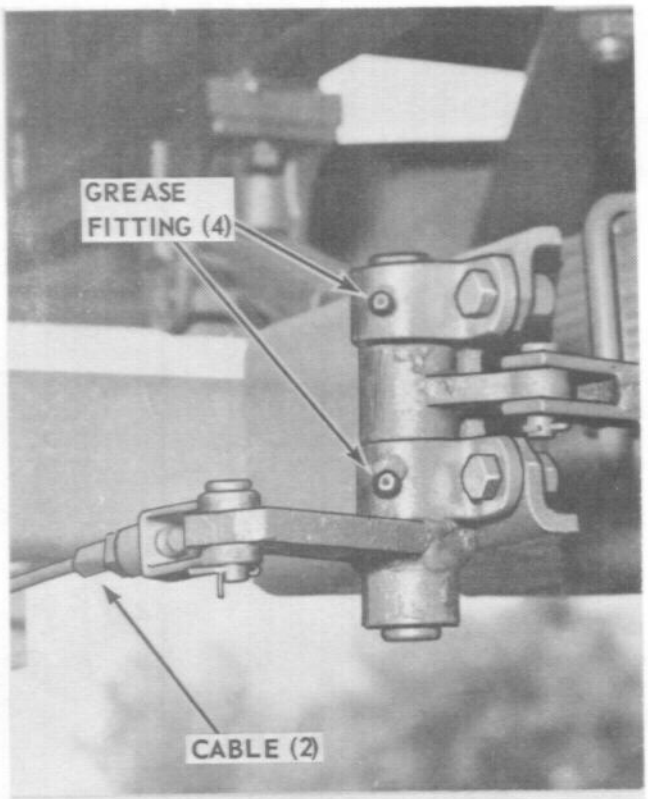
STEP 6. INSTALL HUB AND BRAKE DRUM ASSEMBLY (PARA 3-122).

STEP 7. INSTALL WHEEL ASSEMBLY (PARA 3-121).

Figure 3-11. Wheel bearing service.

3-18. Parking Brake Service

Service parking brake as shown in figure 3-12.



ME 4310-338-15/3-12

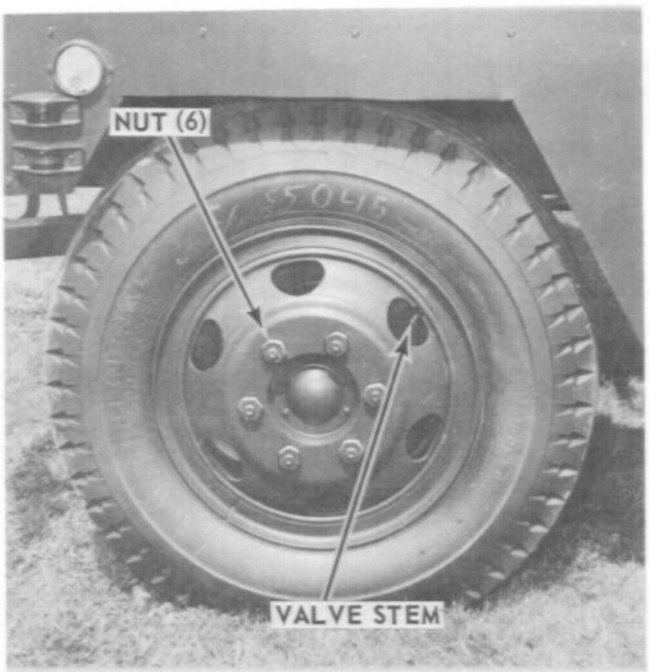
STEP 1. WIPE GREASE FITTINGS AND CABLES CLEAN USING A CLEANING SOLVENT THAT IS IN ACCORDANCE WITH FEDERAL SPECIFICATION P-D-680.

STEP 2. LUBRICATE CABLES AND GREASE FITTINGS. REFERENCE LO 5-4310-338-12.

Figure 3-12. Parking brake service.

3-19. Tire and Tube Service

Service tires and tubes as shown in figure 3-13.



ME 4310-338-15/3-13

STEP 1. CHECK FOR AND TIGHTEN ANY LOOSE NUTS.

NOTE

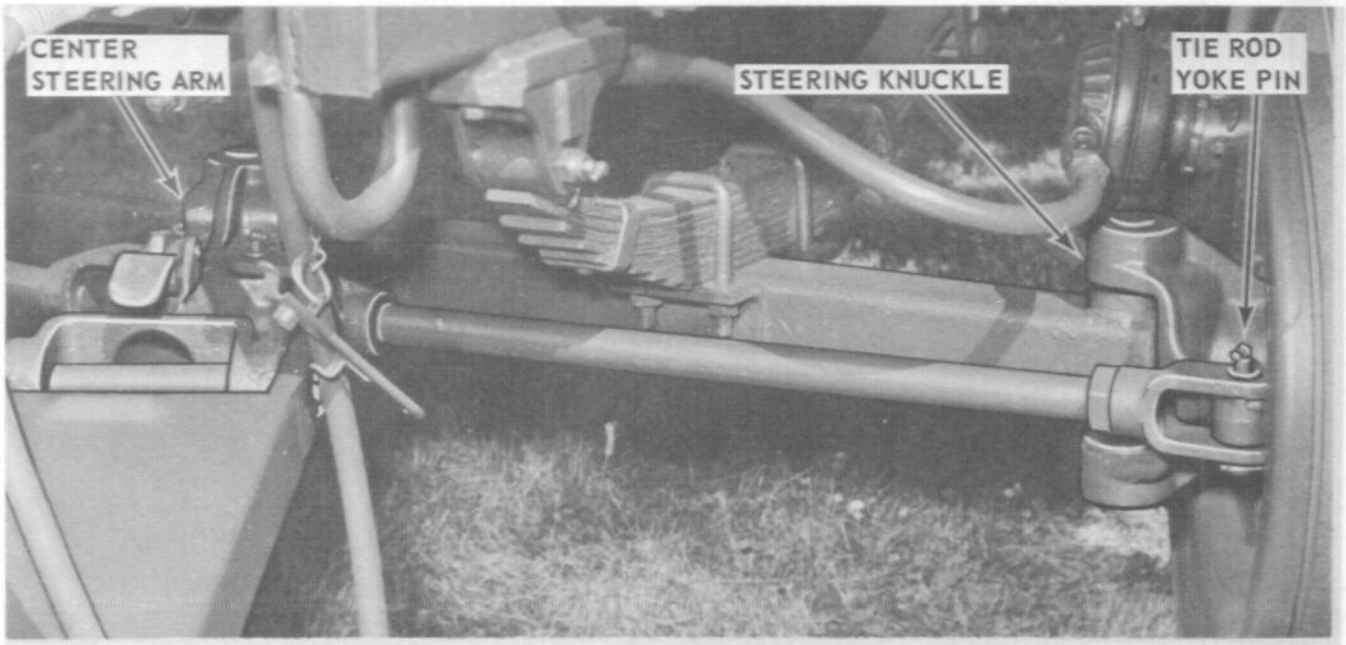
DO NOT CHECK AIR PRESSURE JUST AFTER UNIT HAS BEEN TOWED FOR A LONG DISTANCE AND TIRES ARE WARM.

STEP 2. CHECK EACH TIRE FOR PROPER INFLATION. AIR PRESSURE IN EACH TIRE SHOULD BE 45 PSI.

Figure 3-13. Tire and tube service.

3-20. Steering Assembly Service

Service steering assembly as shown in figure 3-14.



ME 4310-338-15/3-14

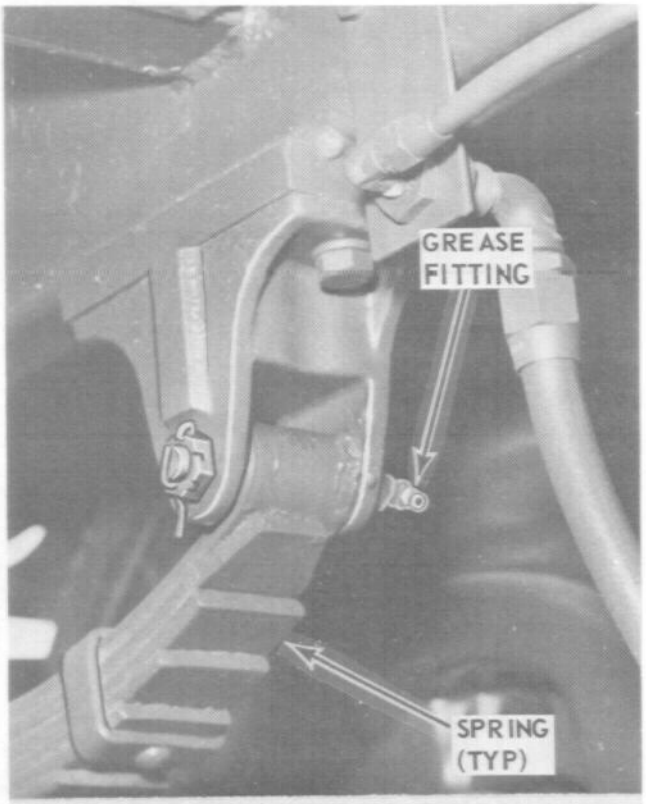
STEP 1. WIPE GREASE FITTINGS CLEAN USING A CLEANING SOLVENT THAT IS IN ACCORDANCE WITH FEDERAL SPECIFICATION P-D-680.

STEP 2. LUBRICATE TIE ROD YOKE PINS (4 FITTINGS), STEERING KNUCKLES (4 FITTINGS), AND CENTER STEERING ARM (2 FITTINGS). REFERENCE LUBRICATION ORDER LO 5-4310-338-12.

Figure 3-14. Steering assembly service.

3-21. Spring Service

Service springs as shown in figure 3-15.



ME 4310-338-15/3-15

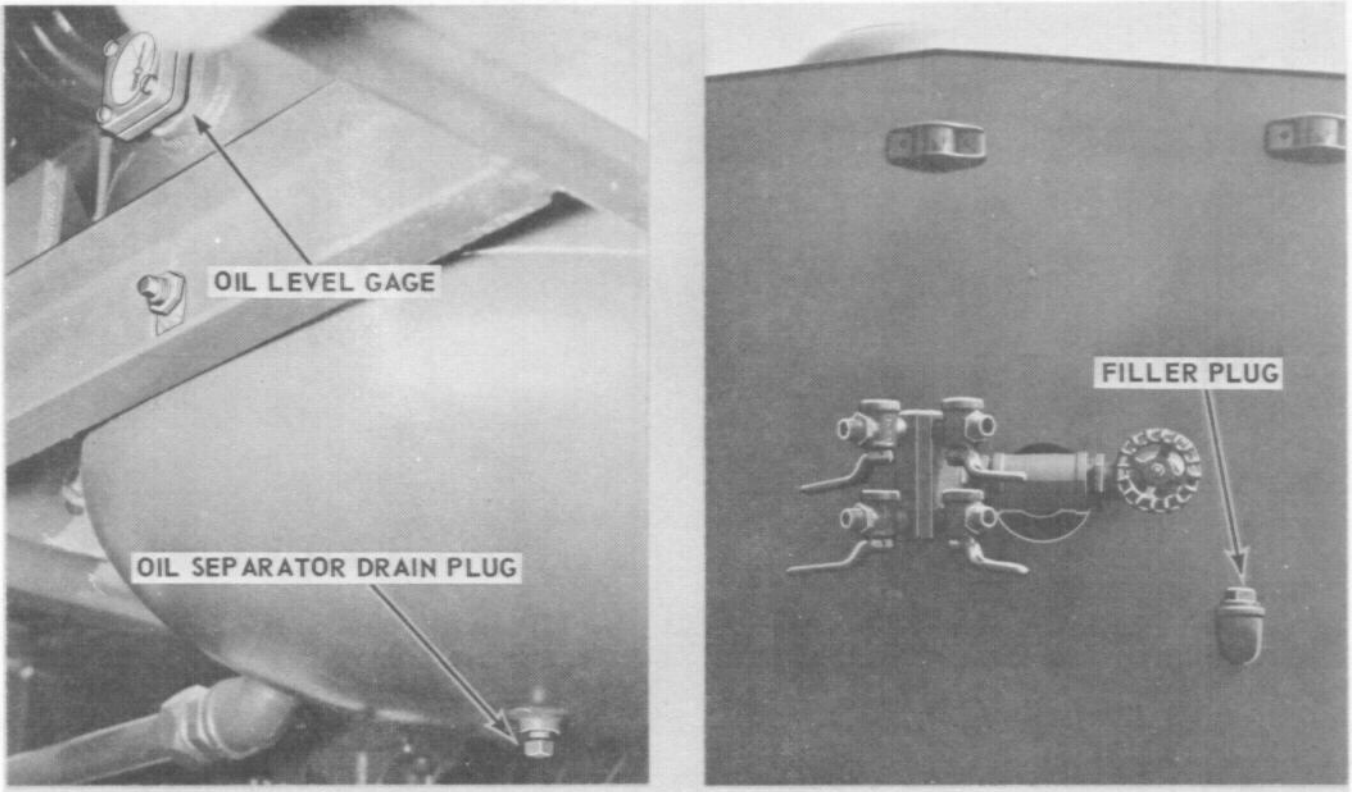
STEP 1. WIPE GREASE FITTING CLEAN USING A CLEANING SOLVENT THAT IS IN ACCORDANCE WITH FEDERAL SPECIFICATION P-D-680.

STEP 2. LUBRICATE SPRING. REFERENCE LO 5-4310-338-12.

Figure 3-15. Spring service.

3-22. Oil Separator Service

Service oil separator as shown in figure 3-16.



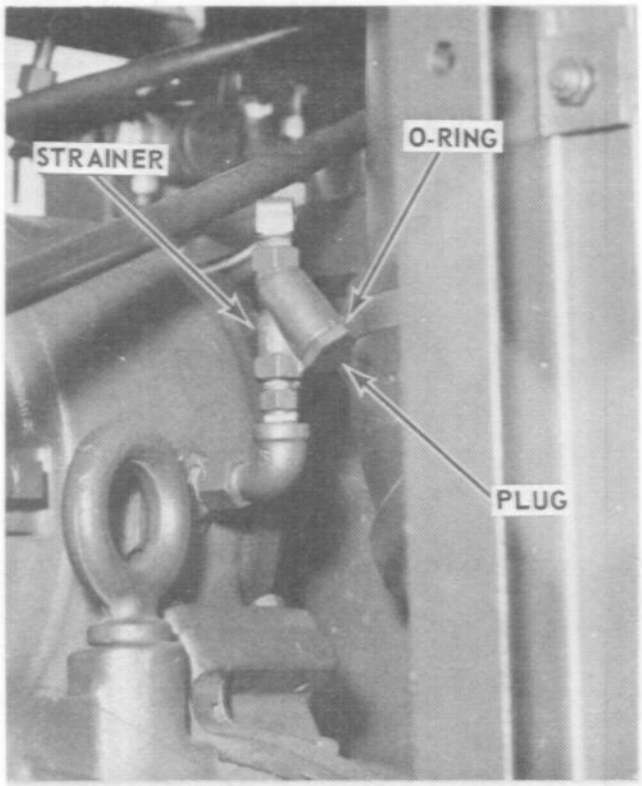
STEP 1. CHECK OIL LEVEL GAGE FOR PROPER COMPRESSOR OIL LEVEL. FILL TO PROPER LEVEL. REFERENCE LUBRICATION ORDER LO5-4310-338-12.

STEP 2. CLEAN OIL SEPARATOR OIL LEVEL GAGE AND FILLER WITH A CLEANING SOLVENT THAT IS IN ACCORDANCE WITH FEDERAL SPECIFICATION P-D-680.

Figure 3-16. Oil separator service.

3-23. Oil Return Line Strainer Service

Service oil return line strainer as shown in figure 3-17.



ME 4310-338-15/3-17

STEP 1. REMOVE PLUG AND O-RING. REMOVE STRAINER ELEMENT.

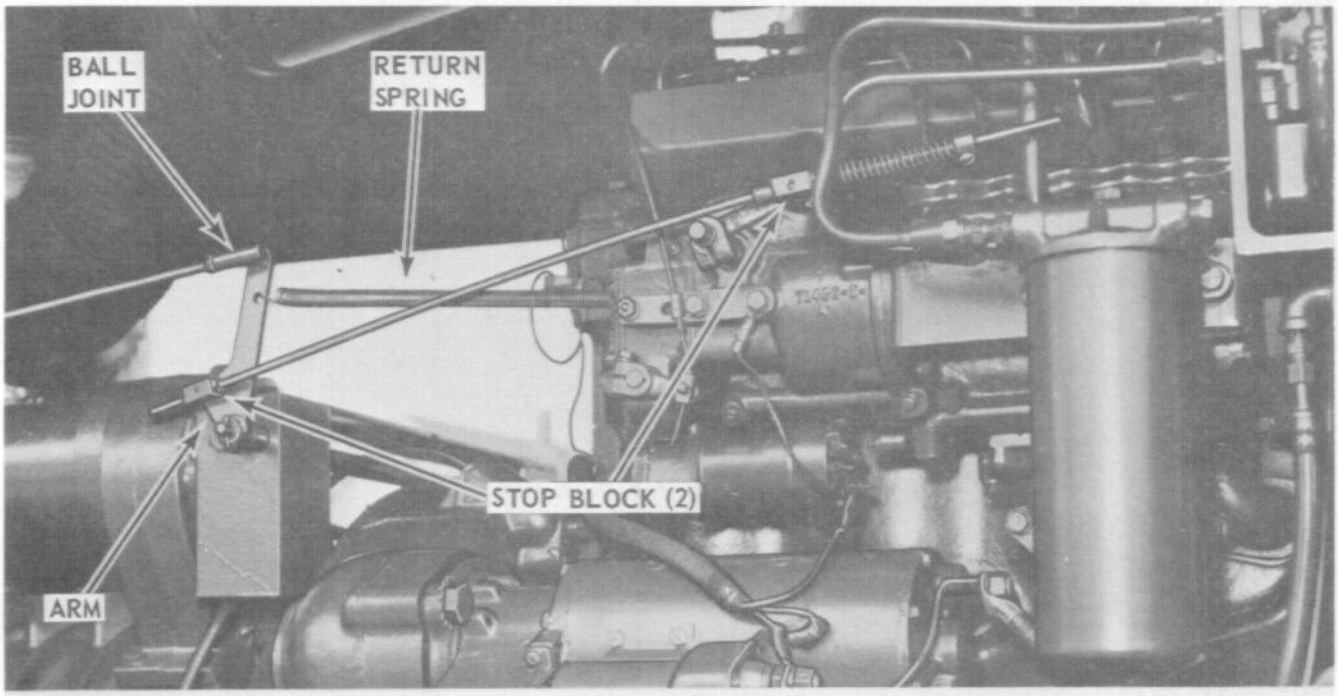
STEP 2. CLEAN ELEMENT USING A CLEANING SOLVENT THAT IS IN ACCORDANCE WITH FEDERAL SPECIFICATION P-D-680. INSPECT STRAINER AND O-RING.

STEP 3. INSTALL STRAINER, O-RING, AND PLUG.

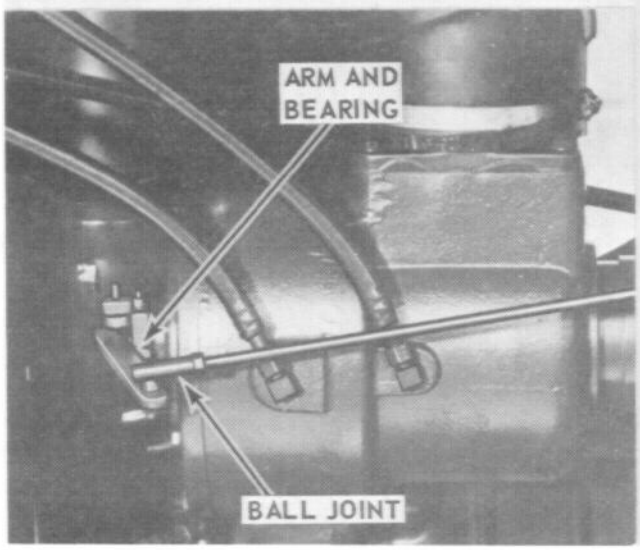
Figure 3-17. Oil return line strainer service.

3-24. Speed Control Linkage Service

Service speec control linkage as shown in figure 3-18.



ME 4310-338-15/3-18



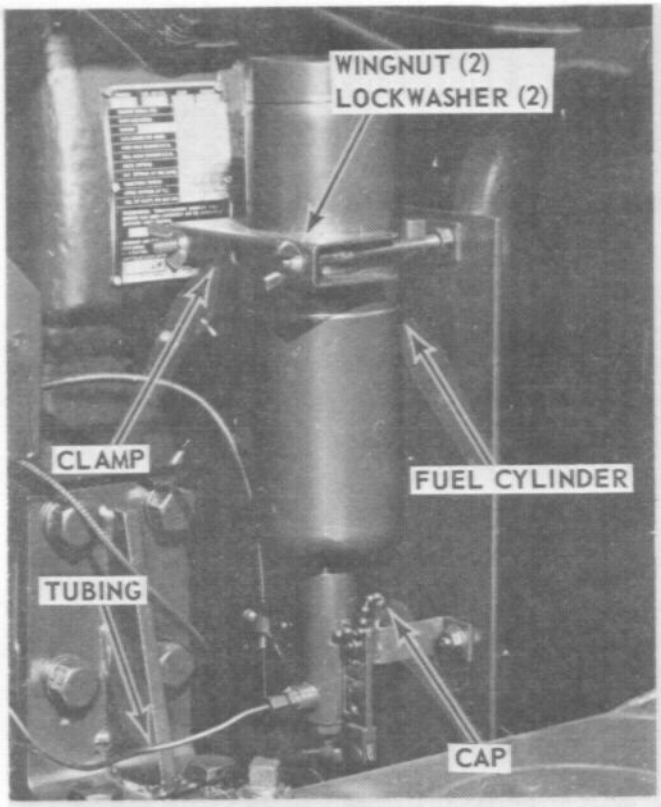
STEP 1. WIPE CLEAN ALL ARMS, PIVOT POINTS, AND RODS USING A CLEANING SOLVENT THAT IS IN ACCORDANCE WITH FEDERAL SPECIFICATION P-D-680. DRY THOROUGHLY.

STEP 2. LUBRICATE ARMS, BALL JOINTS, STOP BLOCKS, SPRING, AND OTHER PIVOTAL POINTS. REFERENCE LUBRICATION ORDER LO 5-4310-338-12.

Figure 3-18. Speed Control Linkage Service.

3-25. Cold Weather Starting Aid Service

Service cold weather starting aid as shown in figure 3-19.



ME 4310-338-15/3-19

WARNING

DO NOT PUNCTURE OR MISHANDLE FUEL CYLINDER. THE CYLINDER CONTAINS AN ETHER BASE MIXTURE WHICH IS EXTREMELY TOXIC, VOLATILE, AND COMBUSTIBLE.

STEP 1. REMOVE WINGNUTS, LOCKWASHERS, AND CLAMP.

STEP 2. UNSCREW AND REMOVE FUEL CYLINDER FROM ACTUATING VALVE. COVER VALVE OPENING WITH CAP UNTIL READY TO INSTALL NEW FUEL CYLINDER.

STEP 3. REMOVE ACTUATING VALVE CAP AND INSTALL NEW FUEL CYLINDER TO VALVE.

STEP 4. INSTALL CLAMP, LOCKWASHERS, AND WINGNUTS.

STEP 5. DISCONNECT TUBING LINE FROM ACTUATING VALVE AND ENGINE INTAKE MANIFOLD. BLOW OUT LINE WITH COMPRESSED AIR THROUGH ORIFICE END ONLY.

STEP 6. CONNECT TUBING LINE TO ACTUATING VALVE AND OPERATE ACTUATING LEVER. CHECK ORIFICE END FOR FOGGING DISCHARGE OF FUEL.

STEP 7. CONNECT TUBING LINE TO ENGINE INTAKE MANIFOLD.

Figure 3-19. Cold weather starting aid service.

Section V. TROUBLESHOOTING

3-26. General

This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the Model IM600RPV Rotary Air Compressor. Malfunctions which may occur are listed in Table 3-2. Each malfunction stated is followed by a list of probable causes of the trouble. The corrective action recommended is described next to the probable cause. References to applicable procedural paragraphs or illustrations are also included in the corrective action column. Any trouble encountered that is beyond the scope of organizational maintenance shall be reported to Direct Support, General Support, or Depot Maintenance personnel as indicated by the Maintenance Allocation Chart, Appendix C.

Section VI. FIELD EXPEDIENT REPAIRS

3-27. General

Because of the nature of the air compressor unit, there are no field expedient repairs for this equipment. Any such repairs could result in serious harm to the equipment.

Table 3-2. Troubleshooting

Malfunction	Probable cause	Corrective action
1. Engine will not turn over.	*a.* Weak or dead batteries.	*a.* Charge or replace batteries (para 3-106).
	b. Battery cable connections loose or terminals corroded.	*b.* Clean terminals and tighten connections.
	c. HEAT-START switch defective.	*c.* Replace HEAT-START switch (para 3-60).
	d. Starting motor defective.	*d.* Replace starting motor (para 3-105).
	e. Other causes	*e.* Refer other causes to Direct Support, General Support or Depot Level maintenance personnel.
2. Engine turns over but will not start or is hard to start.	*a.* Engine stop control is in stop position.	*a.* Place control in operating position.
	b. Fuel tanks empty.	*b.* Refill fuel tanks.
	c. Water or dirt in fuel system.	*c.* Drain fuel tanks. Fill tanks with uncontaminated fuel. Clean fuel lines. Service fuel filters (fig. 3-6).
	d. One or both fuel filters are clogged.	*d.* Service fuel filters (fig. 3-6).
	e. Improper fuel grade.	*e.* Drain fuel tanks. Fill tanks with proper grade of fuel (para 1-4).
	f. Fuel transfer pump defective.	*f.* Replace fuel transfer pump (para 3-95).
	g. Air in fuel system.	*g.* Purge fuel lines using hand priming pump. Tighten connections.
	h. Turbocharger defective.	*h.* Replace turbocharger (para 3-115).
	i. Engine air cleaner dirty or clogged.	*i.* Service air cleaner (fig. 3-5).
	j. Shutoff solenoid sticking.	*j.* Replace shutoff solenoid (para 3-58).
	k. Fuel bypass valve sticking open.	*k.* Replace fuel bypass valve (para 3-99).
	l. Valve clearances incorrect.	*l.* Adjust valve clearances (para 3-117).
	m. Other causes	*m.* Refer other causes to Direct Support, General Support, and Depot level maintenance personnel.
3. Engine misses or runs erratically.	*a.* Engine too cold to run loaded compressor.	*a.* Do not use any air from compressor until engine runs smoothly.
	b. Water in fuel system.	*b.* Drain fuel system. Fill with clean, uncontaminated fuel. Service fuel filters (fig. 3-6).
	c. Air in fuel system.	*c.* Purge lines using hand priming pump. Tighten connections.
	d. Fuel transfer pump defective.	*d.* Replace fuel transfer pump (para 3-95).
	e. Fuel lines leaking or cracked.	*e.* Replace fuel lines (para 3-100).
	f. Valve clearances incorrect.	*f.* Adjust valve clearances (para 3-117).
	g. Defective fuel injection nozzle or fuel injection pump.	*g.* Run engine at speed where defect is most noticeable. Momentarily loosen fuel line nut on each injection pump, one at a time, to cut out that cylinder. If one is found where loosening nut makes no difference in irregular operation, replace nozzle or pump for that cylinder (para 3-94 and 3-93).
	h. Fuel bypass valve defective.	*h.* Replace fuel bypass valve (para 3-99).
	i. Other causes	*i.* Refer other causes to Direct Support, General Support and Depot level maintenance personnel.
4. Engine lacks power.	*a.* Fuel filters dirty or clogged.	*a.* Service fuel filters (fig. 3-6).
	b. Engine air cleaner clogged.	*b.* Service air cleaner (fig. 3-5).
	c. Valve clearances incorrect.	*c.* Adjust valve clearances (para 3-117).
	d. Air in fuel system.	*d.* Purge lines using hand priming pump. Tighten connections.
	e. Defective fuel injection nozzle or fuel injection pump.	*e.* Run engine at speed where defect is most noticeable. Momentarily loosen fuel line nut on each injection pump, one at a time, to cut out that cylinder. If one is found where loosening nut makes no difference in improper operation, replace nozzle or pump for that cylinder (para 3-94 and 3-93).
	f. Fuel contaminated or of poor quality.	*f.* Drain fuel system. Fill with clean, uncontaminated fuel. Service fuel filters (fig. 3-6).
	g. Fuel transfer pump defective.	*g.* Replace fuel transfer pump (para 3-95).

Table 3-2. Troubleshooting — Continued.

Malfunction	Probable cause	Corrective action
	h. Turbocharger carboned or otherwise dragging.	*h.* Replace turbocharger (para 3-115).
	i. Fuel bypass valve defective.	*i.* Replace fuel bypass valve (para 3-99).
	j. Speed control linkage out of adjustment.	*j.* Adjust speed control linkage (fig. 3-69).
	k. Other causes	*k.* Refer other causes to Direct Support, General Support, and Depot level maintenance personnel.
5. Engine knocks, develops excessive noise, or vibration.	*a.* Engine oil level low.	*a.* Fill crankcase in accordance with current lubrication order (LO) 5-4310-338-12
	b. Improper fuel grade.	*b.* Drain fuel tanks. Fill tanks with proper grade of fuel (para 1-4).
	c. Valve clearances incorrect.	*c.* Adjust valve clearances (para 3-117).
	d. Low engine operating temperature.	*d.* Replace water temperature regulator (para 3-75).
	e. Engine mounting bolts loose.	*e.* Tighten engine mounting bolts (see torque data, Table 5-4).
	f. Compressor vibrating. .	*f.* See Noisy Compressor Operation, trouble number 20.
	g. Loose pulley and damper.	*g.* Tighten pulley and damper.
	h. Fan blade unbalanced.	*h.* Loosen or remove fan belts. Operate engine for short duration at affected speed range. If vibration is not present, replace fan assembly (para 3-74).
	i. Defective fuel injection pump or nozzle.	*i.* Run engine at speed where defect is most noticeable. Momentarily loosen fuel line nut on each injection pump, one at a time, to cut out that cylinder. If one is found where loosening nut makes no difference in improper operation, replace nozzle or pump for that cylinder (para 3-94 and 3-93).
	j. Other causes	*j.* Refer other causes to Direct Support, General Support, and Depot level maintenance personnel.
6. Engine stops suddenly.	*a.* Out of fuel.	*a.* Fill fuel tanks with proper grade of fuel (para 1-4).
	b. Fuel filters dirty or clogged.	*b.* Service fuel filters (fig. 3-6).
	c. Water or dirt in fuel system.	*c.* Drain fuel tanks. Fill tanks with uncontaminated fuel. Clean fuel lines. Service fuel filters (fig. 3-6).
	d. Engine overheating (safety switch shutoff).	*d.* Check engine coolant level. Inspect radiator and hoses for leaks or obstructions. Check drive belt adjustment (fig. 3-47).
	e. Low oil pressure (safety switch shutoff).	*e.* Check crankcase oil level. Fill in accordance with current Lubrication Order (LO) 5-4310-338-12
	f. Overspeed governor switch defective or out of adjustment.	*f.* Adjust or replace overspeed governor switch (para 3-67).
	g. Air in fuel system.	*g.* Purge lines using hand priming pump. Tighten connections.
	h. Shutoff solenoid defective.	*h.* Replace shutoff solenoid (para 3-58).
	i. Air compressor overheating (safety switch shutoff).	*i.* Low compressor oil level. Fill in accordance with current Lubrication Order (LO) 5-4310-338-12. Dirty compressor oil filter element. Change element (fig. 3-3). Dust or dirt collected on oil cooler core external surface. Blow off all dirt and dust.
	j. Other causes	*j.* Refer other causes to Direct Support, General Support and Depot level maintenance personnel.
7. Engine has low or no oil pressure.	*a.* Oil level in crankcase low.	*a.* Fill crankcase in accordance with current Lubrication Order (LO) 5-4310-338-12

Table 3-2. Troubleshooting — Continued.

Malfunction	Probable cause	Corrective action
	b. Improper lubricant.	*b.* Drain crankcase. Fill with proper lubricant in accordance with current Lubrication Order (LO) 5-4310-338-12.
	c. Oil pressure gage defective.	*c.* Replace oil pressure gage (para 3-46).
	d. Other causes	*d.* Refer other causes to Direct Support, General Support and Depot level maintenance personnel.
8. Engine overheats.	*a.* Coolant level low.	*a.* Fill radiator.
	b. Dust or dirt collected on radiator core external surfaces.	*b.* Blow off all dust and dirt.
	c. Oil supply in crankcase low.	*c.* Fill crankcase in accordance with current Lubrication Order (LO) 5-4310-338-12
	d. Water pump defective.	*d.* Replace water pump (para 3-76).
	e. Water temperature regulator defective.	*e.* Replace water temperature regulator (para 3-75).
	f. Water temperature gage defective.	*f.* Replace water temperature gage (para 3-53).
	g. Fan drive belts slipping or broken.	*g.* Replace or adjust drive belts (para 3-72).
	h. Radiator hoses collapsed or deteriorated.	*h.* Repair or replace radiator hoses (para 3-71).
	i. Radiator blocked.	*i.* Flush out radiator to remove blockage.
	j. Other causes	*j.* Refer other causes to Direct Support, General Support, and Depot level maintenance personnel.
9. Engine exhaust excessively black or gray.	*a.* Air cleaner clogged.	*a.* Service air cleaner (fig. 3-5).
	b. Turbocharger carboned or defective.	*b.* Replace turbocharger (para 3-115).
	c. Fuel injection nozzle plugged or leaking.	*c.* Replace fuel injection valve nozzle (para 3-94).
	d. Other causes	*d.* Refer other causes to Direct Support, General Support, and Depot level maintenance personnel.
10. Engine exhaust excessively white or blue.	*a.* Crankcase oil level too high.	*a.* Avoid overfilling. Determine cause and drain excess oil.
	b. Defective fuel injection nozzle or fuel injection pump.	*b.* Run engine at speed where defect is most noticeable. Momentarily loosen fuel line nut on each injection pump, one at a time, to cut out that cylinder. If one is found where loosening nut makes no difference in irregular operation, replace nozzle or pump for that cylinder (para 3-94 and 3-93).
	c. Valve clearances incorrect.	*c.* Adjust valve clearances (para 3-117).
	d. Improper fuel grade.	*d.* Drain fuel tanks. Fill tanks with proper grade of fuel (para 1-4).
	e. Engine operating temperature too low.	*e.* Replace water temperature regulator (para 3-75).
	f. Fuel transfer pump defective.	*f.* Replace fuel transfer pump (para 3-95).
	g. Fuel bypass valve defective.	*g.* Replace fuel bypass valve (para 3-99).
	h. Air in fuel system.	*h.* Purge lines using hand priming pump. Tighten connections.
	i. Fuel filters dirty or clogged.	*i.* Service fuel filters (fig. 3-6).
	j. Other causes	*j.* Refer other causes to Direct Support, General Support, and Depot level maintenance personnel.
11. Excessive engine oil consumption.	*a.* High crankcase pressure.	*a.* Service crankcase breather (fig. 3-4).
	b. External oil leaks.	*b.* Inspect for visible evidence of leaks and repair accordingly.
	c. Crankcase oil level too high.	*c.* Avoid overfilling. Determine cause and drain excess oil.
	d. Other causes	*d.* Refer other causes to Direct Support, General Support, and Depot level maintenance personnel.
12. Engine fails to stop.	*a.* Engine stop cable broken or out of adjustment.	*a.* Adjust or replace engine stop cable (para 3-59).
	b. Other causes	*b.* Refer other causes to Direct Support, General Support, and Depot level maintenance personnel.

Table 3-2. Troubleshooting — Continued.

Malfunction	Probable cause	Corrective action
13. Excessive fuel consumption.	*a.* Leak in fuel system.	*a.* Pressurize fuel tanks to 5 PSI maximum. Watch for evidence of leaks. Inspect all external lines and connections. Engine internal leaks will probably be accompanied by low engine oil pressure and increased level in oil sump.
	b. Fuel grade improper.	*b.* Drain fuel tanks. Fill tanks with proper grade of fuel (para 1-4).
	c. Fuel and combustion knock.	*c.* See corrective actions for Misfiring and Low Power.
	d. Other causes	*d.* Refer other causes to Direct Support, General Support and Depot level maintenance personnel.
14. Engine stalls at low speed.	*a.* Air in fuel system.	*a.* Purge lines using hand priming pump. Tighten connections.
	b. Fuel bypass valve defective.	*b.* Replace fuel bypass valve (para 3-99).
	c. Fuel filters dirty or clogged.	*c.* Service fuel filters (fig. 3-6).
	d. Fuel transfer pump defective.	*d.* Replace fuel transfer pump (para 3-95).
	e. Fuel injection nozzle defective.	*e.* Replace fuel injection valve nozzle (para 3-94).
	f. Other causes	*f.* Refer other causes to Direct Support, General Support and Depot level maintenance personnel.
15. Valve train clicking noise.	*a.* Valve clearances incorrect.	*a.* Adjust valve clearances (para 3-117).
	b. Insufficient lubricant circulation.	*b.* Check lubrication in valve compartment. Should be very wet at high idle speed, but only damp at low idle. Oil passages should be cleaned, especially those leading to cylinder head.
	c. Engine oil level low.	*c.* Fill crankcase in accordance with current Lubrication Order (LO) 5-4310-338-12
	d Other causes	*d.* Refer other causes to Direct Support, General Support, and Depot level maintenance personnel.
16. Engine oil in coolant or coolant in engine oil.	*a.* Engine oil cooler defective.	*a.* Replace engine oil cooler (para 3-109).
	b. Other causes	*b.* Refer other causes to Direct Support, General Support and Depot level maintenance personnel.
17. Little rocker arm movement and excessive valve clearances.	*a.* Insufficient lubricant circulation.	*a.* Check lubrication in valve compartment. Should be very wet at high idle speed, but only damp at low idle. Oil passages should be cleaned, especially those leading to cylinder head.
	b. Other causes	*b.* Refer other causes to Direct Support, General Support and Depot level maintenance personnel.
18. Premature engine wear.	*a.* Engine air cleaner defective.	*a.* Replace engine air cleaner (para 3-113).
	b. Dirt in lubricating oil.	*b.* Locate and correct source of dirt entry. Change lubricating oil. Service oil filter (fig. 3-3).
	c. Other causes	*c.* Refer other causes to Direct Support, General Support and Depot level maintenance personnel.
19. Compressor overheats.	*a.* Dirty compressor oil filter element.	*a.* Service compressor oil filter (fig. 3-3).
	b. Dust or dirt collected on oil cooler core external surface.	*b.* Blow off all dirt and dust.
	c. Low compressor oil level.	*c.* Refill oil separator to proper level in accordance with current Lubrication Order (LO) 5-4310-338-12
	d. Faulty thermal bypass valve.	*d.* Replace thermal bypass valve (para 3-85).
	e. Other causes	*e.* Report other causes to Direct Support, General Support and Depot level maintenance personnel.

Table 3-2. Troubleshooting — Continued.

Malfunction	Probable cause	Corrective action
20. Noisy compressor operation.	*a.* Low compressor oil level.	*a.* Refill oil separator to proper level in accordance with current Lubrication Order (LO) 5-4310-338-12
	b. Air pressure regulator assembly defective.	*b.* Replace air pressure regulator assembly (para 3-89).
	c. Other causes	*c.* Report other causes to Direct and General Support maintenance personnel.
21. Compressor not operating to full capacity or pressure.	*a.* Air pressure regulator assembly defective or out of adjustment.	*a.* Adjust or replace air pressure regulator assembly (para 3-89).
	b. Leak in air hoses, piping, or connections.	*b.* Check all air hoses, piping and connections for leaks while unit is operating. Use soapy water solution on areas. Tighten or replace as required.
	c. Compressor air cleaner dirty or clogged.	*c.* Service air cleaner (fig. 3-5).
	d. Safety valve on oil separator leaking.	*d.* Replace safety valve (para 3-83).
	e. Other causes	*e.* Report other causes to Direct and General Support maintenance personnel.
22. Compressor fails to load or unload.	*a.* Dirt buildup on intake-unloader valve seat.	*a.* Clean valve seat.
	b. Unloading pressure too high or too low.	*b.* Adjust air pressure regulator assembly (fig. 3-71).
	c. Air hose between intake-unloader and air pressure regulator assembly damaged or leaking.	*c.* Replace air hose (para 3-81).
	d. Other causes	*d.* Refer other causes to Direct and General support maintenance personnel.
23. Compressor unloads but engine will not idle.	*a.* Speed control linkage defective.	*a.* Replace speed control linkage (para 3-88).
	b. Other causes	*b.* Refer other causes to Direct and General support maintenance.
24. Condensate and/or emulsion in oil separator.	*a.* Unusually low oil temperature and high humidity.	*a.* If this is a climatic condition, replace compressor oil with a non-detergent oil. Refer to current Lubrication Order (LO) 5-4310-338-12
	b. Faulty thermal bypass valve.	*b.* Replace thermal bypass valve (para 3-85).
	c. Other causes	*c.* Refer other causes to Direct and General Support maintenance personnel.
25. Excessive compressor oil comsumption.	*a.* Compressor oil system overfilled.	*a.* Drain to proper oil level.
	b. Other causes	*b.* Refer other causes to Direct and General Support maintenance personnel.
26. Compressor unit hunts.	*a.* Air pressure regulator assembly defective.	*a.* Replace air pressure regulator assembly (para 3-89).
	b. Other causes	*b.* Refer other causes to Direct and General Support maintenance personnel.
27. Ammeter indicates low or no charging rate when batteries are low or discharged.	*a.* Defective or loose wiring in charging circuit.	*a.* Repair or replace as required.
	b. Ammeter defective.	*b.* Replace ammeter (para 3-54).
	c. Generator regulator assembly defective.	*c.* Replace generator regulator assembly (para 3-104).
	d. Generator assembly defective.	*d.* Replace generator assembly (para 3-102).
	e. Loose or broken drive belts.	*e.* Tighten or replace drive belts (para 3-72).
28. Ammeter indicates excessive charge rate when batteries are fully charged.	*a.* Defective wiring in charging circuit.	*a.* Repair or replace as required.
	b. Ammeter defective.	*b.* Replace ammeter (para 3-54).
	c. Generator regulator assembly defective.	*c.* Replace generator regulator assembly (para 3-104).
29. Generator overheats.	*a.* Defective wiring.	*a.* Check and repair or replace.
	b. Generator regulator assembly defective.	*b.* Replace generator regulator assembly (para 3-104).
	c. Generator assembly defective.	*c.* Replace generator assembly (para 3-102).
30. Wheel wobbles.	*a.* Wheel bent.	*a.* Replace wheel (para 3-121).
	b. Wheel loose on hub.	*b.* Tighten nuts.
	c. Wheel bearing defective.	*c.* Replace wheel bearing (para 3-122).

Table 3-2. Troubleshooting — Continued.

Malfunction	Probable cause	Corrective action
31. Wheel bearing overheats.	*a.* Wheel bearing improperly installed.	*a.* Reinstall wheel bearing (para 3-122).
	b. Lack of lubrication.	*b.* Repack wheel bearing (para 3-122).
32. Tire wear abnormal.	*a.* Wheel loose on hub.	*a.* Tighten nuts.
	b. Improper tire inflation.	*b.* Inflate tire to proper pressure (fig. 3-13).
	c. Tie rod out of adjustment.	*c.* Adjust tie rod (fig. 3-123).
33. Brakes will not apply.	*a.* Broken or disconnected air line.	*a.* Connect or replace air line (para 3-128).
	b. Emergency relay valve defective.	*b.* Replace emergency relay valve (para 3-126).
	c. Punctured diaphragm in service chamber.	*c.* Replace service chamber on spring brake-service chamber (para 3-123 or 3-124).
	d. Other causes	*d.* Refer other causes to Direct Support, General Support, or Depot level maintenance personnel.
34. Brakes apply but braking is not adequate.	*a.* Brake linings and drums are wet.	*a.* Allow unit to sit until brakes dry out or apply brakes softly and tow unit until heat from brakes evaporates moisture. **CAUTION** **Do not tow vehicle for a long duration with brakes applied, excessive friction will cause glazing of brake shoes.**
	b. Low air pressure in brake system due to leak in air lines or fittings.	*b.* Repair or replace air lines of fittings (para 3-128).
	c. Service chamber leaking.	*c.* Replace service chamber or spring brake-service chamber (para 3-123 or 3-124).
	d. Brake drum broken or cracked.	*d.* Replace brake drum (para 3-122).
	e. Other causes	*e.* Refer other causes to Direct Support, General Support, and Depot level maintenance personnel.
35. Brakes apply too slowly.	*a.* Low air pressure in brake system.	*a.* Check towing vehicle. Check air compressor unit for leaks in air lines or service chambers.
	b. Restricted air line.	*b.* Replace air line (para 3-128).
	c. Emergency relay valve defective.	*c.* Replace emergency relay valve (para 3-126).
	d. Service chamber is leaking.	*d.* Replace service chamber or spring brake-service chamber (para 3-123 or 3-124).
	e. Other causes	*e.* Refer other causes to Direct Support, General Support, and Depot level maintenance personnel.
36. Brakes will not release.	*a.* Complete loss of air.	*a.* Inspect for broken or loose air lines, restrictions, or any other defect.
	b. Spring brake is defective.	*b.* Replace spring brake (para 3-123).
	c. Emergency relay valve defective.	*c.* Replace emergency relay valve (para 3-126).
	d. Brake shoes adjusted too close to brake drum.	*d.* Adjust brake shoes (para 3-129).
	e. Parking drum actuating mechanism defective.	*e.* Adjust or replace parking brake actuating mechanism (para 3-129).
	f. Other causes	*f.* Refer other causes to Direct Support, General Support and Depot level maintenance personnel.
37. Brakes release too slowly.	*a.* Restricted air line.	*a.* Remove restriction.
	b. Shoe movement binding on backing plate.	*b.* Lubricate shoe pivot points.
	c. Wedge actuating mechanism in service chamber is binding.	*c.* Replace service chamber or spring brake-service chamber (para 3-123 or 3-124).
	d. Other causes	*d.* Refer other causes to Direct Support, General Support, and Depot level maintenance personnel.
38. Brakes apply eneven or grab.	*a.* Emergency relay valve defective.	*a.* Replace emergency relay valve (para 3-126).
	b. Grease or moisture on brake linings.	*b.* Clean grease from linings and drums. If wet, allow unit to sit until brakes dry out or apply brakes softly and tow unit until heat from brakes evaporates moisture. **CAUTION** **Do not tow vehicle for a long duration with brakes applied, excessive friction will cause glazing of brake shoes.**

Table 3-2. Troubleshooting — Continued.

Malfunction	Probable cause	Corrective action
	c. Scored or cracked brake drum.	c. Turn drum on a lathe or replace drum (para 3-122).
	d. Loose wheel bearing.	d. Replace wheel bearing (para 3-122).
	e. Brake drum out-of-round.	e. Replace brake drum (para 3-122).
	f. Wedge actuating mechanism in service chamber is binding.	f. Replace service chamber or spring brake-service chamber (para 3-123 or 3-124).
	g. Other causes	g. Refer other causes to Direct Support, General Support, and Depot level maintenance personnel.
39. Parking brake does not hold.	a. Parking brake actuating mechanism not adjusted properly.	a. Adjust parking brake actuating mechanism (fig. 3-119).
	b. Spring brake defective.	b. Replace spring brake (para 3-123).

Section VII. RADIO INTERFERENCE SUPPRESSION

3-28. General Methods Used to Attain Proper Suppression

Essentially, suppression is attained by providing a low resistance path to ground for stray currents. The methods used include shielding the generator and generator regulator cables, and grounding the unit components using a braided electrical lead and toothed lockwashers.

3-29. Interference Suppression Components

a. Primary Suppression Components. The primary suppression components are those whose primary function is to suppress radio interference. These components are the shielded cables on the generator and generator regulator, figure 3-20.

b. Secondary Suppression Components. These components have radio interference suppression functions which are incidental or secondary to their primary functions. These are the toothed lockwashers and a braided electrical lead.

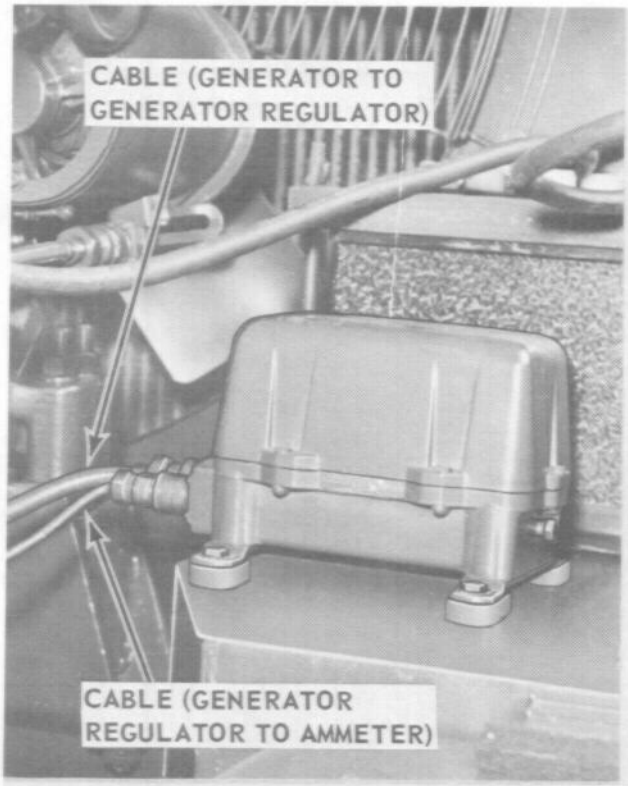
3-30. Replacement of Suppression Components

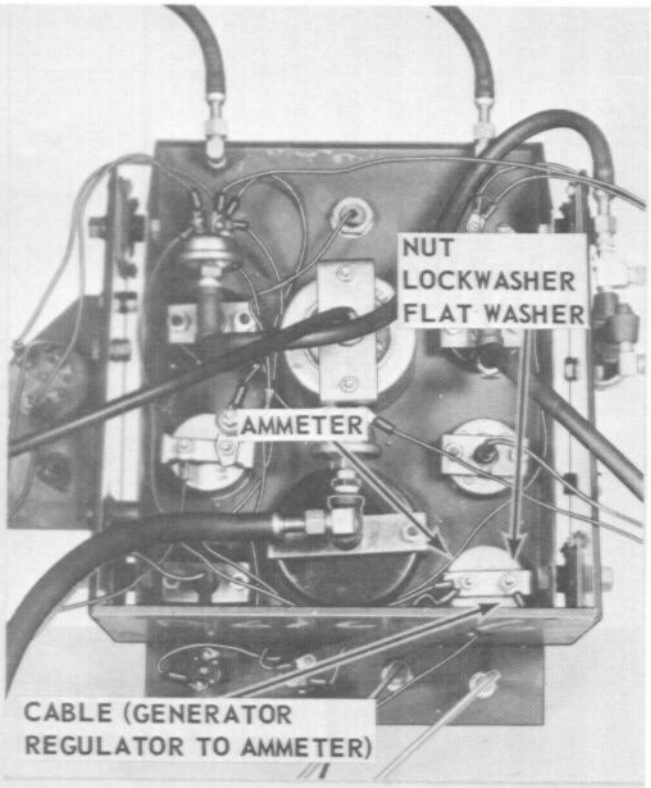
a. Refer to figure 3-20 for instructions on removing shielded cables from generator and generator regulator.

b. Removal instructions for secondary radio interference suppression components are included in the disassembly instructions for the individual assemblies on which they are used.

3-31. Testing of Radio Interference Suppression

Test the cables for proper grounding of the shielding. If test equipment is not available and interference is indicated, isolate the cause by replacing each cable, one at a time, until the interference stops.





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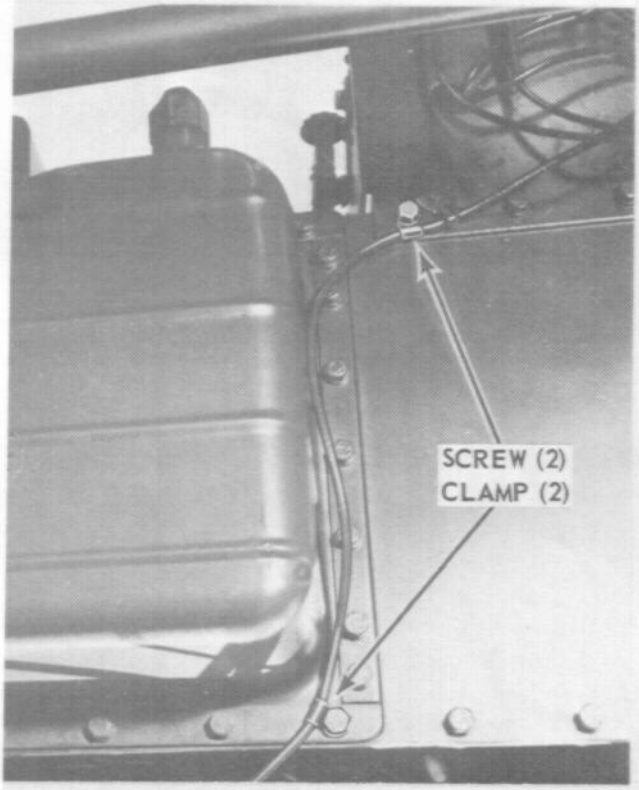


REMOVAL

STEP 1. UNSCREW AND REMOVE GENERATOR TO GENERATOR REGULATOR CABLE.

STEP 2. REMOVE SCREWS AND CLAMPS FROM GENERATOR REGULATOR TO AMMETER CABLE. REMOVE NUT, LOCKWASHER, AND FLAT WASHER FROM AMMETER.

STEP 3. UNSCREW CABLE FROM GENERATOR REGULATOR; REMOVE CABLE.

INSTALLATION

STEP 1. INSTALL AND TIGHTEN BOTH CABLES TO GENERATOR REGULATOR. INSTALL AND TIGHTEN CABLE TO GENERATOR.

STEP 2. INSTALL CABLE ON AMMETER AND SECURE WITH FLAT WASHER, LOCKWASHER, AND NUT.

STEP 3. ATTACH CLAMPS ON GENERATOR REGULATOR TO AMMETER AND SECURE WITH SCREWS.

Figure 3-20. Primary suppression components; removal and installation.

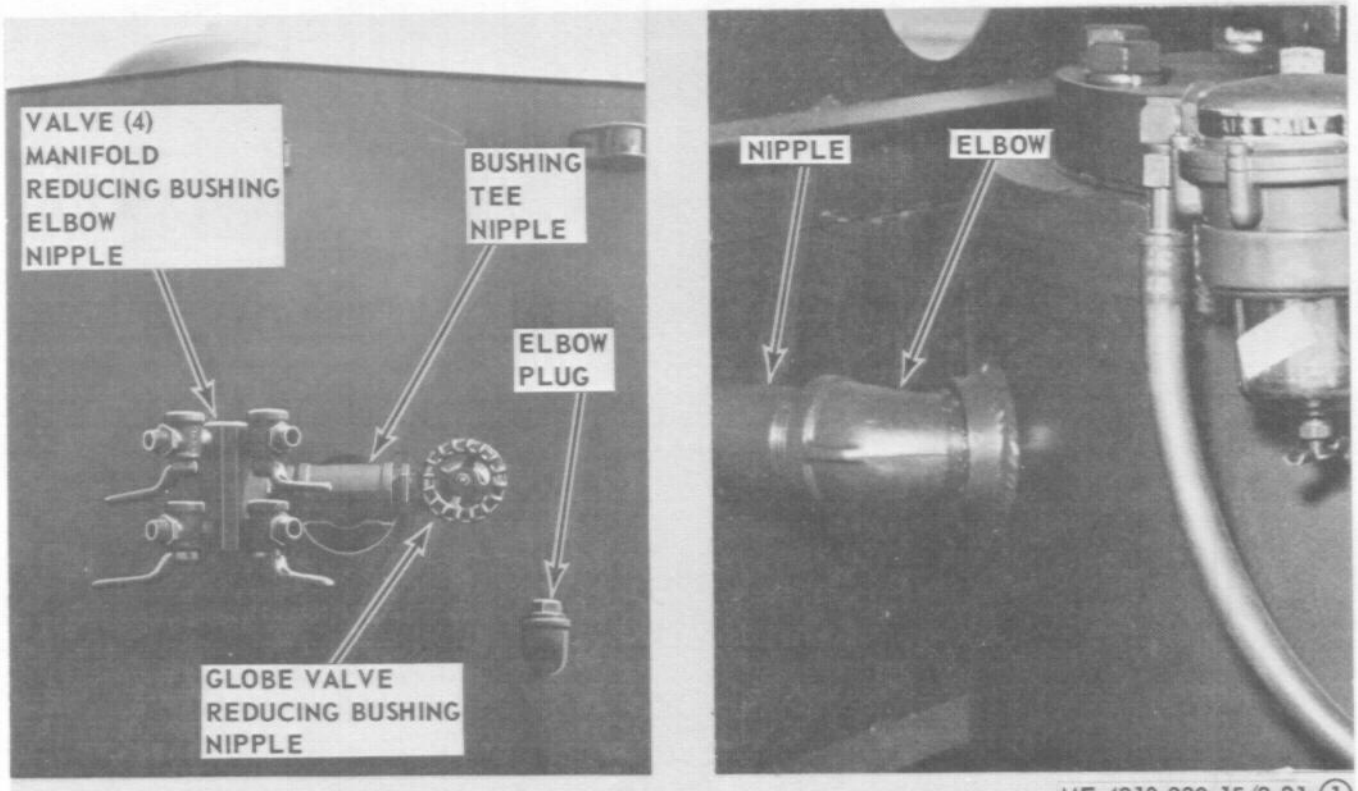
3-32. General

The engine and air compressor are enclosed in a sheet metal housing. Doors on both sides of the unit provide access to engine and compressor components. In addition to the doors, the housing group consists of side and end panels, door and roof supports, a grille, trays, rails, and a two-section roof. Clearance lights, reflectors, data and instruction plates a battery charging receptacle, air brake dummy connectors, and a cable hanger fasten to the outside of the housing.

3-33. Housing Group

a. Removal and Disassembly.

(1) Remove air cleaner caps, oil filler elbow, rain shield, and air discharge valves and piping as shown in figure 3-21.



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REMOVAL

STEP 1. REMOVE OIL FILLER PLUG, NIPPLE, AND ELBOWS FROM OIL SEPARATOR.

STEP 2. REMOVE ALL VALVES AND PIPING FROM AIR DISCHARGE CONNECTION.

STEP 3. LOOSEN BOLT AND NUT; REMOVE RAIN SHIELD.

STEP 4. LOOSEN BOLTS AND NUTS; REMOVE AIR CLEANER CAPS.

INSTALLATION

STEP 1. INSTALL AIR CLEANER CAPS AND SECURE WITH BOLTS AND NUTS.

STEP 2. INSTALL RAIN SHIELD AND SECURE WITH BOLT AND NUT.

STEP 3. INSTALL ALL VALVES AND PIPING TO AIR DISCHARGE CONNECTION.

STEP 4. INSTALL OIL FILLER ELBOWS, NIPPLE, AND PLUG TO OIL SEPARATOR.

Figure 3-21. Removal and installation of external components on housing group (sheet 1 of 2).

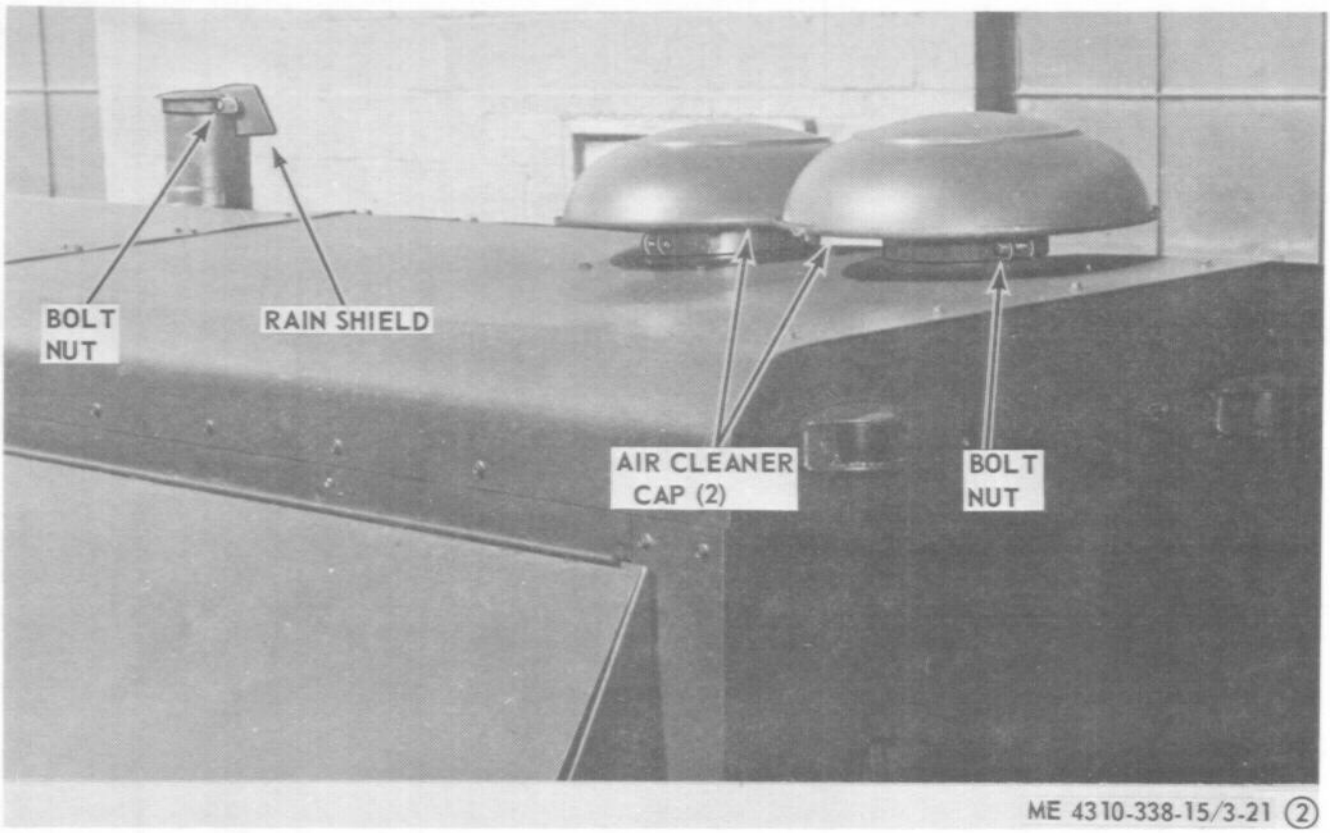


Figure 3-21. Removal and installation of external components on housing group (sheet 2 of 2).

(2) Remove taillight and blackout taillight assemblies (para 3-35 and 3-36).

(3) Remove battery charging receptacle (para 3-38).

(4) Remove clearance light assemblies (para 3-37).

(5) Remove compressor air cleaner assembly (para 3-79).

(6) Remove fuel tank holddowns (para 3-92).

(7) Disassemble housing group in numerical sequence shown in figure 3-22.

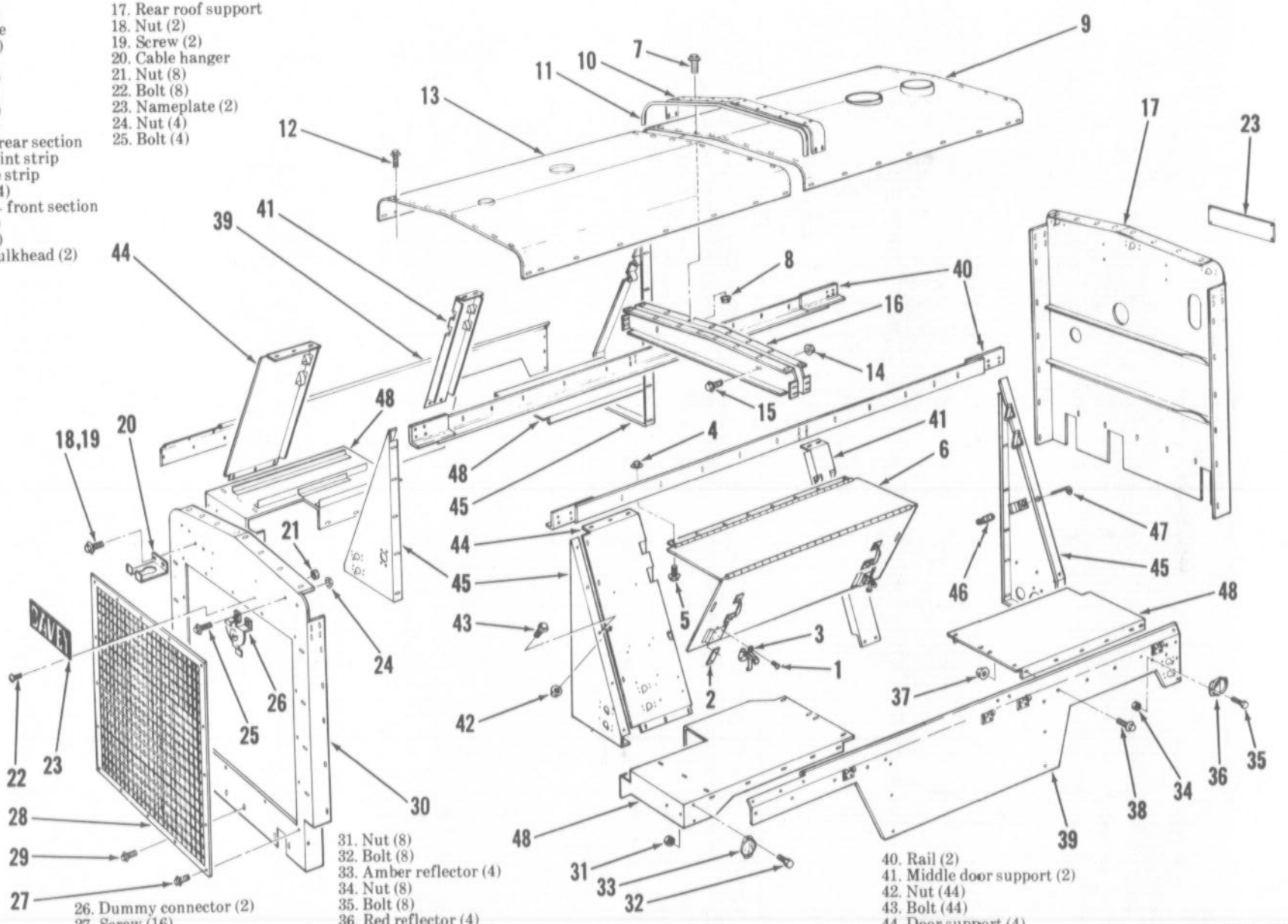


Figure 3-22. Housing group; diassembly and reassembly.

b. Cleaning, Inspection, and Repair.

(1) Clean all metal parts using a cleaning solvent that is in accordance with Federal specification P-D-680. Dry parts thoroughly.

(2) Inspect parts for cracks, distortion, breaks, or any other defect.

(3) Inspect all attaching hardware for damaged threads, distortion, cracks, or any other defect.

c. Reassembly and Installation.

(1) Reassemble housing group in reverse numerical sequence shown in figure 3-22. Install fuel tank holddowns (para 3-92).

(2) Install compressor air cleaner assembly (para 3-79).

(3) Install clearance light assemblies (para 3-37).

(4) Install battery charging receptacle (para 3-38).

(5) Install taillight and blackout taillight assemblies (para 3-35 and 3-36).

(6) Install air cleaner caps, oil filler elbow, rain shield, and air discharge valves and piping as shown in figure 3-21.

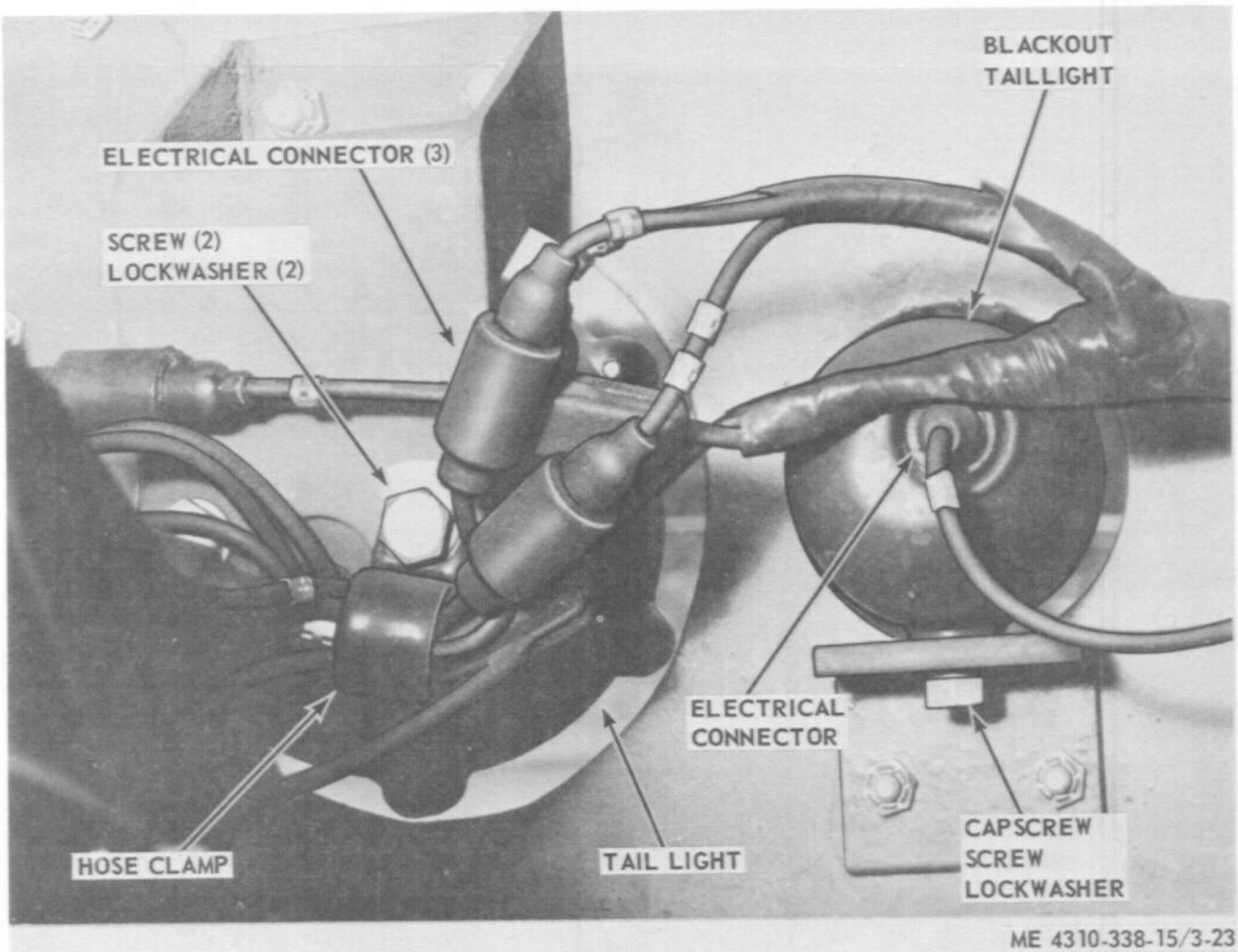
Section IX. AIR COMPRESSOR UNIT ELECTRICAL GROUP

3-34. General

The electrical group consists of the stoplights, taillights, marker lights, turn signals, blackout lights, clearance lights, battery charging receptacle, and the wiring harnesses. Each taillight assembly serves as a stoplight, taillight, turn signal, and blackout light. The marker light is used when towing the air compressor unit after dark so that a following vehicle can judge the distance to the unit. The clearance lights are either red, amber, or blackout and are mounted at various points on the housing. The battery charging receptacle, mounted on the front of the unit, provides a connection for charging the batteries from an external power source. All of the external lights are interconnected by a chassis wiring harness and receive power from the towing vehicle via the intervehicular electrical cable. The remaining electrical components are connected by individual wires or small wiring harnesses.

3-35. Taillight Assembly

a. Removal. Remove each taillight assembly as shown in figure 3-23.



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A TAILLIGHT ASSY

REMOVAL

STEP 1. DISCONNECT ELECTRICAL CONNECTORS.

STEP 2. REMOVE SCREWS, LOCKWASHERS, AND HOSE CLAMP. REMOVE TAILLIGHT ASSEMBLY.

INSTALLATION

STEP 1. POSITION TAILLIGHT ASSEMBLY AND SECURE WITH ONE SCREW AND LOCKWASHER.

STEP 2. CONNECT ELECTRICAL CONNECTORS.

STEP 3. PLACE WIRES IN HOSE CLAMP. INSTALL HOSE CLAMP, SCREW, AND LOCKWASHER.

B BLACKOUT TAILLIGHT ASSY

REMOVAL

STEP 1. DISCONNECT ELECTRICAL CONNECTOR.

STEP 2. REMOVE SCREWS AND LOCKWASHER. REMOVE BLACKOUT STOPLIGHT.

INSTALLATION

STEP 1. POSITION BLACKOUT STOPLIGHT AND INSTALL SCREWS AND LOCKWASHER.

STEP 2. CONNECT ELECTRICAL CONNECTOR.

Figure 3-23. Taillight assemblies; removal and installation.

b. Disassembly. Disassemble each taillight assembly in numerical sequence shown in figure 3-24.

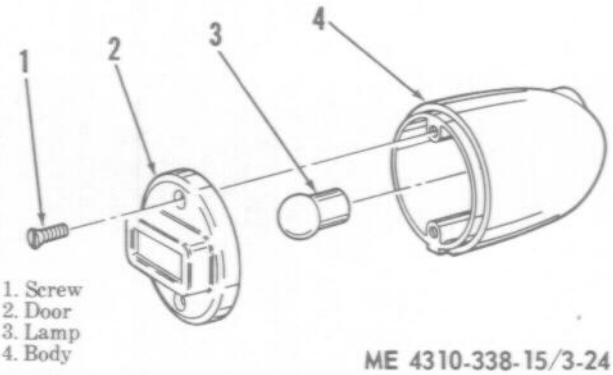


Figure 3-24. Taillight Assembly; Disassembly and Reassembly.

c. Cleaning, Inspection, and Repair.

(1) Clean all metal parts using a cleaning solvent that is in accordance with Federal specification P-D-680. Dry parts thoroughly.

(2) Inspect plate and sockets for cracks, distortion, corrosion, looseness, or any other defect.

(3) Inspect door assembly and body for cracks, distortion, condition of lenses, or any other defect.

(4) Inspect springs, contacts, and markers for cracs, distortion, corrosion, or any other defect.

(5) Inspect gaskets and grommets for deterioration, stretching, or any other defect.

(6) Inspect lamps for cracks, corrosion, open filaments, or any other defect.

(7) Inspect all other parts, including attaching hardware, for cracks, breaks, damaged threads, or any other defect.

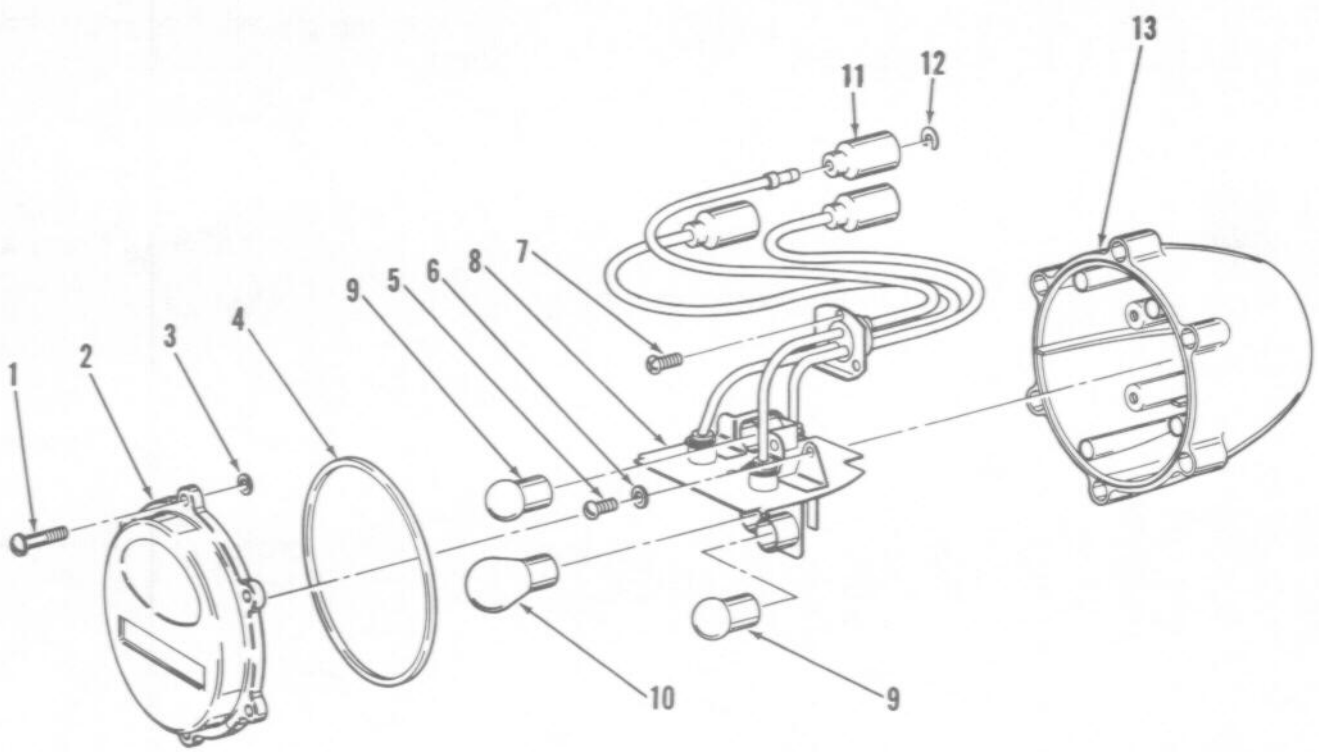
d. Reassembly. Reassemble taillight assembly in reverse numerical sequence shown in figure 3-24.

e. Installation. Install each taillight assembly as shown in figure 3-23.

3-36. Blackout Taillight Assembly

a. Removal. Remove blackout taillight assembly as shown in figure 3-23.

b. Disassembly. Disassemble blackout taillight assembly in numerical sequence shown in figure 3-25.



1. Screw (6)
2. Door
3. Retaining ring (6)
4. Gasket
5. Screw (2)
6. Washer (2)
7. Screw (3)
8. Socket-wire assembly
9. Lamp (2)
10. Lamp
11. Shell (3)
12. Washer (3)
13. Body

Figure 3-25. Blackout taillight assembly; disassembly and reassembly.

c. Cleaning, Inspection, and Repair.

(1) Clean all metal parts using a cleaning solvent that is in accordance with Federal specification P-D-680. Dry parts thoroughly.

(2) Inspect sockets for cracks, breaks, corrosion, or any other defect.

(3) Inspect door and body for cracks, breaks, distortion, or any other defect.

(4) Inspect gasket and grommets for cracks, distortion, deterioration, or any other defect.

(5) Inspect plate, contacts, and springs for cracks, distortion, corrosion, or any other defect.

(6) Inspect lamp for cracks, corrosion, open filaments, or any other defect.

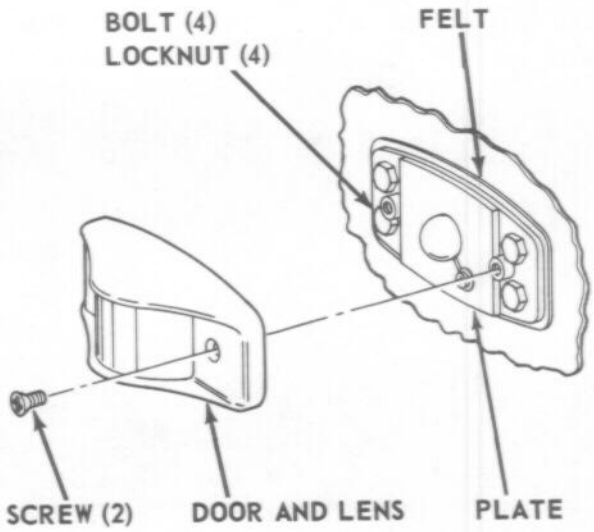
(7) Inspect all other parts, including attaching hardware, for cracks, breaks, distortion, or any other defect.

d. Reassembly. Reassemble blackout taillight assembly in reverse numerical sequence shown in figure 3-25.

e. Installation. Install blackout taillight assembly as shown in figure 3-23.

3-37. Clearance Light Assembly

a. Removal. Remove each clearance light assembly as shown in figure 3-26.



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REMOVAL

STEP 1. DISCONNECT CLEARANCE LIGHT FROM WIRING HARNESS.

STEP 2. REMOVE SCREWS FROM DOOR AND LENS. REMOVE DOOR AND LENS.

STEP 3. REMOVE BOLTS AND LOCKNUTS FROM PLATE. REMOVE PLATE AND FELT.

INSTALLATION

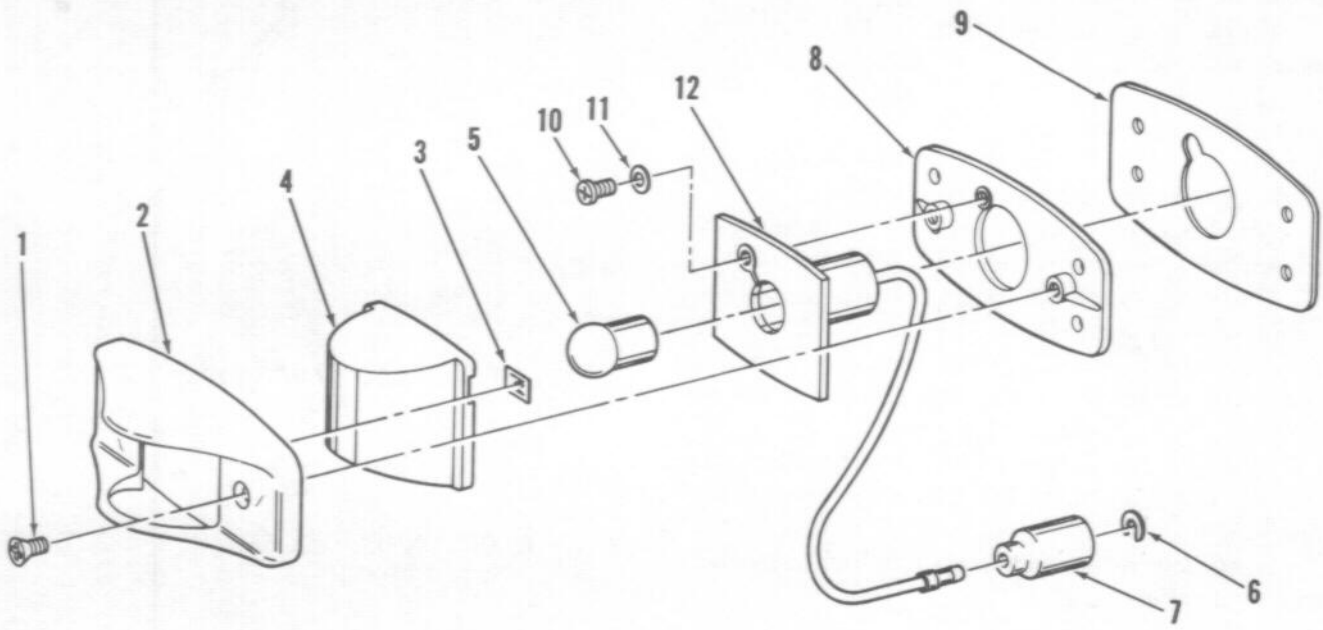
STEP 1. PLACE FELT AND PLATE IN MOUNTING POSITION AND SECURE WITH BOLTS AND LOCKNUTS.

STEP 2. INSTALL DOOR AND LENS AND SECURE WITH SCREWS.

STEP 3. CONNECT CLEARANCE LIGHT TO WIRING HARNESS.

Figure 3-26. Clearance light assemblies; removal and installation.

b. Disassembly. Disassemble clearance light assembly in numerical sequence shown in figure 3-27.



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1. Screw
2. Door
3. Nut
4. Lens
5. Lamp
6. Washer
7. Shell
8. Plate
9. Gasket
10. Screw
11. Washer
12. Grommet-Wire

Figure 3-27. Clearance light assemblies; disassembly and reassembly.

c. Cleaning and Inspection.

(1) Wipe all parts clean with a dry, clean cloth. Nonelectrical metal parts can be cleaned using a cleaning solvent that is in accordance with Federal specification P-D-680. Dry parts thoroughly.

(2) Inspect socket for cracks, breaks, corrosion, or any other defect.

(3) Inspect door and lens for cracks, breaks, distortion, or any other defect.

(4) Inspect wire and plug for cracks or any other defect.

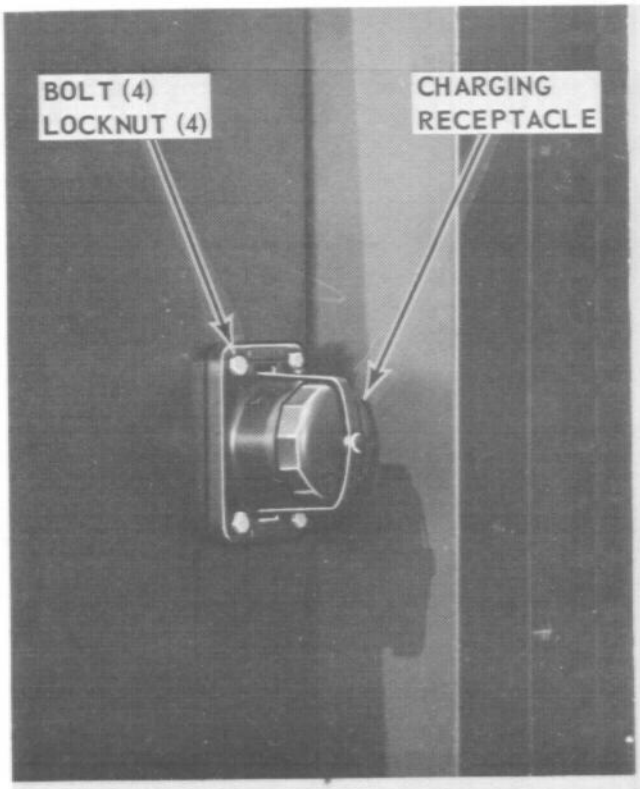
(5) Inspect all other parts for breaks, distortion, cracks, or any other defect.

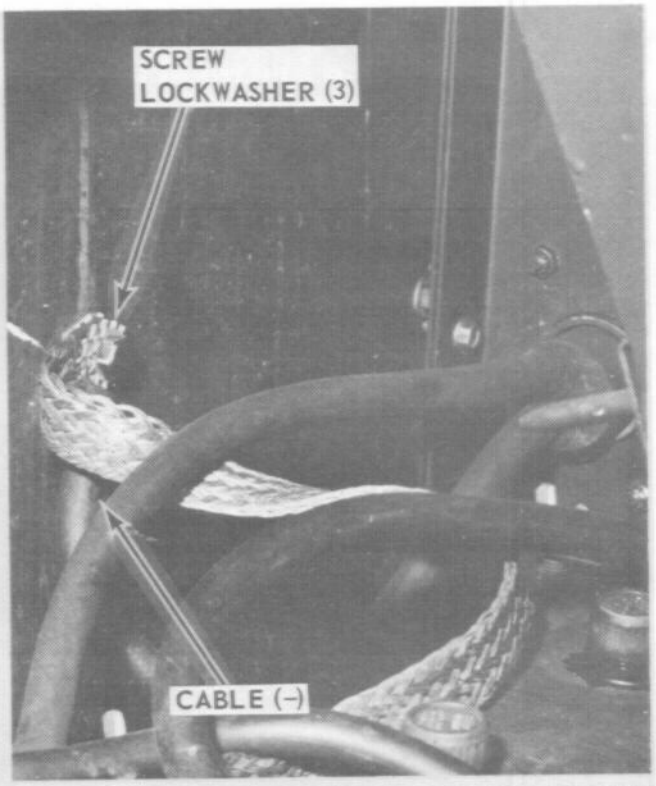
d. Reassembly. Reassemble clearance light assembly in reverse numerical sequence shown in figure 3-27.

e. Installation. Install each clearance light assembly as shown in figure 3-26.

3-38. Battery Charging Receptacle

a. Removal. Remove battery charging receptacle as shown in figure 3-28.





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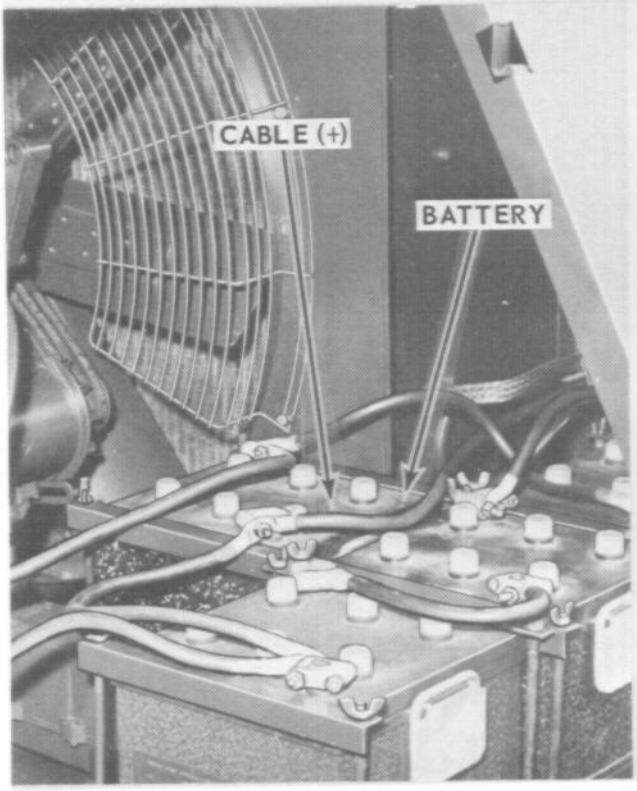


REMOVAL

STEP 1. REMOVE SCREW AND LOCKWASHERS. REMOVE GROUND CABLE.

STEP 2. DISCONNECT POSITIVE CABLE FROM BATTERY TERMINAL.

STEP 3. REMOVE BOLTS AND LOCKNUTS. REMOVE RECEPTACLE.

INSTALLATION

STEP 1. PLACE RECEPTACLE IN MOUNTING POSITION AND SECURE WITH BOLTS AND LOCKNUTS.

STEP 2. CONNECT POSITIVE CABLE TO BATTERY TERMINAL. SEE FIGURE 1-3 FOR WIRING DIAGRAM.

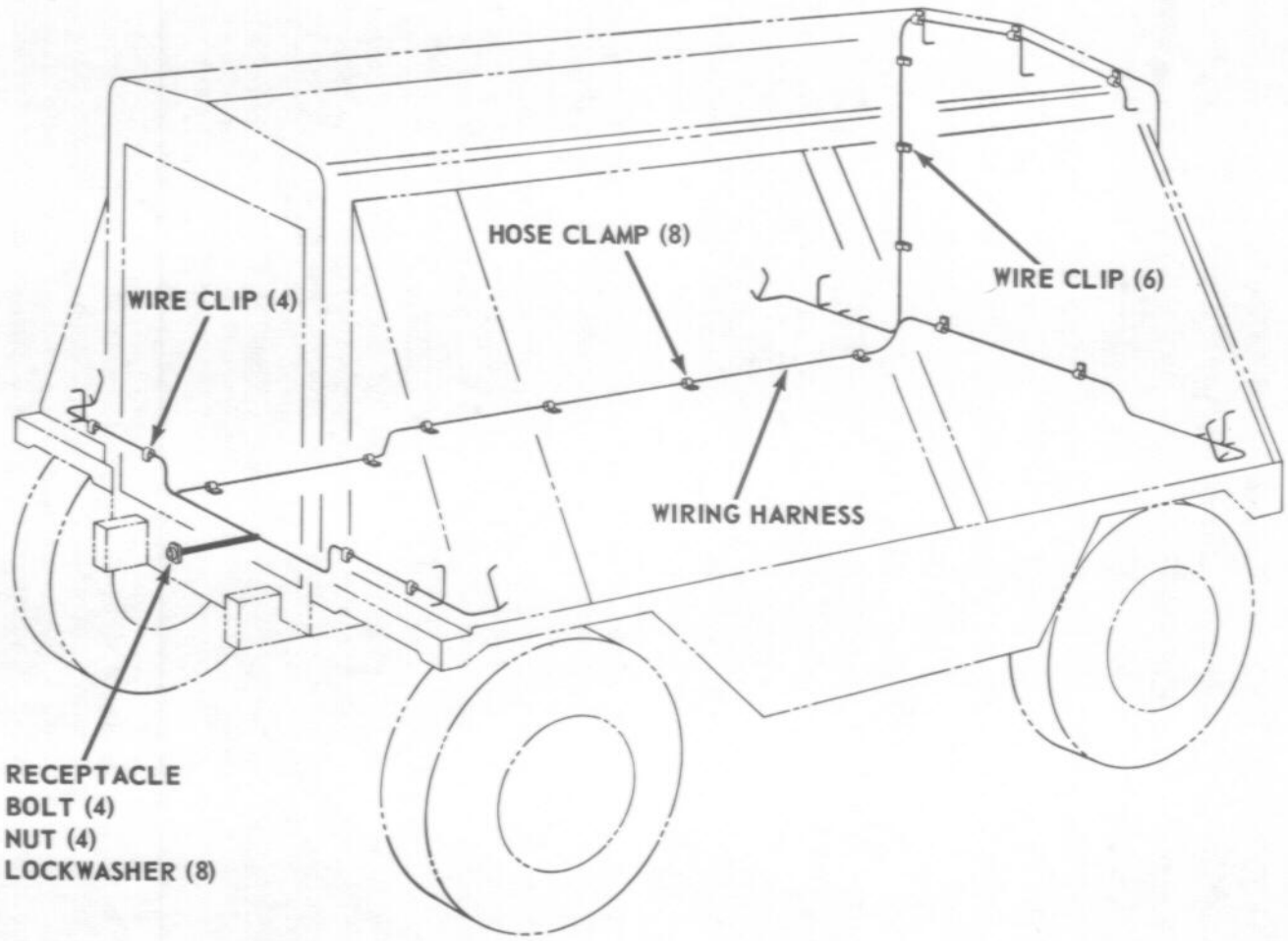
STEP 3. INSTALL GROUND CABLE AND BRAIDED ELECTRICAL LEAD. SECURE WITH SCREW AND LOCKWASHERS.

Figure 3-28. Battery charging receptacle; removal and Installation.

b. Installation. Install battery charging receptacle as shown in figure 3-28.

3-39. External Lighting Wiring Harness

a. Removal. Remove external lighting wiring harness as shown in figure 3-29.



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REMOVAL

STEP 1. DISCONNECT GROUND CABLE FROM BATTERY.

STEP 2. DISCONNECT ALL LIGHTS FROM WIRING HARNESS.

STEP 3. REMOVE ALL HOSE CLAMPS AND WIRE CLIPS.

STEP 4. REMOVE BOLTS, NUTS, AND LOCKWASHERS FROM RECEPTACLE. REMOVE WIRING HARNESS AND RECEPTACLE.

INSTALLATION

STEP 1. PLACE WIRING HARNESS AND RECEPTACLE ON UNIT. SECURE RECEPTACLE WITH BOLTS, NUTS, AND LOCKWASHERS.

STEP 2. SECURE WIRING HARNESS IN PLACE WITH HOSE CLAMPS AND WIRE CLIPS.

STEP 3. CONNECT ALL LIGHTS TO WIRING HARNESS (SEE FIG. 1-3). CONNECT A TOWING VEHICLE TO UNIT AND TEST LIGHTS FOR PROPER OPERATION.

STEP 4. CONNECT BATTERY GROUND CABLE.

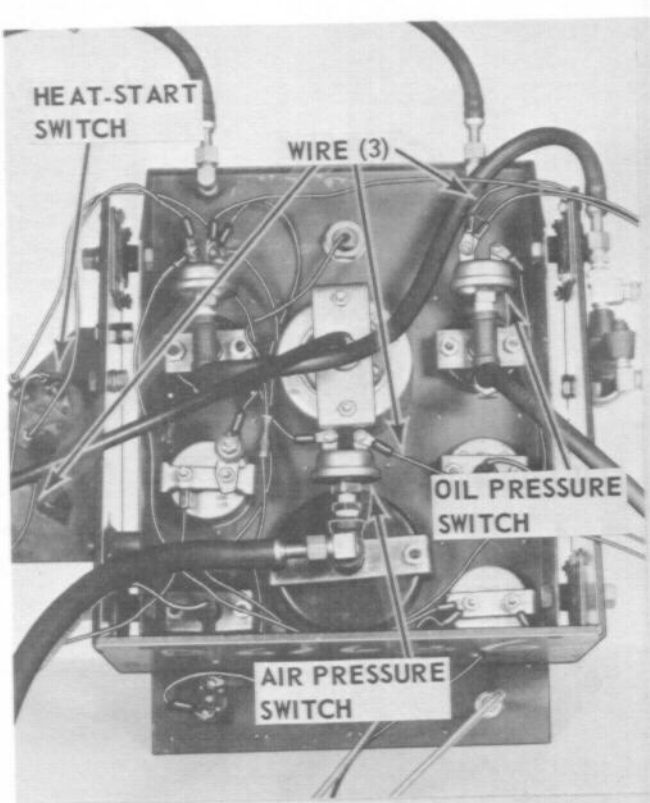
Figure 3-29. External lighting wiring harness; removal and installation.

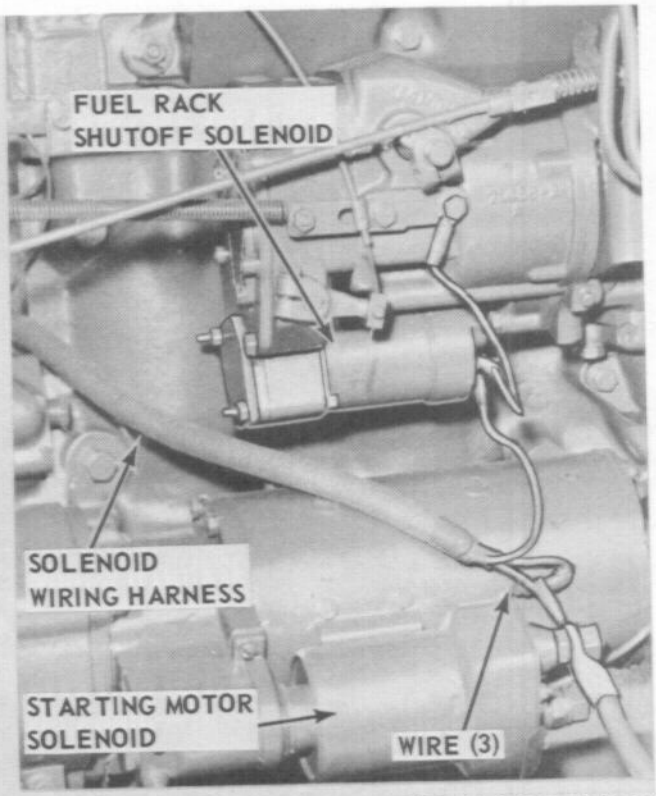
b. Installation. Install external lighting wiring harness as shown in figure 3-29.

3-40. Solenoid Wiring Harness

a. Removal. Remove solenoid wiring harness as shown in figure 3-30.

b. Installation. Install solenoid wiring harness as shown in figure 3-30.





ME 4310-338-15/3-30

REMOVAL

STEP 1. DISCONNECT GROUND CABLE FROM BATTERY.

STEP 2. DISCONNECT HARNESS WIRES FROM INSTRUMENT PANEL SWITCHES.

STEP 3. DISCONNECT HARNESS WIRES FROM STARTING MOTOR SOLENOID AND FUEL RACK SHUTOFF SOLENOID. REMOVE WIRING HARNESS.

INSTALLATION

STEP 1. CONNECT HARNESS WIRES TO STARTING MOTOR SOLENOID AND FUEL RACK SHUTOFF SOLENOID (SEE FIGURE 1-3 FOR WIRING DIAGRAM).

STEP 2. CONNECT HARNESS WIRES TO INSTRUMENT PANEL SWITCHES.

STEP 3. CONNECT BATTERY GROUND CABLE.

Figure 3-30. Solenoid wiring harness; removal and installation.

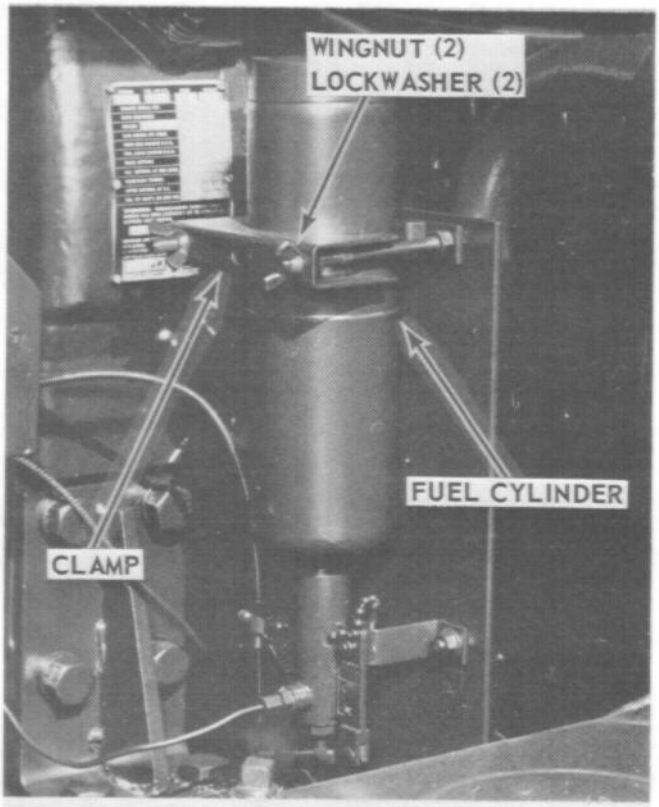
Section X. COLD WEATHER STARTING AID

3-41. General

The cold weather starting aid provides a means of injecting a highly combustible fuel mixture into the engine air intake to aid in starting the engine when ambient temperatures are below +32° F. The fuel, an ether base mixture, is stored in a metal cylinder that has a capacity of 790 cubic centimeters. The cylinder is approximately 95 percent expendable. The fuel cylinder mounts to a valve assembly which is actuated by the control cable mounted on the instrument panel. Each actuation of the valve lever injects a measured shot of 5 cubic centimeters of fuel into the engine intake air stream. The fuel mixture travels via copper tubing from the valve to an atomizer on the intake manifold.

3-42. Fuel Cylinder

a. Removal. Remove fuel cylinder as shown in figure 3-31.



ME 4310-338-15/3-31

REMOVAL

STEP 1. LOOSEN AND REMOVE WINGNUTS, LOCKWASHERS, AND CLAMP.

STEP 2. UNSCREW AND REMOVE FUEL CYLINDER FROM VALVE ASSEMBLY.

INSTALLATION

STEP 1. INSTALL A NEW FUEL CYLINDER IN VALVE ASSEMBLY AND TIGHTEN BY HAND.

NOTE

DO NOT OVERTIGHTEN FUEL CYLINDER.

STEP 2. INSTALL CLAMP AND SECURE WITH WINGNUTS AND LOCKWASHERS.

Figure 3-31. Fuel cylinder; removal and installation.

b. Installation. Install fuel cylinder as shown in figure 3-31.

3-43. Valve, Atomizer, and Tubing

a. Removal.

(1) Remove fuel cylinder (fig. 3-31).

(2) Remove valve, atomizer, and tubing as shown in figure 3-32.

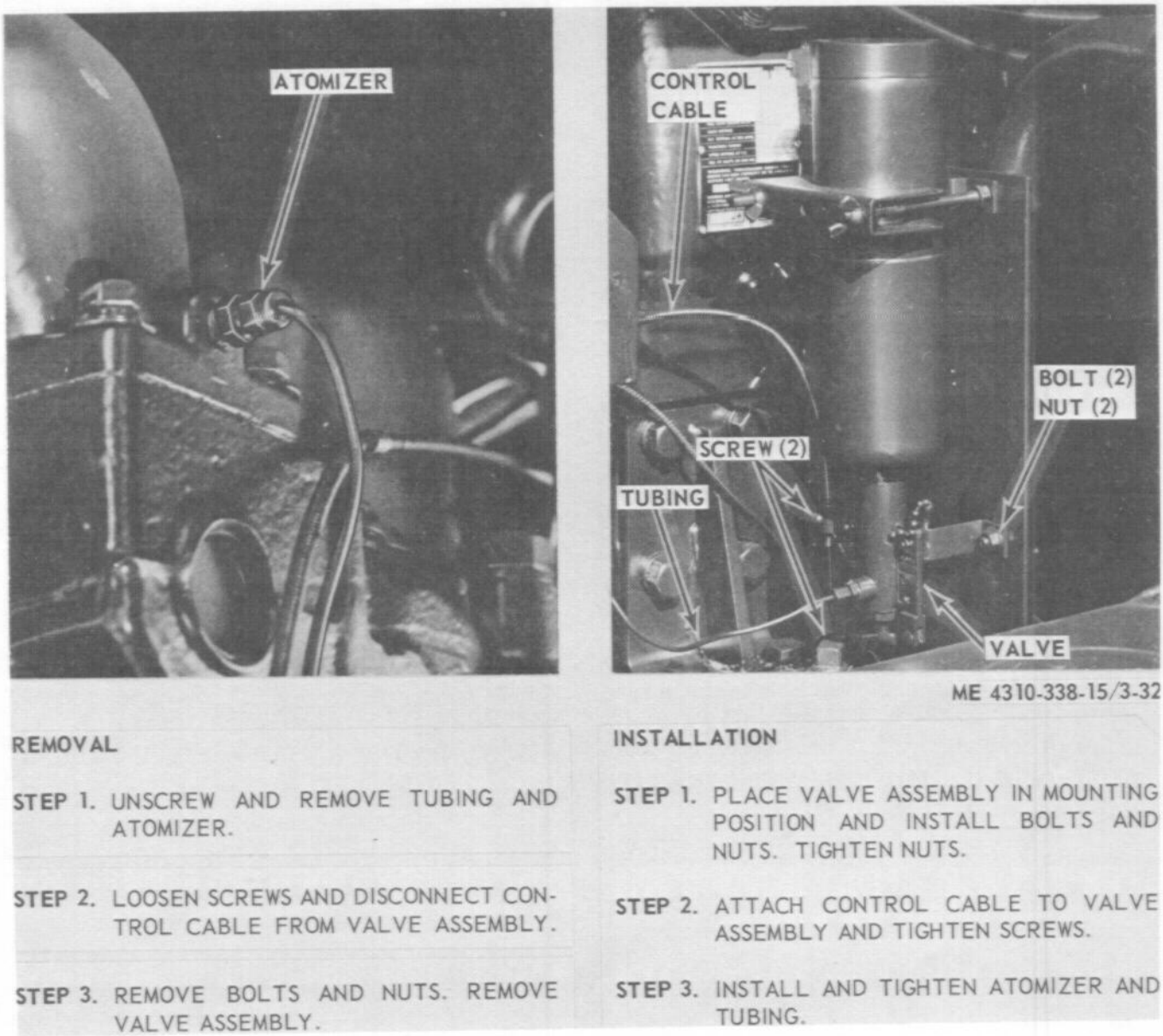


Figure 3-32. Valve, atomizer, and tubing; removal and installation.

b. Cleaning and Inspection.

(1) Clean all metal parts and tubing using a cleaning solvent that is in accordance with Federal specification PD-680. Dry parts thoroughly.

(2) Inspect actuating valve for cracks, breaks, distortion, improper operation, or any other defect.

(3) Inspect tubing for cracks, breaks, kinks, or any other defect.

(4) Inspect atomizer for cracks, distortion, condition of threads and orifice hole, or any other defect.

(5) Inspect mounting hardware for cracks, breaks, distortion, damaged threads, or any other defect.

c. Installation.

(1) Install valve, atomizer, and tubing as shown in figure 3-32.

(2) Install fuel cylinder (fig. 3-31).

3-44. General

The controls and instruments are categorized into three basic groups; operation indicating group, control group, and safety group. The operation indicating group consists of gages that show engine oil pressure, compressor oil temperature, compressor oil level, air pressure, engine RPM and elapsed running time, engine water temperature, fuel level, fuel pressure, and battery-generator amperage. Also included are the air cleaner restriction indicators and a service meter. The control group consists of the fuel rack shutoff solenoid, engine stop control, safety push-button switch, throttle RUN-START lever, HEAT-START switch, cold weather starting aid control, fuel pressure switch, air pressure switch, and panel lamp switch. The safety group consists of components that monitor unit operation and shut down the engine if an abnormal condition develops. This group includes the water temperature safety switch, oil pressure safety switch, engine overspeed governor switch, and compressor thermostatic switch.

3-45. Instrument Panel Assembly

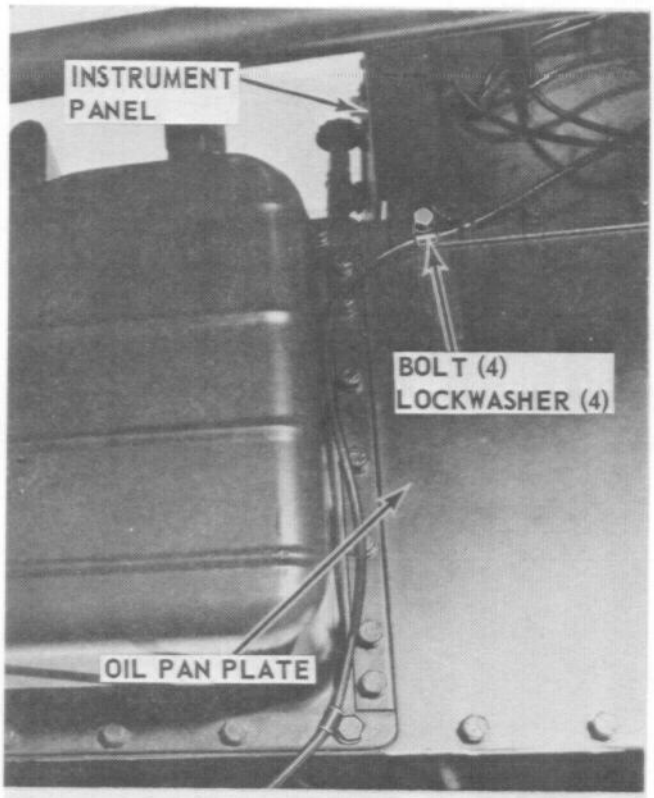
a. Removal.

(1) Disconnect air, fuel, and oil lines from gages as required for removal of instrument panel assembly.

(2) Disconnect wiring from switches and gages as required for removal of instrument panel assembly.

(3) Disconnect tachometer cable.

(4) Remove instrument panel assembly as shown in figure 3-33.



ME 4310-338-15/3-33

REMOVAL

STEP 1. REMOVE SCREWS AND LOCKWASHERS. REMOVE INSTRUMENT PANEL ASSEMBLY.

STEP 2. REINSTALL AND TIGHTEN SCREWS AND LOCKWASHERS TO OIL PAN PLATE.

INSTALLATION

STEP 1. REMOVE SCREWS AND LOCKWASHERS WHICH MOUNT INSTRUMENT PANEL TO OIL PAN PLATE.

STEP 2. PLACE INSTRUMENT PANEL IN MOUNTING POSITION AND SECURE WITH SCREWS AND LOCKWASHERS. BE SURE HOSE CLAMP IS INSTALLED.

Figure 3-33. Instrument panel assembly; removal and installation.

b. Cleaning and Inspection.

(1) Wipe instrument panel assembly clean using a clean cloth soaked in a cleaning solvent that is in accordance with Federal specification P-D-680. Dry thoroughly.

(2) Inspect all instruments for damage or loose mounting.

(3) Inspect hoses and cables for kinks, cracks, or any other defect.

(4) Inspect all other parts for cracks, breaks, distortion, or any other defect.

c. Installation.

(1) Install instrument panel assembly as shown in figure 3-33.

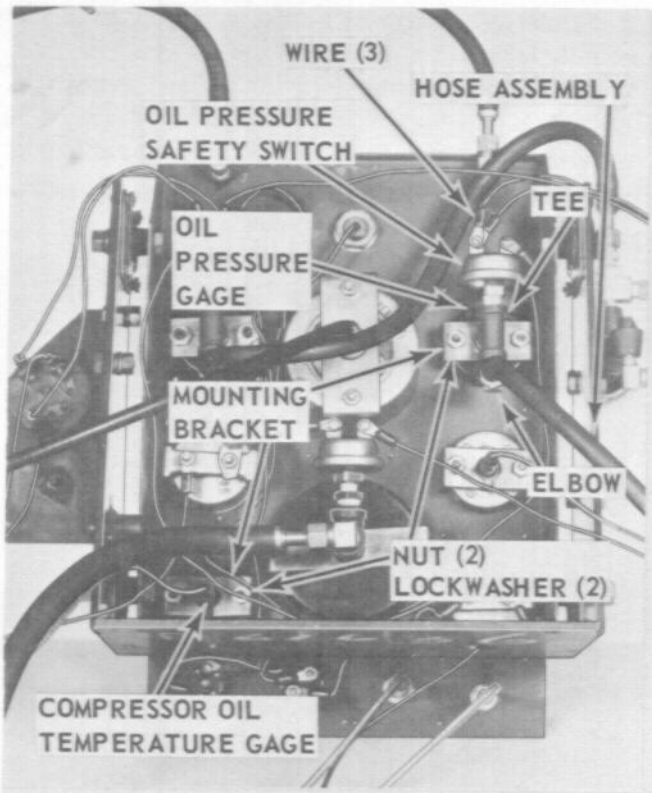
(2) Connect wiring to switches and gages (fig. 1-3).

(3) Connect air, fuel, and oil lines to gages (fig. 1-4 and 1-5).

(4) Connect tachometer cable.

3-46. Engine Oil Pressure Gage

a. Removal. Remove oil pressure gage as shown in figure 3-34.



REMOVAL

STEP 1. DISCONNECT HOSE ASSEMBLY AND WIRES.

STEP 2. REMOVE SWITCH, ELBOW, AND TEE.

STEP 3. REMOVE NUTS, LOCKWASHERS, AND MOUNTING BRACKET. REMOVE OIL PRESSURE GAGE.

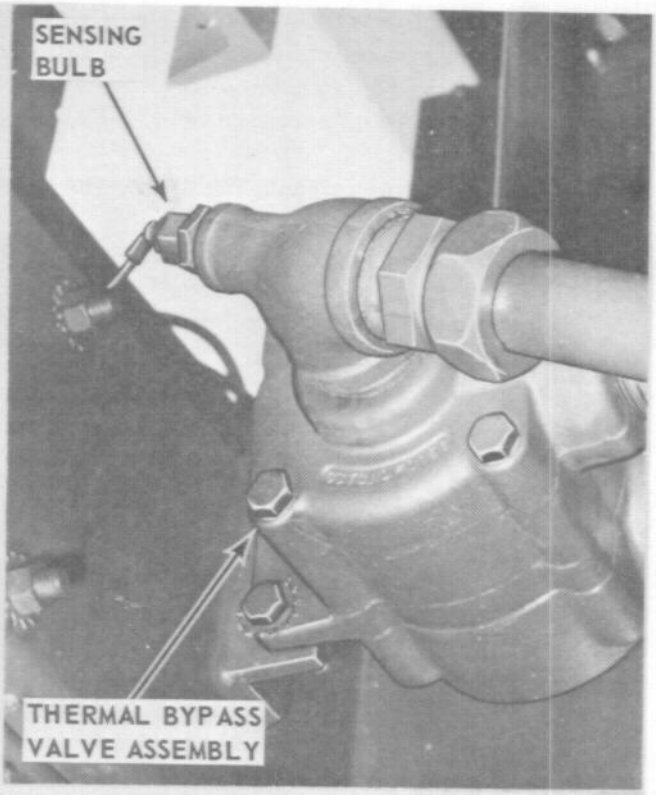
INSTALLATION

STEP 1. PLACE OIL PRESSURE GAGE ON INSTRUMENT PANEL AND INSTALL MOUNTING BRACKET. SECURE WITH NUTS AND LOCKWASHERS.

STEP 2. INSTALL TEE, ELBOW, AND SWITCH.

STEP 3. CONNECT HOSE ASSEMBLY AND WIRES (SEE FIGURE 1-3 FOR WIRING DIAGRAM).

A **ENGINE OIL PRESSURE GAGE; REMOVAL AND INSTALLATION.**



ME 4310-338-15/3-34 (1)

REMOVAL

STEP 1. UNSCREW AND REMOVE OIL TEMPERATURE SENSING BULB FROM THERMAL BYPASS VALVE ASSEMBLY.

STEP 2. REMOVE SCREWS, LOCKWASHERS, AND MOUNTING BRACKET. REMOVE COMPRESSOR OIL TEMPERATURE GAGE.

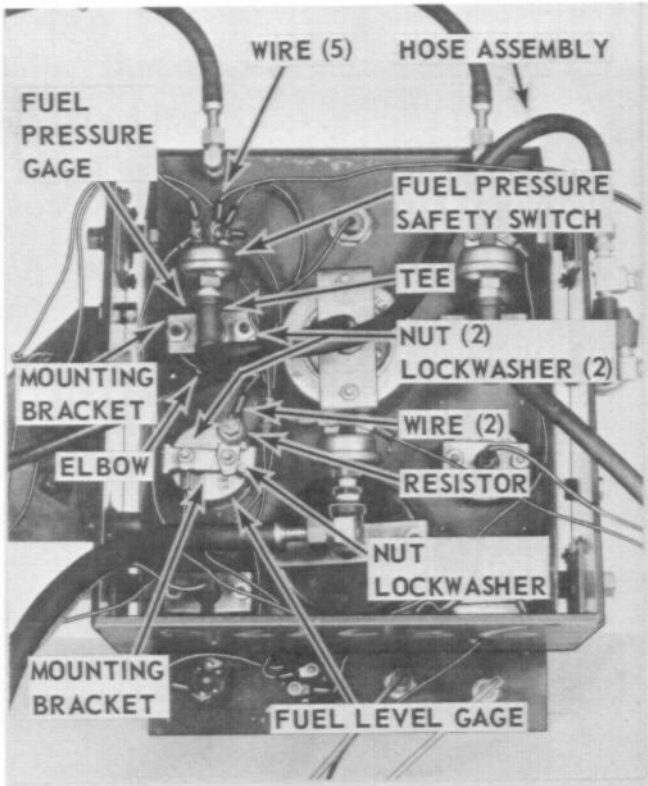
INSTALLATION

STEP 1. PLACE OIL TEMPERATURE GAGE ON INSTRUMENT PANEL AND INSTALL MOUNTING BRACKET. SECURE WITH NUTS AND LOCKWASHERS.

STEP 2. INSTALL AND TIGHTEN OIL TEMPERATURE SENSING BULB ON THERMAL BYPASS VALVE ASSEMBLY.

B **COMPRESSOR OIL TEMPERATURE GAGE; REMOVAL AND INSTALLATION.**

Figure 3-34. Instrument Panel Controls and Instruments, Removal and Installation (sheet 1 of 8).



REMOVAL

STEP 1. DISCONNECT HOSE ASSEMBLY AND WIRES.

STEP 2. REMOVE SWITCH, ELBOW, AND TEE.

STEP 3. REMOVE NUTS, LOCKWASHERS, AND MOUNTING BRACKET. REMOVE FUEL PRESSURE GAGE.

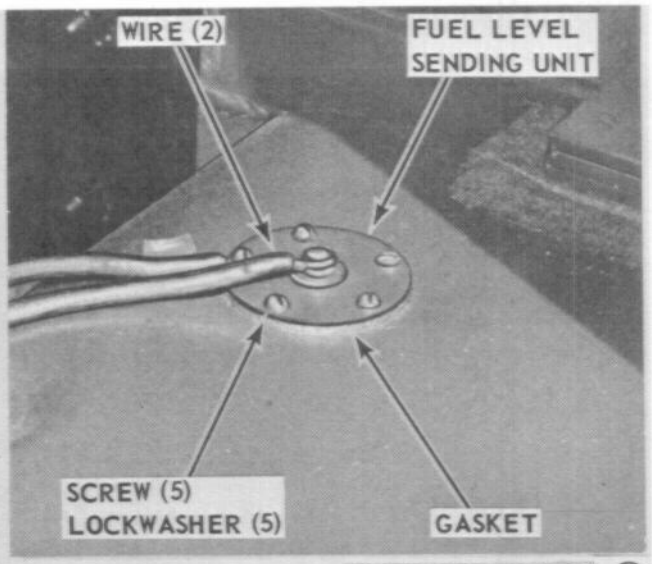
INSTALLATION

STEP 1. PLACE FUEL PRESSURE GAGE ON INSTRUMENT PANEL AND INSTALL MOUNTING BRACKET. SECURE WITH NUTS AND LOCKWASHERS.

STEP 2. INSTALL TEE, ELBOW, AND SWITCH.

STEP 3. CONNECT HOSE ASSEMBLY AND WIRES (SEE FIGURE 1-3 FOR WIRING DIAGRAM).

C FUEL PRESSURE GAGE; REMOVAL AND INSTALLATION.



ME 4310-338-15/3-34 (2)

REMOVAL

STEP 1. DISCONNECT WIRES FROM GAGE AND SENDING UNIT.

STEP 2. REMOVE NUT, LOCKWASHER, AND RESISTOR FROM GAGE.

STEP 3. REMOVE NUTS, LOCKWASHERS, AND MOUNTING BRACKET. REMOVE FUEL LEVEL GAGE.

STEP 4. REMOVE SCREWS AND LOCKWASHERS. REMOVE SENDING UNIT AND GASKET.

INSTALLATION

STEP 1. INSTALL SENDING UNIT AND GASKET. SECURE WITH SCREWS AND LOCKWASHERS. CONNECT WIRES (SEE FIGURE 1-3 FOR WIRING DIAGRAM.

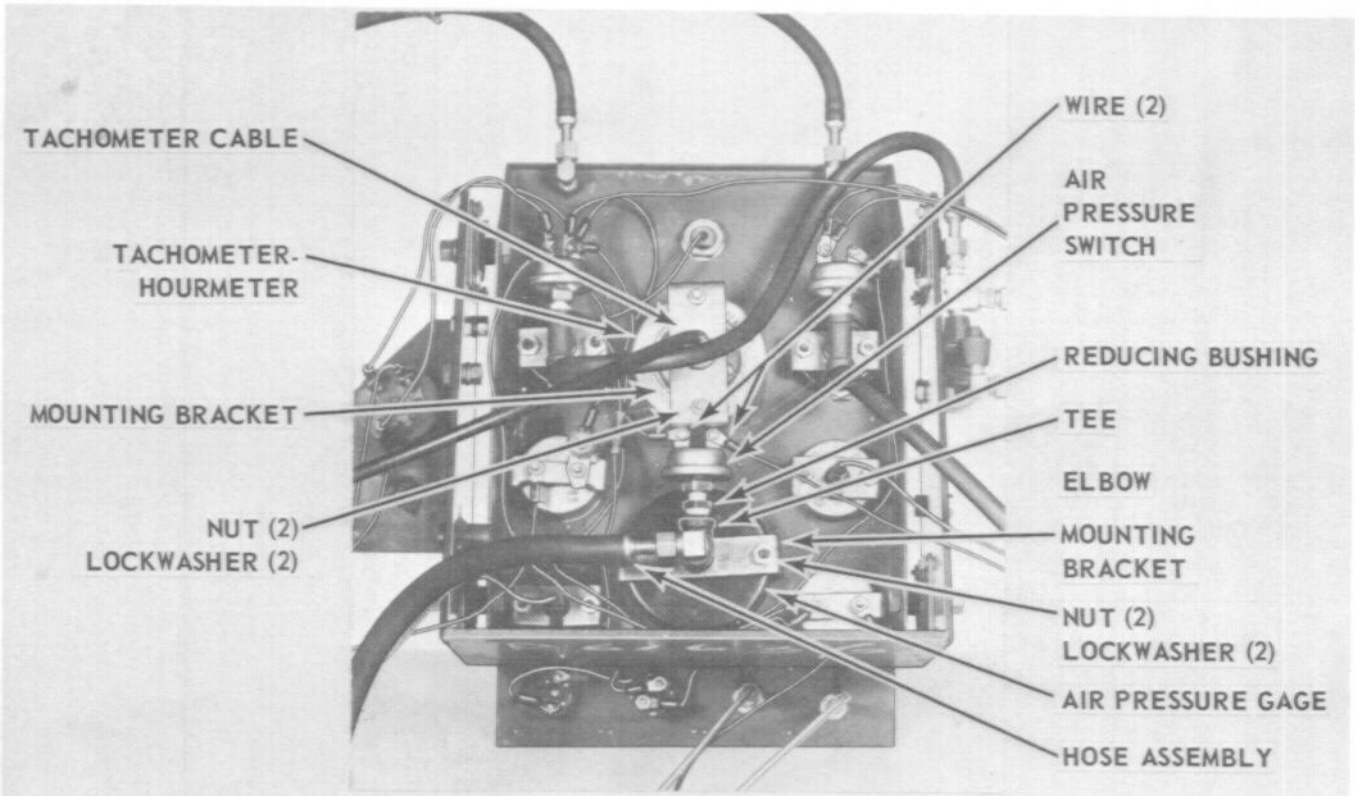
STEP 2. PLACE FUEL LEVEL GAGE ON INSTRUMENT PANEL AND INSTALL MOUNTING BRACKET. SECURE WITH NUTS AND LOCKWASHERS.

STEP 3. INSTALL RESISTOR ON REAR OF GAGE AND SECURE WITH NUT AND LOCKWASHER.

STEP 4. CONNECT WIRES TO GAGE (SEE FIGURE 1-3).

D FUEL LEVEL GAGE; REMOVAL AND INSTALLATION.

Figure 3-34. Instrument Panel Controls and Instruments, Removal and Installation (sheet 2 of 8).



ME 4310-338-15/3-34 (3)

E AIR PRESSURE GAGE; REMOVAL AND INSTALLATION.

REMOVAL

STEP 1. DISCONNECT TACHOMETER CABLE.

STEP 2. REMOVE NUTS, LOCKWASHERS, AND MOUNTING BRACKET. REMOVE TACHOMETER-HOURMETER.

INSTALLATION

STEP 1. PLACE TACHOMETER-HOURMETER ON INSTRUMENT PANEL AND INSTALL MOUNTING BRACKET. SECURE WITH NUTS AND LOCKWASHERS.

STEP 2. CONNECT TACHOMETER CABLE.

F TACHOMETER-HOURMETER; REMOVAL AND INSTALLATION.

REMOVAL

STEP 1. DISCONNECT HOSE ASSEMBLY AND WIRES.

STEP 2. REMOVE SWITCH, REDUCING BUSHING, ELBOW, AND TEE.

STEP 3. REMOVE NUTS, LOCKWASHERS, AND MOUNTING BRACKET. REMOVE AIR PRESSURE GAGE.

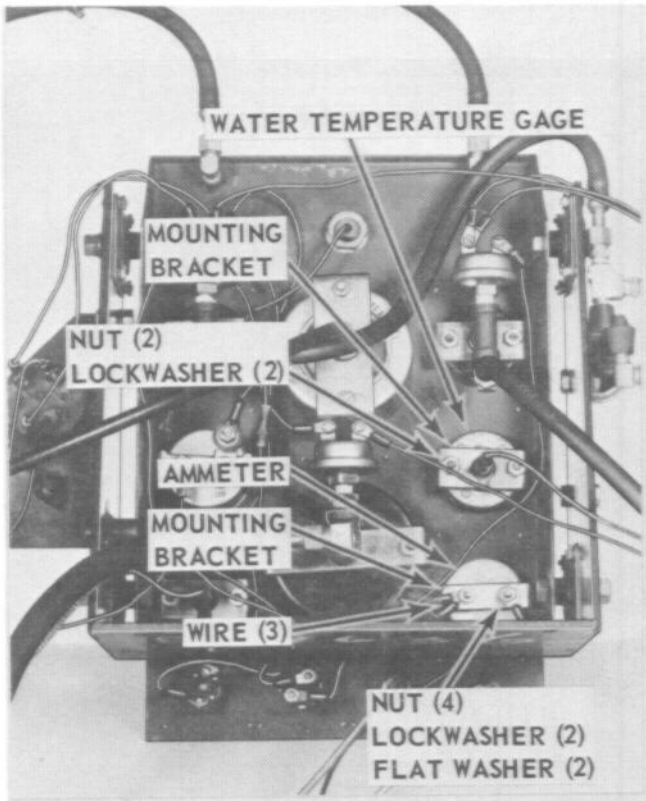
INSTALLATION

STEP 1. PLACE AIR PRESSURE GAGE ON INSTRUMENT PANEL AND INSTALL MOUNTING BRACKET. SECURE WITH NUTS AND LOCKWASHERS.

STEP 2. INSTALL TEE, ELBOW, REDUCING BUSHING, AND SWITCH.

STEP 3. CONNECT WIRES AND HOSE ASSEMBLY.

Figure 3-34. Instrument Panel Controls and Instruments, Removal and Installation (sheet 3 of 8).



REMOVAL

STEP 1. DISCONNECT WIRES.

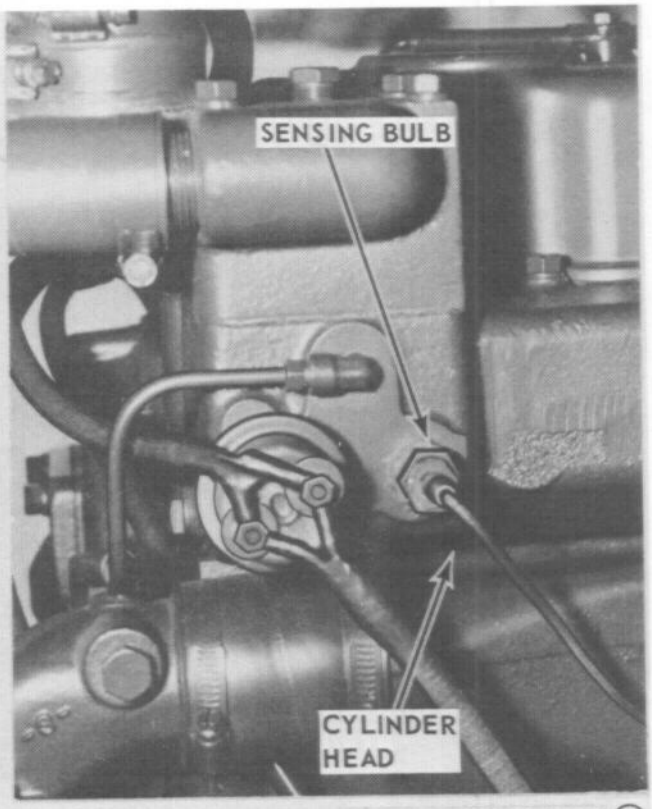
STEP 2. REMOVE NUTS, LOCKWASHERS, AND MOUNTING BRACKET. REMOVE AMMETER.

INSTALLATION

STEP 1. PLACE AMMETER ON INSTRUMENT PANEL AND INSTALL MOUNTING BRACKET. SECURE WITH NUTS AND LOCKWASHERS.

STEP 2. CONNECT WIRES (SEE FIGURE 1-3 FOR WIRING DIAGRAM).

G AMMETER; REMOVAL AND INSTALLATION.



ME 4310-338-15/3-34 (4)

REMOVAL

STEP 1. UNSCREW AND REMOVE WATER TEMPERATURE SENSING BULB FROM CYLINDER HEAD.

STEP 2. REMOVE SCREWS, LOCKWASHERS, AND MOUNTING BRACKET. REMOVE WATER TEMPERATURE GAGE.

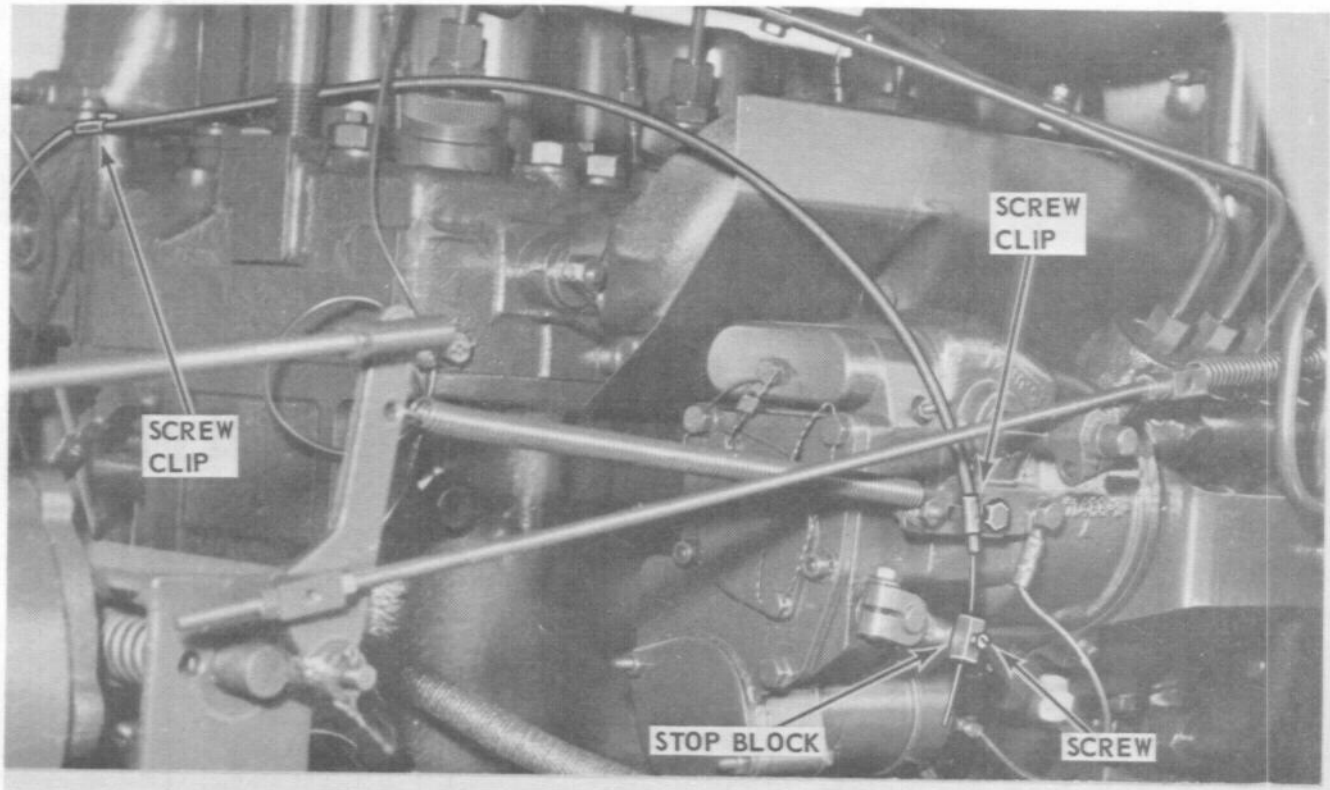
INSTALLATION

STEP 1. PLACE WATER TEMPERATURE GAGE ON INSTRUMENT PANEL AND INSTALL MOUNTING BRACKET. SECURE WITH NUTS AND LOCKWASHERS.

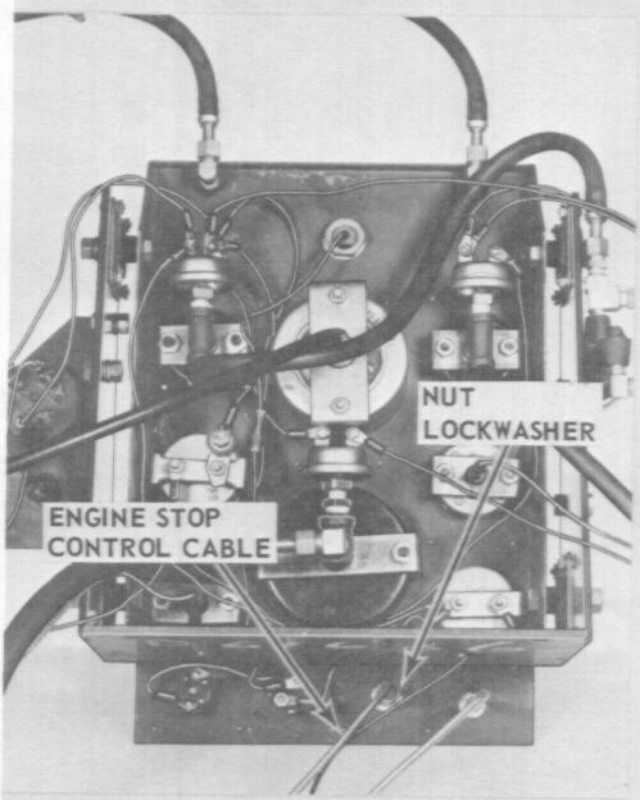
STEP 2. INSTALL AND TIGHTEN WATER TEMPERATURE SENSING BULB ON CYLINDER HEAD.

H WATER TEMPERATURE GAGE; REMOVAL AND INSTALLATION.

Figure 3-34. Instrument Panel Controls and Instruments, Removal and Installation (sheet 4 of 8).



ME 4310-338-15/3-34 (5)



REMOVAL

STEP 1. LOOSEN SCREW ON STOP BLOCK AND REMOVE CONTROL CABLE WIRE.

STEP 2. LOOSEN SCREWS ON CABLE CLIPS. SLIDE CONTROL CABLE OUT OF CLIPS.

STEP 3. REMOVE NUT AND LOCKWASHER. REMOVE CONTROL CABLE.

INSTALLATION

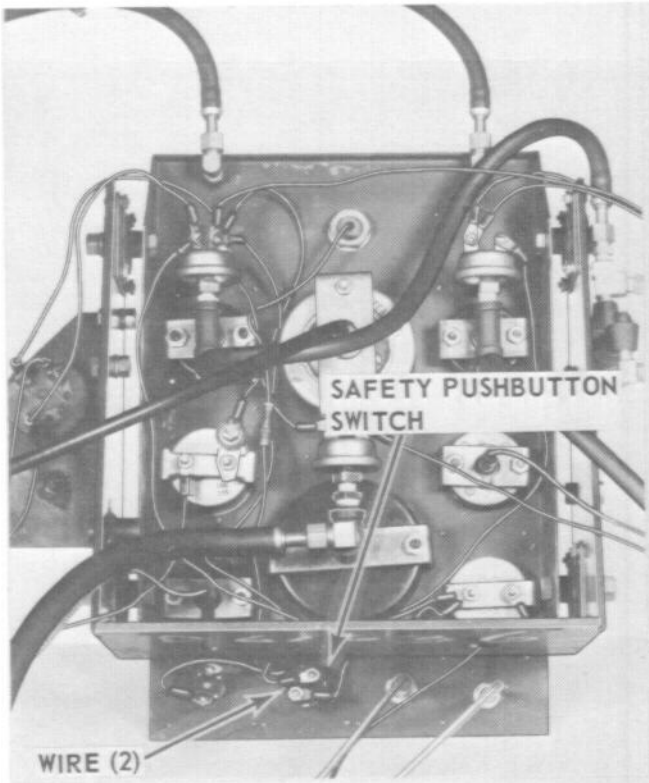
STEP 1. PLACE CONTROL CABLE IN MOUNTING POSITION AND SECURE WITH NUT AND LOCKWASHER.

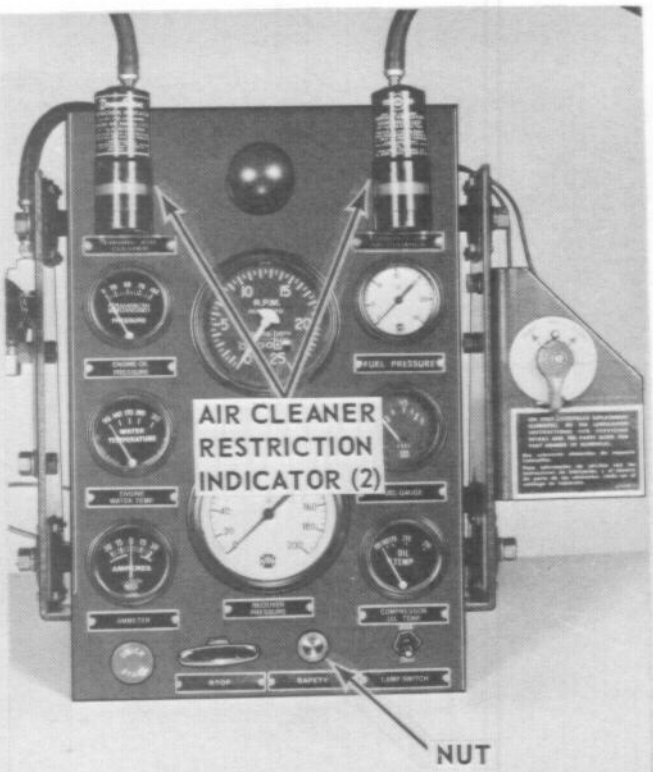
STEP 2. LOOSEN SCREWS ON CABLE CLIPS. SLIDE CONTROL CABLE INTO CLIPS AND TIGHTEN SCREWS.

STEP 3. INSTALL CONTROL CABLE WIRE IN STOP BLOCK AND SECURE WITH SCREW.

1 ENGINE STOP CONTROL CABLE; REMOVAL AND INSTALLATION.

Figure 3-34. Instrument Panel Controls and Instruments, Removal and Installation (sheet 5 of 8).





ME 4310-338-15/3-34 (6)

REMOVAL

STEP 1. DISCONNECT WIRES.

STEP 2. REMOVE NUT AND SWITCH.

INSTALLATION

STEP 1. PLACE SWITCH IN MOUNTING POSITION AND SECURE WITH NUT.

STEP 2. CONNECT WIRES.

J SAFETY PUSHBUTTON SWITCH; REMOVAL AND INSTALLATION.

REMOVAL

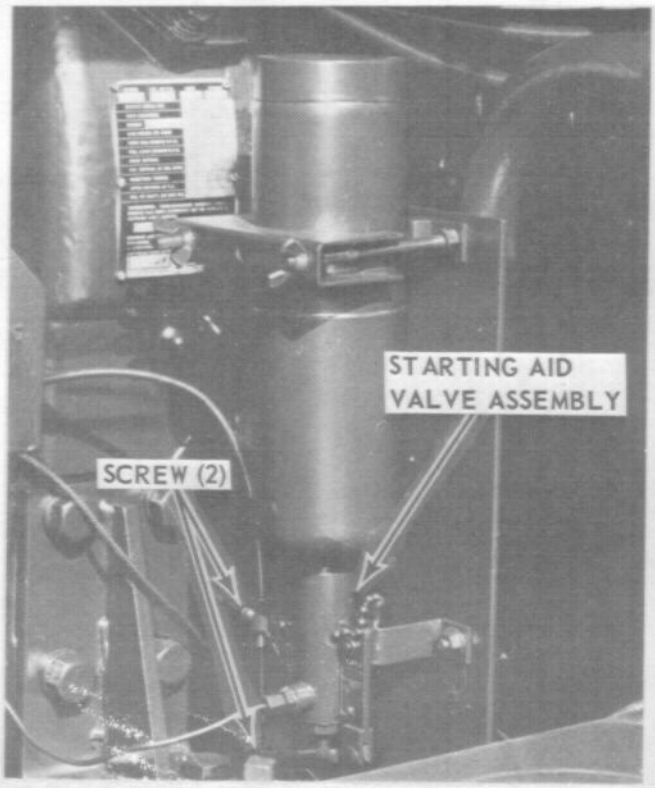
UNSCREW AND REMOVE AIR CLEANER RESTRICTION INDICATOR FROM INSTRUMENT PANEL.

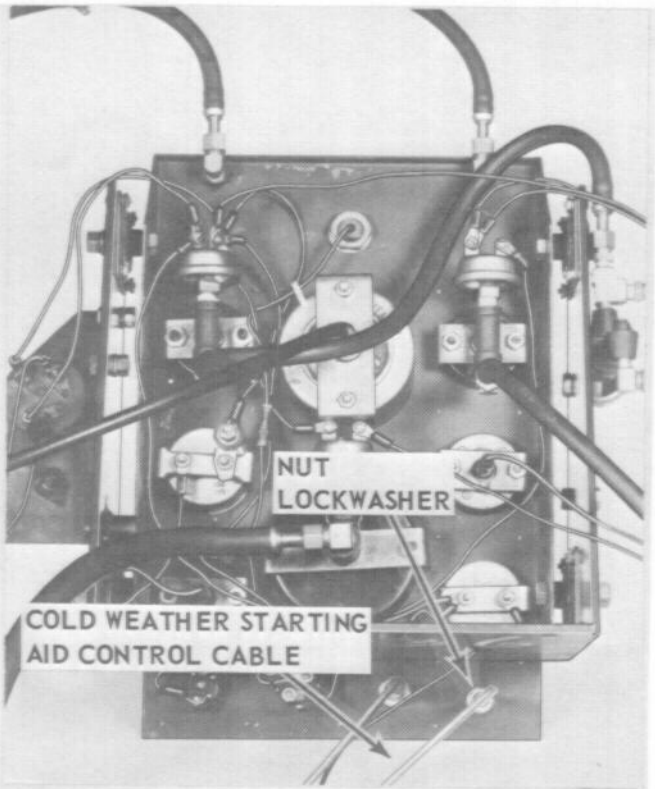
INSTALLATION

SCREW AIR CLEANER RESTRICTION INDICATOR ONTO INSTRUMENT PANEL AND TIGHTEN.

K AIR CLEANER RESTRICTION INDICATORS; REMOVAL AND INSTALLATION.

Figure 3-34. Instrument Panel Controls and Instruments, Removal and Installation (sheet 6 of 8).





ME 4310-338-15/3-34 (7)

REMOVAL

STEP 1. LOOSEN SCREWS ON VALVE ASSEMBLY AND REMOVE CONTROL CABLE.

STEP 2. REMOVE NUT AND LOCKWASHER. REMOVE CONTROL CABLE.

INSTALLATION

STEP 1. PLACE CONTROL CABLE IN MOUNTING POSITION AND SECURE WITH NUT AND LOCKWASHER.

STEP 2. INSTALL CABLE ON VALVE ASSEMBLY AND TIGHTEN SCREWS.

L **COLD WEATHER STARTING AID CONTROL CABLE; REMOVAL AND INSTALLATION.**

Figure 3-34. Instrument Panel Controls and Instruments, Removal and Installation (sheet 7 of 8).