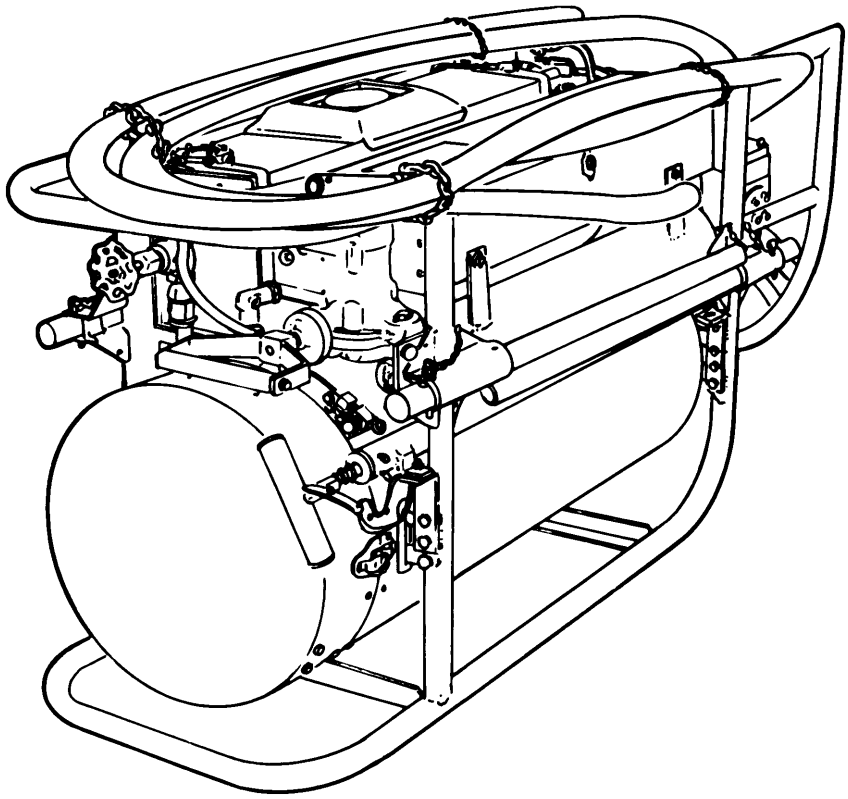
TM 3-1040-276-23

ORGANIZATIONAL AND DIRECT SUPPORT MAINTENANCE MANUAL

GENERATOR, SMOKE, MECHANICAL: PULSE JET, M3A4 (1040-01-143-9506)



HEADQUARTERS, DEPARTMENT OF THE ARMY

OCTOBER 1985

WARNINGS

FIRE HAZARD

Flames, hot gases, or hot fog oil may shoot out from smoke outlet nozzles up to 24 hours after operation. Use two people at nozzle end, one on each side, to lift and carry a hot smoke generator.

Gasoline fumes may be present even after tank has been washed and can cause an explosion and injury to personnel. Do not use open flame torch of any kind to apply heat to fuel tank for soldering. Use a soldering iron to apply heat, but do not heat iron to point it glows or can cause a spark.

A hot engine may cause fuel or trapped gases to ignite. Wait till engine cools before attempting procedure. Make sure float bowl toggle valve is off before pulling fuel tube from metering jet. Use a suitable authorized container for draining fuel.

HEAT HAZARD

Fog oil pump may become very hot during operation. Make sure fog oil pump air motor is cool before checking for stuck rocker arms, pump rod assembly, or tappet valves to avoid injury.

HEALTH HAZARD

Gasket made of lead. Wash hands to avoid lead poisoning after handling lead gasket.

Asbestos fibers can cause cancer if inhaled. Handle asbestos gasket with care.

FIRST AID

For first aid information, refer to FM21-11.

CHANGE

No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *19 June 1989*

Organizational and Direct Support
Maintenance Manual
GENERATOR, SMOKE, MECHANICAL: PULSE JET, M3A4
(NSN 1040-01-143-9506)

TM 3-1040-276-23, 11 October 1985, is changed as follows:

1. New or changed material is indicated by a vertical bar in the margin of the page.

2. Changes to illustrations are indicated by a pointing hand.

3. Remove old pages and insert new pages as indicated below.

Remove pages	*Insert pages*
2-1 thru 2-14	2-1 thru 2-14
2-23 and 2-24	2-23 and 2-24
2-35 thru 2-46	2-35 thru 2-46
None	2-48.1/(2-48.2 blank)
2-61 thru 2-66	2-61 thru 2-66
None	2-66.1 thru 2-66.21/(2-66.22 blank)
2-67 thru 2-70	2-67 thru 2-71/(2-72 blank)
3-5 and 3-6	3-5 and 3-6
3-9 thru 3-14	3-9 thru 3-14
3-21 and 3-22	3-21 and 3-22
3-39 thru 3-42	3-39/(3-40 blank)
B-3 thru B-5/(B-6 blank)	B-3 thru B-6
D-1 thru D-3/(D-4 blank)	D-1 thru D-4
Index 1 and Index 2	Index 1 and Index 2

4. File this change sheet in back of the publication for reference purposes.

By Order of the Secretary of the Army:

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

Official:
WILLIAM J. MEEHAN
Brigadier General, United States Army
The Adjutant General

Distribution:
To be distributed in accordance with DA Form 12-28, requirements for TM 3-1040-276-23.

TECHNICAL MANUAL
No. 3-1040-276-23

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 11 October 1985

Organizational and Direct Support Maintenance Manual

GENERATOR, SMOKE, MECHANICAL: PULSE JET, M3A4 (1040-01-143-9506)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Armament, Munitions, and Chemical Command, ATTN: AMSMC-MAR-T (A), Aberdeen Proving Ground, MD 21010-5423. A reply will be furnished to you.

HOW-TO-USE THIS MANUAL

GENERAL. When using this manual, check all warnings and cautions before operating the M3A4 smoke generator and review the entire maintenance procedure before beginning the maintenance task. References are to pages, figures, or other publications. TM 3-1040-255-10 provides procedures for installing the M2 smoke generator mount.

INDEXES. Three indexes provide quick access to parts of this manual.

a. *Table of Contents.* Lists in order all chapters and their sections and appendixes. Gives page references.

b. *Symptom Index.* Indexes the common malfunctions that may be reported to you by the operator or that you may find during maintenance.

c. *Alphabetical Index.* Lists page numbers for each paragraph and appendix.

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS. Chapter 2 covers the following information:

a. *Repair Parts; Special Tools; Test, Measurement, and Diagnostic Equipment (TMDE); and Support Equipment.*

b. *Service Upon Receipt.* Gives procedures for servicing smoke generators upon receipt.

c. *Preventive Maintenance Checks and Services.* Lists mandatory semiannual inspections and services.

d. *Troubleshooting Procedures.* Provides the typical malfunctions reported by the operator to organizational maintenance. Lists the tests or inspections, and sequential steps to be taken to correct failures reported on the generator. Refers to organizational maintenance instructions required to correct the problem.

e. *Organization/Maintenance Procedures.* Provides initial setup and detailed procedures for performing maintenance functions authorized by the MAC, appendix B.

DIRECT SUPPORT MAINTENANCE INSTRUCTIONS. Chapter 3 covers the following information.

a. *Repair Parts; Special Tools; Test Measurement, and Diagnostic Equipment (TMDE); and Support Equipment.*

b. *Direct Support Maintenance Procedures.* Provides initial setup and detailed procedures for performing maintenance functions authorized by the MAC, appendix B.

APPENDIXES. This appendixes covers the following information.

a. *Appendix A.* Lists all references used.

b. *Appendix B.* Contains the maintenance allocation chart (MAC) for the M3A4 smoke generator.

c. *Appendix C.* Lists expendable or durable supplies needed to operate and maintain the M3A4 smoke generator.

d. *Appendix D.* Lists and illustrates items requiring manufacture.

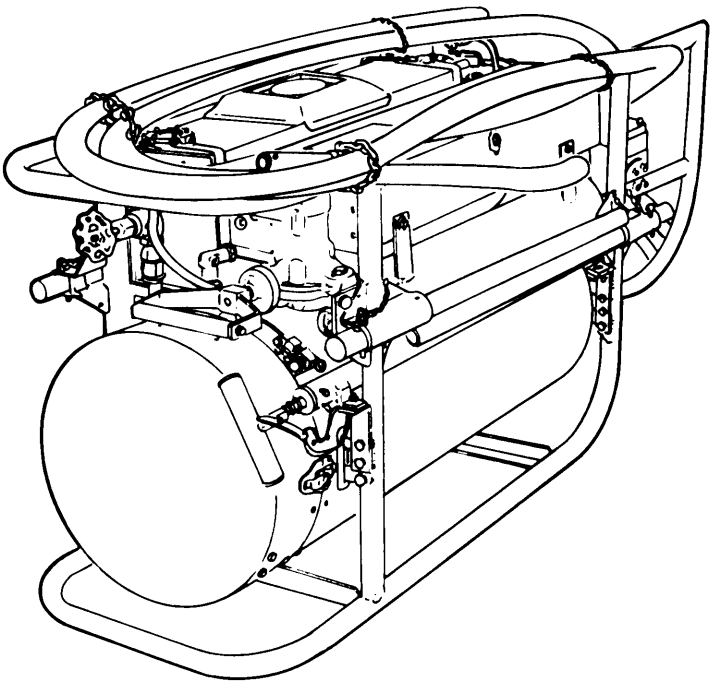
EXAMPLE. You are a Quartermaster and Chemical Equipment Repairer, MOS 63J. You have received an M3A4 smoke generator from the operator for repair at organizational maintenance level. The operator reports that the fog oil pump fails to pump fog oil. (Note: The same methods of finding information apply to direct support maintenance.)

a. *How do you start?* Look at the table of contents in the front of this manual. On the left side you find the listing chapter 2, Organizational Maintenance, section IV, Troubleshooting Procedures, telling you to go to page 2-8.

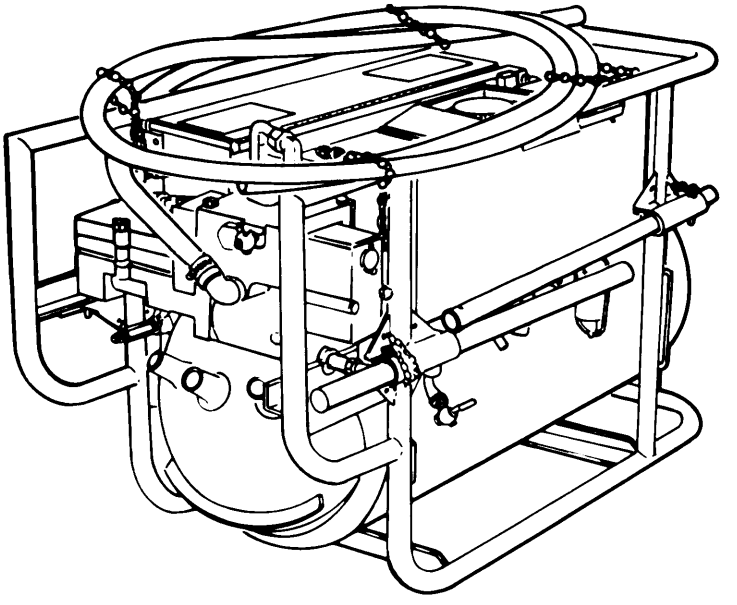
b. *What malfunction did the operator report for the generator turned into you for repair?* If the DA Form 2404 does not tell you, ask the operator to describe the problem.

c. *How do you fix a problem?* Follow the step-by-step instructions in the troubleshooting table. The instructions under corrective action tell you what maintenance procedures to follow and the page number. Follow the procedures until the problem is fixed or the instructions tell you to refer the problem to direct support maintenance for repair of the generator.

d. *What supplies and equipment will you need?* Go to the alphabetical index in the back of the manual. Look for the major component you are going to fix. For example, M4 fog oil pump maintenance instructions for organizational maintenance refer you to page 2-61. There, under Initial Setup, you will find a list of tools, supplies, and materials you will need.



FRONT COVER END



SMOKE DISCHARGE END

FULL EXTERNAL VIEW OF M3A4 PULSE JET MECHANICAL SMOKE GENERATOR

CHAPTER 1
INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE.

a. *Type of Manual.* Organizational and Direct Support Maintenance Manual.

b. *Model Number and Equipment* Name. M3A4 pulse jet mechanical smoke generator.

c. *Purpose of Equipment.* To generate large area smoke screens that will reduce direct visual observation and conceal troops, vehicles, or installations from enemy view.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management System (TAMMS), as contained in Maintenance Management Update.

1-3. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE. Destroy M3A4 smoke generator components by mechanical means, demolition, fire, or improper operation as described in TM 43-0002-31.

1-4. PREPARATION FOR STORAGE OR SHIPMENT. Refer to TM 740-90-1 for administrative storage instructions.

1-5. OFFICIAL NOMENCLATURE, NAMES, AND DESIGNATIONS. This listing includes nomenclature cross-references used in this manual.

Common Name	*Official Nomenclature*
Air hose	Nonmetallic hose assembly
Air pump assembly	Manual inflating pump
Air release button	Control valve and moisture proof boot
Engine tube assembly	Engine manifold
Fog oil exhaust hose	Nonmetallic hose
Fog oil inlet hose	Rubber hose assembly
Fog oil line	Tube, copper assembly
Fuel gage	Liquid quantity indicator
Fuel hose	Nonmetallic hose assembly
Fuel shutoff valve	Plug cock
Lock pin	Quick release pin
Ignition cable	Special purpose cable
M3A4 smoke generator	Generator, Smoke. Mechanical: Pulse Jet, M3A4
Pin and chain assembly	Headed straight pin
Pressurizing line	Tube assembly
Purging air line	Tube assembly
Toggle valve	Shutoff cock

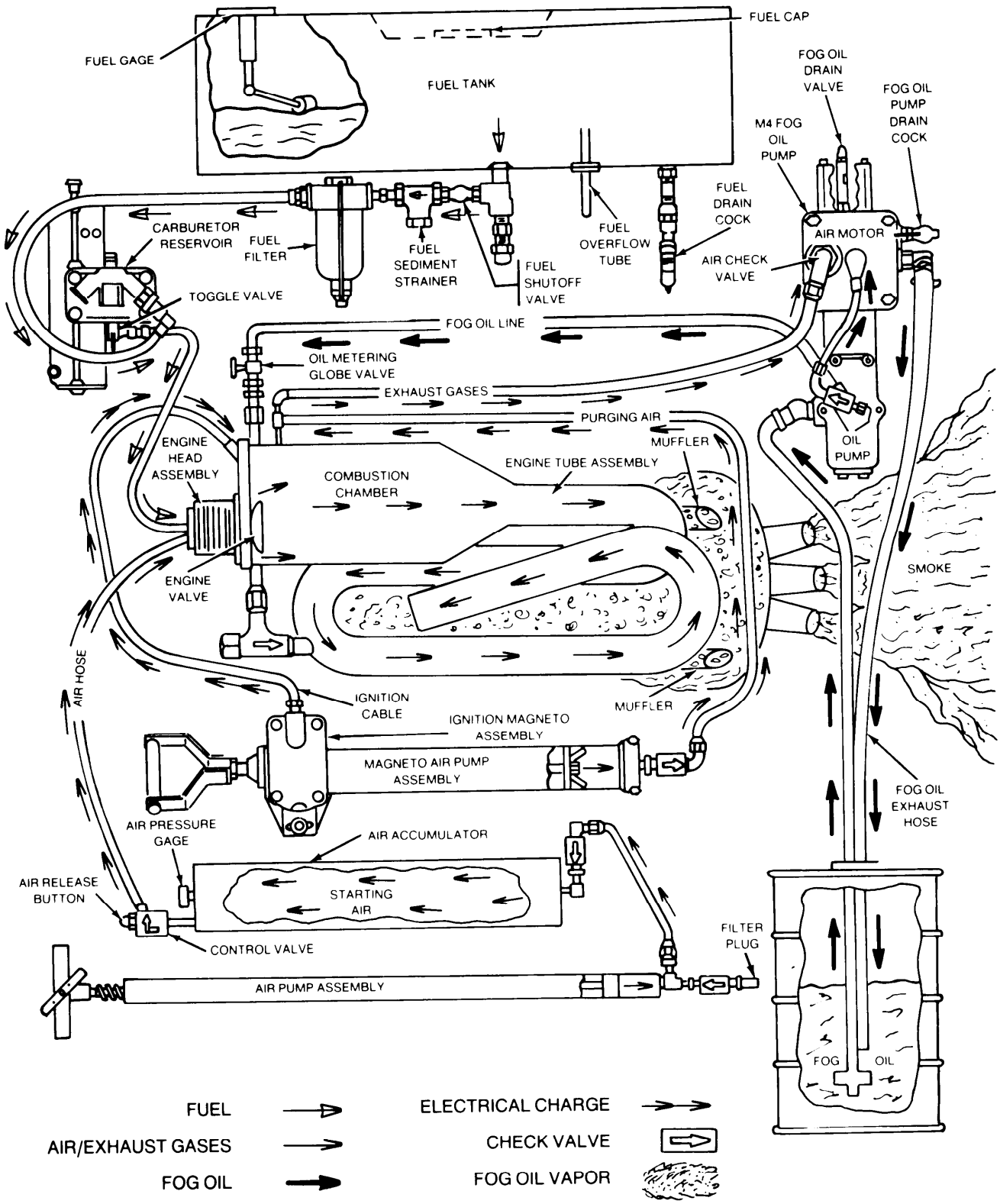
1-6. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR's). If your M3A4 smoke generator needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at Commander, US Army Armament, Munitions, and Chemical Command, ATTN: AMSMC-QAD (R), Rock Island, IL 61299-6000. We'll send you a reply.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-7. EQUIPMENT DATA. See TM 3-1040-276-10.

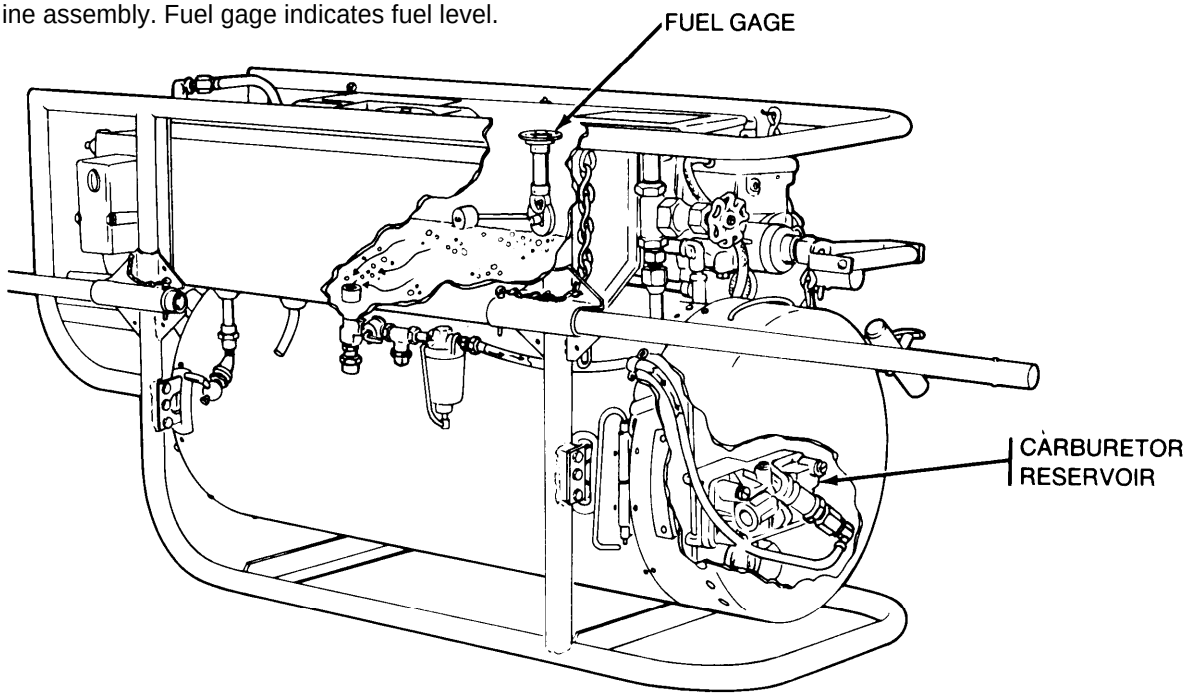
Section III. PRINCIPLES OF OPERATION

1-8. PRINCIPLES OF OPERATION. The M3A4 pulse jet mechanical smoke generator uses fuel (gasoline), air pressure, exhaust gases, and fog oil to start, operate, generate smoke, or purge the generator as shown on the following schematic flow diagram. Each of the maintenance significant functional components of the M3A4 smoke generator described below is represented in this diagram.

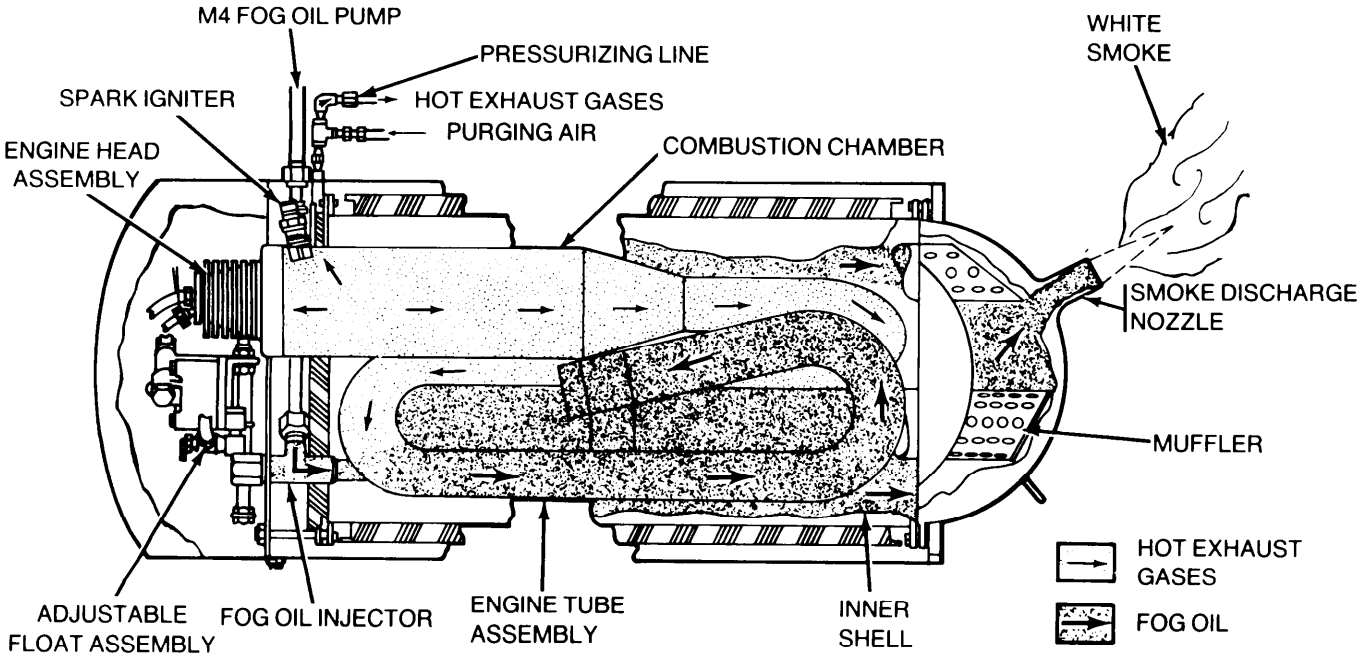


SCHEMATIC DIAGRAM OF MAINTENANCE SIGNIFICANT FUNCTIONAL COMPONENTS OF M3A4 SMOKE GENERATOR

a. *Fuel Tank Assembly.* Supplies fuel (by gravity flow) to carburetor reservoir of adjustable float assembly on engine assembly. Fuel gage indicates fuel level.



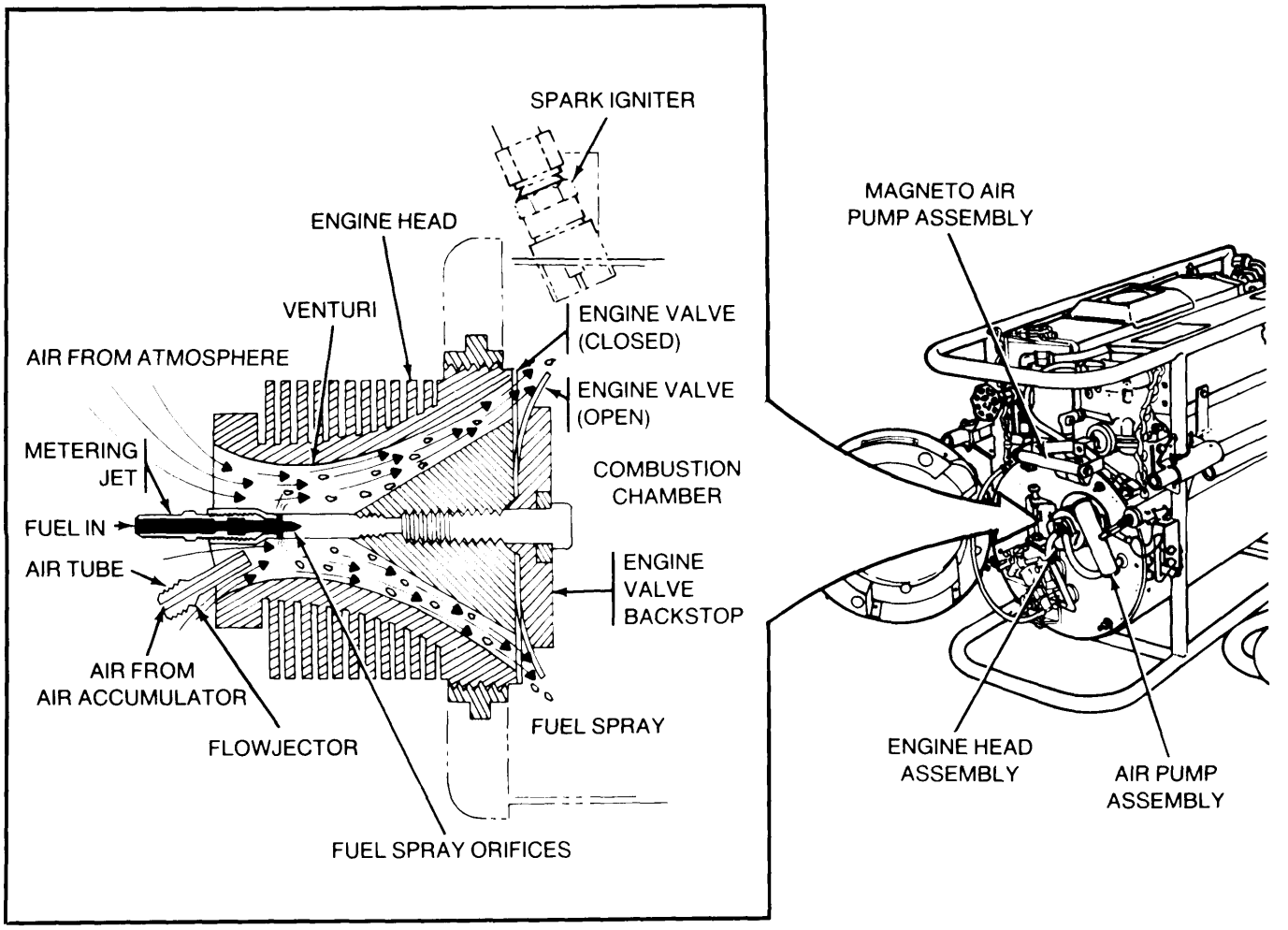
b. *Engine Assembly.* Gasoline-operated, pulse jet, single-cycle engine that heats fog oil to generate smoke. Adjustable float assembly meters fuel to engine head assembly. Engine head assembly injects fuel-air mixture into combustion chamber of engine tube assembly. Spark igniter initially ignites fuel-air mixture. Some hot exhaust gases are routed through a pressurizing line to drive M4 fog oil pump. The remaining gas vaporizes fog oil injected in engine tube and forces fog oil vapors into inner shell, through mufflers, and out smoke discharge nozzles. Once discharged, cooler air condenses fog oil vapors into small droplets to form dense white smoke.



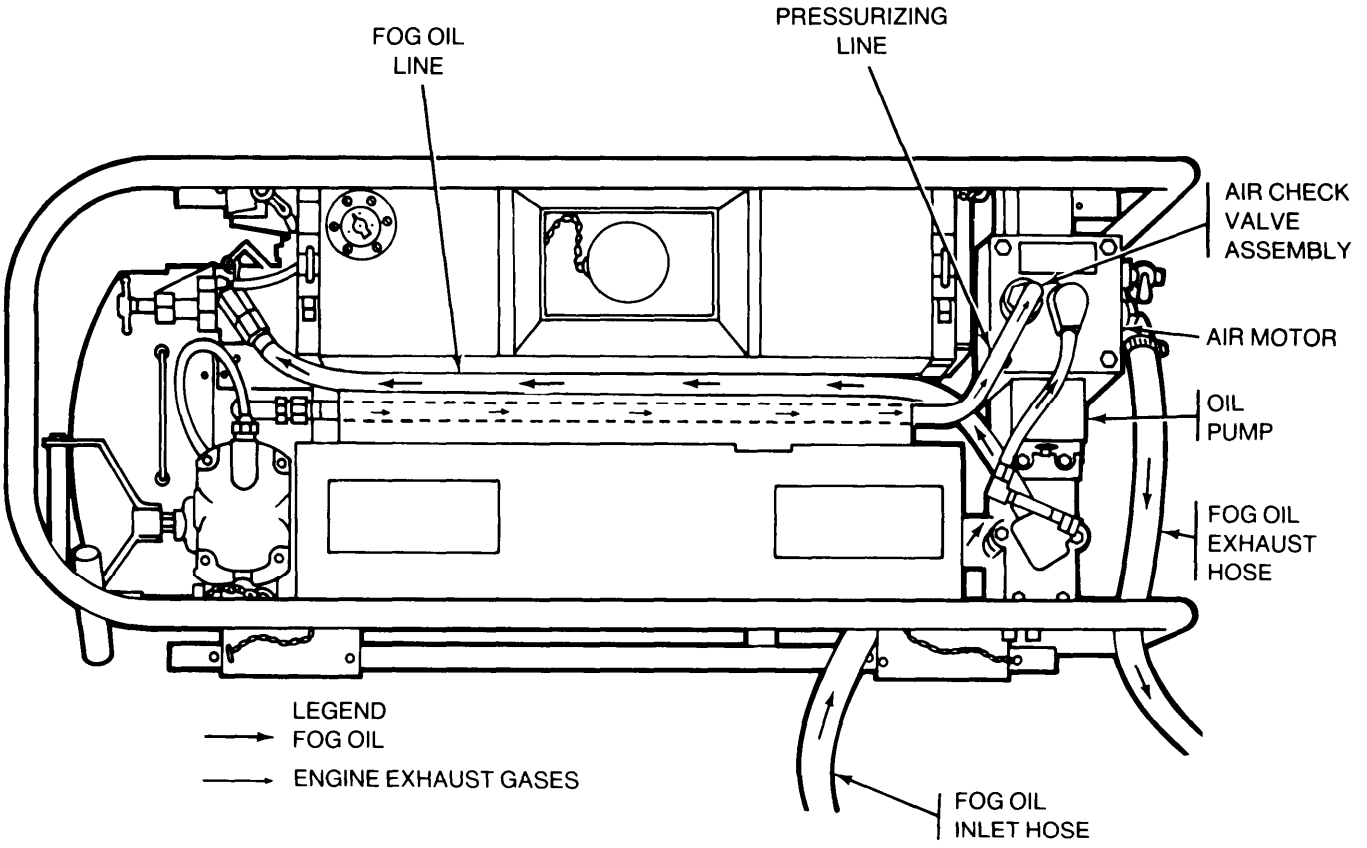
c. *Engine Head Assembly.* Pulse-jet engine-head and adapter assembly with a metering jet, flowjector, and engine valve which is held to rear of engine head by an engine valve backstop, washer, and cap screw. Fuel flows by gravity into metering jet. Air from air accumulator passes over three fuel spray orifices in flowjector to draw fuel into engine head venturi. Air pressure opens engine valve as far as engine valve backstop and forces fuel-air mixture into combustion chamber of engine tube assembly. Spark from spark igniter explodes fuel-air mixture closing engine valve and forcing burning gases through engine tube. Shock waves moving through engine tube away from engine valve develop negative pressure on combustion chamber side of engine valve. This vacuum opens engine valve and draws air into combustion chamber. As air from atmosphere passes over fuel spray orifices in flowjector, fuel is drawn into air stream past engine valve. Once in combustion chamber, fuel-air mixture is ignited by hot gases in chamber and cycle begins again without a spark from spark igniter.

d. *Air Pump Assembly.* Hand-operated plunger-type air pump. Pressurizes air accumulator assembly which provides pressurized air through air line and air hose to engine head assembly.

e. *Magneto-Air Pump Assembly.* Hand-operated plunger-type air pump and magnetic-electric magneto. Pump handle is connected to rack which engages magneto gear. Sends electric charge through ignition cable and spark igniter to start engine. Pumps air through air pump line to purge hot exhaust gases from engine tube assembly after shut-down of generator.



f. *M4 Fog Oil Pump.* Driven by an air motor. Engine exhaust gases enter pressurizing line through air check valve on M4 fog oil pump air motor. Pressure from engine exhaust gases drives the air motor piston which is connected to the oil pump piston by a piston rod. Oil pump draws fog oil through fog oil inlet hose inserted in fog oil drum. Oil pump pumps fog oil into fog oil line leading to engine assembly. Excess oil lubricates air motor and is returned to fog oil drum through fog oil exhaust hose.



CHAPTER 2
ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

2-1. COMMON TOOLS AND EQUIPMENT. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) assigned to your unit.

2-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT. Refer to the Maintenance Allocation Chart (app B) for support equipment.

2-3. REPAIR PARTS. Repair parts are listed and illustrated in TM 3-1040-276-23P.

Section II. SERVICE UPON RECEIPT

SERVICE UPON RECEIPT - SMOKE GENERATOR

LOCATION	ITEM	ACTION	REMARKS
1 Shipping Container	Smoke generator	Unpack.	
2 Smoke Generator	a. Components	a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364, Report of Discrepancy. (ROD).	
		b. Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA PAM 738-750.	
		c. Check to see whether the equipment has been modified.	Refer to DA PAM 310-1.
	b. Smoke generator	Perform operator and monthly organizational PMCS and operate smoke generator.	TM 3-1040-276-10

Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-4. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

a. *Purpose.* The purpose of organizational PMCS is to systematically and periodically inspect and service the M3A4 smoke generator:

(1) To insure that the equipment is ready for operation at all times.

(2) To perform those PMCS procedures that are beyond the capability of the operator/crew.

(3) To discover and correct defects before they result in serious damage or failure requiring time-consuming repairs or replacement.

b. *Use.*

(1) Schedule each of your unit's smoke generators for organizational PMCS at specified intervals.

(2) Use the schedule below as a check list each time you perform the PMCS to make sure that you perform all required procedures.

(3) Report and record all deficiencies and shortcomings, together with corrective actions taken, on DA Form 2404, Equipment Inspection and Maintenance Worksheet.

(4) Make sure that you record the serial numbers for both the smoke generator and its M4 fog oil pump assembly.

(5) Because it takes two persons to lift and carry the smoke generator and the operator knows his/her smoke generator best, use the assigned operator, if available, to assist in performing the organizational PMCS.

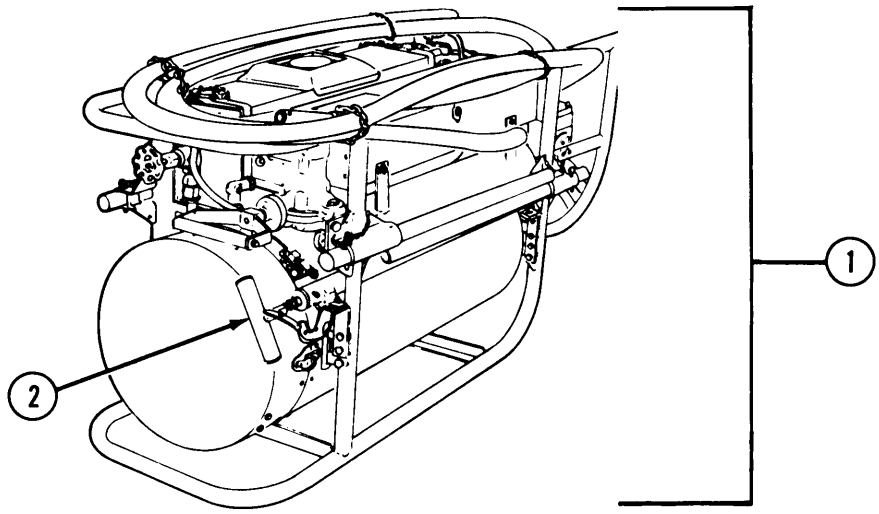
c. *Explanation of Columns on the PMCS Schedule.*

(1) Item number column. Checks and services are numbered in order of performance. Use this column as a source of item numbers for the TM Number Column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording results of PMCS.

(2) Interval column designates the interval at which the procedures are to be performed. M means monthly. S means semiannually. The dots indicate the items to be inspected and the procedure to be performed.

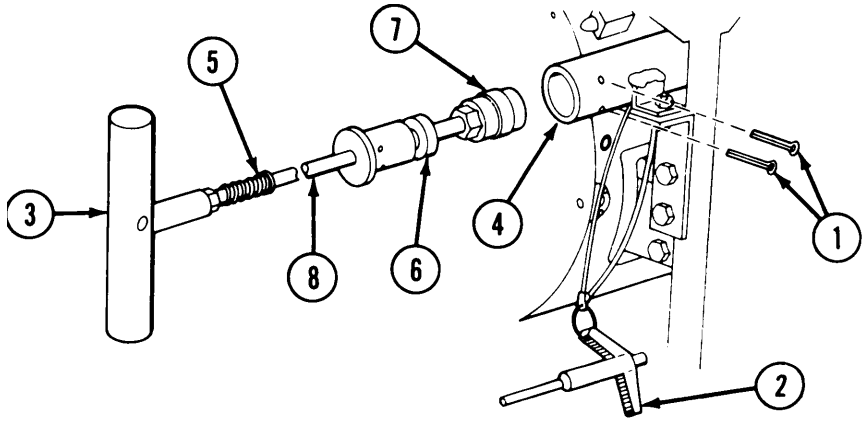
(3) Item to be inspected column. The items listed in this column are divided into groups indicating the portion of the equipment of which they are part. The common name or official nomenclature as shown on the maintenance allocation chart (app B) is used for this purpose.

(4) Procedures column. This column briefly describes the procedure for performing the check or service. Whenever replacement or repair is recommended, reference is made to page number for the applicable maintenance instruction.

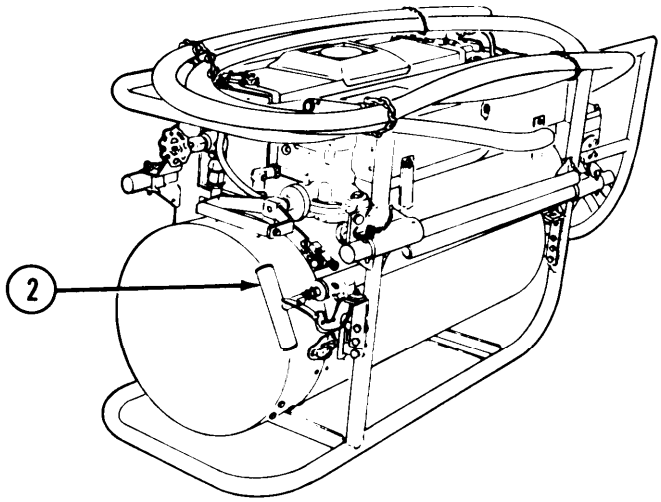


M - MONTHLY S - SEMIANNUALLY

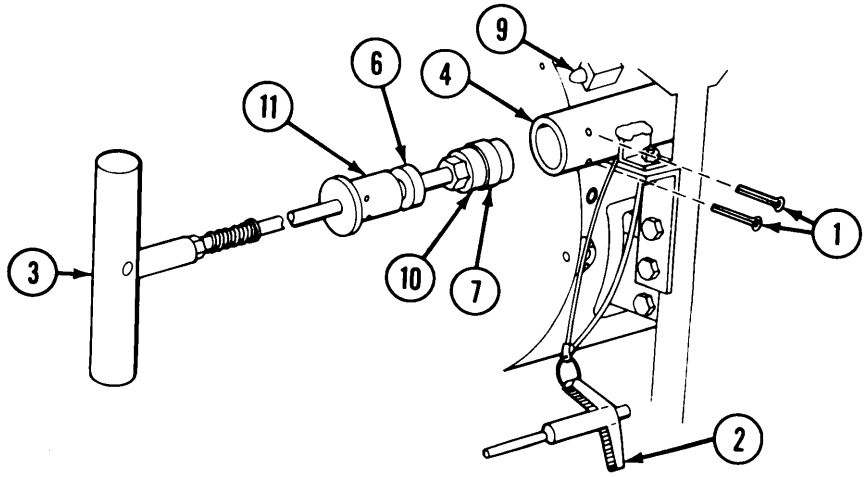
Item No.	Interval M	Interval S	Item To Be Inspected	Procedures
1		●	M3A4 smoke generator	Perform operator PMCS (TM 3-1040-276-10). Tighten all loose screws and nuts. Perform authorized organizational maintenance as required. Evacuate to direct support maintenance as required. Make sure instruction plate (caution plate) is legible and not torn. Replace if necessary (p 2-14).
2	●		Air pump assembly	a. Open the front cover. Straighten and remove two cotter pins (1), extract lock pin (2) and pull air pump handle (3) out to remove air pump components from air pump tube (4). b. Clean parts with dry cleaning solvent (item 4, app C) and dry with rag (item 6, app C). c. Check for broken or missing parts. Check for bent or missing washer (5), cut, torn, or frayed felt washer (6). Check for deformed or frayed sleeve nut (7). Check for bent air pump rod (8) and bent or punctured air pump tube (4). Replace missing or damaged parts (p 2-67).



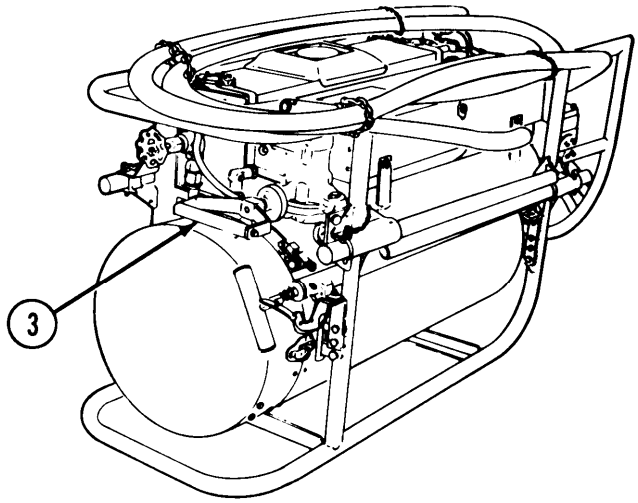
ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES SCHEDULE (CONT)



M - MONTHLY S - SEMIANNUALLY

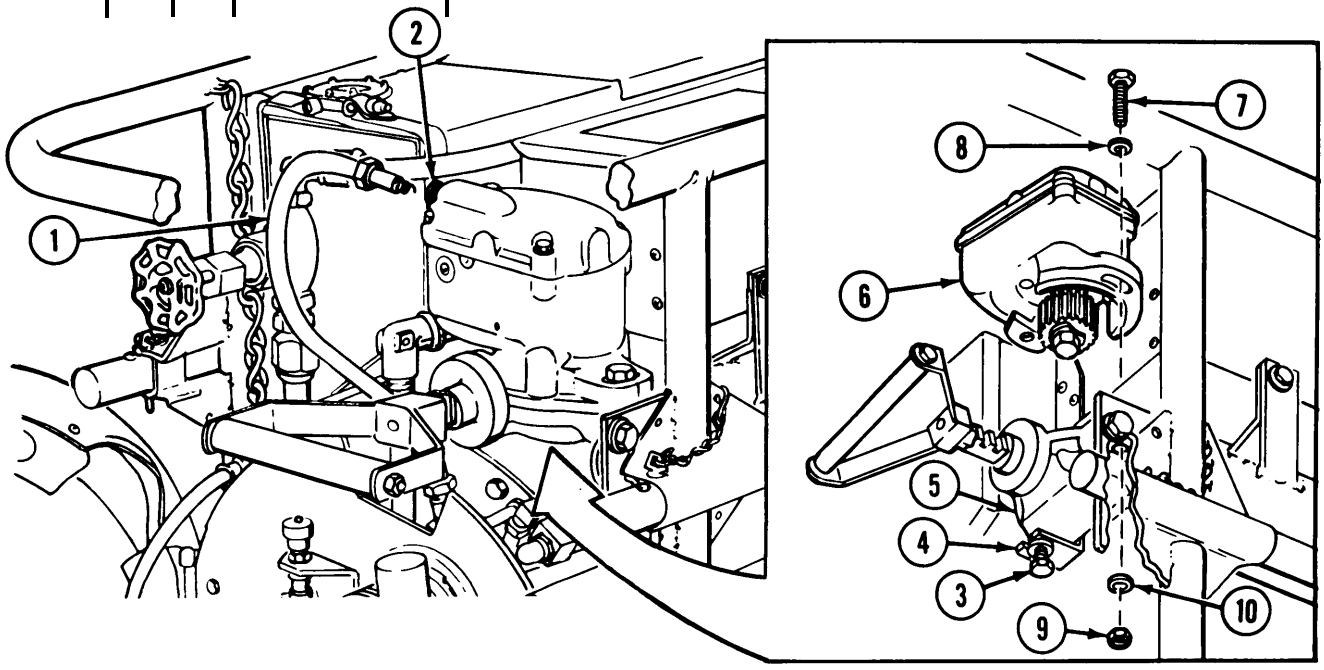
Item No.	Interval M	Interval S	Item To Be Inspected	Procedures
2	●		Air pump assembly (cont)	d. Lubricate sleeve nut (7), inside of air pump tube (4), and felt washer (6) with lubricating oil (item 6, app C). e. Press air release button (9) to release pressure from accumulator assembly before inserting air pump piston (10). f. Insert air pump piston (10) end into air pump tube (4) and press pump rod bushing (11) into tube while alining two holes in bushing with two holes in tube. Insert two cotter pins (1) through two holes in air pump tube and pump rod bushing. Bend ends of cotter pins. g. Perform operator's PMCS on air pump assembly (TM 3-1040-276-10) and troubleshoot if necessary (p 2-67). h. Insert lock pin (2) into air pump handle (3). 

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES SCHEDULE (CONT)

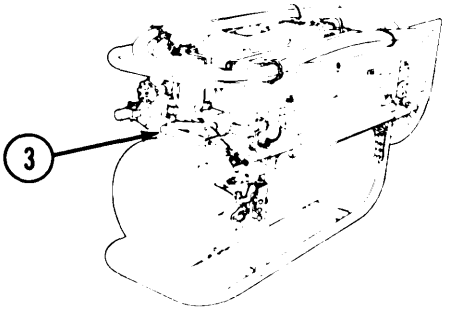


M - MONTHLY S - SEMIANNUALLY

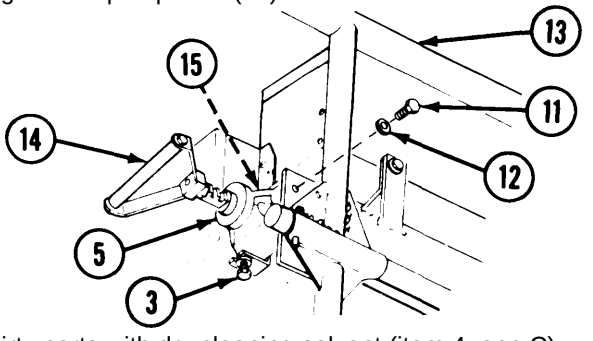
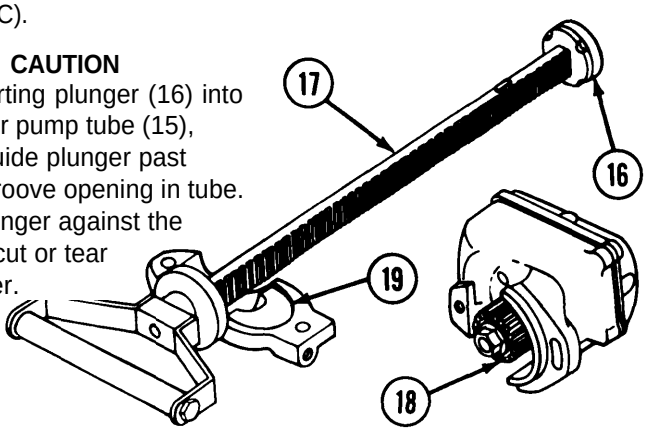
Item No.	Interval M	Interval S	Item To Be Inspected	Procedures
3	●		Magneto air pump assembly	a. Unwrap fog oil inlet and exhaust hoses. b. Disconnect ignition cable (1) from ignition magneto outlet (2). c. Remove cap screw (3) with washer from bracket (4), clamp (5), and ignition magneto assembly (6) housing. d. Remove cap screw (7), flat washer (8), nut (9), and lockwasher (10), from ignition magneto assembly (6) housing and clamp (5). Lift magneto assembly (6) from clamp (5).



ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES SCHEDULE (CONT)



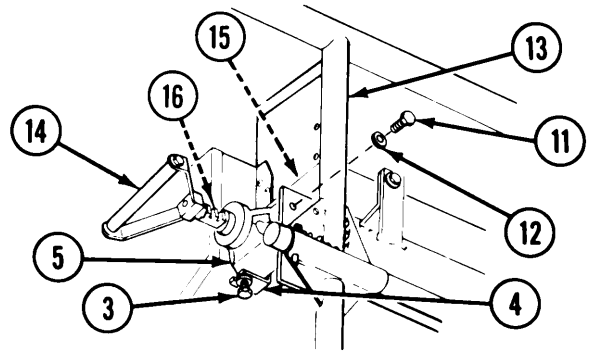
M - MONTHLY S - SEMIANNUALLY

Item No.	Interval M	Interval S	Item To Be Inspected	Procedures
3	●		Magneto air pump assembly (cont)	e. Remove cap screw (11) and washer (12) from frame (13) and clamp (5). f. Pull air pump handle (14) and remove clamp (5) with assembled items from magneto air pump tube (15).  g. Clean dirty parts with dry cleaning solvent (item 4, app C). h. Check plunger (16) for cuts, brittleness, or deterioration. i. Check for bent rack (17) and broken rack teeth. j. Check for broken teeth on gear (18) and check if gear turns easily. k. Disassemble, clean, inspect, repair, replace, and reassemble parts as required (p 2-51). l. Fill grease cup (19) with aircraft grease (item 5, app C), and lubricate inside of magneto air pump tube and plunger (16) with lubricating oil (item 6, app C). **CAUTION** When inserting plunger (16) into magneto air pump tube (15), carefully guide plunger past edges of groove opening in tube. Forcing plunger against the edges will cut or tear the plunger. 

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES SCHEDULE (CONT)

M - MONTHLY S - SEMIANNUALLY

Item No.	Interval M	Interval S	Item To Be inspected	Procedures
3	●		Magneto air pump assembly (cont)	m. While holding air pump handle (14), insert plunger (16) into air pump tube (15) and push handle and clamp until clamp mates with tube and slides onto bracket (4). Install cap screw (11) and washer (12) through frame (13) and into clamp (5).



NOTE

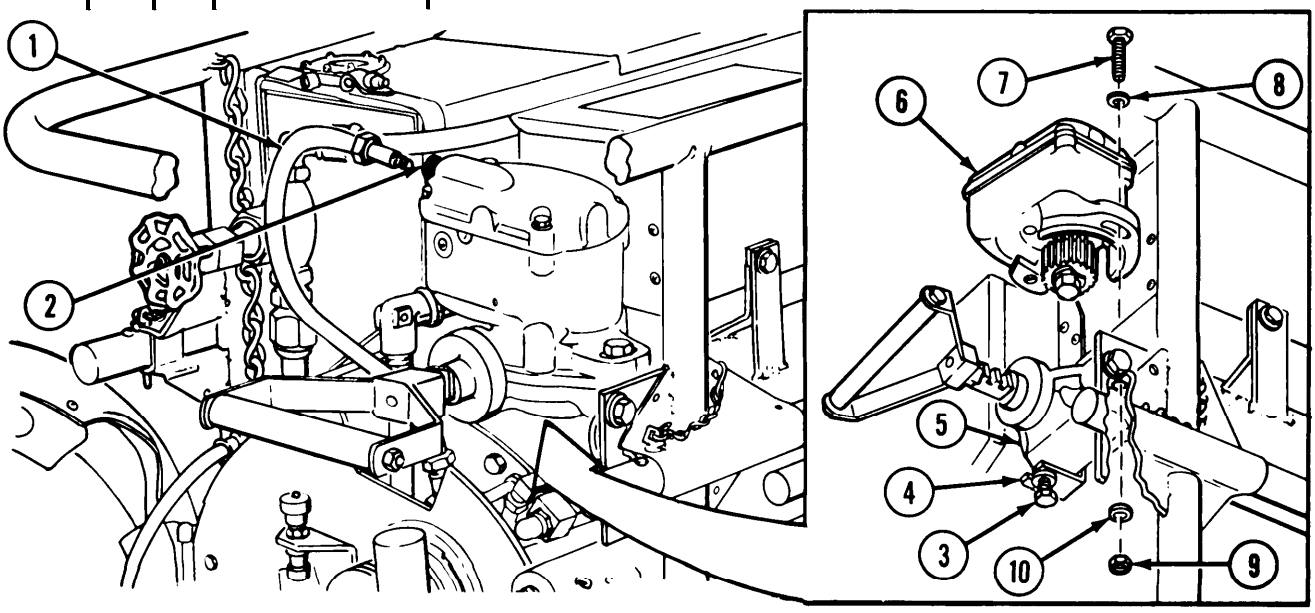
Aline teeth on rack with ignition magneto gear. Operate handle to make sure teeth are alined.

n. Position ignition magneto assembly (6) housing onto clamp (5) and install cap screw (3) with washer.

o. Install cap screw (7), flat washer (8), nut (9), and lockwasher (10) into ignition magneto assembly (6) housing and clamp (5).

p. Connect ignition cable (1) to ignition magneto assembly outlet (2).

q. Operate smoke generator (TM 3-1040-276-10).



Section IV. TROUBLESHOOTING PROCEDURES

2-5. ORGANIZATIONAL MAINTENANCE TROUBLESHOOTING PROCEDURES.

a. The table (p 2-8) lists the common malfunctions that may be reported to you by the operator or you may find during maintenance of the M3A4 smoke generator or its components. Perform the tests/inspections and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

c. Before you use the troubleshooting table, check with the operator to determine if all operator troubleshooting procedures for the reported malfunction have been followed. If in doubt, repeat the operator troubleshooting procedures before proceeding and after replacing faulty components.

SYMPTOM INDEX

TROUBLESHOOTING

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

1. AIR PRESSURE GAGE REGISTERS LOW PRESSURE.

Step 1. Check air accumulator and air pump assembly for loose fittings and connections and for cracks in air pump assembly and air accumulator.

Tighten loose fittings and connections and replace cracked air pump assembly (p 2-32) and air accumulator (p 2-15).

Step 2. Check air accumulator check valve.

Replace faulty air accumulator check valve (p 2-19).

TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

Step 3. Check air pump assembly check valve and filter plug.

Replace faulty check valve and filter plug (p 2-31).

Step 4. Check air pressure gage.

Replace faulty air pressure gage (p 2-20).

2. AIR PUMP ASSEMBLY/AIR ACCUMULATOR ASSEMBLY GIVES WEAK OR NO STARTING AIR BLAST.

Step 1. Air hose split, cut, or doesn't fit.

Replace air hose (p 2-42).

Step 2. Control valve stuck.

Replace control valve (p 2-20).

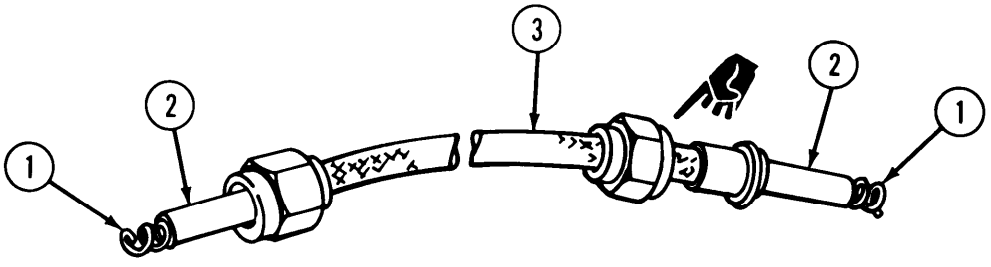
3. IGNITION CABLE/MAGNETO GIVES NO SPARK OR WEAK SPARK.

CAUTION

Handle ignition cable with care. Rough handling cracks insulator. When you pump magneto air pump handle, stop short in both directions. Use short strokes about 8 inches long. Rough handling cracks magneto air pump clamp.

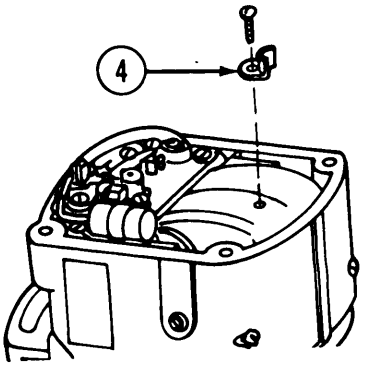
Step 1. Ignition cable contacts (1) corroded or insulator (2) cracked.

Clean cable contacts. Repair damaged cable (p 2-71).



TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION



Step 2. Ignition terminal sleeve contact corroded or insulator chipped or cracked.

Replace ignition terminal sleeve (p 2-55).

Step 3. Coil clip (4) missing or broken.

Replace coil clip (4) (p 2-55).

Step 4. Capacitor cracked or has broken lead.

Replace capacitor (p 2-55).

Step 5. Contact set points pitted or corroded. Separate points by inserting screwdriver blade and check points.

Replace contact set (p 2-55).

Step 6. Contact set point gap may need adjusting. Rotate cam so that breaker arm of contact set sits on high center. Then check gap between points with 0.015-inch feeler gage. Feeler should slide in between points with little resistance or play.

Adjust contact set point gap (p 2-55).

Step 7. Coil has cracked insulator or broken leads.

Replace ignition magneto (p 2-51).

Step 8. Rotor-coil induction producing weak electrical charge.

Replace ignition magneto (p 2-51).

4. FOG OIL EXHAUST HOSE GUSHES FOG OIL.

Step 1. Test for faulty air check valve assembly disc valve. Remove air check valve assembly (p 2-61). Shake valve body and listen for rattle.

If disc valve doesn't rattle (won't open or close), repair air check valve assembly (p 2-66.21).

Step 2. Fog oil pump air motor leaks.

Remove M4 fog oil pump (p 2-26) and repair (2-66.7).

Step 3. Pressurizing line clogged.

Report on DA Form 2404 to your supervisor.

TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

5. FOG OIL PUMP FAILS TO PUMP FOG OIL.

Step 1. Fog oil inlet hose has loose connections, breaks, or missing, clogged, or torn fog oil strainer.

Repair fog oil inlet hose (p 2-60).

WARNING

Fog oil pump may become very hot during operation. Make sure fog oil pump air motor is cool before checking for stuck rocker arms, pump rod assembly, or tappet valves to avoid injury.

Step 2. Rocker arms, pump rod assembly, or tappet valves are stuck.

Remove M4 fog oil pump (p 2-26) and repair (p 2-66.7).

Step 3. Oil check valve stuck.

Replace check valve (p 2-63).

Step 4. Test for faulty air check valve assembly disc valve (malfunction 4, step 1).

If valve won't open or close, repair (p 2-66.21).

Step 5. Air motor overloaded with oil.

Press boots on safety release valves and drain oil (p 2-27).

Step 6. Fog oil pump internal moving parts stuck or binding.

Remove fog oil pump (p 2-26) and repair (p 2-66.7).

Step 7. Fog oil line clogged or oil metering globe valve stuck.

Report on DA Form 2404 to your supervisor.

Step 8. Engine gases leaking past engine head gasket.

Check for carbon deposits on gasket. Replace gasket if necessary (p 2-48.1).

TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

6. MAGNETO AIR PUMP ASSEMBLY FAILS TO PURGE SMOKE/EXHAUST GASES FROM ENGINE.

WARNING

A hot engine may cause fuel or trapped gases to ignite. Wait till engine cools before attempting this procedure. Make sure float bowl toggle valve is off before pulling fuel tube from metering jet. Use a suitable authorized container for draining fuel.

Step 1. Test for faulty magneto-air check valve.

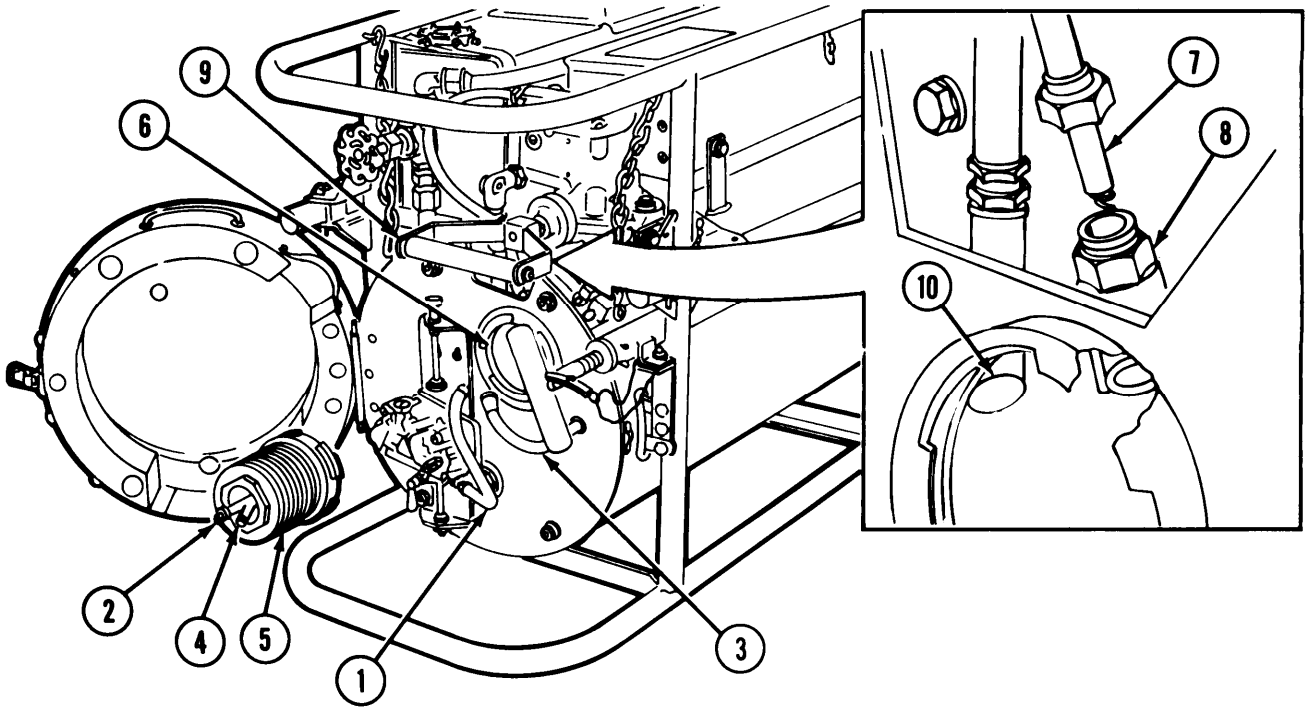
a. Pull fuel tube (1) from metering jet (2) and drain fuel into container.
b. Unscrew air pump hose (3) from flowjector (4). Remove engine head assembly (5) from engine tube (6).
c. Disconnect ignition cable (7) from spark igniter (8).
d. Place hand in engine tube combustion chamber, pump magneto-air pump handle (9), and check for purging air blast from pressurizing line boss (10).

Replace magneto air pump check valve (p 2-22).

e. Repeat step 1d.

If no purging air blast from pressurizing line boss, go to step 2.

f. Assemble parts in reverse order indicated on illustration.



Step 2. Purging air line tube punctured or cracked.

Report on DA Form 2404 to your supervisor.

Section V. ORGANIZATIONAL MAINTENANCE PROCEDURES

2-6. INTRODUCTION.

a. This section contains maintenance procedures which are the responsibility of the organizational maintenance technician as authorized by the maintenance allocation chart (MAC) (app B) and source, maintenance, and recoverability (SMR) coded items in the repair parts and special tools list (RPSTL) (TM 3-1040-276-23P).

WARNING

Flames, hot gases, or hot fog oil may shoot out from smoke outlet nozzles up to 24 hours after operation. Use two people at nozzle end, one on each side, to lift and carry a hot smoke generator.

b. Disassemble the smoke generator only as needed for repair. One quartermaster and chemical equipment repairer MOS 63J can do each task. However, it takes two people to lift and carry the smoke generator. No special environmental conditions are listed because none are required.

2-7. SMOKE GENERATOR.

This task covers:

a. Replacing Instruction and Identification Plate
b. Removal/Installation of the Tool Box Assembly
c. Removal/Installation of the Air Accumulator Assembly Check Valve
d. Removal/Installation of the Air Pressure Gage and Control Valve
e. Removal/Installation of Magneto Air Pump Assembly Check Valve
f. Removal/Installation of Magneto Air Pump Assembly
g. Replacing Ignition Cable
h. Removal/Installation of Fog Oil Hose Assemblies
i. Removal/Installation of Fog Oil Pump
j. Removal/Installation of Air Pump Assembly Check Valve and Filter Plug
k. Removal/Installation of Air Pump Assembly
l. Replacing Quick Release Pin and Cable Assembly
m. Removal/Installation of Fuel Hose
n. Removal/Installation of Fuel Filter, Sediment Strainer, and Fuel Shutoff Valve
o. Painting and Testing Smoke Generator

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26
Torque wrench (item 10, app B)

Materials/Parts
Hose (E31-15-2000-28) (fig D-1)
Dry cleaning solvent (item 4, app C)
Paint brush (item 2, app C)
Polyurethane coating (item 7, app C)
Primer coating (item 8, app C)
Rag (item 9, app C)
Sealing compound (item 11, app C)

References
TM 3-1040-276-10
TM 3-1040-276-23P
TM 43-0139

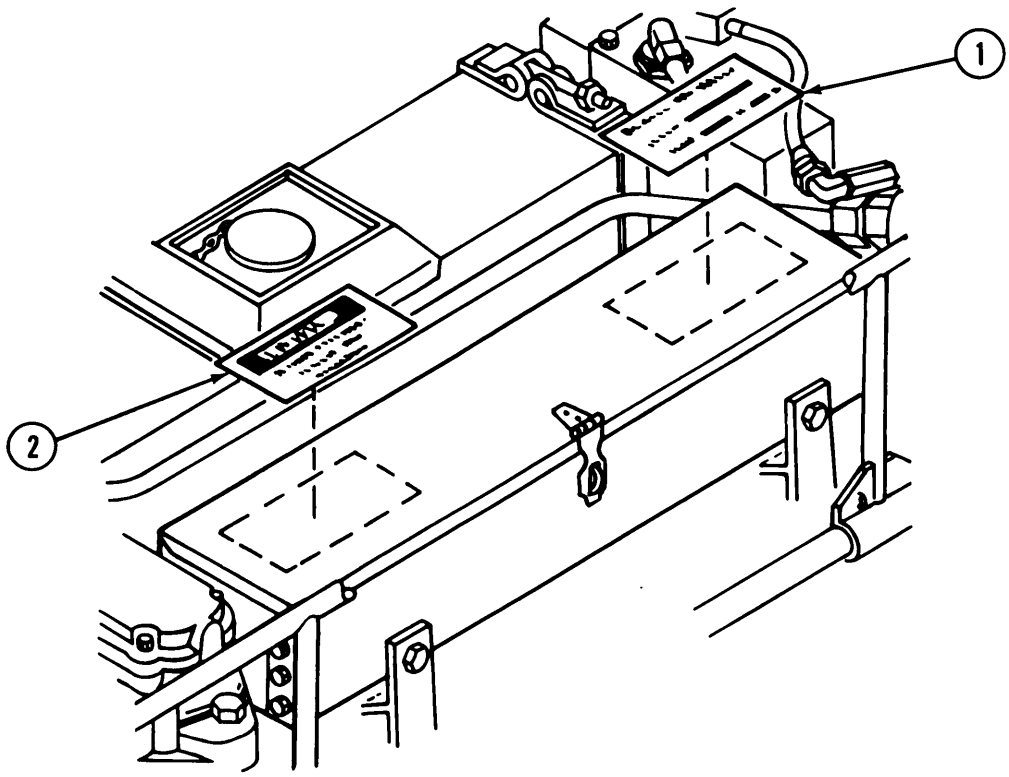
Troubleshooting References
Refer to symptom index (p 2-8).

General Safety Instructions.
Observe safety precautions and warnings in TM 3-1040-276-10 while working on smoke generator.
Drain fuel from fuel tank.

2-7. SMOKE GENERATOR (CONT).

a. *Instruction Plate and Identification Plate.*

REPLACE



a. Lift edge of identification plate (1) or instruction (caution) plate (2) with sharp tool.

b. Pull plate completely off the mounting surface.

c. Thoroughly clean mounting surface with rags and dry cleaning solvent. Surface must be free of oil, grease, dirt or any foreign matter.

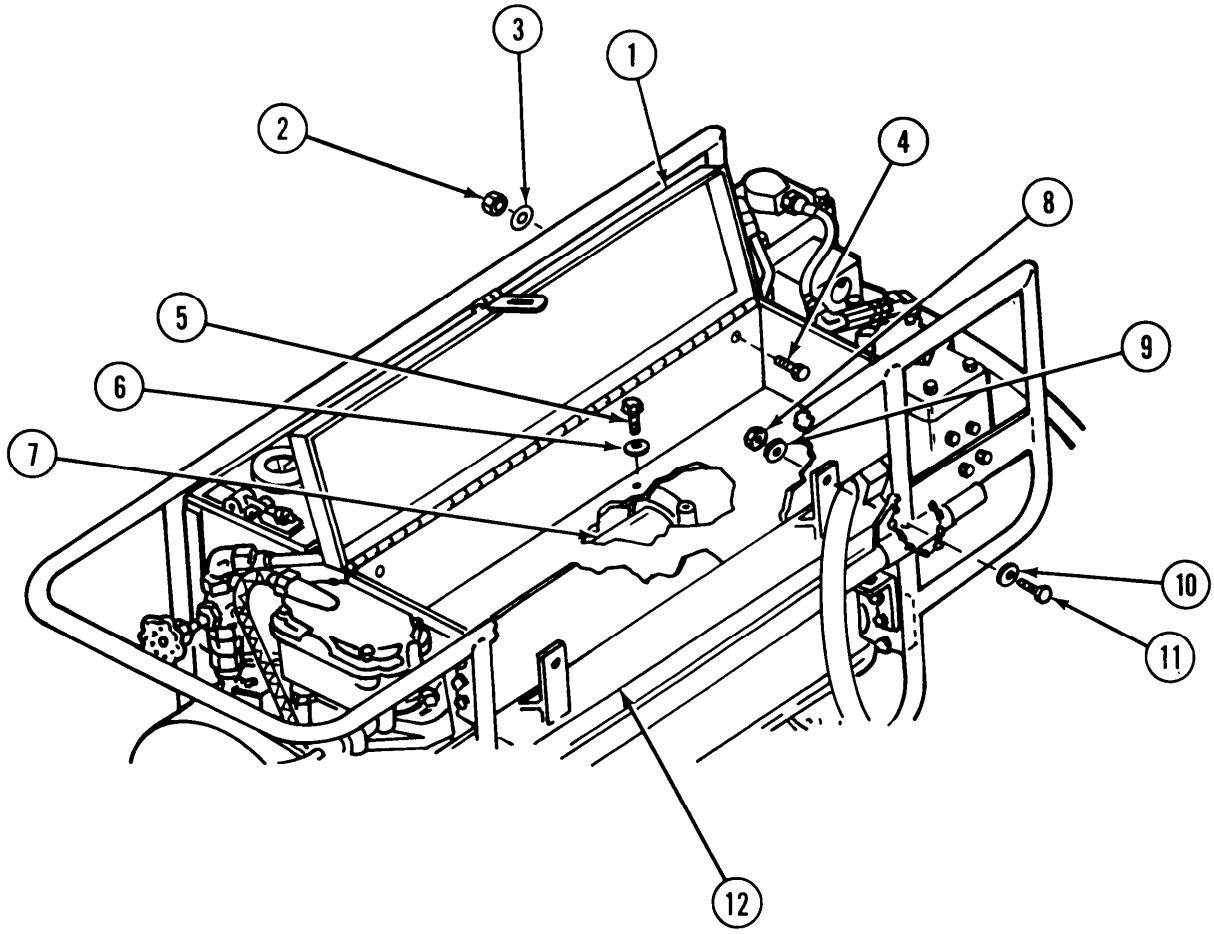
d. Peel paper from adhesive backs of new plates.

e. Mount identification plate (1) or instruction (caution) plate (2) and apply pressure to plate surface.

b. *Tool Box Assembly.*

REMOVAL/INSTALLATION

1



a. Remove on-board spares and tools from tool box assembly (1) (app E, TM 3-1040-276-10).

b. Remove two nuts (2), two lock washers (3), and two screws (4) from tool box assembly and spillage shield.

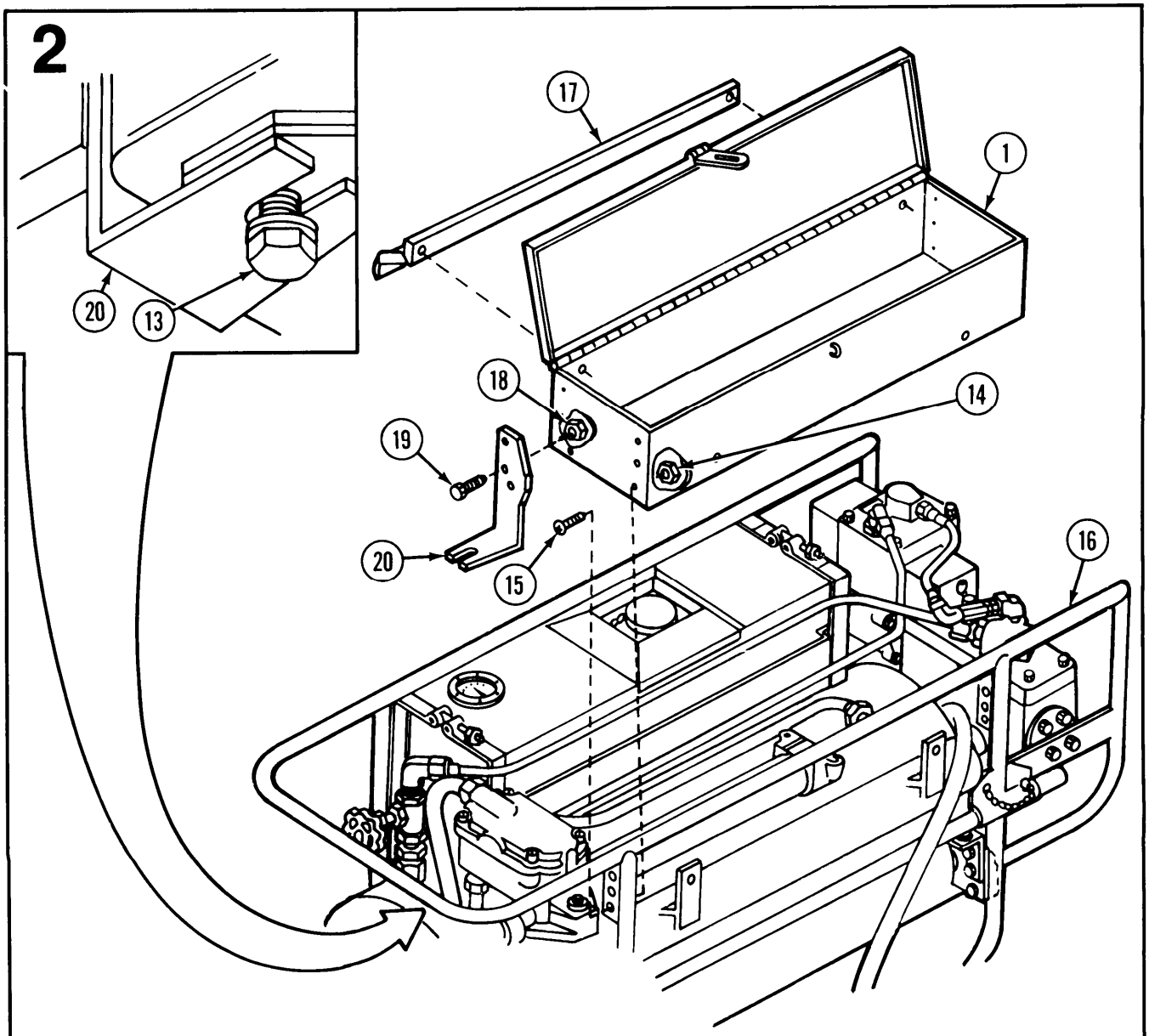
c. Remove two screws (5) and two lock washers (6) at bottom of tool box assembly from magneto air pump assembly (7).

d. Remove two nuts (8), two lock washers (9), two flat washers (10), and two cap screws (11) from tool box assembly (1) and accumulator assembly (12).

2-7. SMOKE GENERATOR (CONT).

b. *Tool Box Assembly (Cont).*

REMOVAL/INSTALLATION (CONT)

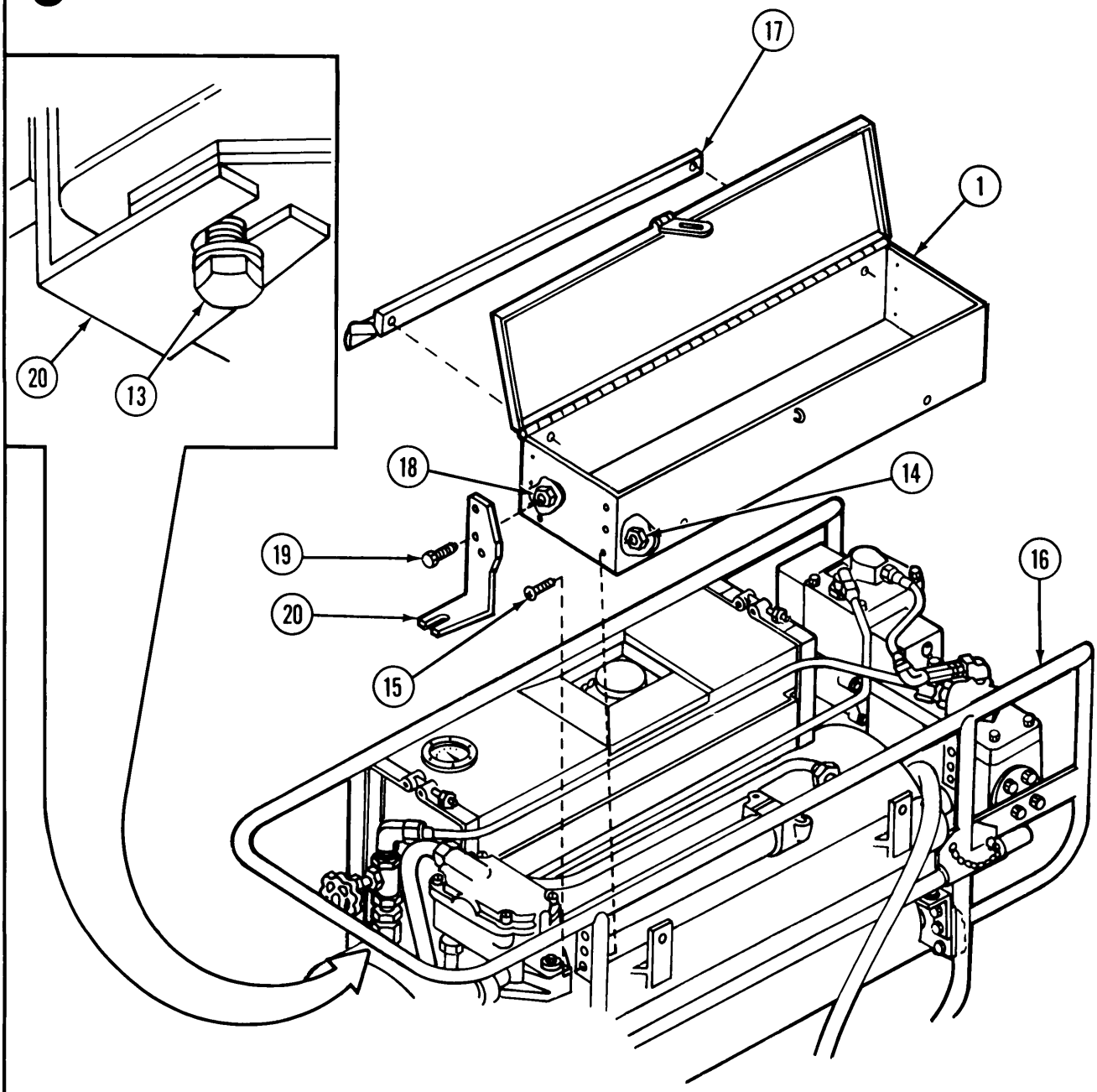


a. Remove cap screw with washer (13).

b. Support tool box assembly (1) while removing six nuts (14) and six machine screws (15) (three at each end of tool box assembly) from frame (16). Push tool box toward fuel tank and away from bracket on smoke discharge end of smoke generator and lift tool box assembly (1) from smoke generator. Remove spillage shield (17) if necessary.

c. Remove three self-locking nuts (18), three screws (19), and angle bracket (20) from tool box assembly (1).

3



a. Install angle bracket (20) on tool box assembly (1) with three screws (19) and three self-locking nuts (18).

NOTE

Be sure spillage shield is installed between the fuel tank and the fuel tank bottom baffle.

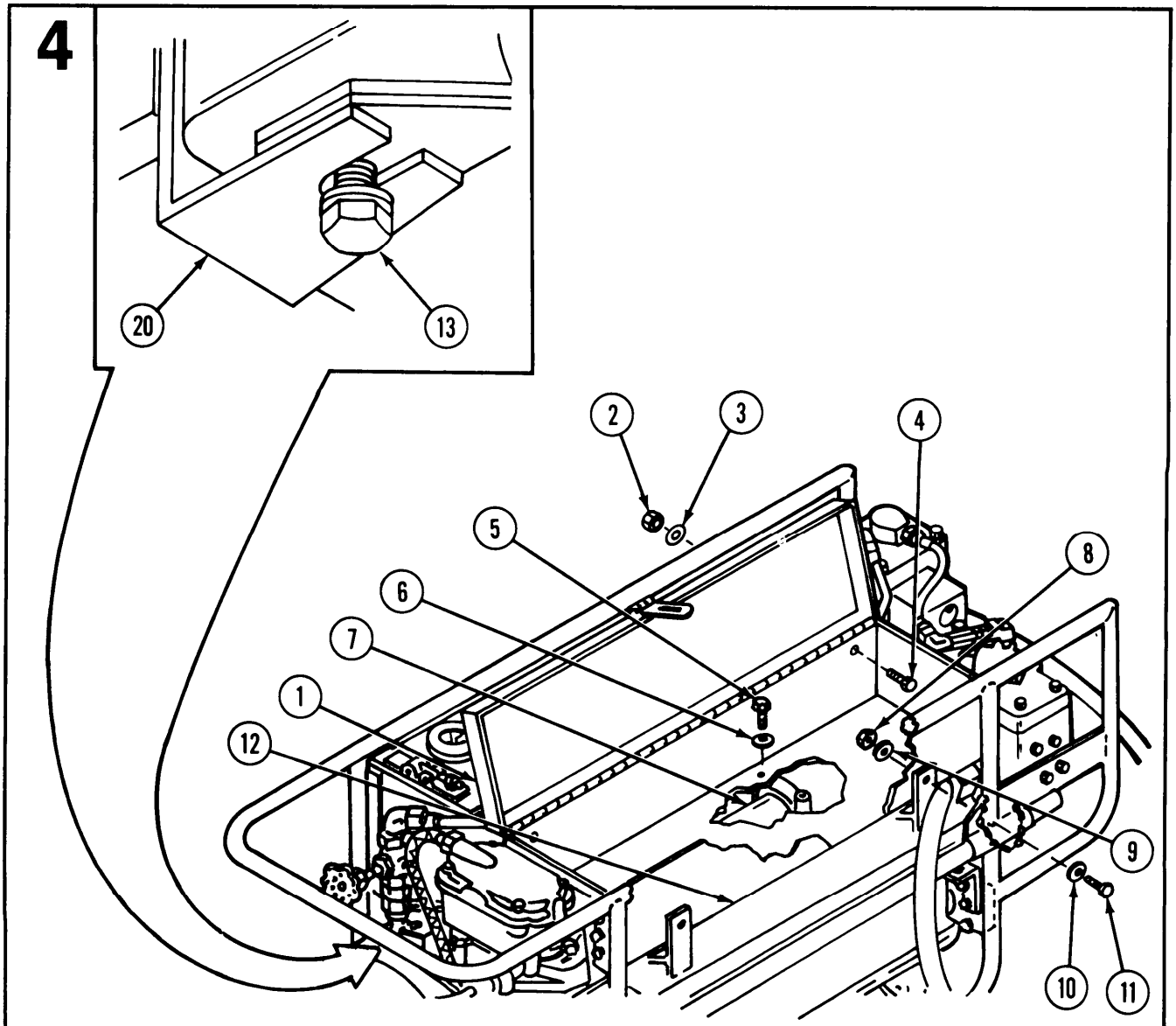
b. Position spillage shield (17) and tool box assembly (1) on smoke generator. Line up slot of angle bracket (20) with ignition magneto and install but do not tighten cap screw and washer (13) as illustrated.

c. Install tool box assembly (1) on frame (16) with six machine screws (15) and six self-locking nuts (14) (three at each end of tool box assembly).

2-7. SMOKE GENERATOR (CONT).

b. *Tool Box Assembly (Cont).*

REMOVAL/INSTALLATION (CONT)



a. Install two screws (5), and two lock washers (6) through bottom of tool box assembly (1) and into magneto air pump assembly (7). Tighten cap screw with washer (13) to secure angle bracket (20) to ignition magneto.

b. Secure accumulator assembly (12) to tool box assembly (1) with two cap screws (11) two flat washers (10), two lock washers (9) and two nuts (8).

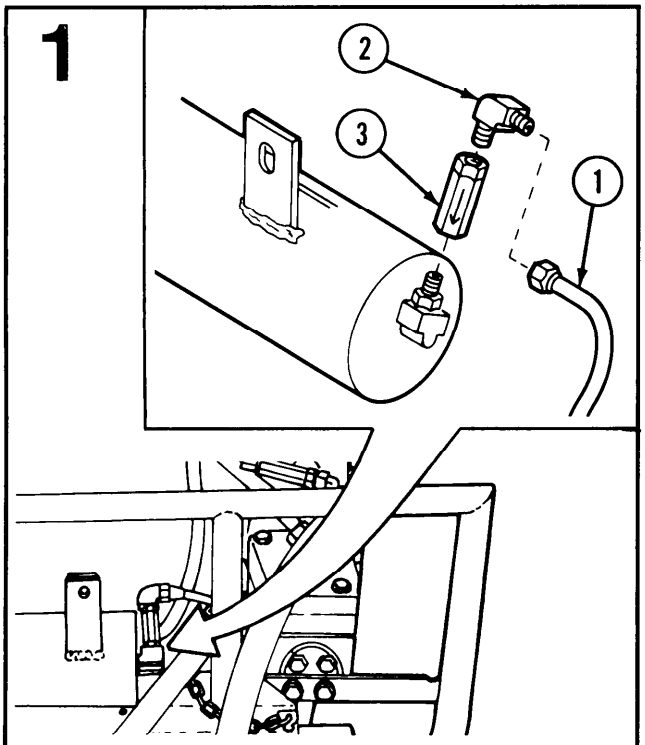
c. Secure spillage shield to tool box assembly (1) with two screws (4), two lock washers (3), and two nuts (2).

d. Stow on-board spares and tools in tool box assembly (1) (app E, TM 3-1040-276-10). Close lid.

c. *Check Valve.*

REMOVAL/INSTALLATION

1

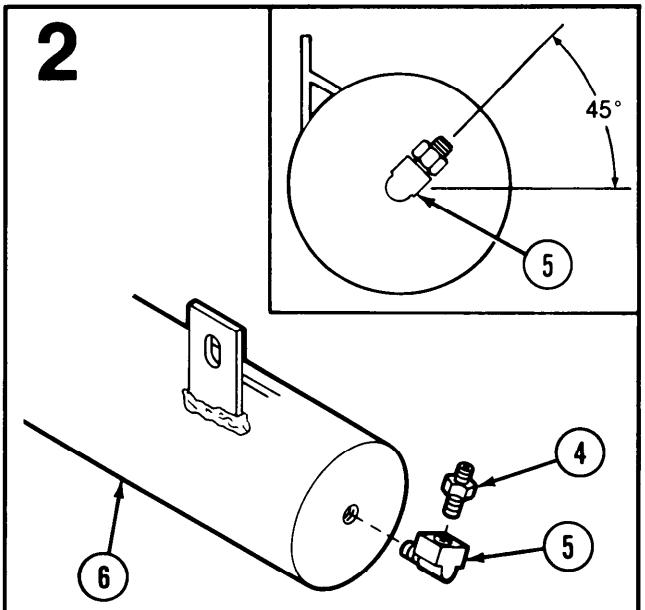


a. Remove tool box assembly (p 2-15).

b. Disconnect tube assembly (1) from pipe to tube elbow (2).

c. Remove pipe to tube elbow (2) and check valve (3).

2



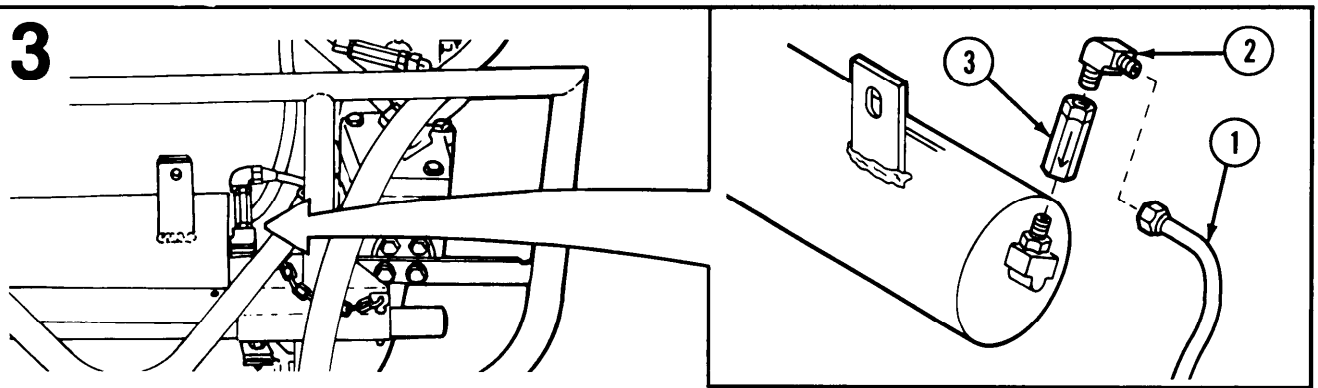
NOTE

Remove nipple (4) and elbow (5) only as necessary for repair.

a. Remove nipple (4) and elbow (5) from accumulator assembly (6).

b. Apply sealing compound to male threads of nipple (4) and elbow (5) and install elbow and nipple on accumulator assembly (6). Offset elbow (5) approximately 45° as illustrated.

3



a. Apply sealing compound to threads of check valve end of pipe to tube elbow (2). Install check valve (3) and pipe to tube elbow (2). Make sure arrow on check valve (3) points away from pipe to tube elbow (2) as shown.

b. Connect tube assembly (1) to pipe to tube elbow (2).

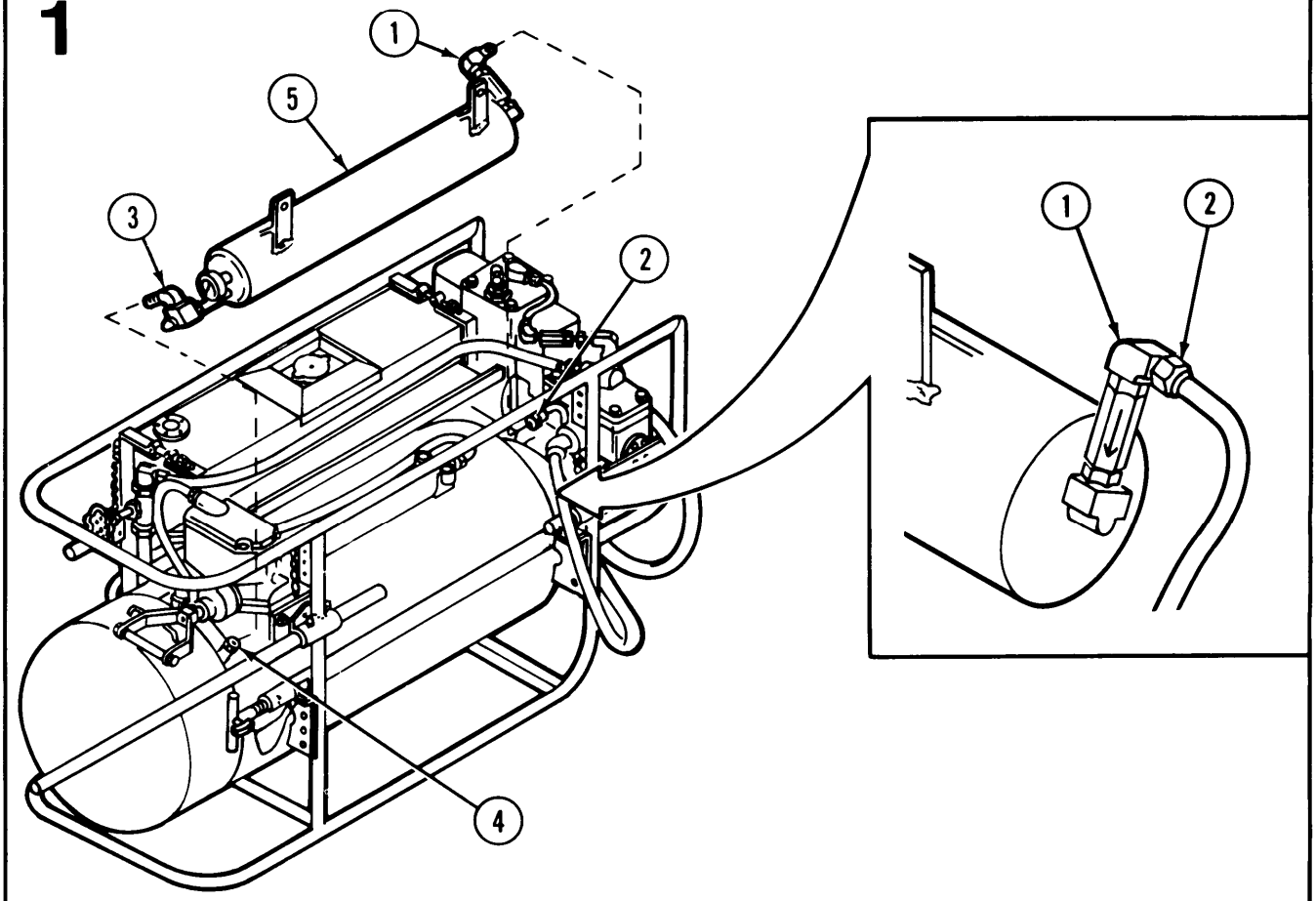
c. Install tool box assembly (step 3, p 2-17).

2-7. SMOKE GENERATOR (CONT).

d. *Air Pressure Gage and Control Valve.*

REMOVAL/INSTALLATION (CONT)

1



a. Remove tool box assembly (p 2-15).

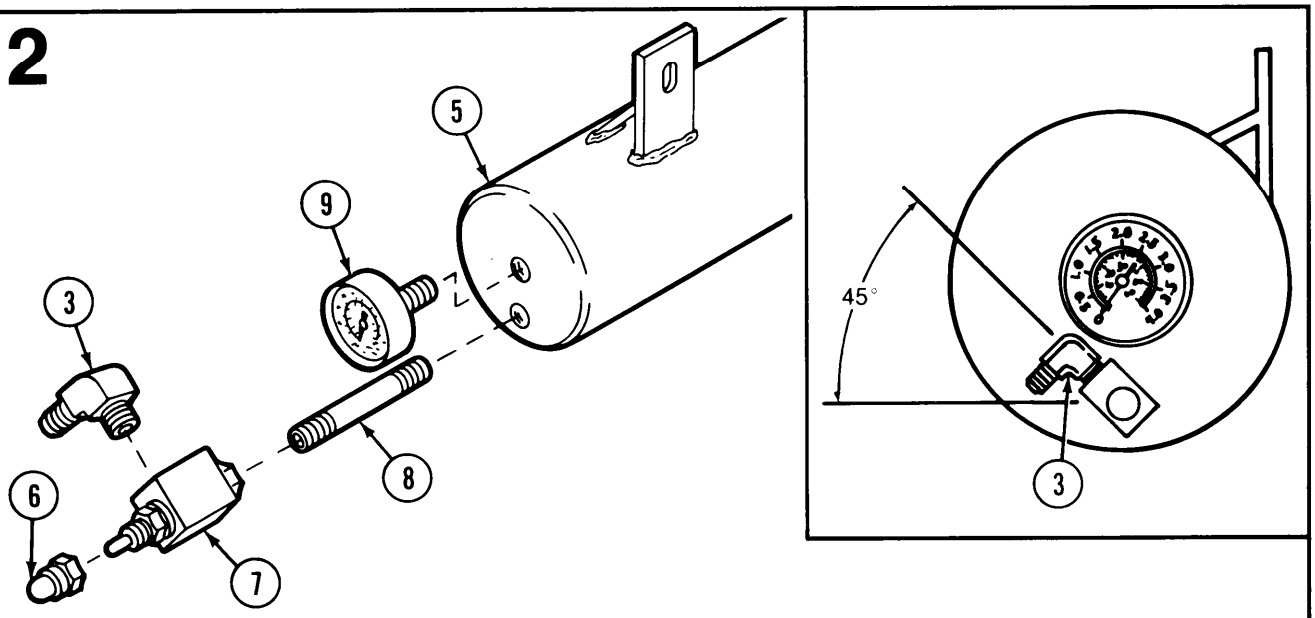
NOTE

Fog oil inlet hose may be removed (p 2-25) to make removal and installation of the accumulator assembly easier.

b. Disconnect pipe to tube elbow (1) from tube assembly (2). Extend handles on accumulator side of smoke generator.

c. Disconnect pipe to tube elbow (3) from tube assembly (4) and lift accumulator assembly (5) with attached parts from smoke generator.

2



a. Remove pipe to tube elbow (3), boot (6), control valve (7), nipple (8), and air pressure gage (9) from accumulator assembly (5).

b. Apply sealing compound to threads of air pressure gage (9) and install air pressure gage on accumulator assembly (5) so gage dial is upright as illustrated.

c. Apply sealing compound to male threads of nipple (8), control valve (7), and control valve end of pipe to tube elbow (3). Install nipple (8), control valve (7), boot (6), on accumulator assembly (5). Install pipe to tube elbow (3) on control valve so elbow is at approximately a 45° angle as illustrated.

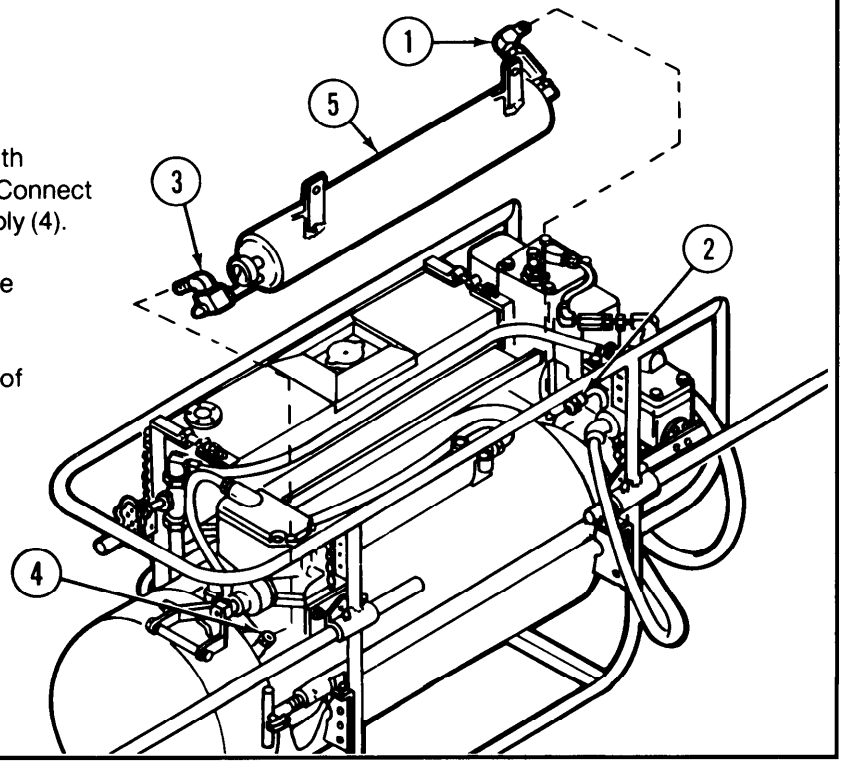
3

a. Position accumulator assembly (5) with attached parts on smoke generator. Connect pipe to tube elbow (3) to tube assembly (4).

b. Connect pipe to tube elbow (1) to tube assembly (2).

c. Push in handles on accumulator side of smoke generator.

d. Install tool box assembly (step 3, p 2-17).

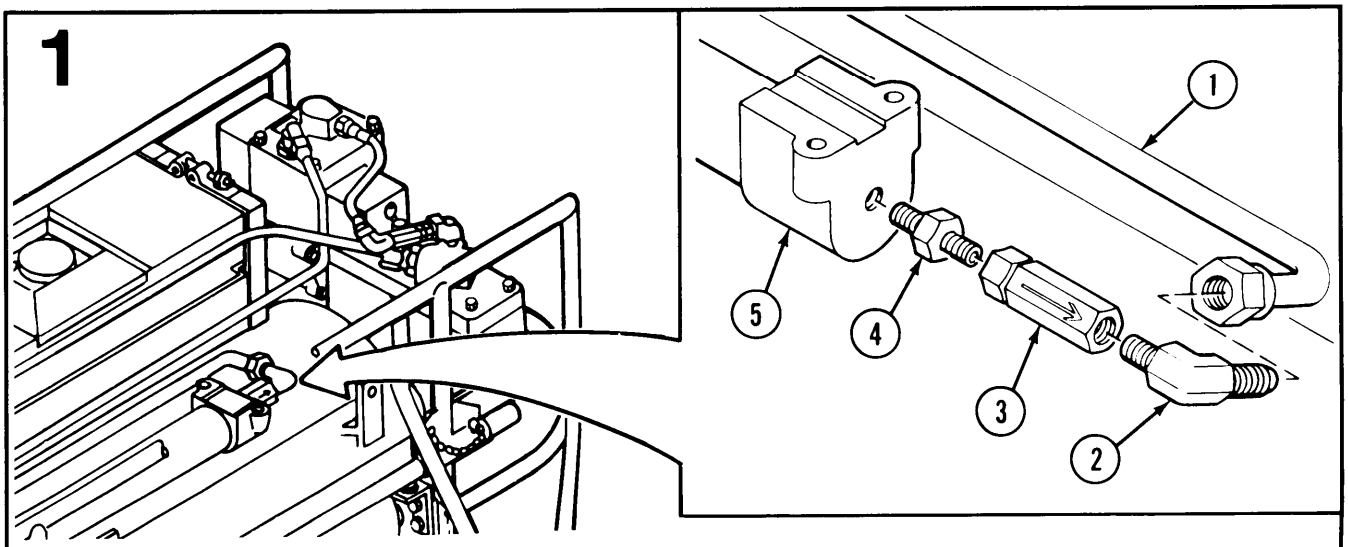


2-7. SMOKE GENERATOR (CONT).

e. *Magneto Air Pump Assembly Check Valve.*

REMOVAL/INSTALLATION

1

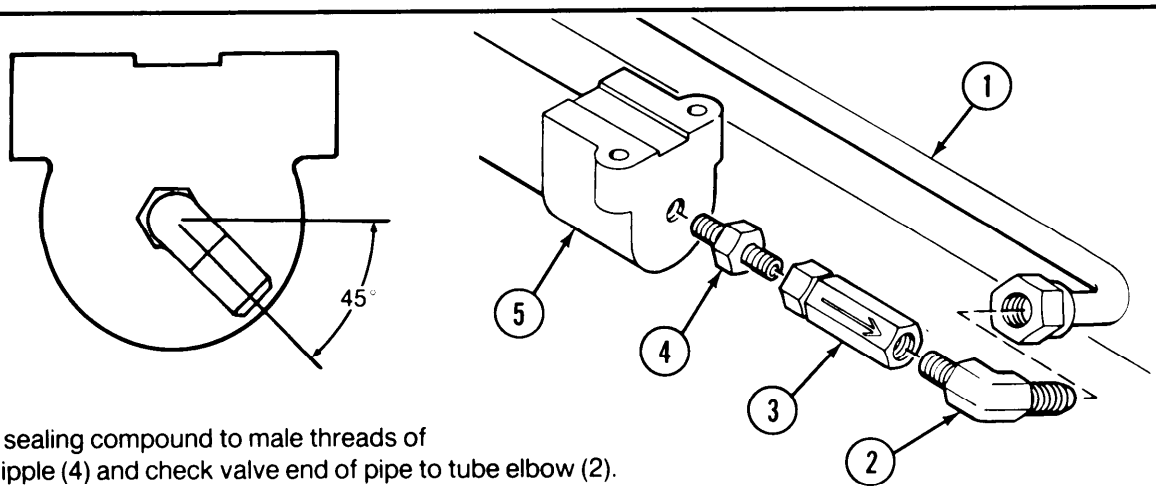


a. Remove tool box assembly (p 2-15).

b. Disconnect purging air line (1) from pipe to tube elbow (2).

c. Remove elbow (2), check valve (3), and pipe nipple (4) from magneto air pump assembly (5).

2



a. Apply sealing compound to male threads of pipe nipple (4) and check valve end of pipe to tube elbow (2).

b. Install pipe nipple (4), check valve (3), and pipe to tube elbow (2) on end of magneto air pump assembly (5). Make sure arrow on check valve (3) points toward pipe to tube elbow (2). Offset pipe to tube elbow approximately 45° as illustrated.

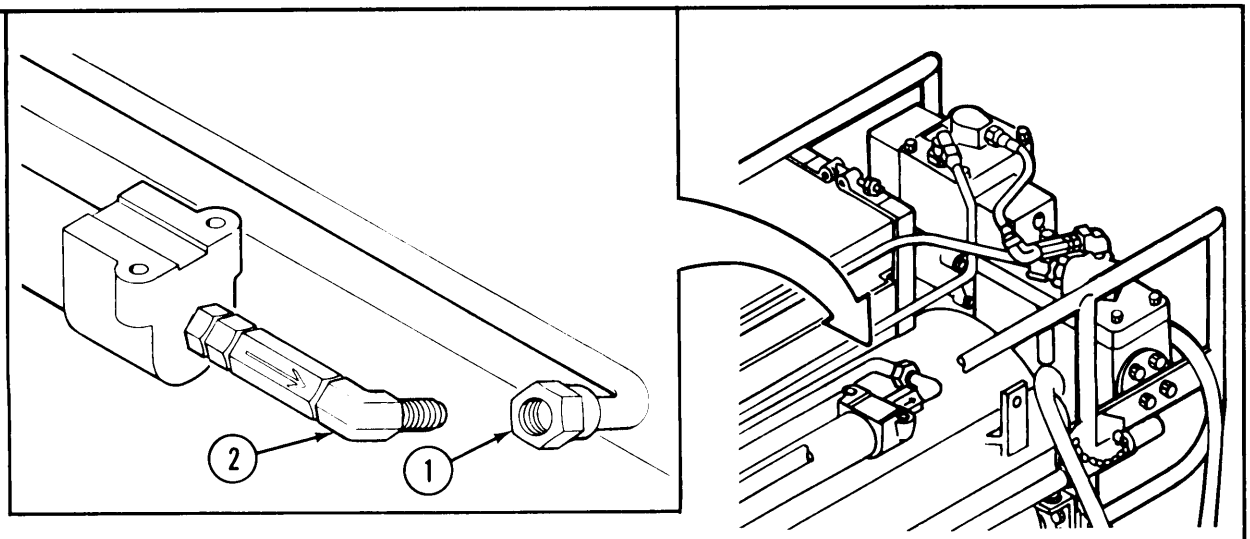
c. Connect purging air line (1) to pipe to tube elbow (2).

d. Install tool box assembly (step 3, p 2-17).

f. *Magneto Air Pump Assembly.*

REMOVAL/INSTALLATION

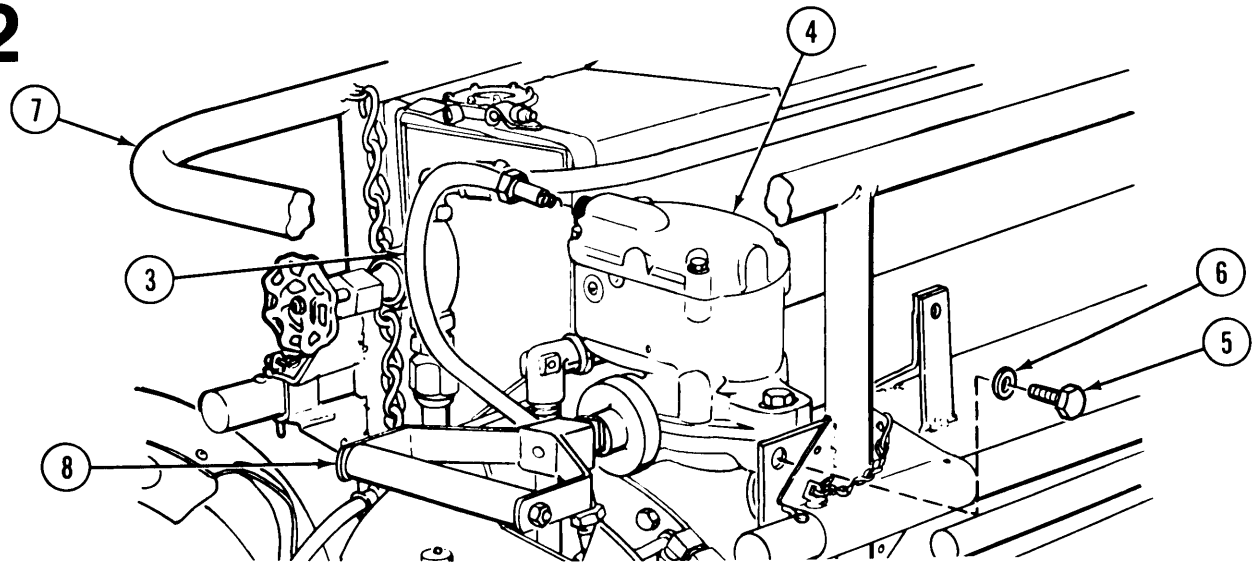
1



a. Remove tool box assembly (p 2-15).

b. Disconnect purging air line (1) from pipe to tube elbow (2).

2



a. Disconnect ignition cable (3) from ignition magneto (4).

b. Unscrew machine bolt (5) and lock washer (6) from frame (7) and magneto air pump assembly (8). Lift magneto air pump assembly (8) from smoke generator.

c. Position magneto air pump assembly (8) on smoke generator and secure to frame (7) with machine bolt (5) and lock washer (6). Do not tighten machine bolt (5) until after tool box assembly is installed.

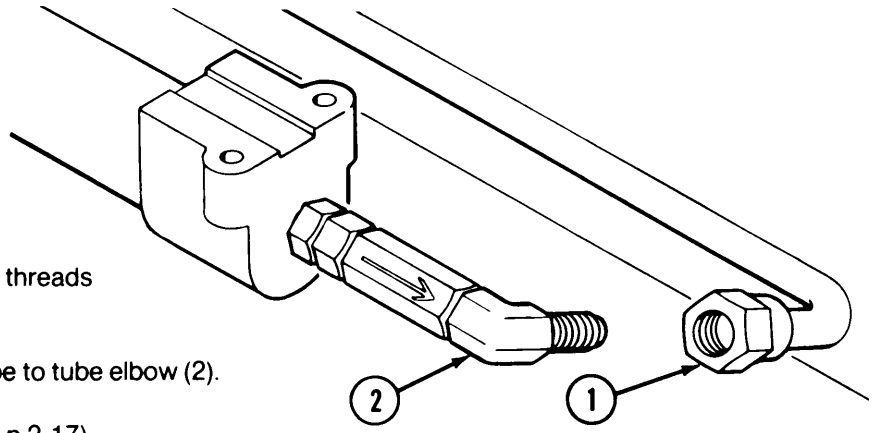
d. Connect ignition cable (3) to ignition magneto (4).

2-7. SMOKE GENERATOR (CONT).

f. *Magneto Air Pump Assembly (Cont).*

REMOVAL/INSTALLATION (CONT)

3



a. Apply sealing compound to male threads of pipe to tube elbow (2).

b. Connect purging air line (1) to pipe to tube elbow (2).

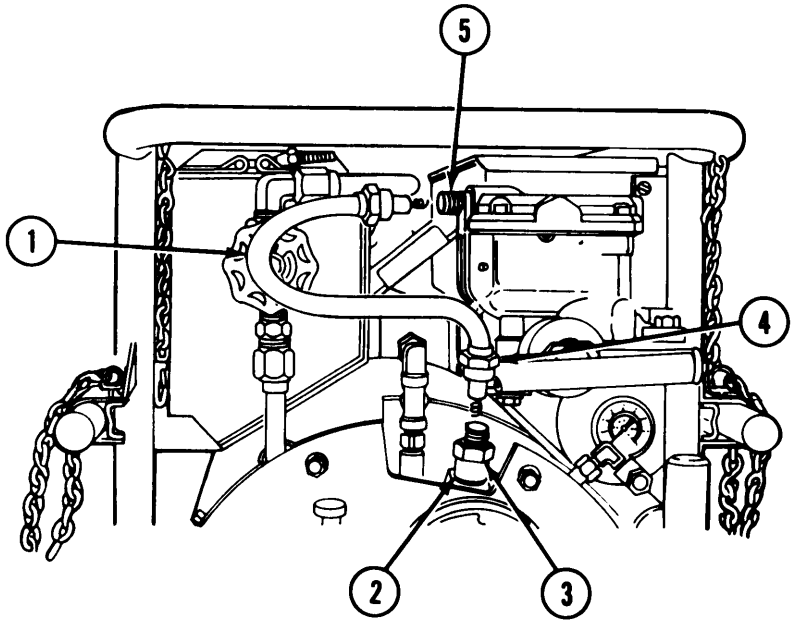
c. Install tool box assembly (step 3, p 2-17).

g. *Ignition Cable.*

REMOVAL/INSTALLATION

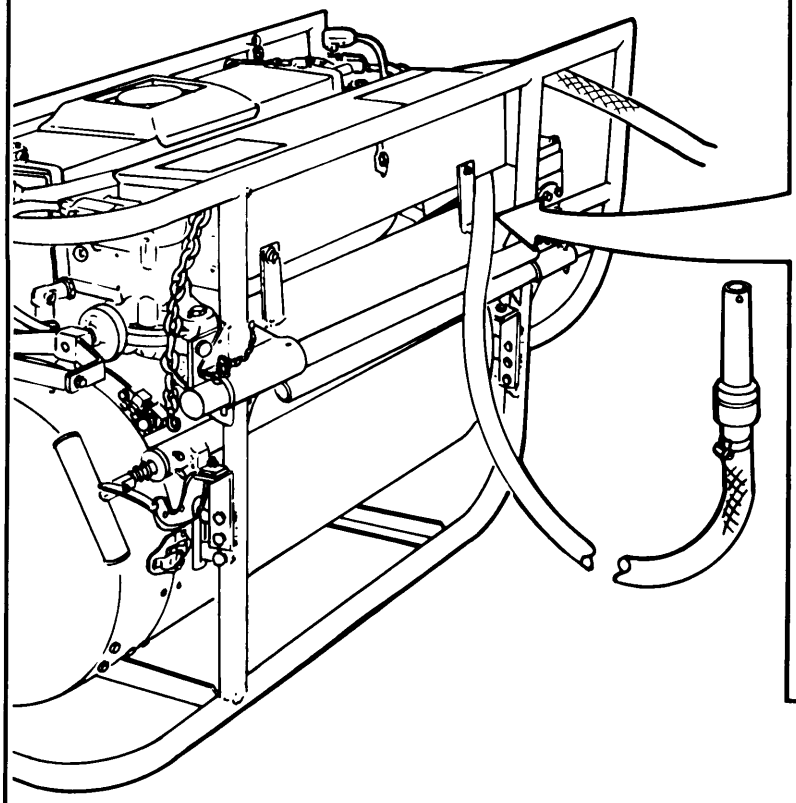
a. Disconnect ignition cable (1) from spark igniter (2) by holding spark igniter adaptor nut (3) and turning connector nut (4). Disconnect ignition cable (1) from ignition magneto end cap connector (5).

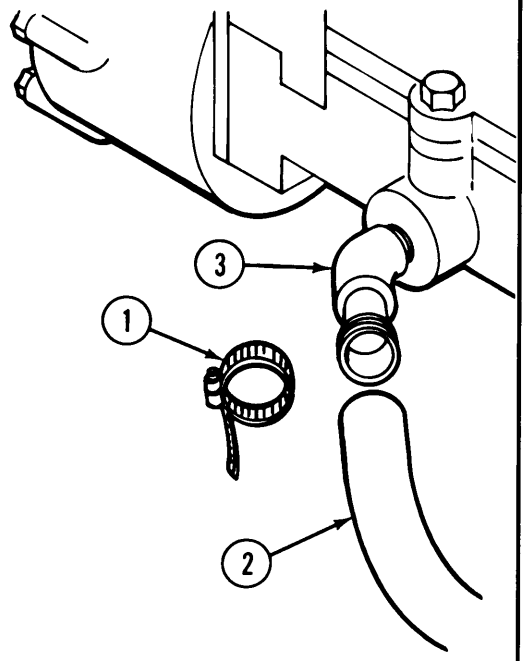
b. Connect ignition cable (1) to ignition magneto end cap connector (5). Connect ignition cable (1) to spark igniter (2) and close front cover.



h. *Fog Oil Hose Assemblies.*

REMOVAL/INSTALLATION





NOTE
REMOVAL/INSTALLATION OF THE FOG OIL INLET HOSE IS SHOWN. REMOVE/ INSTALL THE FOG OIL EXHAUST HOSE THE SAME WAY.

a. Loosen hose clamps (1) and pull fog oil hoses (2) from elbows (3). Remove hose clamps (1) from end of hoses.

b. Inspect fog oil hoses. Replace damaged fog oil exhaust hose (fig D-1). Repair fog oil inlet hose (p 2-60).

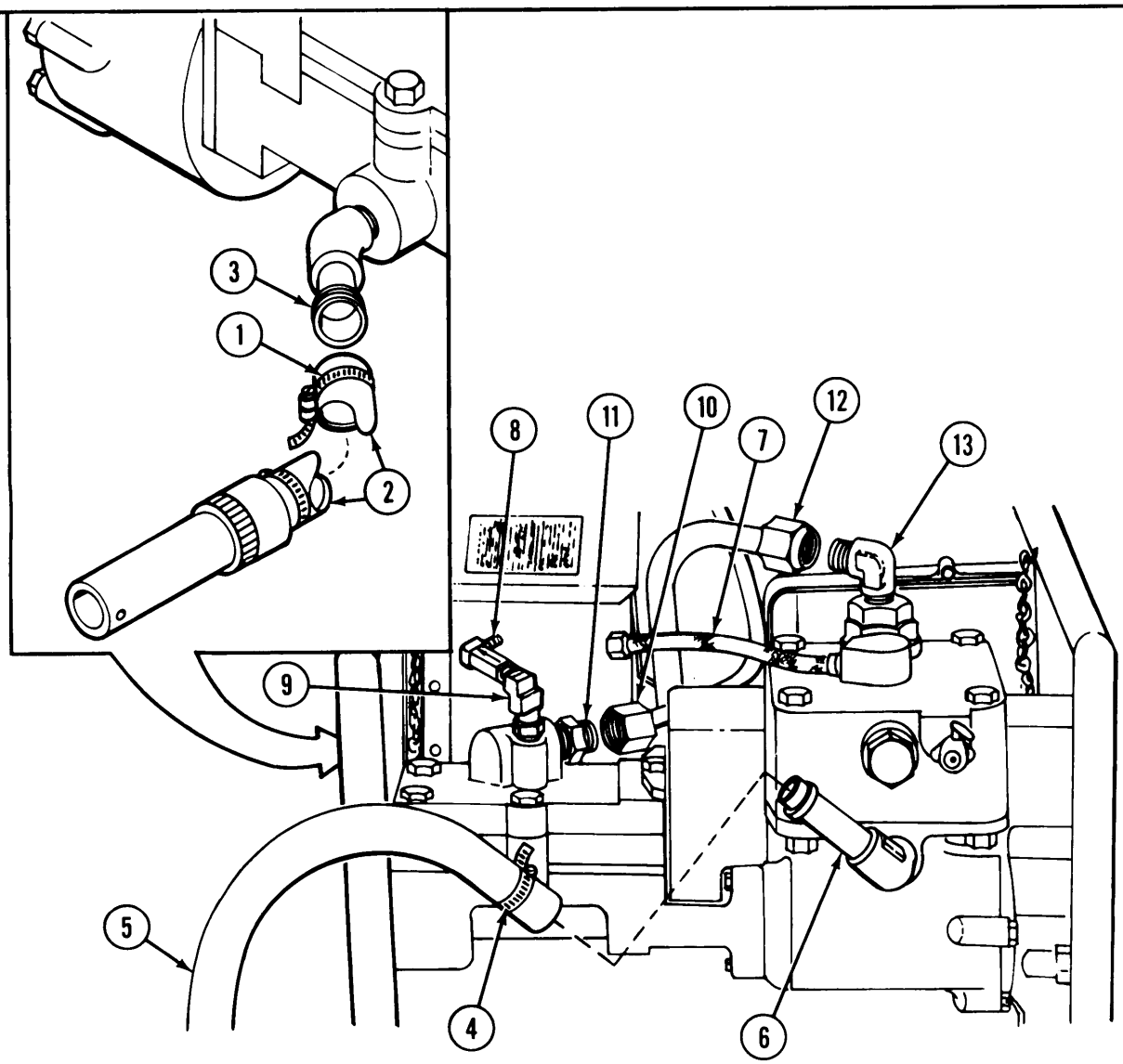
c. Slide hose clamps (1) on end of fog oil hoses (2). Slide hoses with clamps on elbows (3). Tighten hose clamps (1).

2-7. SMOKE GENERATOR (CONT).

i. *Fog Oil Pump.*

REMOVAL/INSTALLATION

1



a. Loosen hose clamp (1) and pull fog oil inlet hose (2) from elbow (3).

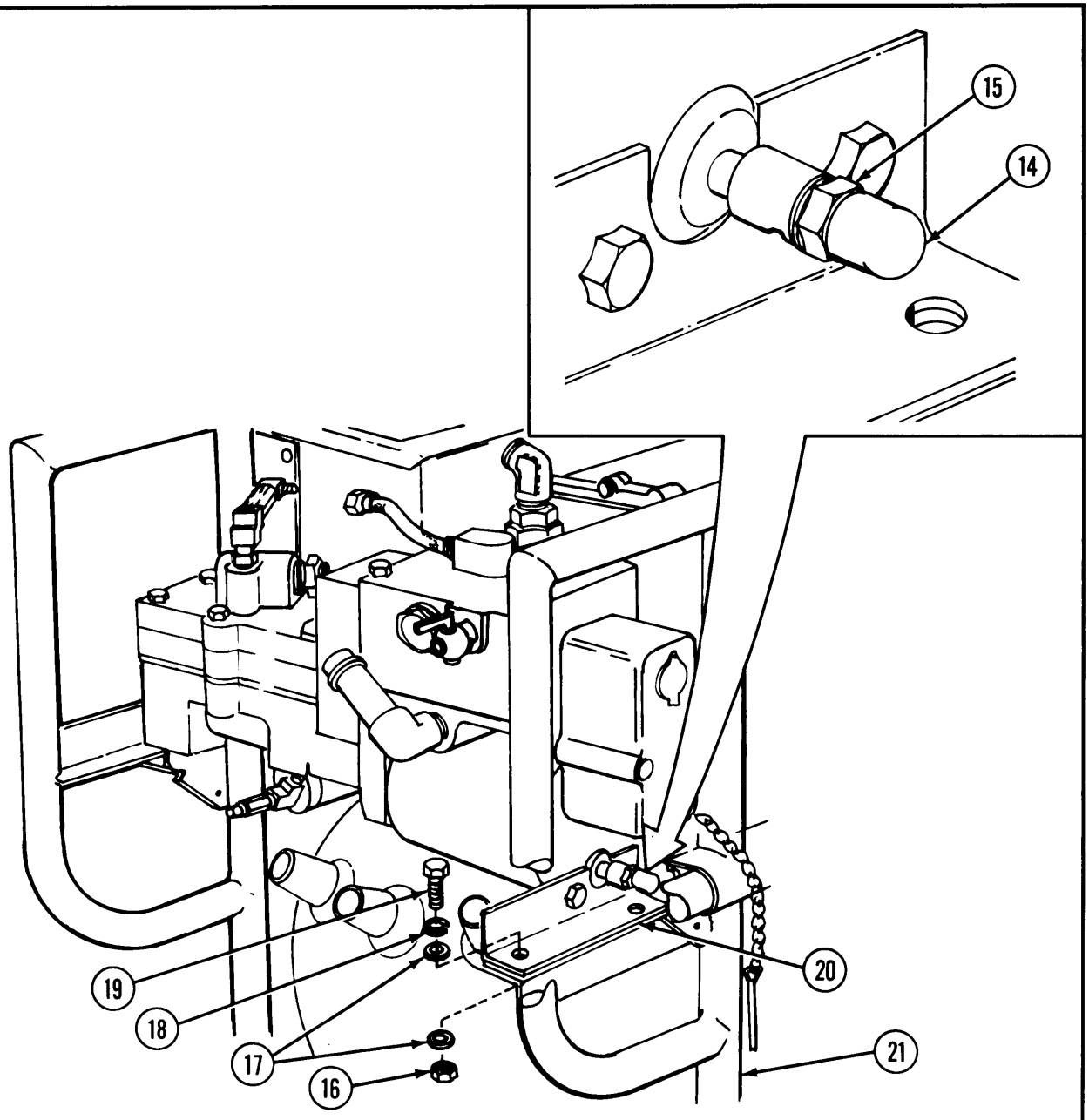
b. Loosen hose clamp (4) and pull fog oil exhaust hose (5) from elbow (6).

c. Disconnect flexible hose assembly (7) from elbow (8) and turn elbow (9) counterclockwise to gain access to fog oil line (10).

d. Disconnect fog oil line (10) from adapter (11).

e. Disconnect pressurizing line (12) from elbow (13).

2



a. Press in boots (14) on two safety relief valves (15) to drain fog oil from fog oil pump.

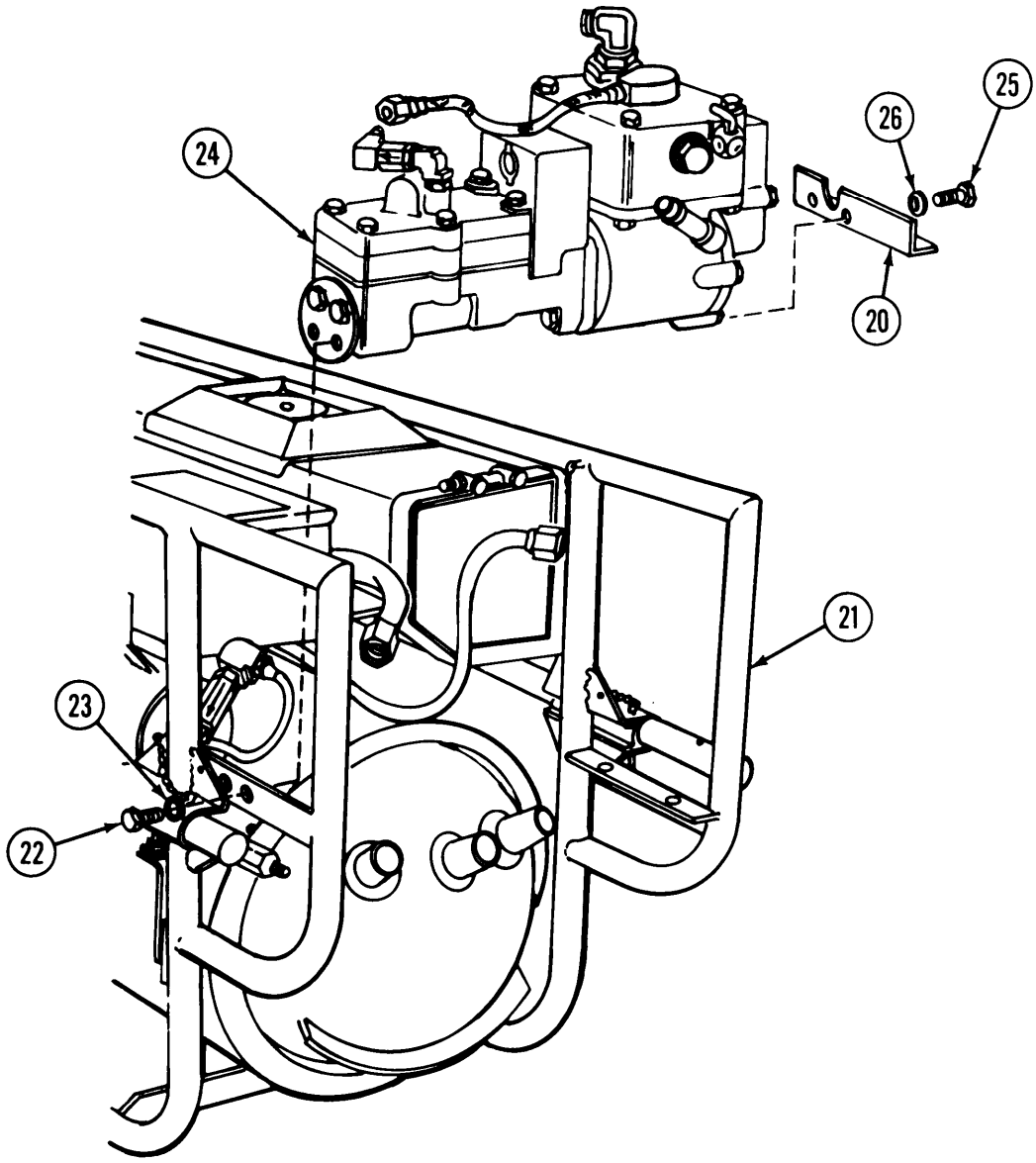
b. Remove two nuts (16), four flat washers (17), two lock washers (18), and screws (19) from fog oil pump bracket (20) and frame (21).

2-7. SMOKE GENERATOR (CONT).

i. *Fog Oil Pump (Cont).*

REMOVAL/INSTALLATION (CONT)

3



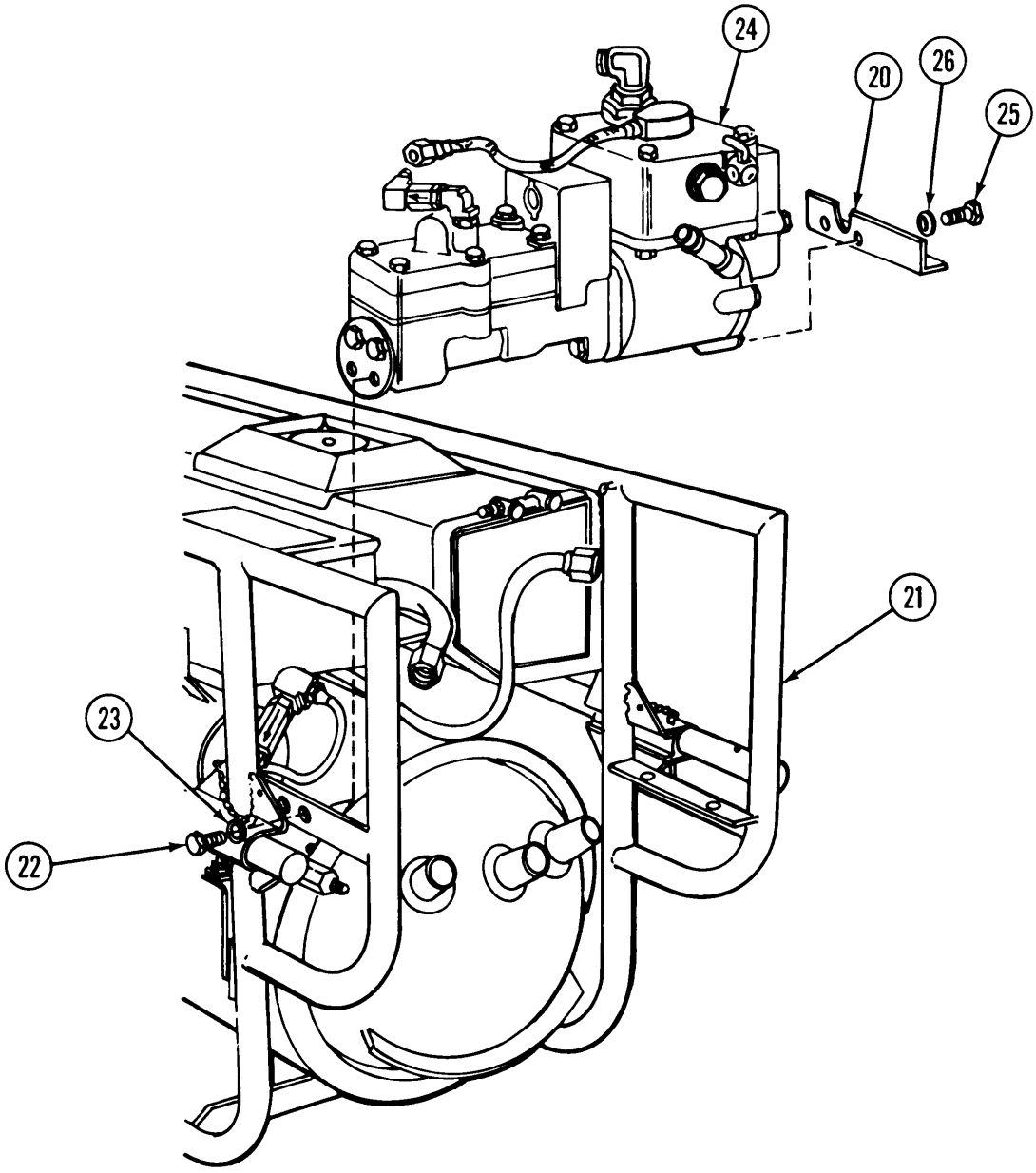
a. Remove two cap screws (22) and lock washers (23) from frame (21) and from fog oil pump (24) while holding onto fog oil pump.

b. Lift fog oil pump (24) from frame (21).

c. Remove two cap screws (25), two lock washers (26), and fog oil pump bracket (20) from fog oil pump (24).

d. Reinsert two cap screws (22), lock washers (23), two cap screws (25), and two lock washers (26) into fog oil pump (24).

4



a. Remove cap screws (22 and 25) and lock washers (23 and 26) from fog oil pump (24).

b. Install fog oil pump bracket (20) to fog oil pump (24) with two cap screws (25) and two lock washers (26). Torque cap screws (25) to 60-70 inch-pounds.

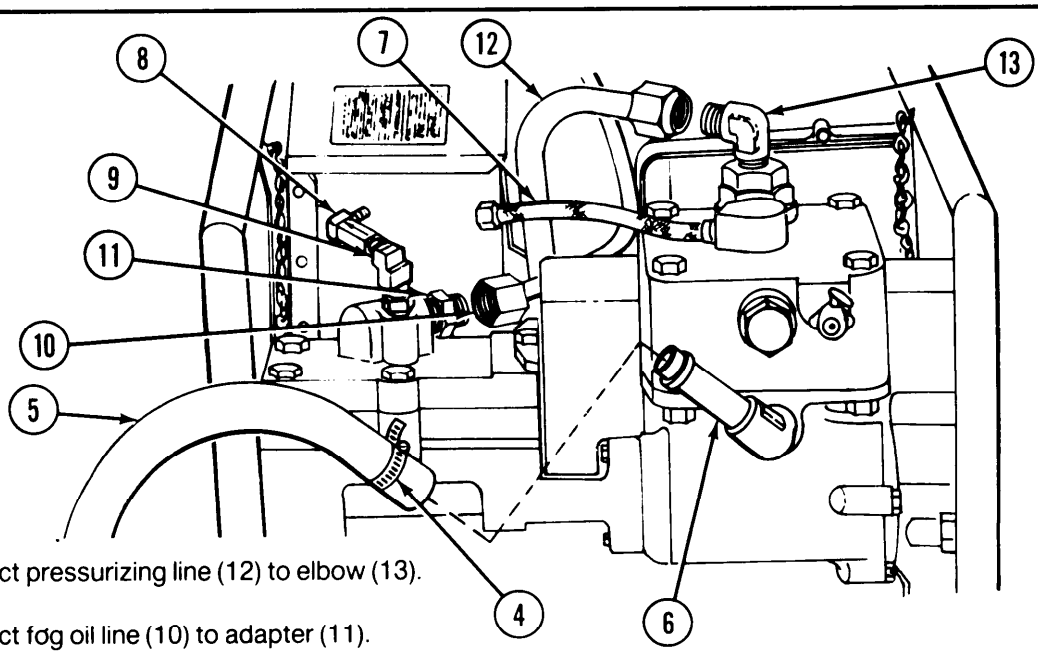
c. Position fog oil pump (24) on frame (21) and secure with two cap screws (22) and two lock washers (23).

2-7. SMOKE GENERATOR (CONT).

i. *Fog Oil Pump (Cont).*

REMOVAL/INSTALLATION (CONT)

5



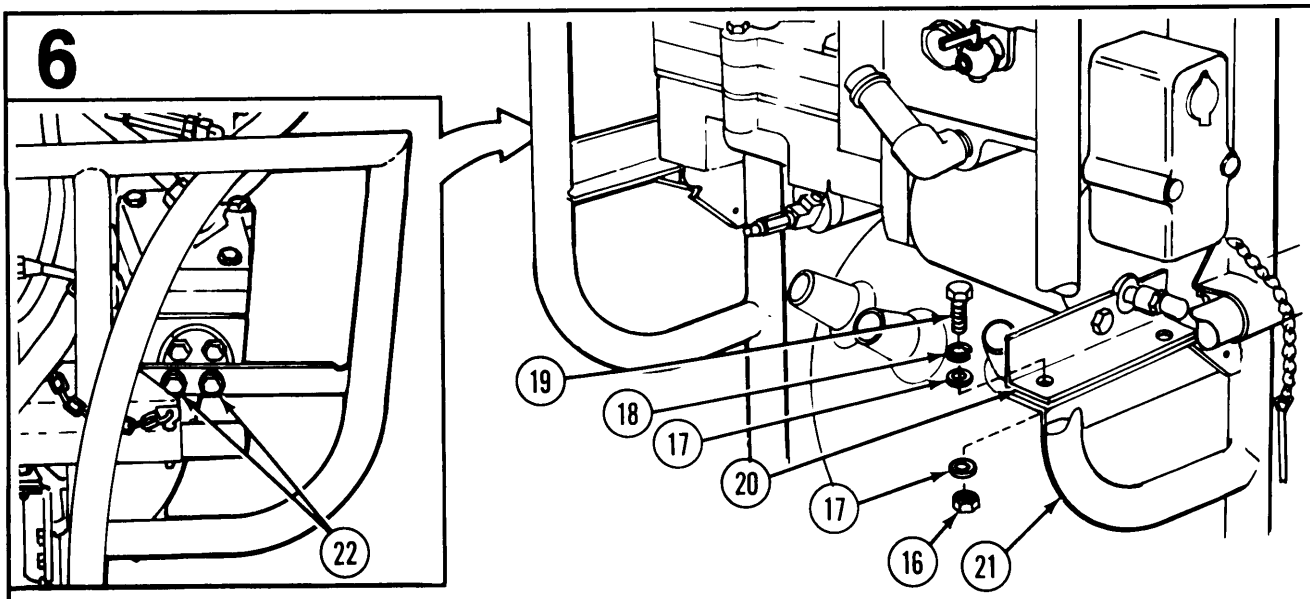
a. Connect pressurizing line (12) to elbow (13).

b. Connect fog oil line (10) to adapter (11).

c. Turn elbow (9) clockwise and connect flexible hose assembly (7) to elbow (8).

d. Fit fog oil exhaust hose (5) with hose clamp (4) on elbow (6). Tighten hose clamp (4).

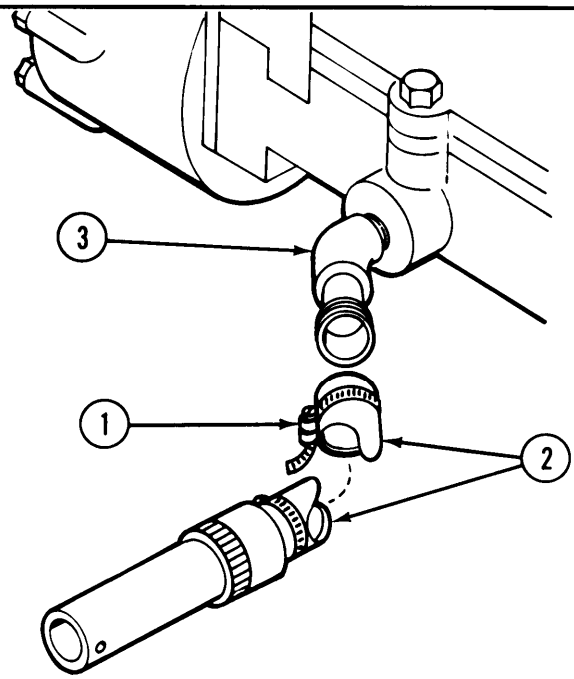
6



Secure fog oil pump bracket (20) to frame (21) with two screws (19), two lock washers (18), four flat washers (17), and two nuts (16). Torque cap screws (22) to 60-70 inch pounds.

7

Fit fog oil inlet hose (2) with hose clamp (1) on elbow (3). Tighten hose clamp (1).

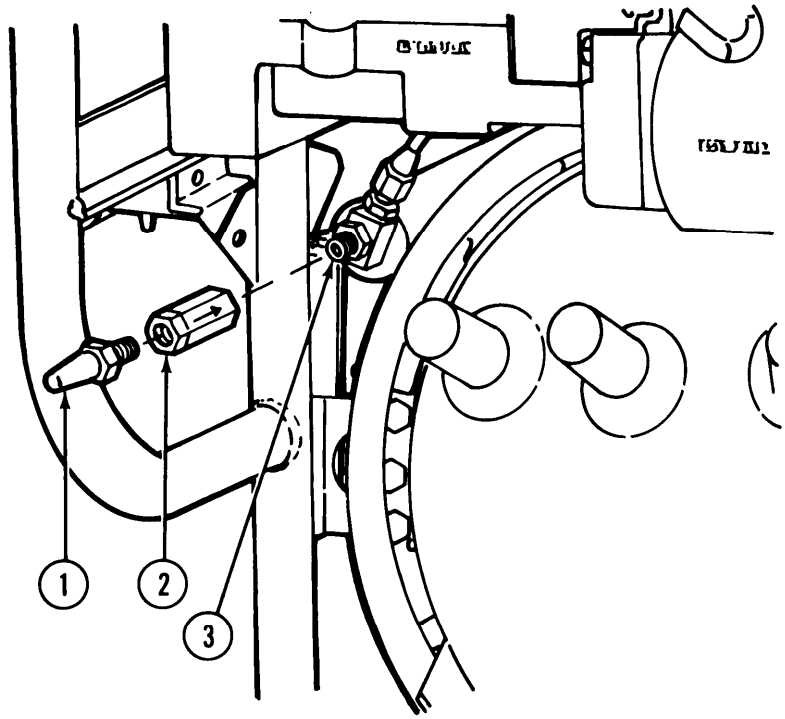


j. *Air Pump Assembly Check Valve and Filter Plug.*

REMOVAL/INSTALLATION

a. Remove filter plug (1) and check valve (2) from nipple (3).

b. Apply sealing compound to threads of filter plug and nipple. Install check valve (2) and filter plug (1) on nipple (3). Make sure arrow on check valve points toward nipple (3).



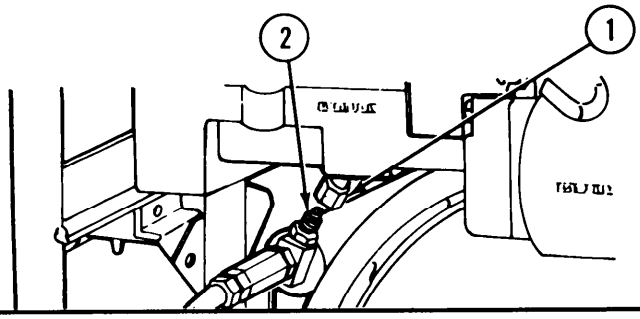
2-7. SMOKE GENERATOR (CONT).

k. *Air Pump Assembly.*

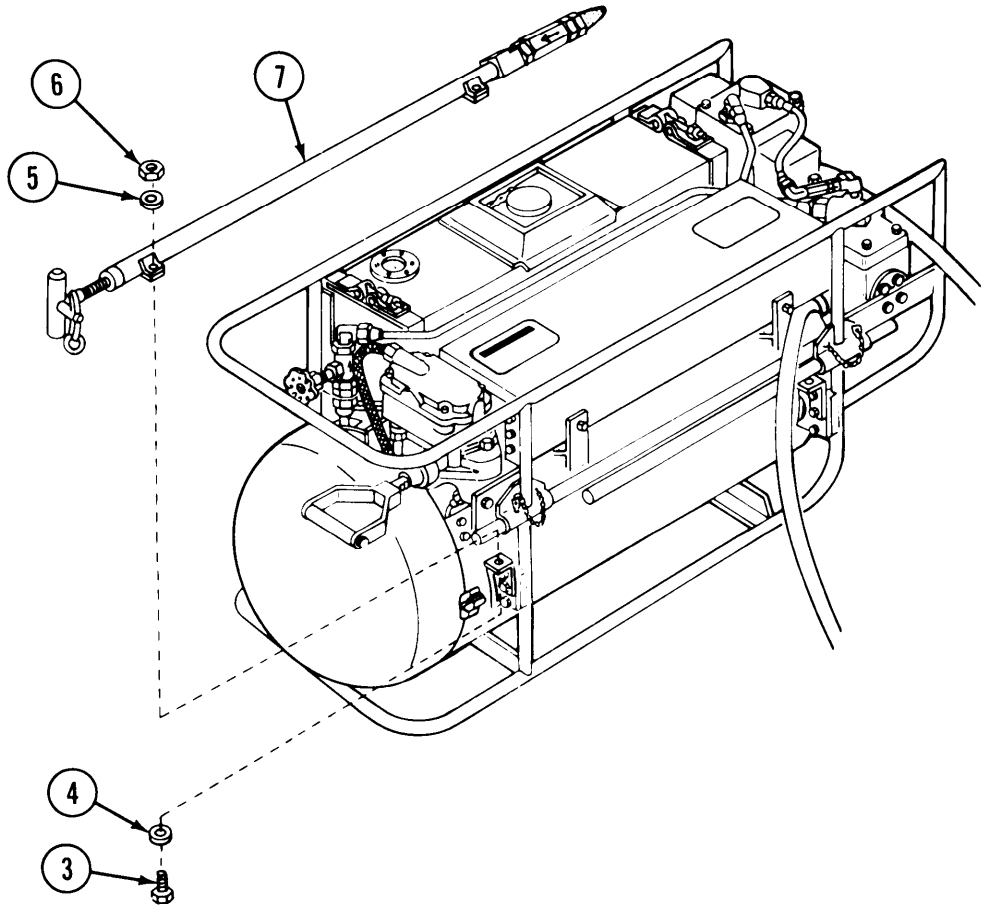
REMOVAL/INSTALLATION

1

Disconnect tube assembly (1) from adapter (2).



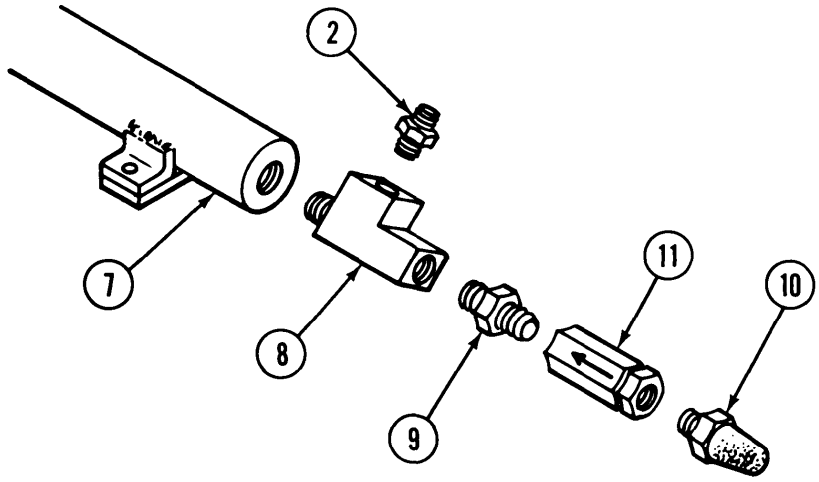
2



a. Remove two cap screws (3), two flat washers (4), two lock washers (5), and two nuts (6).

b. Pull air pump assembly (7) out through front cover end of smoke generator.

3



NOTE

Replace adapter (2), pipe tee (8), and nipple (9) only if necessary for repair.

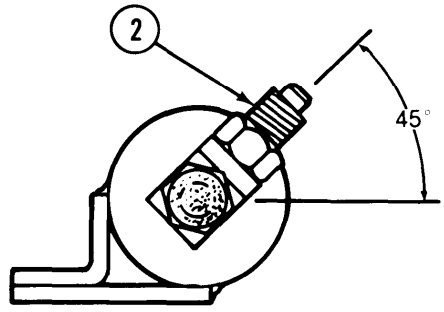
a. Remove adapter (2) from pipe tee (8).

b. Remove filter plug (10), check valve (11), nipple (9), and pipe tee (8) from air pump assembly (7).

c. Apply sealing compound to male threads of filter plug (10), nipple (9), pipe tee (8) and pipe tee end of adapter (2). Install pipe tee (8), nipple (9), check valve (11), and filter plug (10) on air pump assembly (7). Make sure arrow on check valve (11) points toward nipple (9).

4

Install and offset adapter (2) approximately 45° as illustrated.

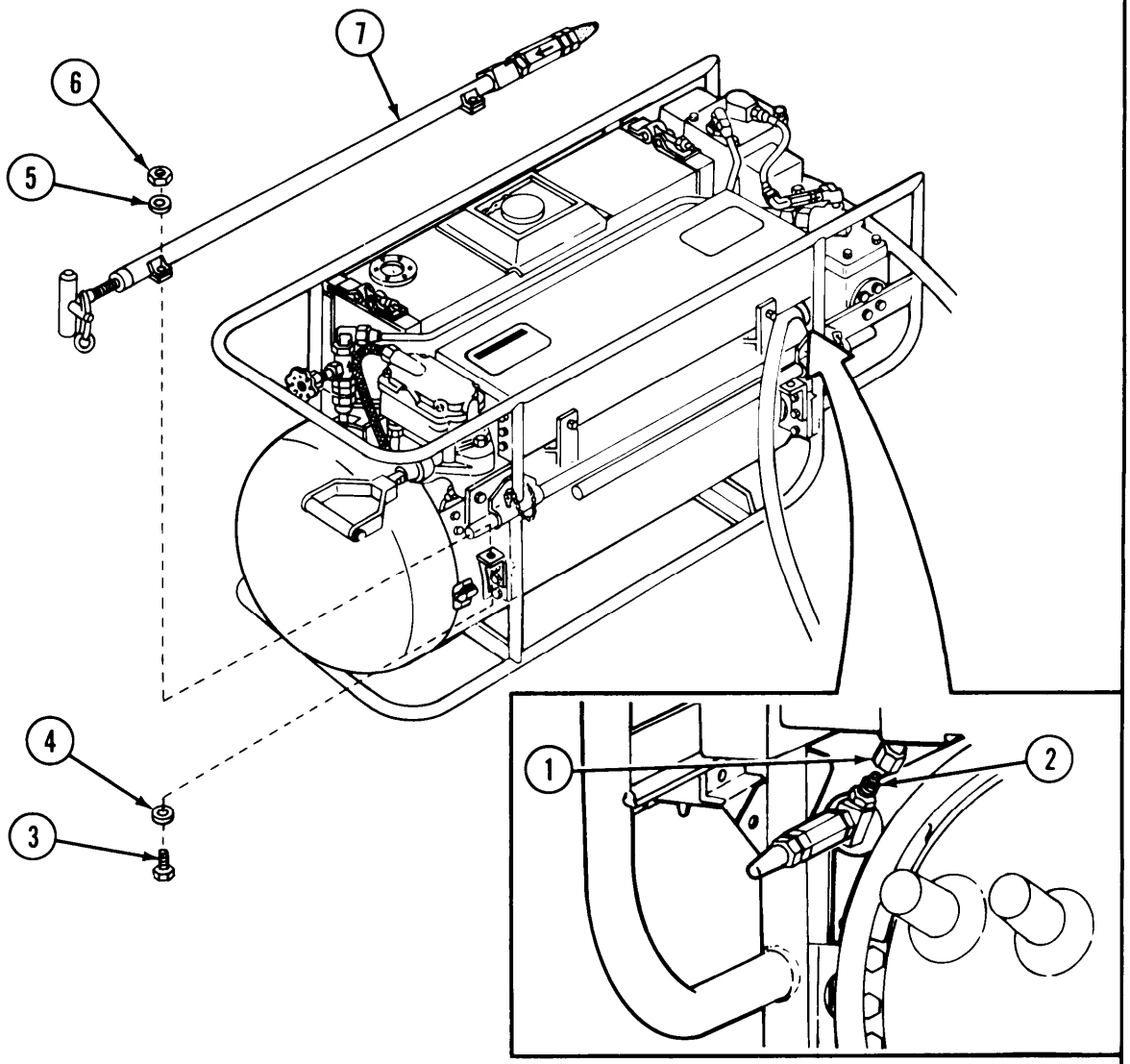


2-7. SMOKE GENERATOR (CONT).

k. *Air Pump Assembly (Cont).*

REMOVAL/INSTALLATION (CONT)

5



Guide check valve end of air pump assembly (7) in through front cover end of smoke generator. Connect tube assembly (1) to adapter (2). Secure air pump assembly (7) to frame with two cap screws (3), two flat washers (4), two lock washers (5), and two nuts (6).

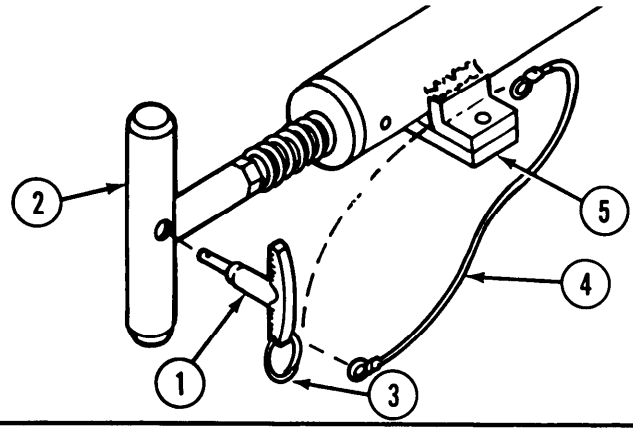
l. *Quick Release Pin and Cable Assembly.*

REPLACE

a. Extract lock pin (1) from air pump assembly handle (2). Open ring (3) and pull nylon cable (4) off ring and from air pump assembly bracket (5).

b. Run one end of nylon cable (4) through air pump assembly bracket (5) and attach both ends to ring (3) on lock pin (1). Close ring (3).

c. Secure air pump assembly handle (2) with lock pin (1).



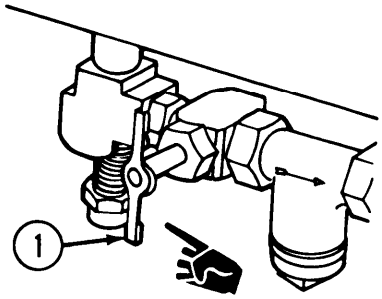
m. *Fuel Hose.*

REMOVAL/INSTALLATION

1

NOTE
Make sure fuel shutoff valve is closed before removing fuel hose. Use a suitable authorized container for draining fuel.

Close fuel shutoff valve (1).

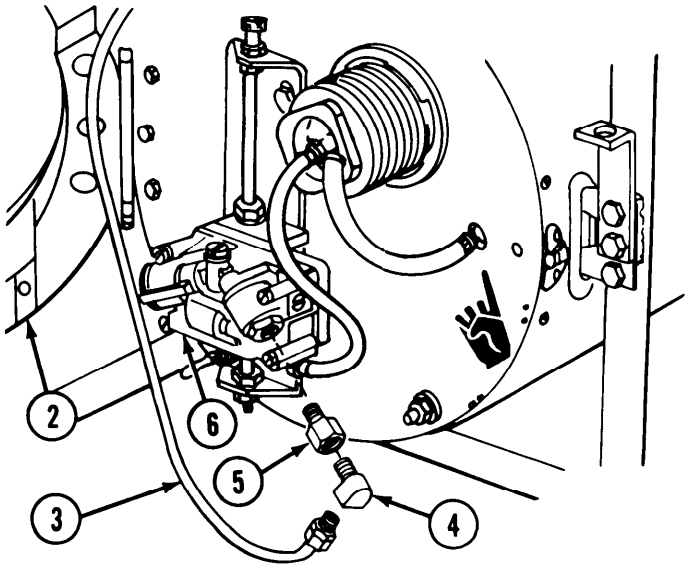


2

a. Open front cover (2), and disconnect fuel hose (3) from elbow (4). Drain fuel into fuel container.

NOTE
Remove elbow (4) and pipe coupling (5) only as necessary to repair.

b. Remove elbow (4) and pipe coupling (5) from carburetor reservoir (6).

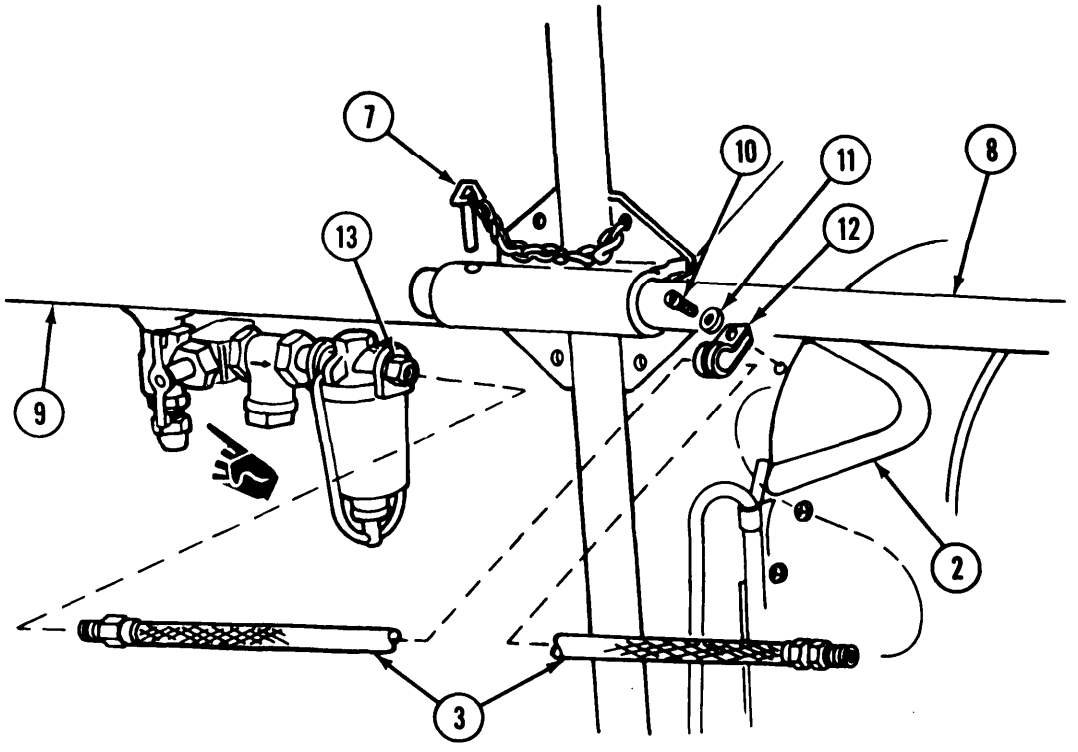


2-7. SMOKE GENERATOR (CONT).

m. *Fuel Hose (Cont).*

REMOVAL/INSTALLATION (CONT)

3



a. Pull two pins (7) and pull out both handles (8) on fuel tank (9) side of smoke generator.

b. Remove screw (10), flat washer (11), clamp (12), and fuel hose (3) from engine assembly outer shell.

c. Separate clamp (12) from fuel hose (3).

d. Disconnect fuel hose (3) from bushing (13).

e. Connect fuel hose (3) to bushing (13). Attach clamp (12) to fuel hose and thread loose end of fuel hose through opening in front cover (2).

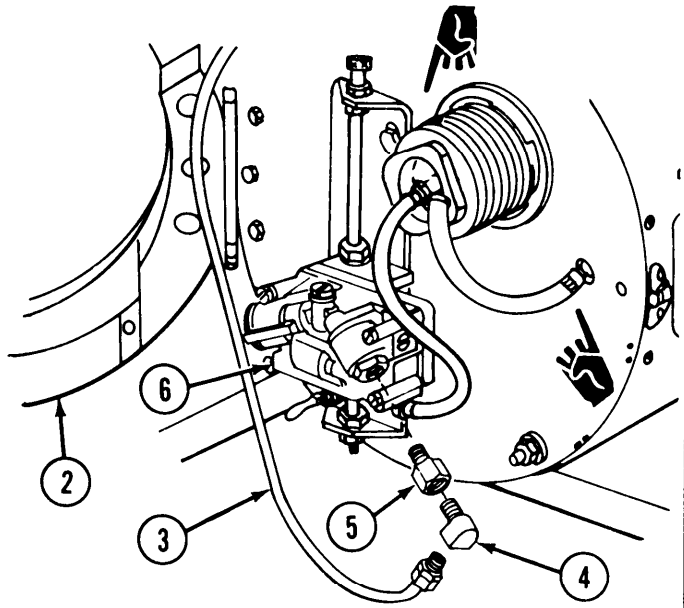
f. Install screw (10), flat washer (11), clamp (12), and fuel hose (3) onto engine assembly outer shell.

g. Push in both handles (8) on fuel tank (9) side of smoke generator and secure with two pins (7)

4

a. Open front cover (2). Install pipe coupling (5) and elbow (4) on carburetor reservoir (6). Offset elbow as shown.

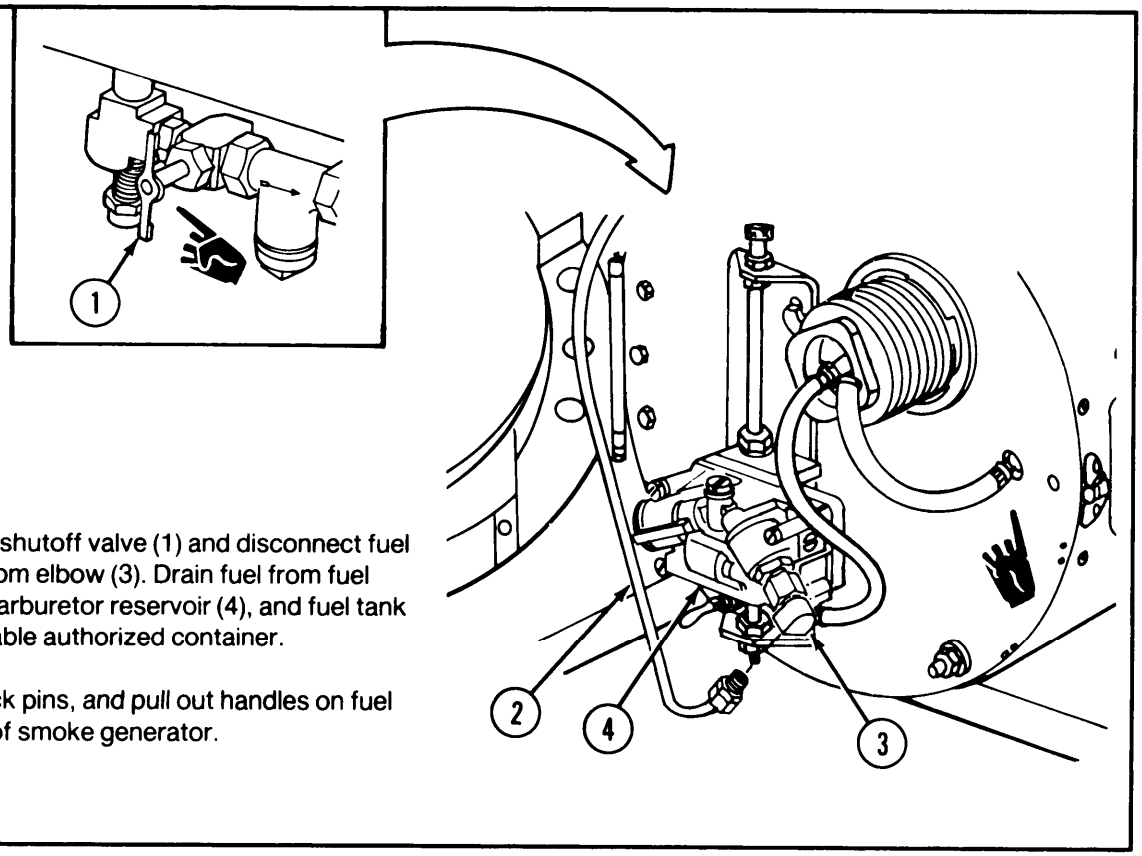
b. Connect fuel hose (3) to elbow (4). Close front cover (2).



n. *Fuel Filter, Sediment Strainer, and Fuel Shutoff Valve.*

REMOVAL/INSTALLATION

1



a. Close fuel shutoff valve (1) and disconnect fuel hose (2) from elbow (3). Drain fuel from fuel hose (2), carburetor reservoir (4), and fuel tank into a suitable authorized container.

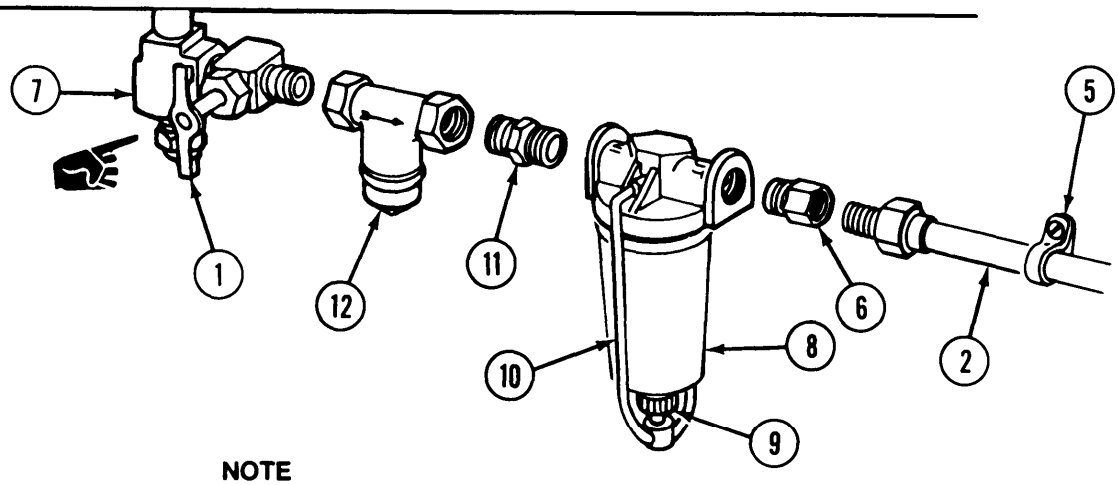
b. Extract lock pins, and pull out handles on fuel tank side of smoke generator.

2-7. SMOKE GENERATOR (CONT).

n. *Fuel Filter, Sediment Strainer, and Fuel Shutoff Valve (Cont).*

REMOVAL/INSTALLATION (CONT)

2



NOTE
Disassemble only as necessary to repair.

a. Loosen clamp (5) and disconnect fuel hose (2) from bushing (6).

b. Unscrew pipe tee (7) 1/4 turn so side opening faces away from fuel tank. This makes removal easier.

c. Remove bushing (6) from fuel filter assembly (8).

d. Loosen bail nut (9) on fuel filter bowl bail, swing bail (10) to side and drain and reassemble fuel filter assembly (8).

e. Unscrew fuel filter assembly (8) from pipe nipple (11) and pipe nipple from sediment strainer (12).

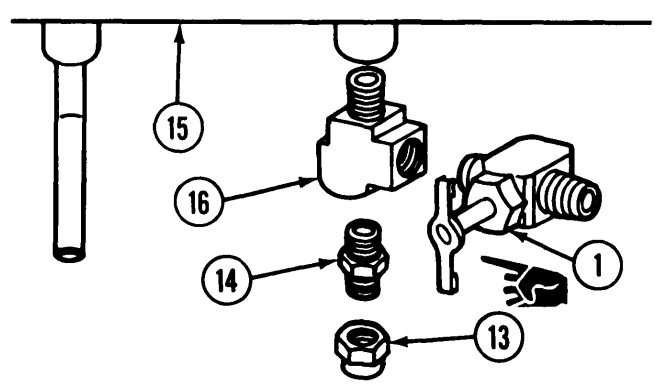
f. Remove sediment strainer (12) from fuel shutoff valve (1).

3

a. Remove cap (13) from nipple (14), drain remaining fuel from fuel tank (15) into suitable fuel container, and remove nipple (14) from pipe tee (16).

b. Remove fuel shutoff valve (1) from pipe tee (16).

c. Remove pipe tee (16) from fuel tank (15).

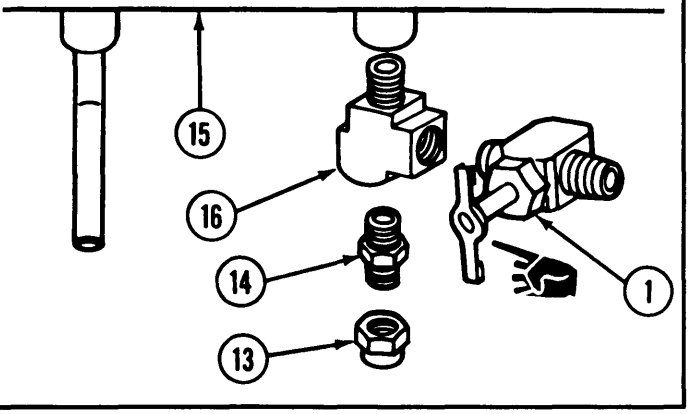


4 Before installing each part, apply sealing compound to threads of male fittings and connectors.

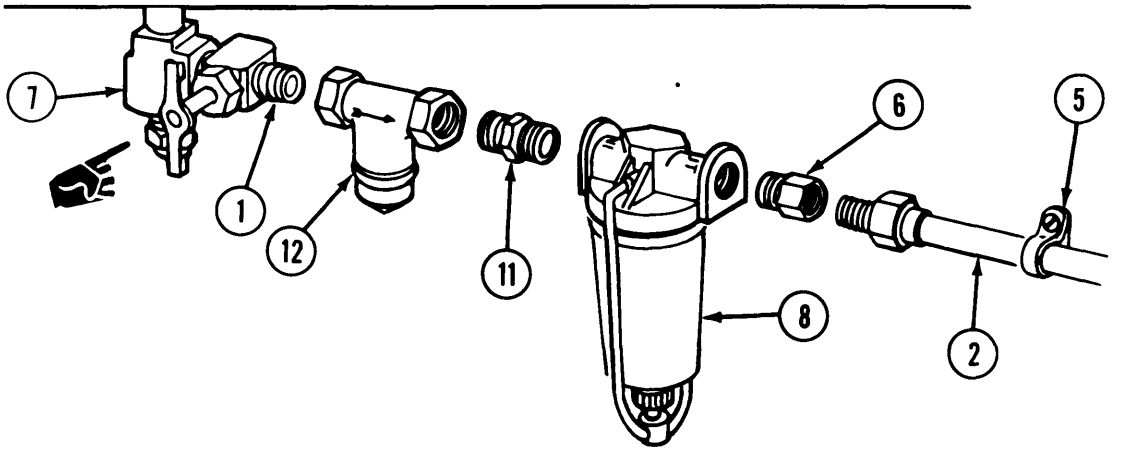
5

a. Install pipe tee (16), nipple (14), and cap (13) into fuel tank (15). Make sure female opening on pipe tee (16) is positioned as illustrated. Back pipe tee (16) off 1/4 turn so female opening faces away from fuel tank to make further installation easier.

b. Install fuel shutoff valve (1) into pipe tee (16) so that handle faces outward. Close fuel shutoff valve (1) after installation.



6



a. Screw sediment strainer (12) into fuel shutoff valve (1).

b. Screw pipe nipple (11) into IN side of fuel filter assembly (8).

c. Screw pipe nipple (11) with fuel filter assembly (8) into sediment strainer (12).

d. Install bushing (6) into fuel filter assembly (8) and connect nonswivel end of fuel hose (2) to bushing (6). Tighten clamp (5).

e. Screw pipe tee (7) 1/4 turn back toward fuel tank.

2-7. SMOKE GENERATOR (CONT).

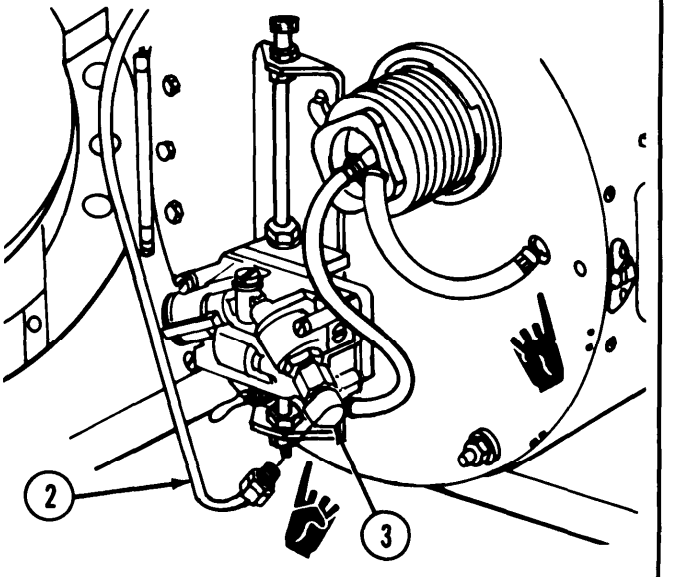
n. *Fuel Filter, Sediment Strainer, and Fuel Shutoff Valve (Cont).*

REMOVAL/INSTALLATION (CONT)

7

a. Push in both handles on fuel tank side of smoke generator, secure with two lock pins.

b. Connect fuel hose (2) to elbow (3) and close front cover.



o. *Smoke Generator.*

PAINTING

CAUTION

Do not paint engine head assembly, filter plug, glass on gages, or nonmetallic parts. Do not let paint clog mounting holes and sliding or moving parts such as handles and levers of valves or controls.

a. Remove burrs, corrosion, and chipped paint.

b. Touch up outside surfaces of smoke generator with primer coating and polyurethane coating. See TM 43-0139.

TESTING

a. Operate smoke generator (TM 3-1040-276-10).

b. If operating magneto-air pump handle after shutdown does not purge exhaust gases or smoke from engine after repairing magneto-air pump assembly (p 2-51) and check valve (p 2-22), report on DA Form 2404 to your supervisor.

2-8. ENGINE ASSEMBLY.

This task covers:
a. Replacing Clamping Catch
b. Replacing Air Hose and Button Plug
c. Replacing Fuel Tube

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5810-90-CL-N26

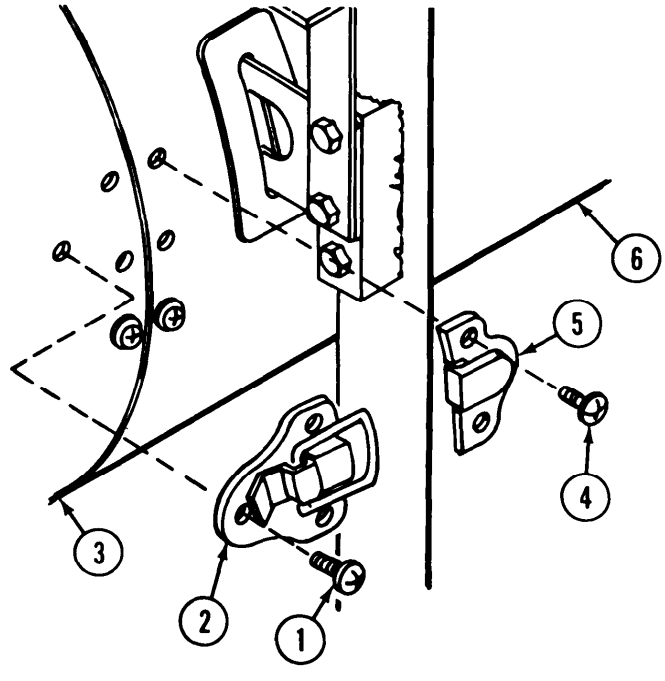
Materials/Parts
Sealing compound (item 11, app C)
Fuel tube (fig D-2)

a. *Clamping Catch.*

REPLACE

a. Remove three screws (1) and clamp (2) from front cover (3). Remove two screws (4) and catch (5) from engine assembly outer shell (6).

b. Install two screws (4) and catch (5) on engine assembly outer shell (6) and three screws (1) and clamp (2) on front cover (3).



2-8. ENGINE ASSEMBLY (CONT).

b. *Air Hose and Button Plug.*

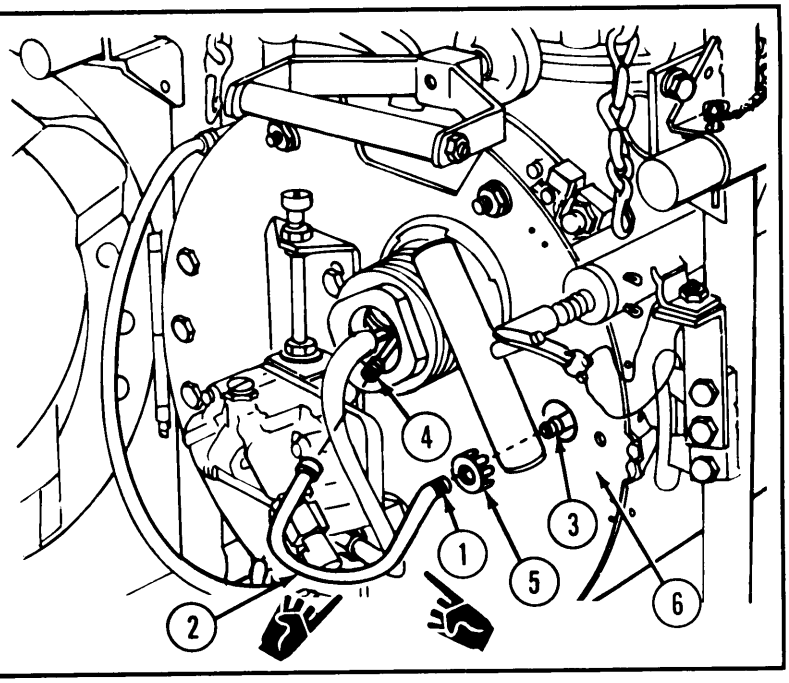
REPLACE

a. Loosen clamp (1) on air hose (2) and pull air hose (2) from tube assembly (3). Unscrew coupling end from flowjector (4).

b. Pry button plug (5) from cooling baffle (6).

c. Install button plug (5) in cooling baffle (6).

d. Screw coupling end of air hose (2) onto flowjector (4) and connect other end to tube assembly (3).

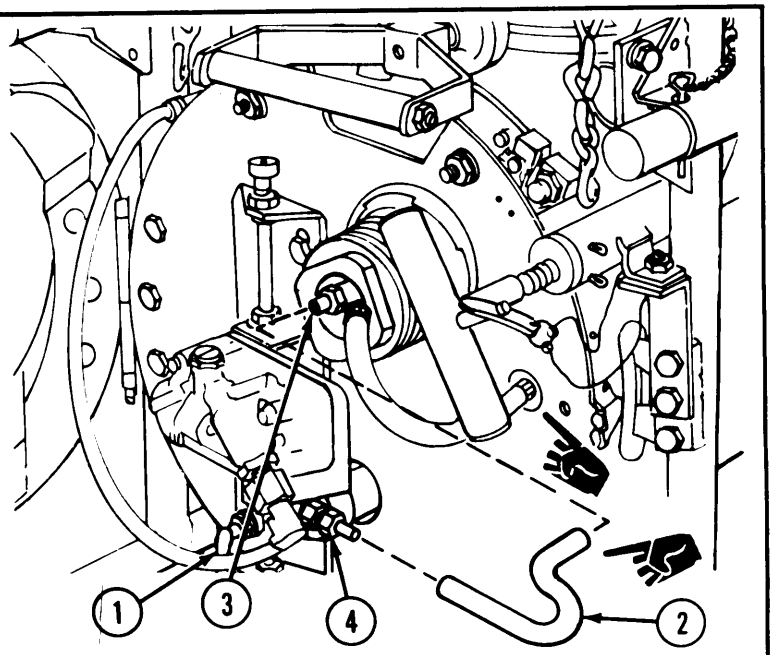


c. *Fuel Tube.*

REPLACE

a. With carburetor reservoir toggle valve (1) closed, remove fuel tube (2) from metering jet (3) and metal tube assembly (4).

b. Cut new fuel tube (fig D-2), slide one end of fuel tube (2) on metering jet (3) and other end on metal tube assembly (4).



2-9. ADJUSTABLE FLOAT ASSEMBLY.

This task covers removal/installation of the:
a Carburetor Reservoir
b. Toggle Valve
c. Adjustment Knob and Spring

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26

Materials/Parts
Rag (item 9, app C)
Sealing compound (item 11 and 12, app C)

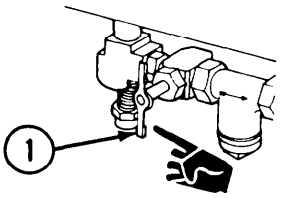
a. *Carburetor Reservoir.*

REMOVAL/INSTALLATION

1

NOTE
Make sure fuel shutoff valve is closed before disconnecting fuel hose from carburetor reservoir.

Close fuel shutoff valve (1).



2

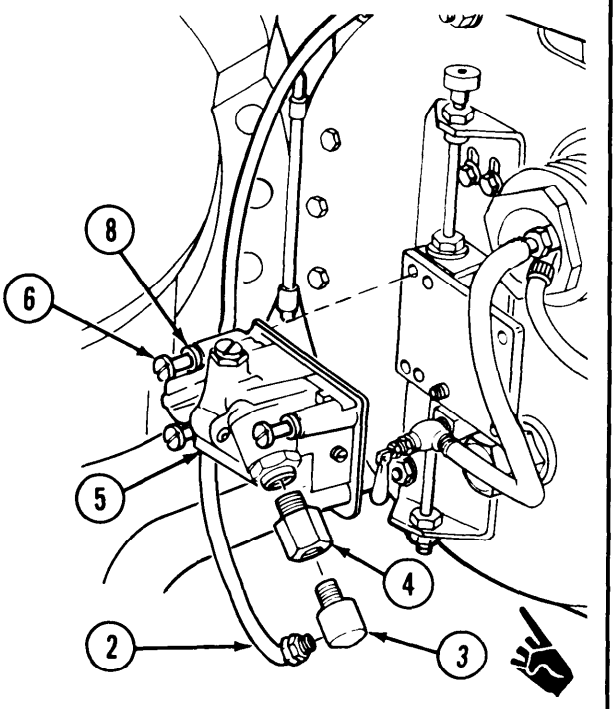
NOTE
Drain fuel from fuel hose into an authorized container.

a. Disconnect fuel hose (2) from elbow (3). Drain fuel into authorized container. Remove elbow (3) and pipe coupling (4) from carburetor reservoir (5).

b. Loosen four screws (6) and remove carburetor reservoir (5) from mounting plate (7).

c. Secure carburetor reservoir (5) to mounting plate (7) with four screws (6) and gaskets (8).

d. Apply sealing compound to fuel hose (2) and male threads of elbow (3) and pipe coupling (4). Install pipe coupling (4) and elbow (3) on carburetor reservoir. Connect fuel hose (2) to elbow (3).



2-9. ADJUSTABLE FLOAT ASSEMBLY (CONT).

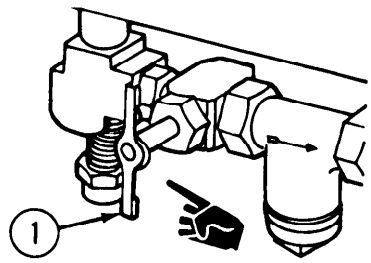
b. *Toggle Valve.*

REMOVAL/INSTALLATION

1

NOTE
Make sure fuel shutoff valve is closed before disconnecting fuel hose from carburetor reservoir.

Close fuel shutoff valve (1).

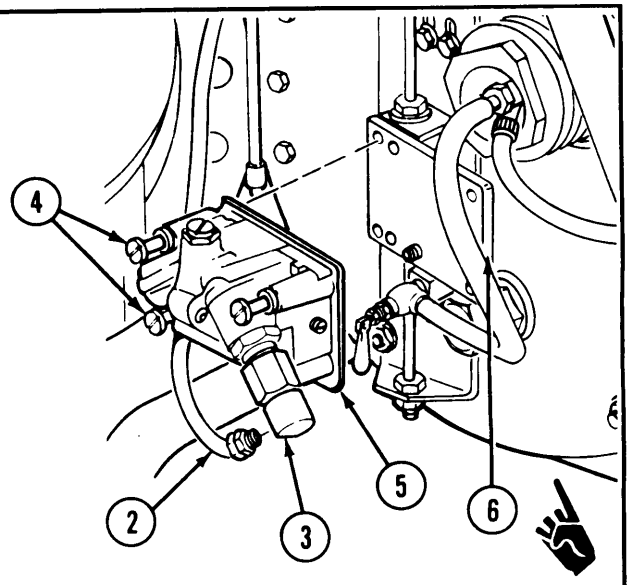


2

NOTE
Drain fuel from fuel hose into an authorized container.

a. Disconnect fuel hose (2) from elbow (3). Drain fuel into an authorized container.

b. Loosen four screws (4) and remove carburetor reservoir (5) from mounting plate (6).

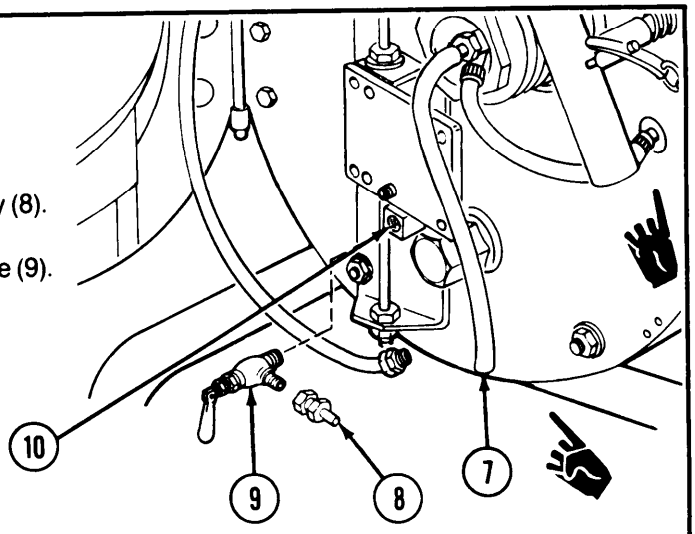


3

a. Disconnect fuel tube (7) from metal tube assembly (8).

b. Remove metal tube assembly (8) from toggle valve (9).

c. Remove toggle valve (9) from elbow (10).

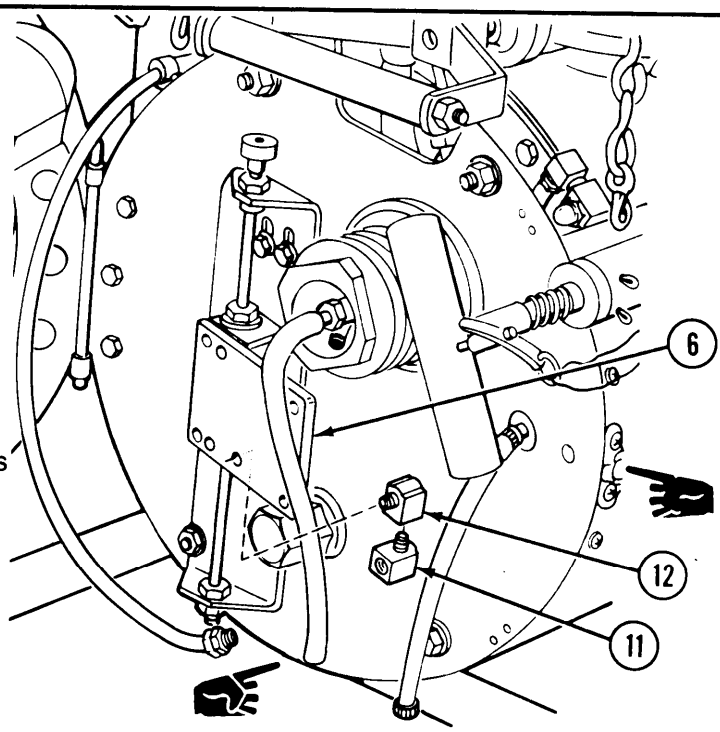


4

NOTE
Remove elbows (11 and 12) only if they need repair.

a. Remove elbows (11 and 12) from mounting plate (6).

b. Apply sealing compound to threads of elbows (11 and 12) and install elbows on mounting plate (6).

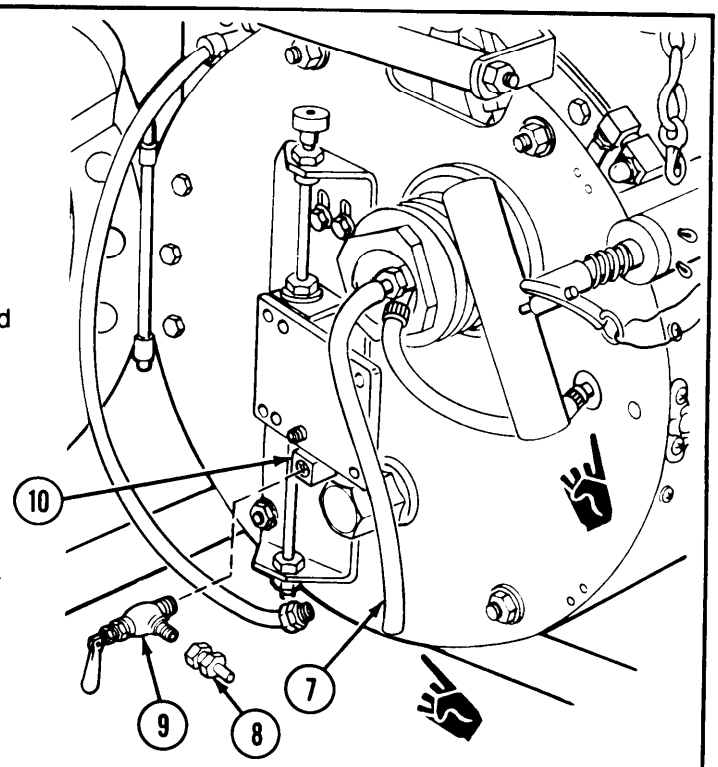


5

a. Apply sealing compound to threads of elbow end of toggle valve (9). Install toggle valve (9) on elbow (10).

b. Apply sealing compound to threads of toggle valve. Install metal tube assembly (8) on toggle valve (9).

c. Connect fuel tube (7) to metal tube assembly (8).



2-9. ADJUSTABLE FLOAT ASSEMBLY (CONT).

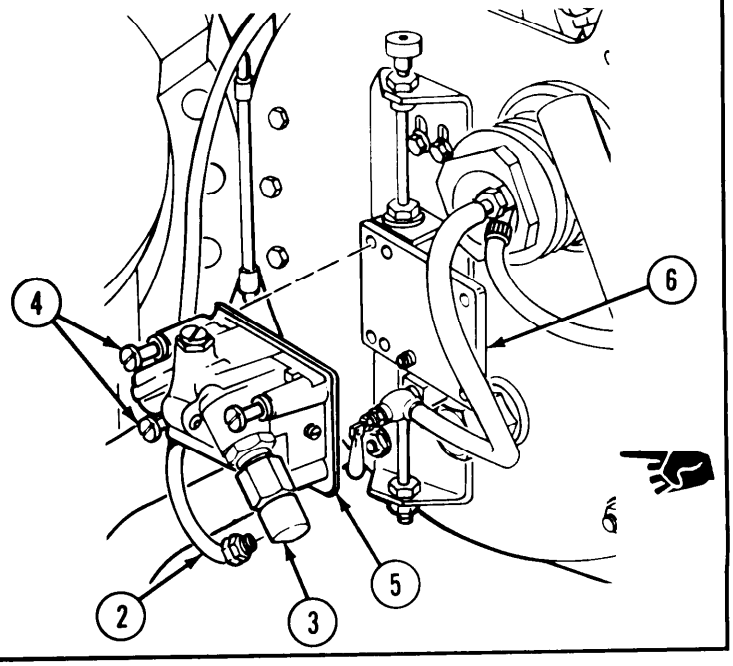
b. *Toggle Valve (Cont).*

REMOVAL/INSTALLATION (CONT)

6

a. Position carburetor reservoir (5) on mounting plate (6) and secure with four screws (4).

b. Connect fuel hose (2) to elbow (3).

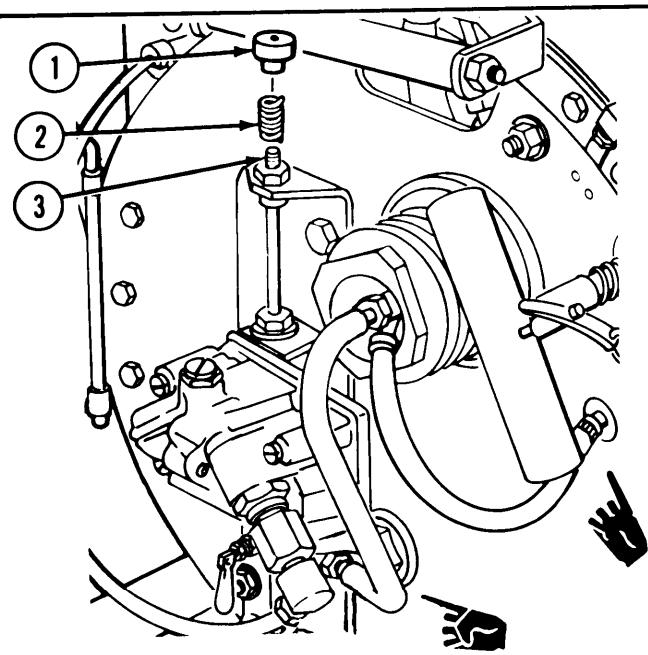


c. *Adjustment Knob and Spring.*

REMOVAL/INSTALLATION

a. Remove adjustment knob (1) and spring (2) from center rod (3).

b. Apply sealing compound (item 12, app C) (LOCTITE222) to internal threads of adjustment knob (1). Install spring (2) and adjustment knob (1) on center rod (3).



2-10. ENGINE HEAD ASSEMBLY.

This task covers:
a. Disassembly
b. Cleaning/Inspect/Repair
c. Reassembly

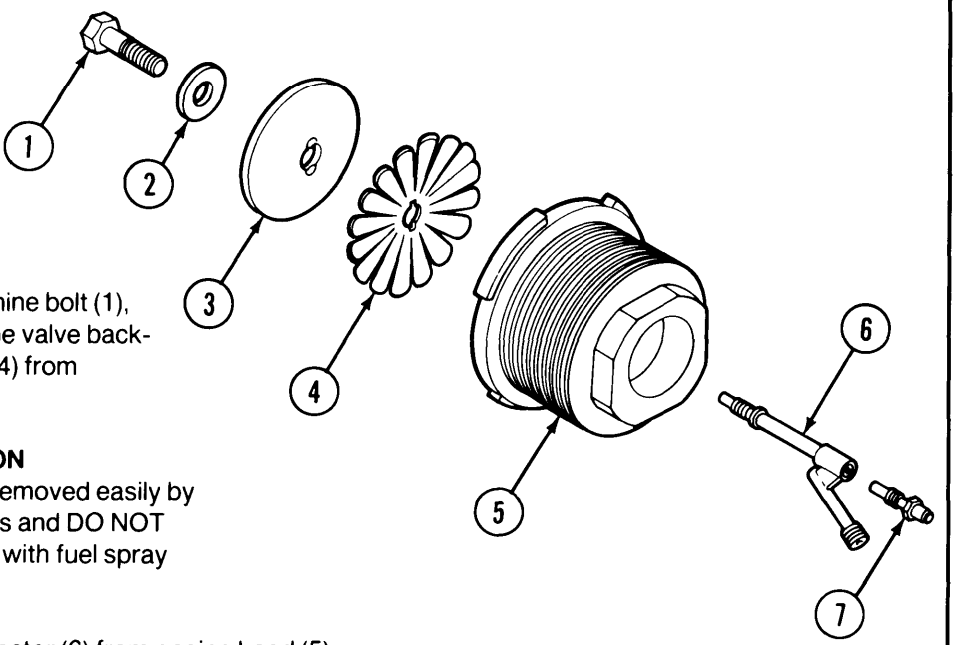
INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5810-90-CL-N26

References
TM 3-1040-276-10
TM 3-1040-276-23P

Equipment Condition
Engine head assembly removed from engine assembly (TM 3-1040-276-10).

DISASSEMBLY



a. Unscrew and remove machine bolt (1), backstop washer (2), engine valve backstop (3), and engine valve (4) from engine head (5).

CAUTION
If flowjector cannot be removed easily by hand, carefully use pliers and DO NOT bend air tube out of line with fuel spray openings.

b. Unscrew and remove flowjector (6) from engine head (5).

c. Unscrew and remove metering jet (7) from flowjector (6).

CLEANING/INSPECT/REPAIR

See TM 3-1040-276-10 for repair procedures. Replace damaged parts (TM 3-1040- 276-23P).

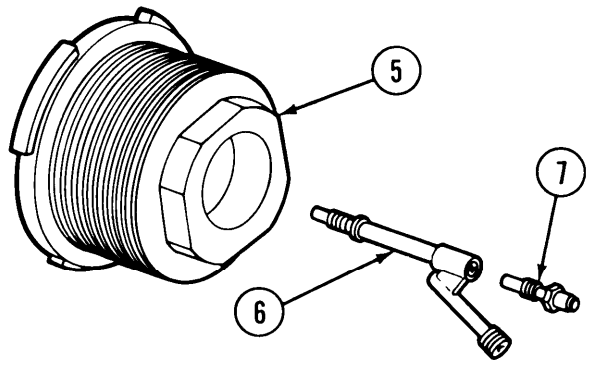
2-10. ENGINE HEAD ASSEMBLY (CONT).

REASSEMBLY

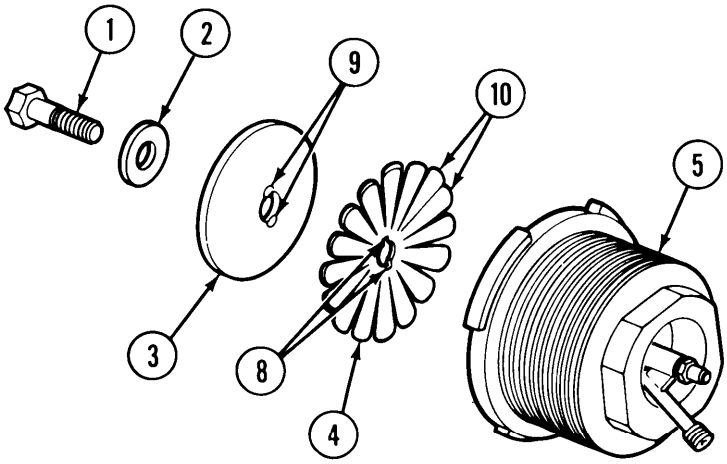
1

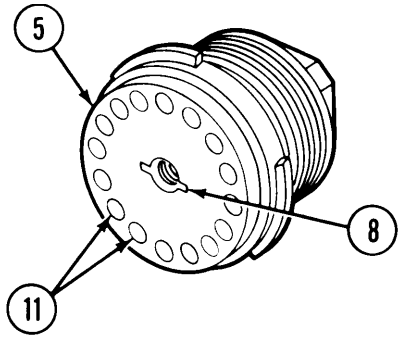
a. Screw metering jet (7) in flowjector (6). Hand tighten snugly but do not force.

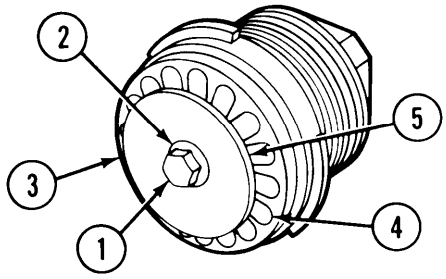
b. Screw flowjector (6) in engine head (5). Hand tighten snugly. Do not exert pressure against air tube.



2







a. Assemble backstop washer (2) and engine valve backstop (3) on machine bolt (1).

b. Position smooth side of engine valve (4) on seating surface of engine head (5) so that indexing slots (8) on valve are alined with slots (8) in engine head.

c. Fit engine valve backstop (3) so that bosses (9) slip easily into indexing slots in engine valve (4) and engine head (5).

d. Carefully tighten machine bolt (1) without damaging threads in engine head (5) or moving petals (10) on engine valve (4) off engine head ports (11).

2-10.1. ENGINE TUBE ASSEMBLY.

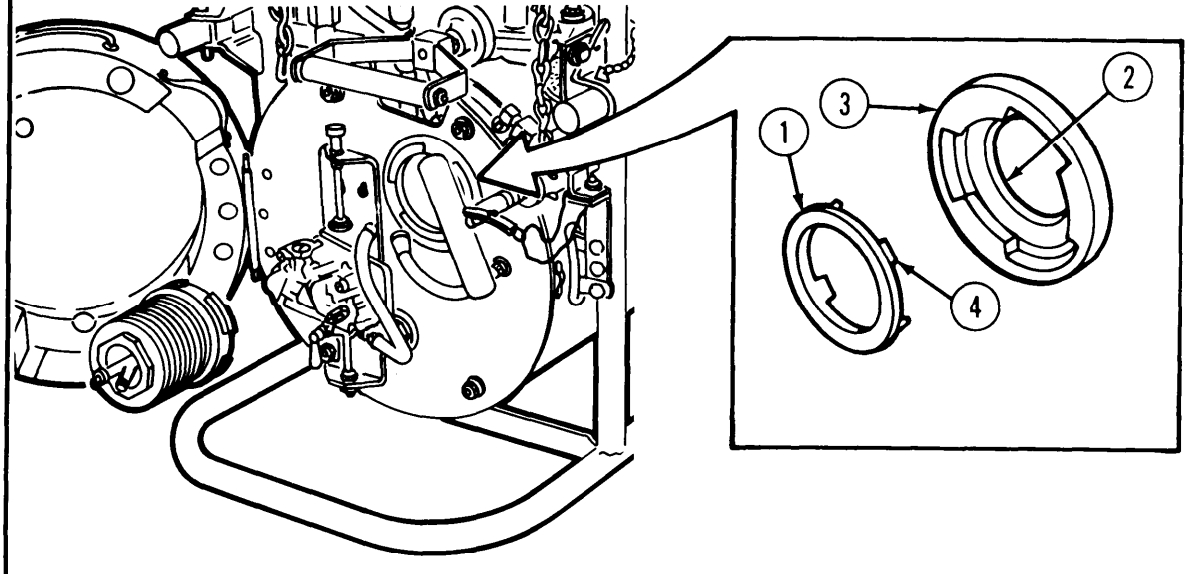
This task covers replacement of engine head gasket.

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26

Equipment Condition
Engine head assembly removed from engine assembly (TM 3-1040-276-10).

REPLACE



a. Pry engine head gasket (1) from combustion chamber ring (2) in engine tube assembly (3).

CAUTION
Take care not to damage gasket surface when installing gasket.

b. Install engine head gasket (1) on combustion chamber ring (2) and secure by bending tabs (4) outward from center of engine tube assembly (3).

2-11. FUEL TANK ASSEMBLY.

This task covers replacement of:
a. Fuel Cap
b. Fuel Gage

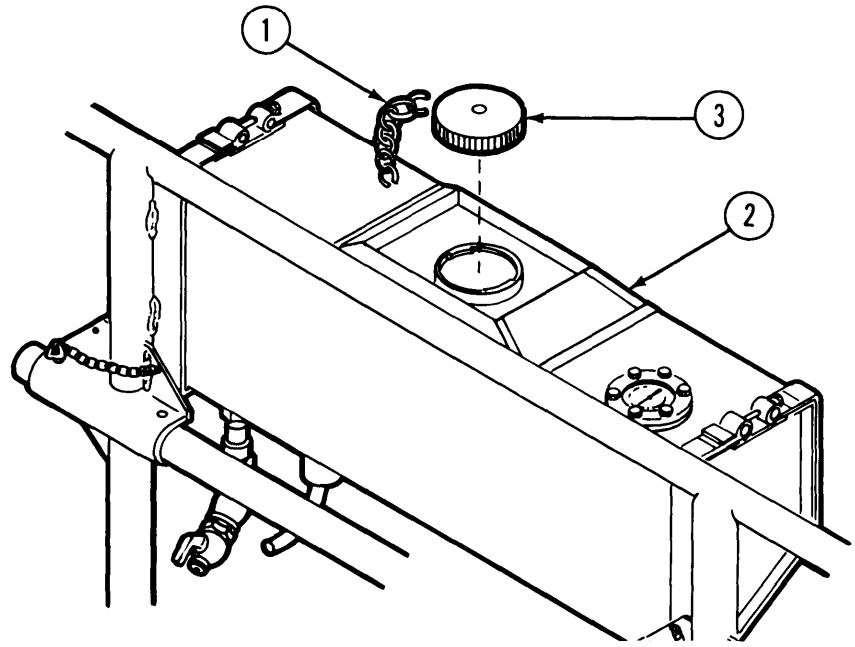
INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26

Materials/Parts
Chain (fig D-3)

a. *Fuel Cap.*

REPLACE



a. Unhook chain (1) from fuel tank (2) and fuel cap (3) by bending links at each end of chain. Remove fuel cap (3) from fuel tank (2).

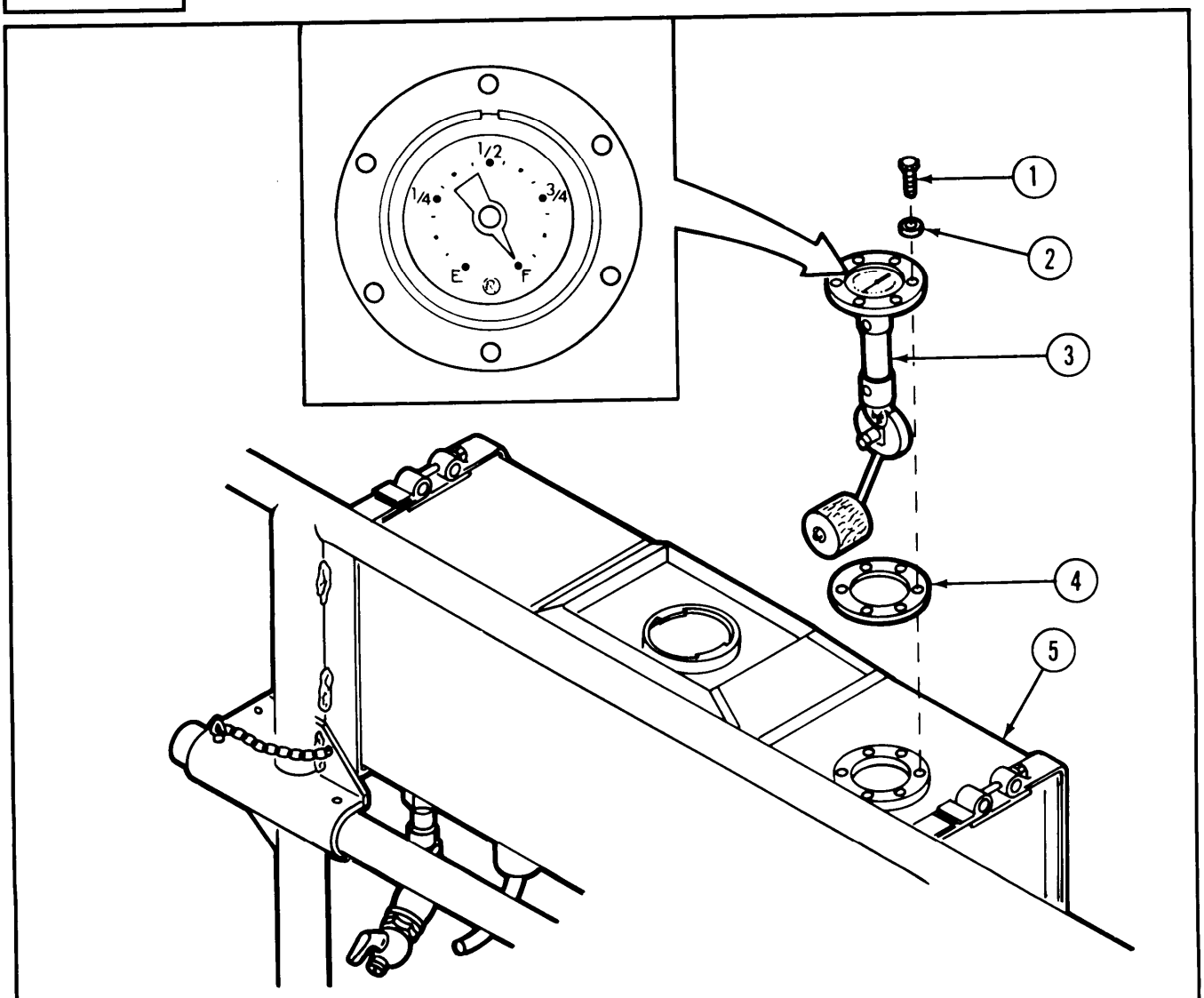
b. Make new chain (fig D-3).

c. Attach chain (1) to fuel tank (2) and fuel cap (3) by bending links at each end of chain. Install fuel cap (3) on fuel tank (2).

2-11. FUEL TANK ASSEMBLY (CONT).

b. *Fuel Gage.*

REPLACE



a. Remove six screws (1), six lock washers (2), fuel gage (3), and gasket (4) from fuel tank (5). Shift fuel gage (3) as required to draw float through opening.

b. Seat gasket (4) on fuel tank (5) opening and aline mounting holes.

c. Insert fuel gage (3) float through gasket (4) and fuel tank (5) opening. Position gage so it can be read from fuel tank side of smoke generator as illustrated. Secure with six screws (1) and six lock washers (2).

2-12. MAGNETO AIR PUMP ASSEMBLY.

This task covers:
a. Disassembly
b. Repair
c. Reassembly

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26
Automotive Vehicle Shop Equipment
SC 4910-95-CL-A74

Materials/Parts
Dry cleaning solvent (item 4, app C)
Grease (item 7, app C)
Lubricating oil (item 6, app C)
Rag (item 9, app C)

References
TM 3-1040-276-23P

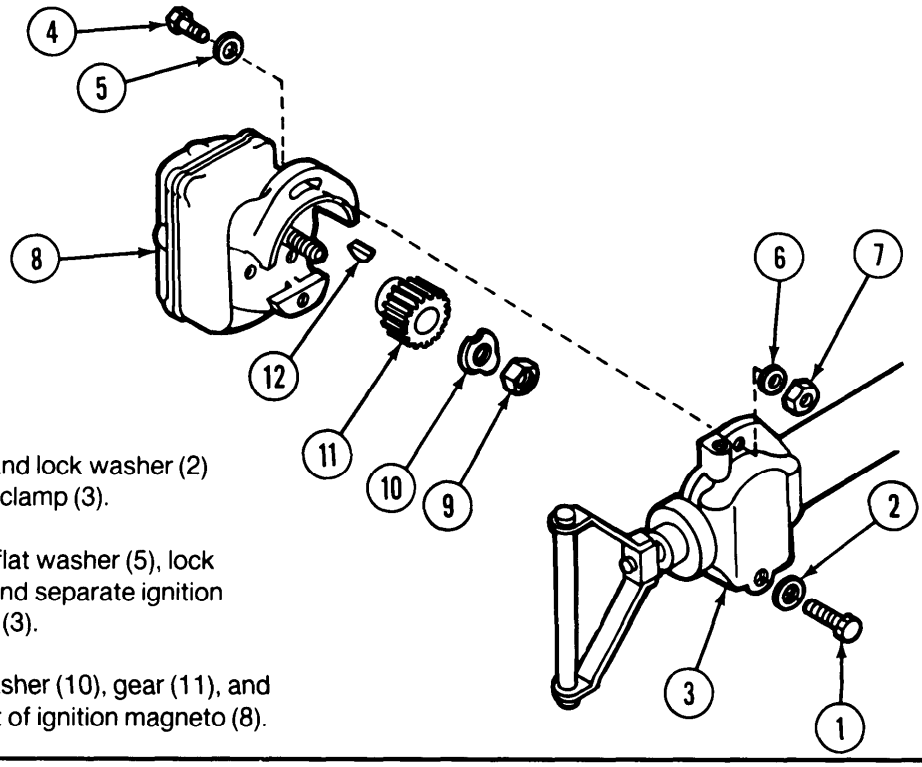
Equipment Condition
Magneto air pump assembly removed from smoke generator (p 2-23).

DISASSEMBLY

1

NOTE
Disassemble only as necessary for repair.

2



a. Remove cap screw (1) and lock washer (2) from magneto air pump clamp (3).

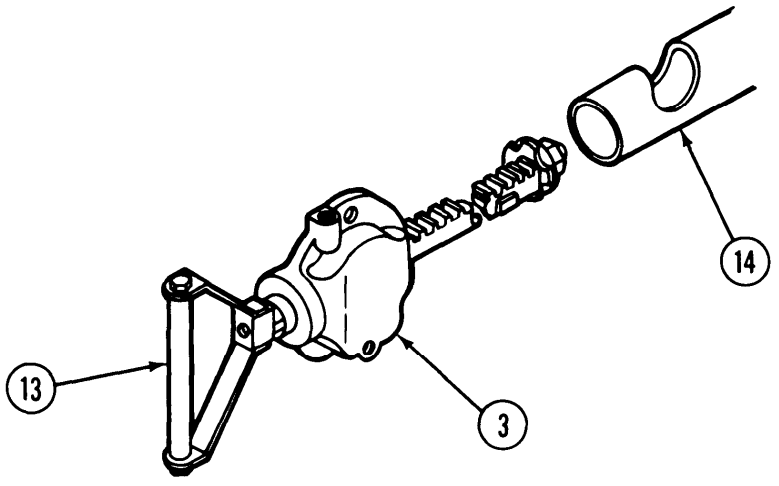
b. Remove cap screw (4), flat washer (5), lock washer (6), and nut (7) and separate ignition magneto (8) from clamp (3).

c. Remove nut (9), lock washer (10), gear (11), and key (12) from rotor shaft of ignition magneto (8).

2-12. MAGNETO AIR PUMP ASSEMBLY (CONT).

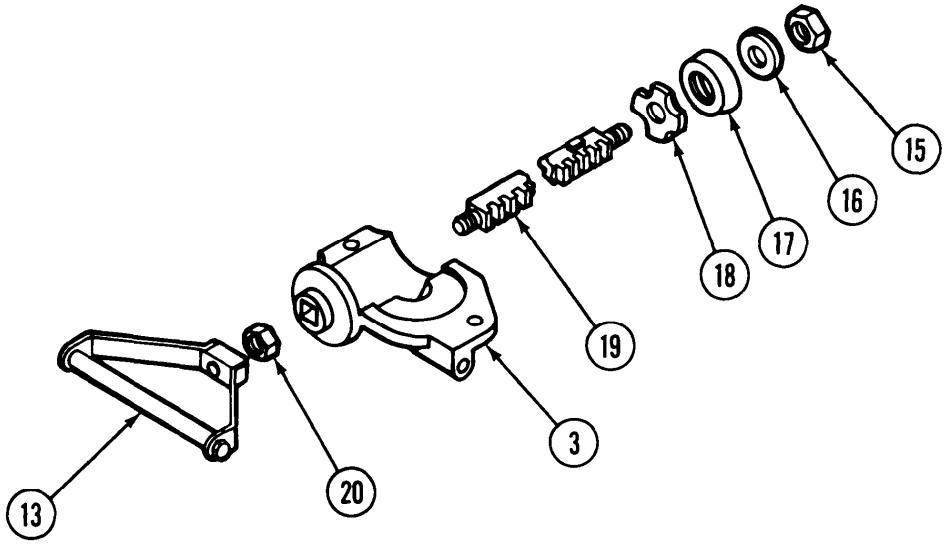
DISASSEMBLY (CONT)

3



Pull magneto air pump handle (13) and clamp (3) from magneto air pump tube (14).

4

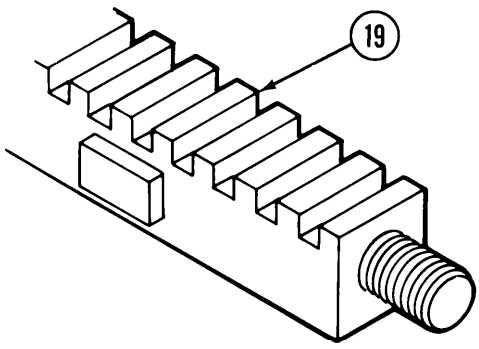


a. Remove self-locking nut (15), washer (16), plunger (17), and plunger support (18) from rack (19).

b. Loosen nut (20) and remove magneto air pump handle (13) and nut from rack (19). Pull rack (19) free from clamp (3).

REPAIR

1



a. Clean parts with dry cleaning solvent and rag. Wipe dry.

b. Inspect rack (19) for broken teeth and for stripped threads. Straighten rack if bent.

2

a. Inspect plunger for tears, wear, or deformation.

b. Inspect handle for missing nut or broken grip.

c. Inspect tube for cracks or punctures. Report damage on DA Form 2404.

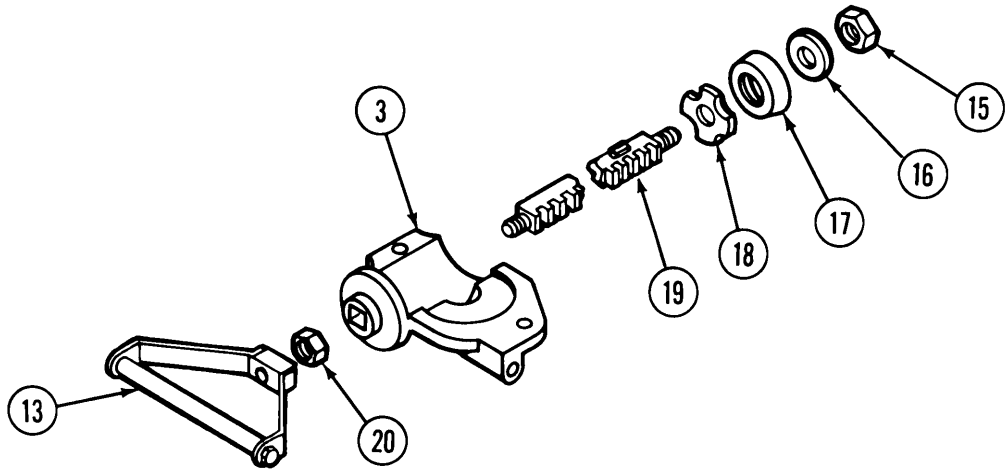
d. Inspect gear for broken teeth.

e. Inspect for stripped threads on screws.

f. Replace authorized parts which do not pass inspection criteria (TM 3-1040-276-23P).

REASSEMBLY

1



a. Install rack (19) through opening in clamp (3) and install nut (20) and position magneto air pump handle (13) on rack as shown. Tighten nut (20).

b. Install plunger support (18), plunger (17), washer (16), and nut (15) on rack (19).

c. Lubricate plunger (17) with lubricating oil. Fill clamp (3) cup with grease.

2-12. MAGNETO AIR PUMP ASSEMBLY (CONT).

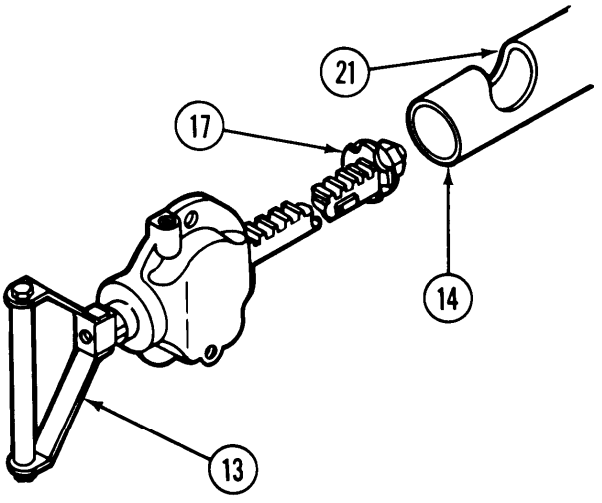
REASSEMBLY (CONT)

2

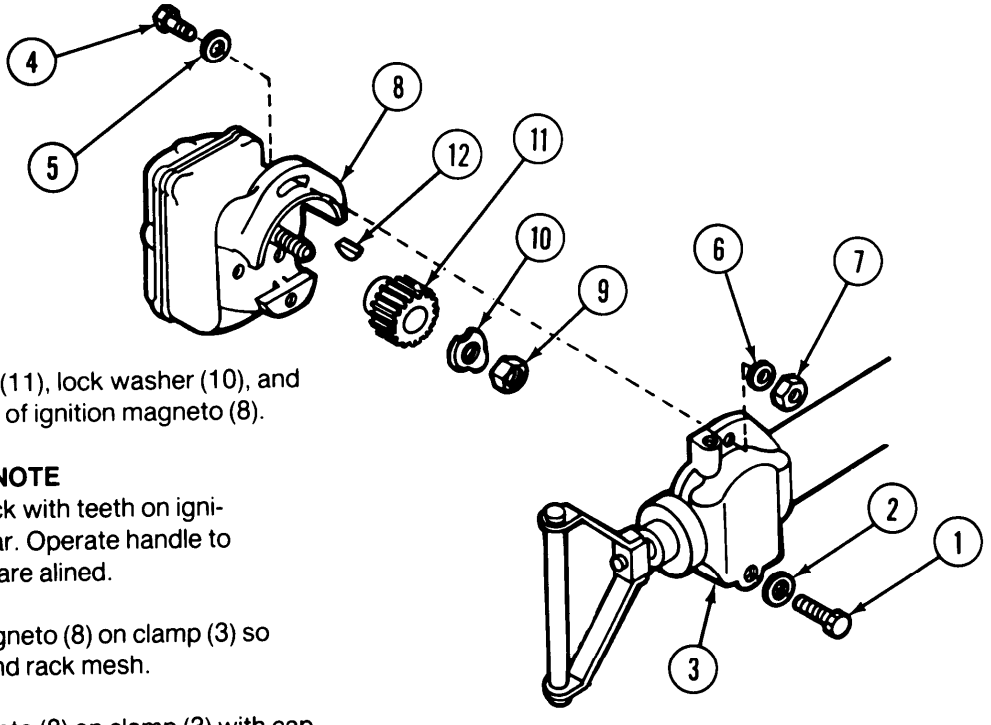
CAUTION

When inserting plunger (17) into magneto air pump tube (14), carefully guide plunger past edges of gear opening (21) in tube. Forcing plunger against the edges will cut or tear the plunger.

Lubricate inside of tube (14) with lubricating oil and insert plunger (17) into tube (14) and guide plunger past edges of gear opening (21) in tube while slowly pushing handle (13).



3



a. Install key (12), gear (11), lock washer (10), and nut (9) on rotor shaft of ignition magneto (8).

NOTE

Aline teeth on rack with teeth on ignition magneto gear. Operate handle to make sure teeth are alined.

b. Position ignition magneto (8) on clamp (3) so teeth on gear (11) and rack mesh.

c. Install ignition magneto (8) on clamp (3) with cap screw (4), flat washer (5), lock washer (6), nut (7), lock washer (2), and cap screw (1). Tighten.

d. Install magneto air pump assembly on smoke generator (p 2-23).

2-13. IGNITION MAGNETO ASSEMBLY.

This task covers:
a. Disassembly
b. Repair
c. Reassembly

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26

Materials/Parts
Dry cleaning solvent (item 4, app C)
Rag (item 9, app C)

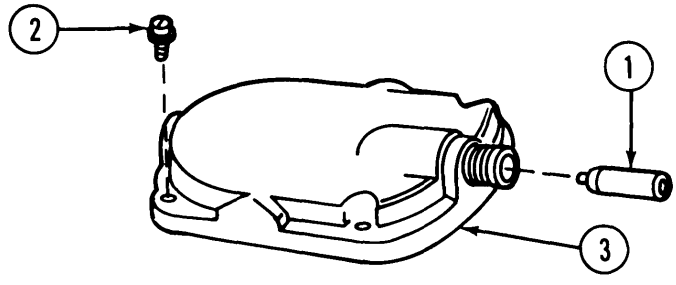
References
TM 3-1040-276-23P

Equipment Condition
Ignition magneto assembly removed from magneto air pump assembly (p 2-51).

General Safety Instructions
Wash hands to avoid lead poisoning after handling lead gaskets.

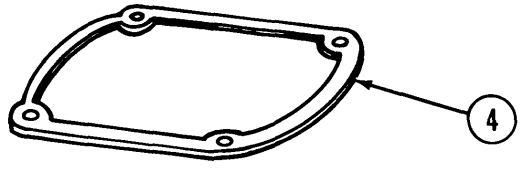
DISASSEMBLY

1

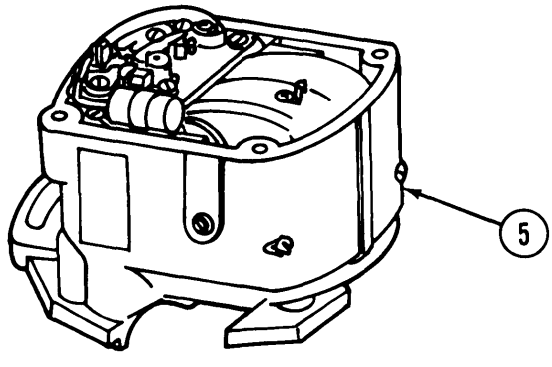


a. Remove ignition terminal sleeve (1) and four cap screws (2) from cap (3).

WARNING
Gasket is made of lead. Wash hands to avoid lead poisoning after handling lead gasket.



b. Remove cap (3) and gasket (4) from ignition magneto housing (5).



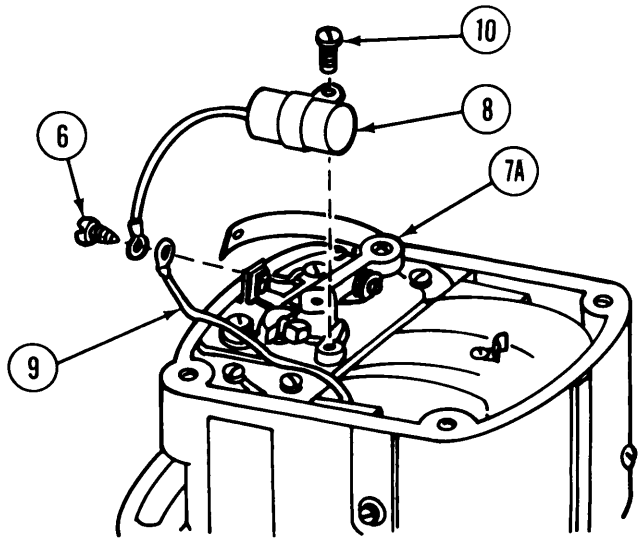
2-13. IGNITION MAGNETO ASSEMBLY (CONT).

DISASSEMBLY (CONT)

2

a. Remove terminal lock washer screw (6) from base of contact set (7) to disconnect lead of capacitor (8), lead of coil (9), and spring lever of contact set (7A).

b. Remove screw (10) and lift out capacitor (8).



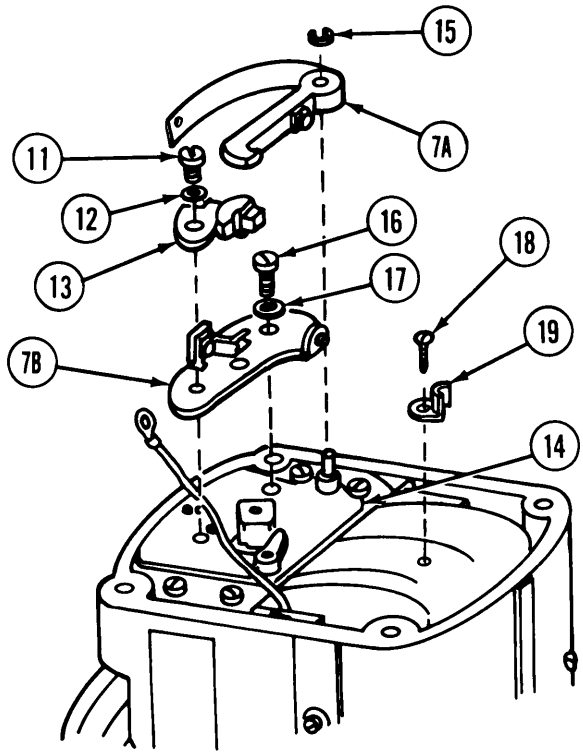
3

a. Remove screw (11), flat washer (12), and cam wick and holder (13) from bearing support (14).

b. Remove snap ring (15) and lift spring lever of contact set (7A) from bearing support (14).

c. Remove support screw (16) and flat washer (17) and lift base of contact set (7B) from bearing support.

d. Remove screw (18) and coil clip (19).



REPAIR

CAUTION

Do not clean cam wick and holder, ignition terminal sleeve, capacitor, or coil with dry cleaning solvent. Clean all moving parts with dry cleaning solvent and rag. Wipe dry with rag.

Inspect parts for damage. Replace authorized parts that are damaged (TM 3-1040-276- 23P).

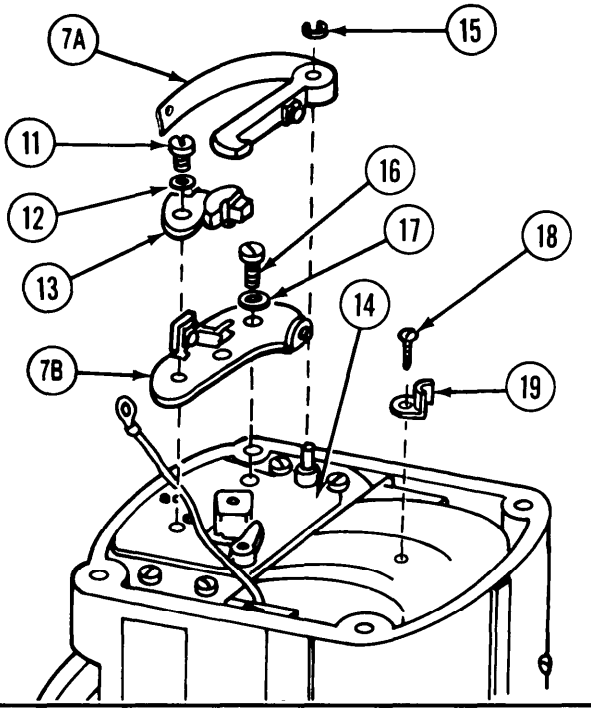
REASSEMBLY

1

a. Install coil clip (19) and screw (18).

b. Seat base of contact set (7B) in bearing support (14). Secure with support screw (16) and flat washer (17). Secure spring lever of contact set (7A) to bearing support (14) with snap ring (15).

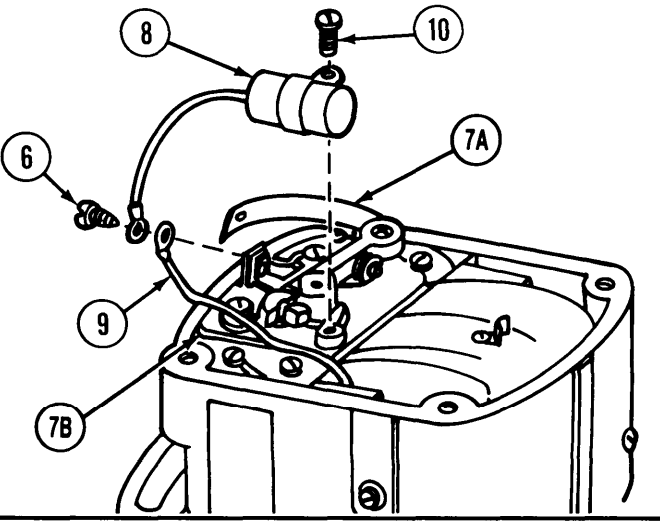
c. Secure cam wick and holder (13) to contact set (7B) and bearing support (14) with screw (11) and flat washer (12) and tighten.



2

a. Install capacitor (8) with screw (10).

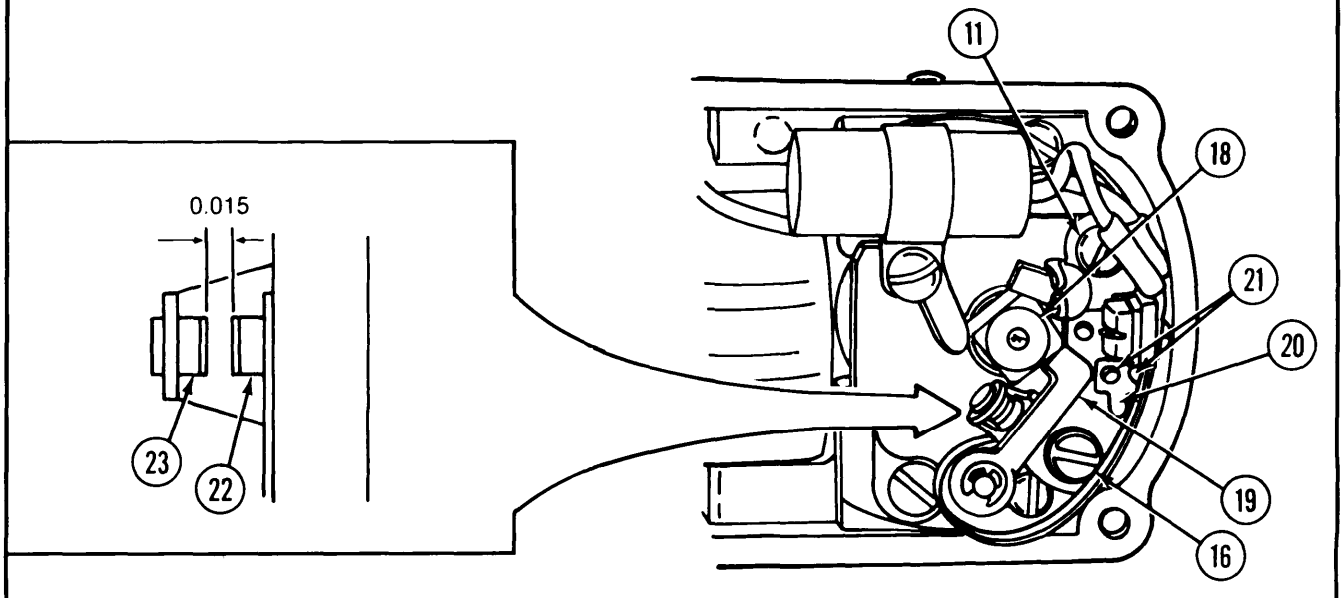
b. Install spring lever of contact set (7A), lead of coil (9), lead of capacitor (8), and terminal lock washer screw (6) on base of contact set (7B).



2-13. IGNITION MAGNETO ASSEMBLY (CONT).

REASSEMBLY (CONT)

3



NOTE

Support screw (16) and screw (11) should be friction-tight to hold base of contact set in place while point gap is being adjusted.

a. Rotate cam (18) so that the breaker arm (19) of contact set sits on high center. Insert screwdriver blade in slot (20) in base of contact set and between the two adjustment pins (21).

b. Insert 0.015-inch feeler gage between contact point (22) on breaker arm and contact point (23) on base of contact set. Pivot screwdriver blade to move base of contact set until feeler gage slides in and out between points with little resistance or play.

c. Lock base of contact set in place by tightening support screw (16). Tighten screw (11).

d. Check point gap again. If gap is incorrect, loosen support screw (16) and screw (11) and return to step 3b.

4

WARNING

Gasket is made of lead. Wash hands to avoid lead poisoning after handling lead gaskets.

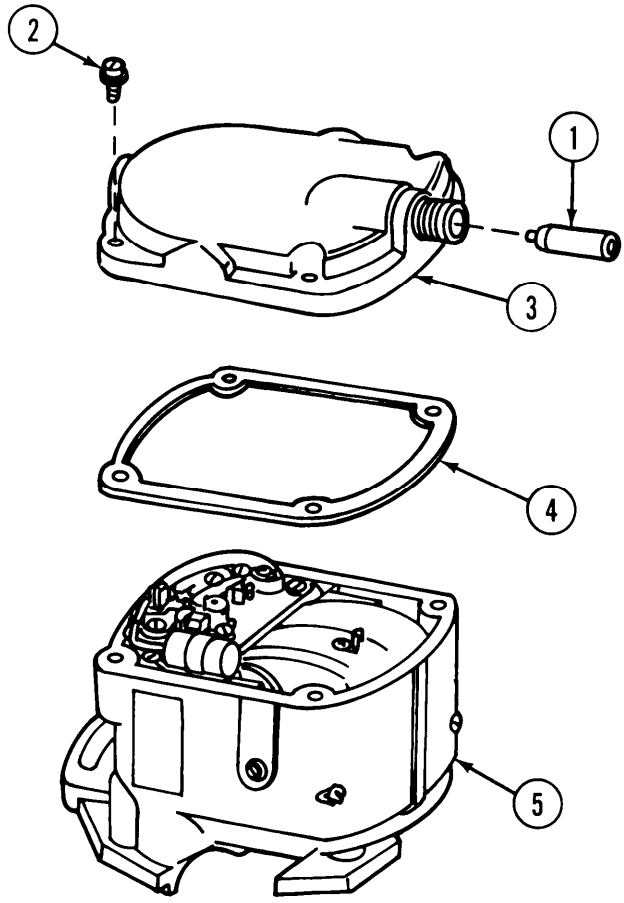
CAUTION

Aline mounting holes in gasket with mounting holes in magneto housing before installing gasket. The lead gasket becomes easily distorted if not handled carefully and installed properly.

Do not install ignition terminal sleeve in cap until gasket and cap have been installed on magneto housing. Pressure from installing cap can crack ignition terminal sleeve.

a. Install gasket (4) and cap (3) on magneto housing (5) with four cap screws (2).

b. Insert ignition terminal sleeve (1) in cap outlet.



2-14. FOG OIL INLET HOSE ASSEMBLY.

This task covers disassembly/repair/reassembly.

INITIAL SETUP

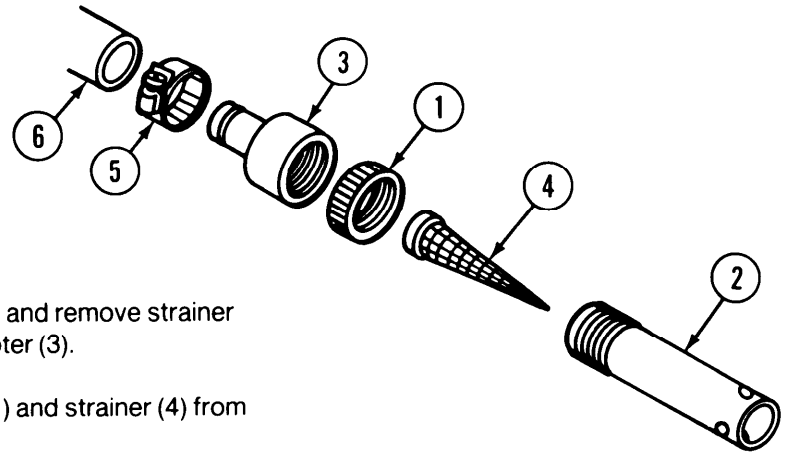
Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26

Materials/Parts
Dry cleaning solvent (item 4, app C)
Rag (item 9, app C)
Hose (fig D-4)

References
TM 3-1040-276-23P

Equipment Condition
Fog oil inlet hose removed from fog oil pump (p 2-25).

DISASSEMBLY/REPAIR/REASSEMBLY



a. Loosen lock ring (1) and remove strainer guard (2) from adapter (3).

b. Remove lock ring (1) and strainer (4) from strainer guard (2).

c. Loosen clamp (5) and remove adapter (3) and clamp (5) from hose (6).

d. Clean metal parts with dry cleaning solvent and rag.

e. Inspect strainer for tears and strainer guard for stripped threads.

f. Inspect hose for cuts, frays, or burns.

g. Replace authorized parts that are damaged (TM 3-1040-276-23P). Make new hose (fig D-4) if damaged.

h. Slip clamp (5) on hose (6). Insert adapter (3) on hose (6) and tighten clamp (5).

i. Screw lock ring (1) onto strainer guard (2) to end of threads.

j. Insert strainer (4) into strainer guard (2).

k. Screw strainer guard (2) into adapter (3). Handtighten lock ring (1).

2-15. M4 FOG OIL PUMP - EXTERNAL FITTINGS.

This task covers replacement of:

a. Air Check Valve Assembly
b. Oil Flow Check Valve
c. Fog Oil Line Straight Pipe Adapter
d. Fog Oil Exhaust Pipe-To-Hose Elbow
e. Fog Oil Pump Drain Cock
f. Fog Oil Pump Pipe-To-Hose Elbow
g. Safety Relief Valve
h. Shroud Access Covers

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26

Materials/Parts
Dry cleaning solvent (item 4, app C)
Rag (item 9, app C)
Sealing compound (item 11, app C)

References
TM 3-1040-276-23P

NOTE
Pump shown removed for clarity.

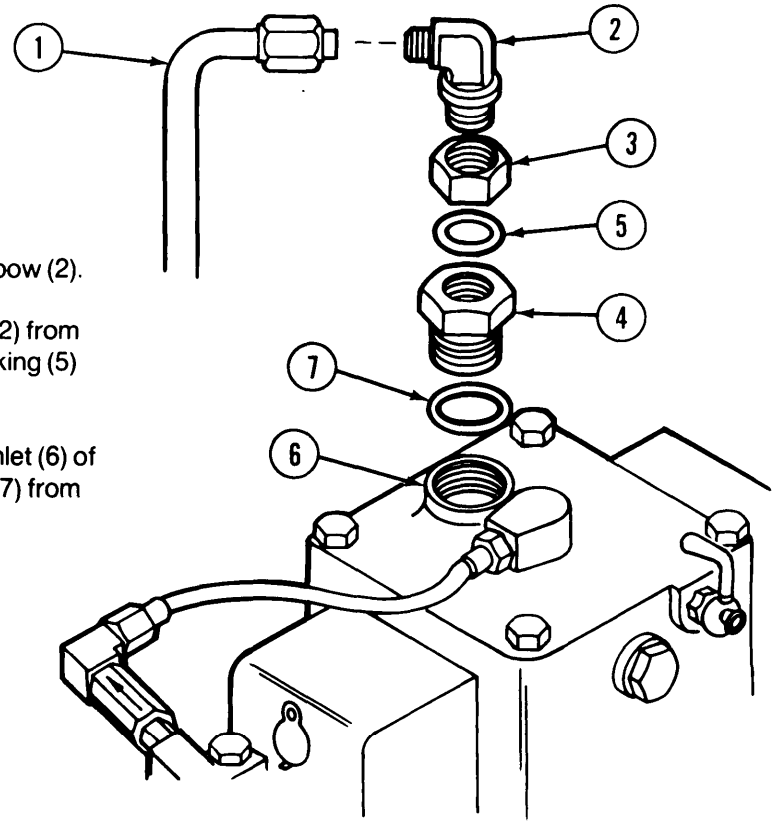
a. *Air Check Valve Assembly.*

REMOVAL

a. Disconnect pressurizing line (1) from elbow (2).

b. Loosen lock nut (3) and remove elbow (2) from valve body (4). Remove preformed packing (5) from elbow (2).

c. Remove valve body (4) from pressure inlet (6) of air motor. Remove preformed packing (7) from valve body (4).



2-15. M4 FOG OIL PUMP - EXTERNAL FITTINGS (CONT).

INSPECTION

WARNING

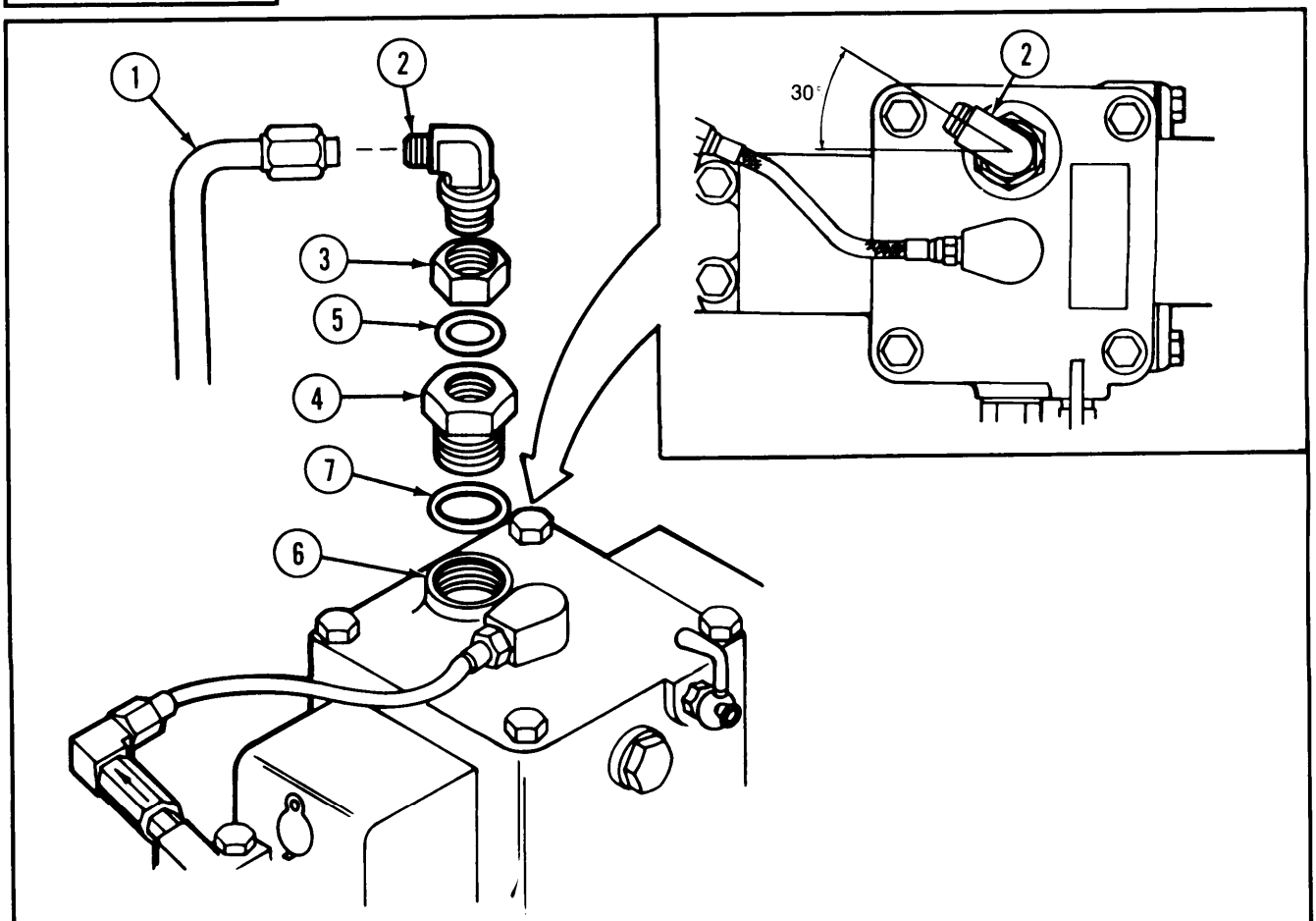
Dry cleaning solvent is flammable and toxic. Keep it away from heat or open flames. Use in well ventilated area. Avoid breathing vapors.

a. Clean parts with dry cleaning solvent and rag. Wipe dry with rag.

b. Inspect preformed packings for tears, cuts, or brittleness. Replace if damaged.

c. Shake valve body (3) and listen for rattle. If valve doesn't rattle (won't open or close), repair air check valve (p 2-66.21).

INSTALLATION



a. Install preformed packing (7) on valve body (4) and install valve body (4) in pressure inlet (6) on air motor.

b. Install preformed packing (5) and nut (3) on elbow (2). Install elbow (2) into valve body (4) and position as shown. Tighten nut (3).

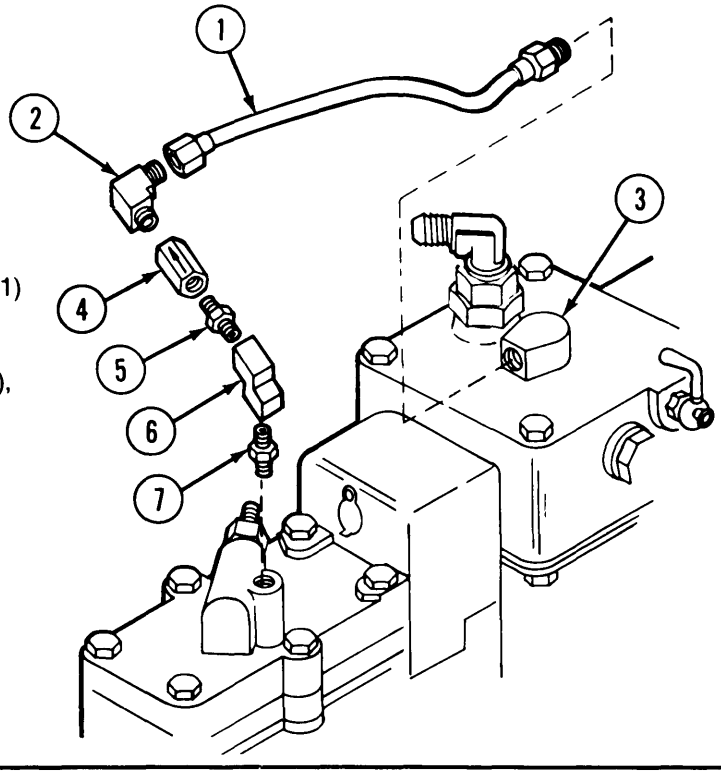
c. Connect pressurizing line (1) to elbow (2).

b. *Oil Flow Check Valve.*

REMOVAL

a. Disconnect flexible metallic hose assembly (1) from elbow (2) and air motor (3).

b. Remove elbow (2), check valve (4), nipple (5), elbow (6), and nipple (7) from oil pump.



INSPECTION

WARNING

Dry cleaning solvent is flammable and toxic. Keep it away from heat or open flames. Use in well ventilated area. Avoid breathing vapors.

a. Clean parts with dry cleaning solvent and rag. Wipe dry with rag.

b. Inspect metallic hose assembly for frays, cuts, or punctures.

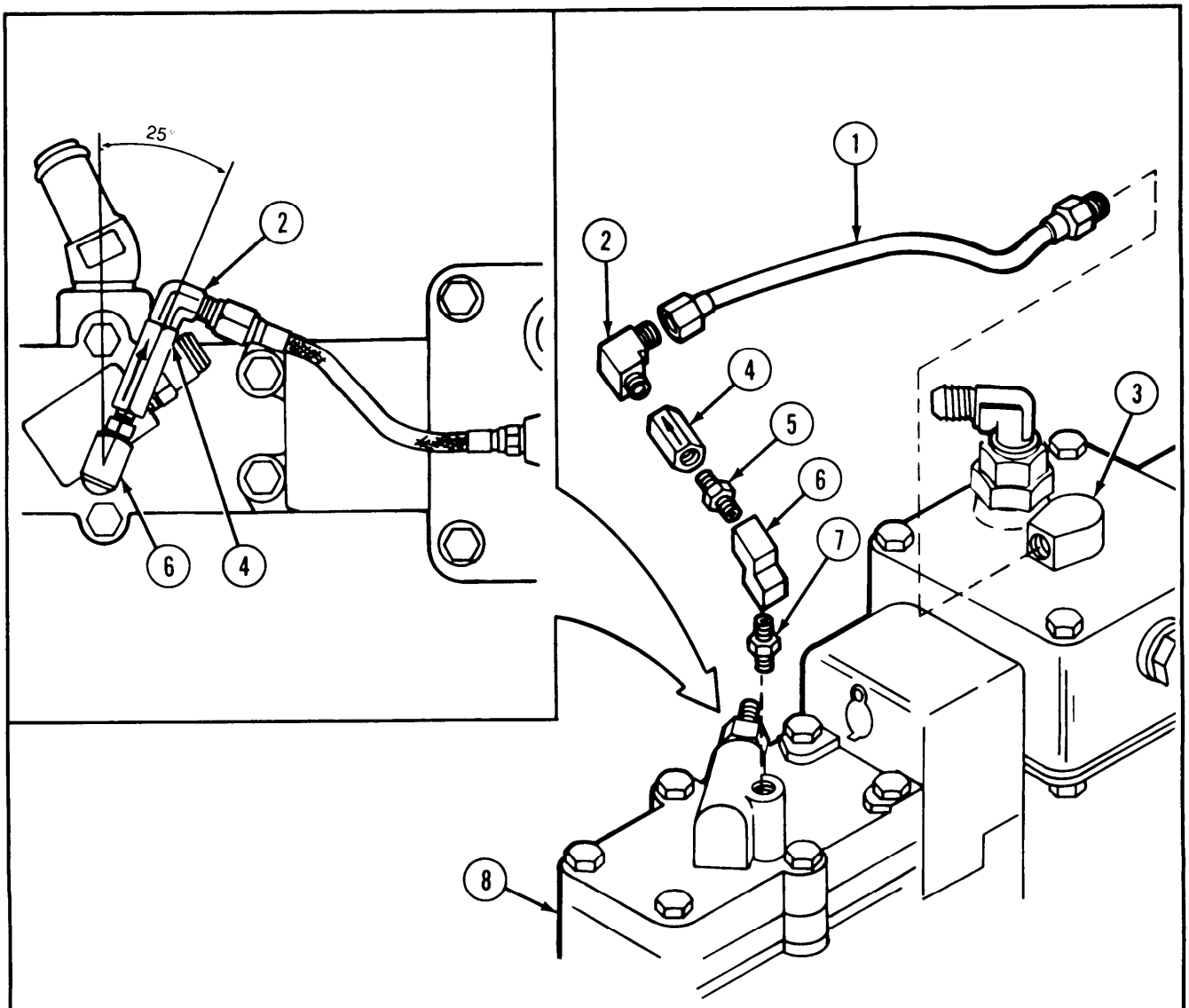
c. Inspect elbows, check valve, and nipples for cracks and stripped threads.

d. Replace authorized parts that are damaged (TM 3-1040-276-23P).

2-15. M4 FOG OIL PUMP - EXTERNAL FITTINGS (CONT).

b. *Oil Flow Check Valve (Cont).*

INSTALLATION



a. Apply sealing compound to male pipe threads of fittings. Allow solvent to evaporate before installing fittings.

b. Install nipple (7), elbow (6), nipple (5), check valve (4), and elbow (2) on oil pump (8). Make sure arrow on check valve (4) is pointing in direction shown. Offset elbows (2 and 6) as shown.

c. Connect flexible metallic hose assembly (1) to elbow (2) and air motor (3).

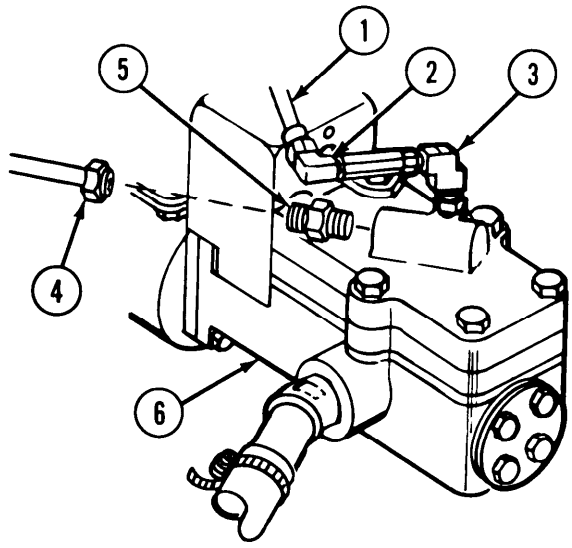
c. *Fog Oil Line Straight Pipe Adapter.*

REMOVAL

a. Disconnect hose assembly (1) from elbow (2) and turn elbow (3) counterclockwise to gain access to fog oil line (4).

b. Disconnect fog oil line (4) from adapter (5).

c. Remove adapter (5) from fog oil pump (6).



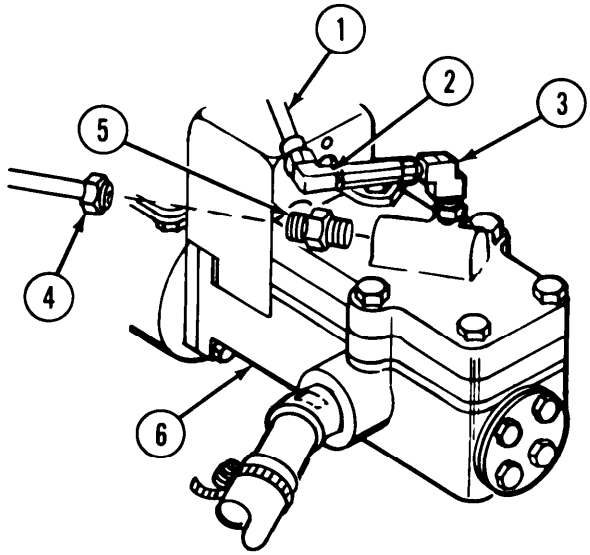
INSTALLATION

a. Apply sealing compound to male pipe threads. Allow solvent to evaporate before installing fitting.

b. Install adapter (5) in fog oil pump (6).

c. Connect fog oil line (4) to adapter (5).

d. Turn elbow (3) clockwise and connect hose assembly (1) to elbow (2).



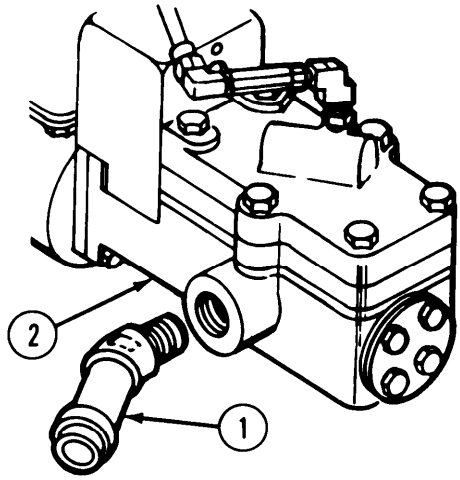
2-15. M4 FOG OIL PUMP - EXTERNAL FITTINGS (CONT).

d. *Fog Oil Exhaust Pipe-to-Hose Elbow.*

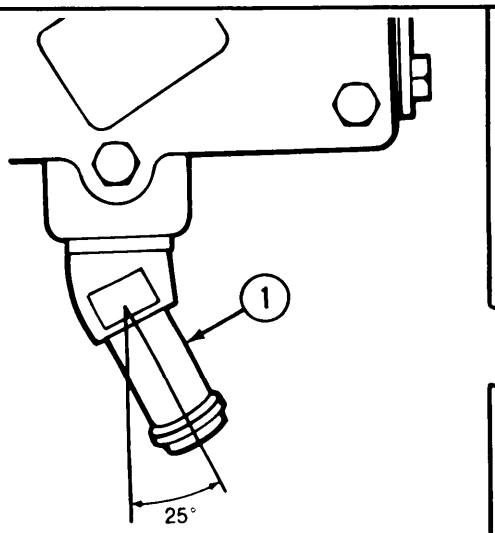
REMOVAL

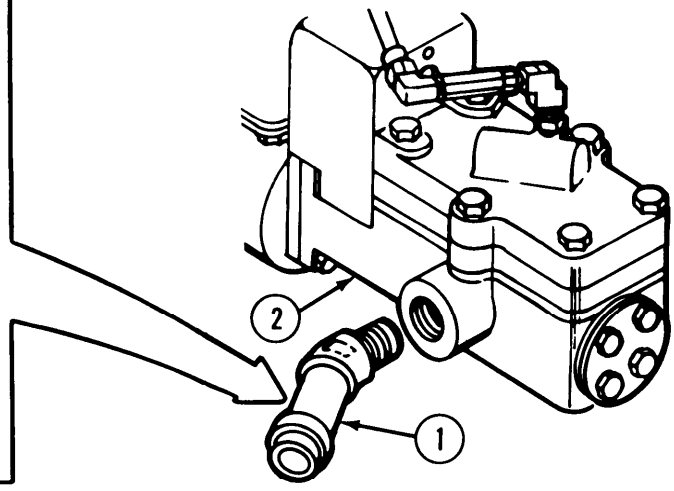
a. Remove fog oil hose (p 2-25).

b. Remove pipe-to-hose elbow (1) from fog oil pump (2)



INSTALLATION





a. Apply sealing compound to male threads. Allow solvent to evaporate on elbow (1) threads.

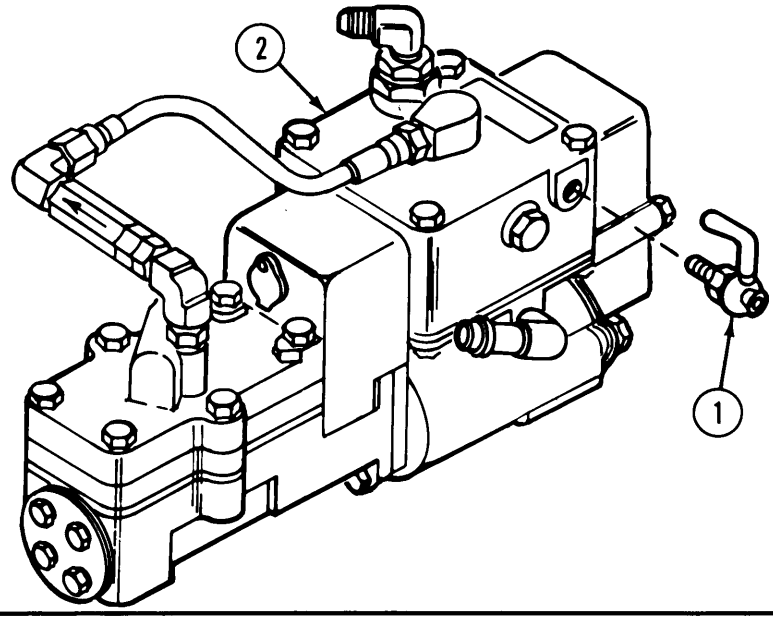
b. Install pipe-to-hose elbow (1) on oil pump (2).

c. Offset pipe-to-hose elbow (1) so tube is pointing at approximately 25° as illustrated. Make sure tube also points downward. Install fog oil hose (p 2-25).

e. *Fog Oil Pump Drain Cock.*

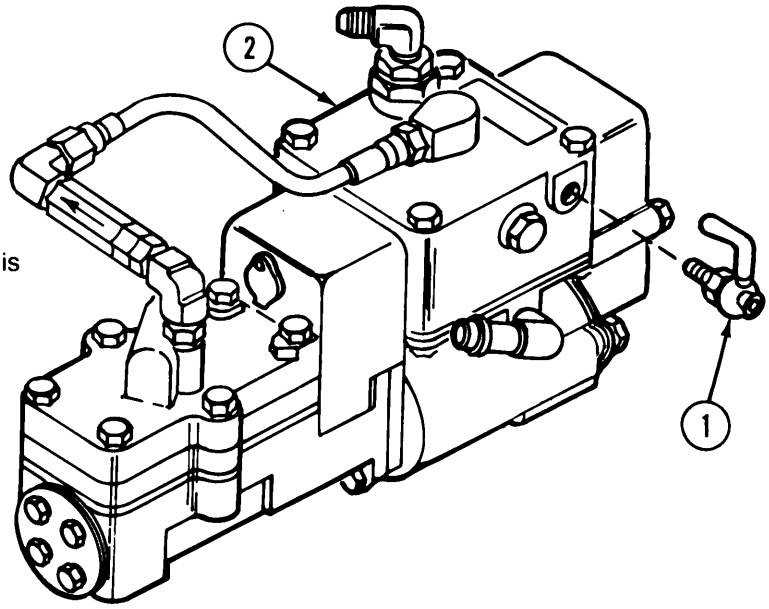
REMOVAL

Remove drain cock (1) from air motor (2).



INSTALLATION

Install drain cock (1) on air motor (2) so lever is upright as illustrated.



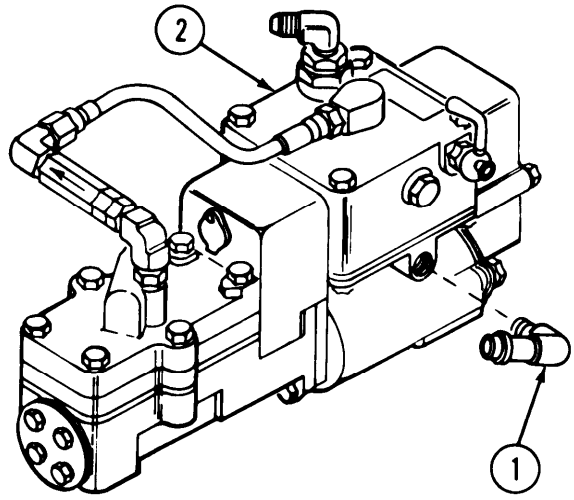
2-15. M4 FOG OIL PUMP - EXTERNAL FITTINGS (CONT).

f. *Fog Oil Pump Supply Pipe-to-Hose Elbow.*

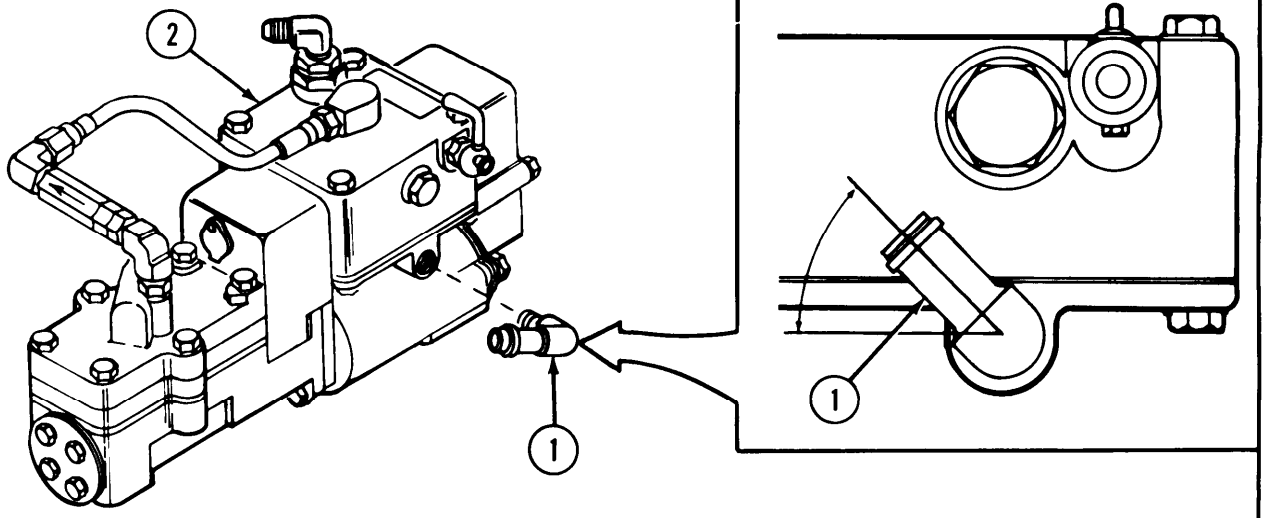
REMOVAL

a. Remove fog oil hose (p 2-25).

b. Remove pipe-to-hose elbow (1) from air motor (2).



INSTALLATION



a. Apply sealing compound to male threads. Allow solvent to evaporate before installing.

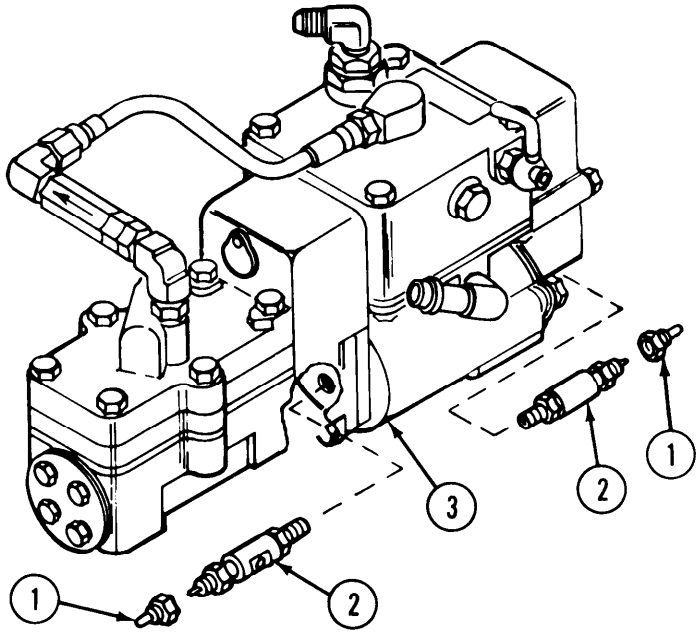
b. Install pipe-to-hose elbow (1) on air motor (2) so tube is pointing approximately 45° as illustrated.

c. Install fog oil hose (p 2-25).

g. *Safety Relief Valve.*

REMOVAL

Remove two boots (1) and two safety relief valves (2) from air cylinder (3).



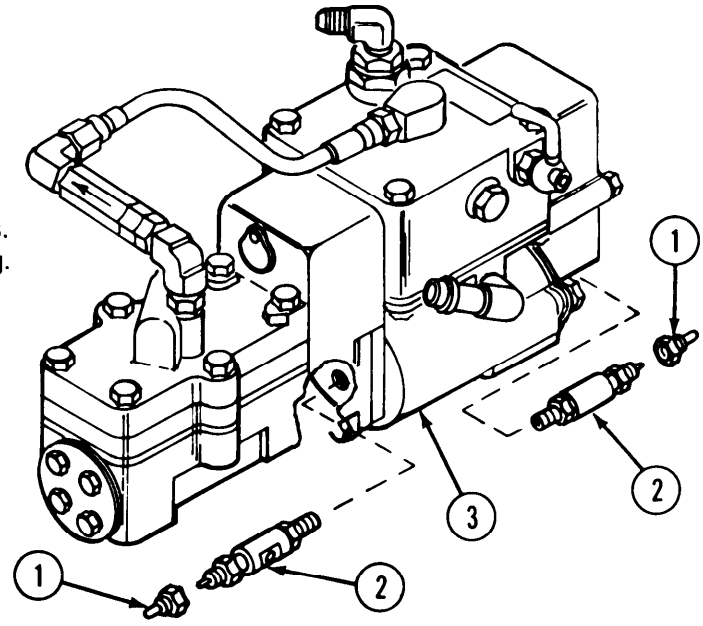
INSPECTION

Inspect for cut or torn boots. Replace if damaged.

INSTALLATION

a. Apply sealing compound to male pipe threads. Allow solvent to evaporate before assembling.

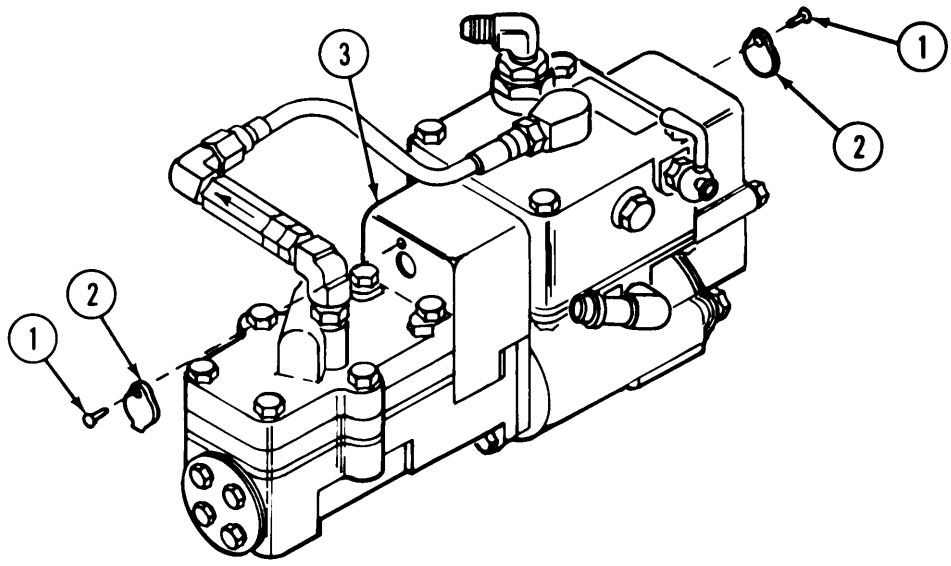
b. Install two safety relief valves (2) and two boots (1) on air cylinder (3). Make sure drain holes on the relief valves (2) point downward.



2-15. M4 FOG OIL PUMP - EXTERNAL FITTINGS (CONT).

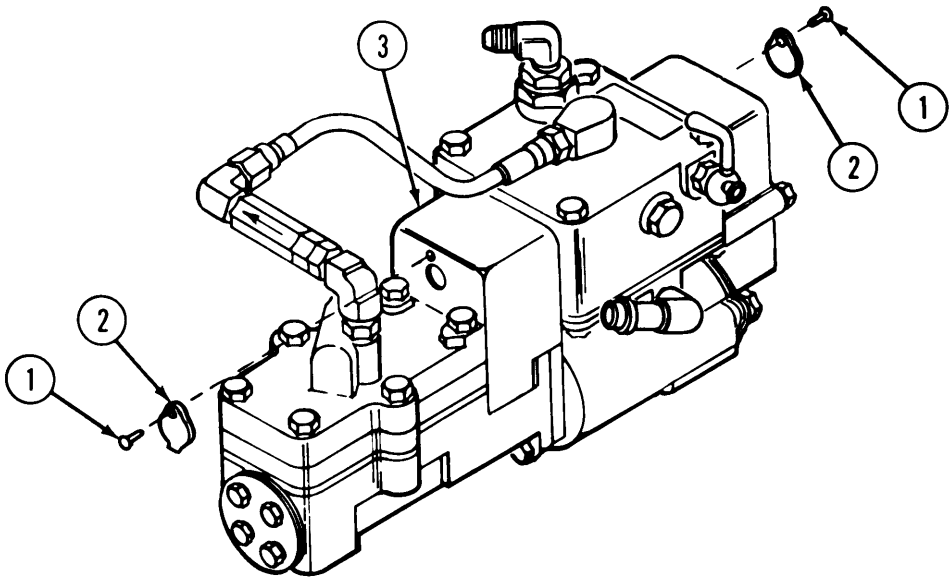
h. *Shroud Access Covers.*

REMOVAL



Remove two tapping screws (1) and two access covers (2) from shrouds (3).

INSTALLATION



Install two access covers (2) on two shrouds (3) with two tapping screws (1).

2-16. M4 FOG OIL PUMP - AIR MOTOR AND HYDRAULIC PISTONS.

This task covers:
a. Disassembly
b. Inspection/Repair
c. Reassembly

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26
Torque Wrench (item 10, app B)
Socket Wrench Set (item 18, app B)
Drive Pin Punch (item 17, app B)
Socket Wrench Crowfoot (item 16, app B)

Materials/Parts
Dry cleaning solvent (item 4, app C)
Rag (item 9, app C)
Sealing compound (item 11, app C)

Equipment Conditions
Fog oil pump removed from generator (p 2-26) and fog oil drained from M4 oil pump.

General Safety Instructions
Fog oil pump gaskets contain asbestos which can be hazardous to personnel if inhaled. Avoid creating dust. Wear an approved respirator under dusty conditions.

DISASSEMBLY

1

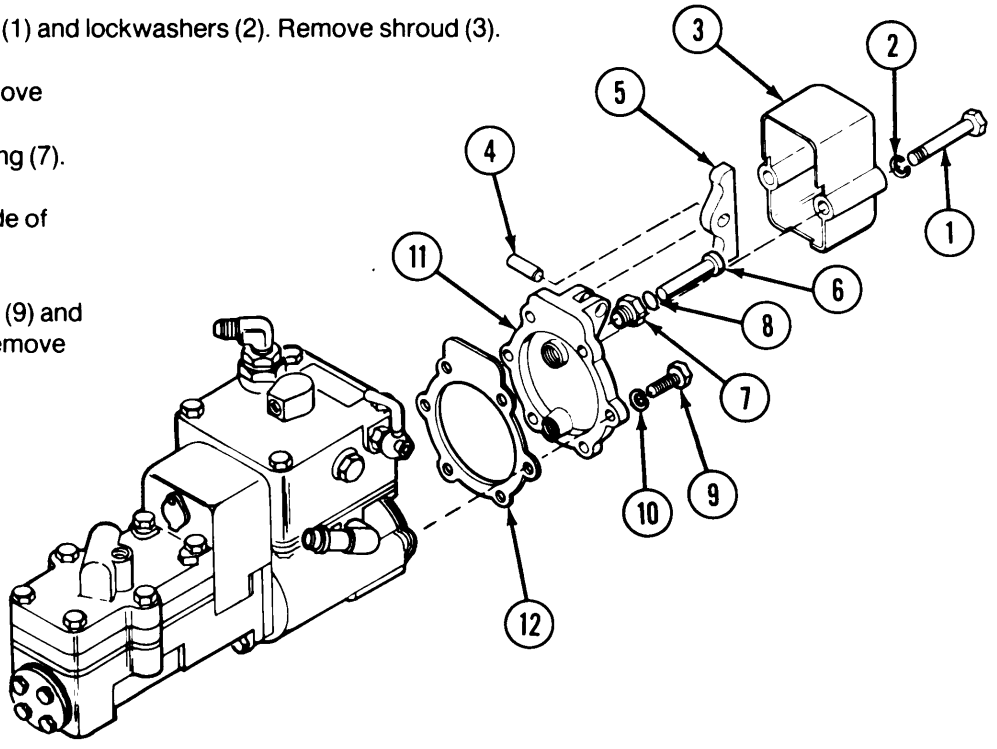
NOTE
Disassemble only as necessary to repair.

a. Remove oil flow check valve and hose assembly (p 2-63).

b. Remove two screws (1) and lockwashers (2). Remove shroud (3).

c. Remove pin (4). Remove rocker arm (5), valve tappet (6), and bushing (7). Remove preformed packing (8) from inside of bushing.

d. Remove four screws (9) and lockwashers (10). Remove cylinder end (11) and gasket (12).



2-16. M4 FOG OIL PUMP - AIR MOTOR AND HYDRAULIC PISTONS (CONT).

DISASSEMBLY (CONT)

2

a. Remove four screws (13) and washers (14). Remove access cover (15) and gasket (16). Push piston rod (19) to air motor side.

b. Remove either self-locking nut (17 or 18) from piston rod (19). Hold one nut while removing the other.

c. Remove two screws (20) and lockwashers (21) securing shroud (22) and remove shroud.

d. Remove four screws (23) and separate air motor (24) from oil pump (25) by withdrawing piston rod (19) through the air motor or oil pump. Remove gasket (26).

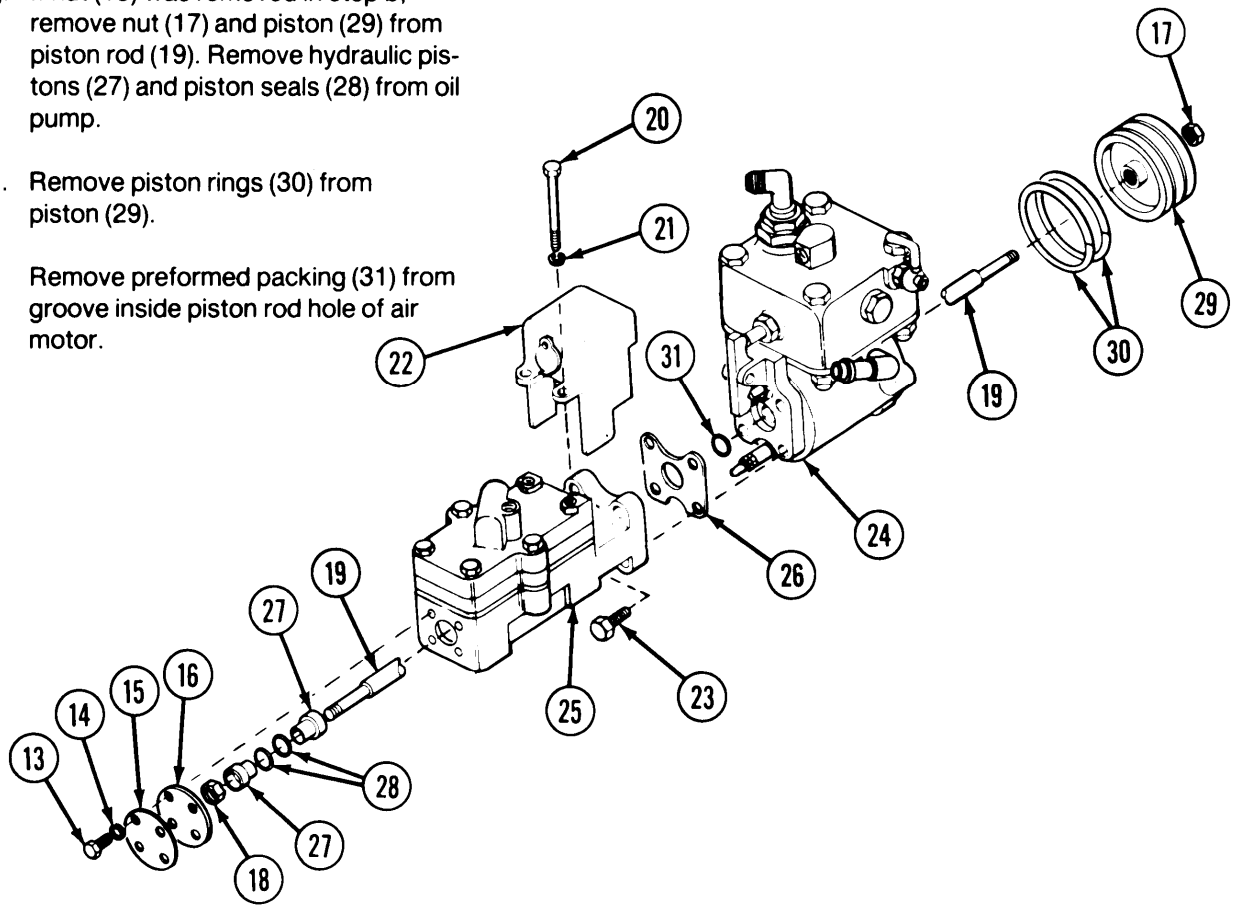
e. Push piston rod (19) with attaching parts out of air motor (24) or oil pump (25).

f. If nut (17) was removed in step b, remove nut (18), hydraulic pistons (27), and piston seals (28) from piston rod (19). Push air cylinder piston (29) from air motor using piston rod.

g. If nut (18) was removed in step b, remove nut (17) and piston (29) from piston rod (19). Remove hydraulic pistons (27) and piston seals (28) from oil pump.

h. Remove piston rings (30) from piston (29).

i. Remove preformed packing (31) from groove inside piston rod hole of air motor.

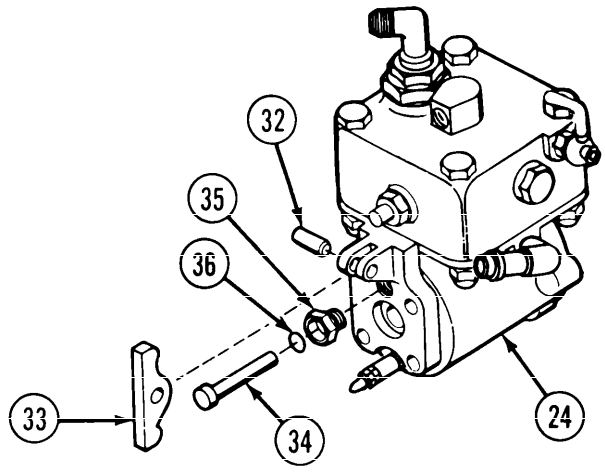


3

a. Drive pin (32) from rocker arm (33).

b. Remove valve tappet (34) and bushing (35).

c. Remove preformed packing (36) from inside bushing (35).

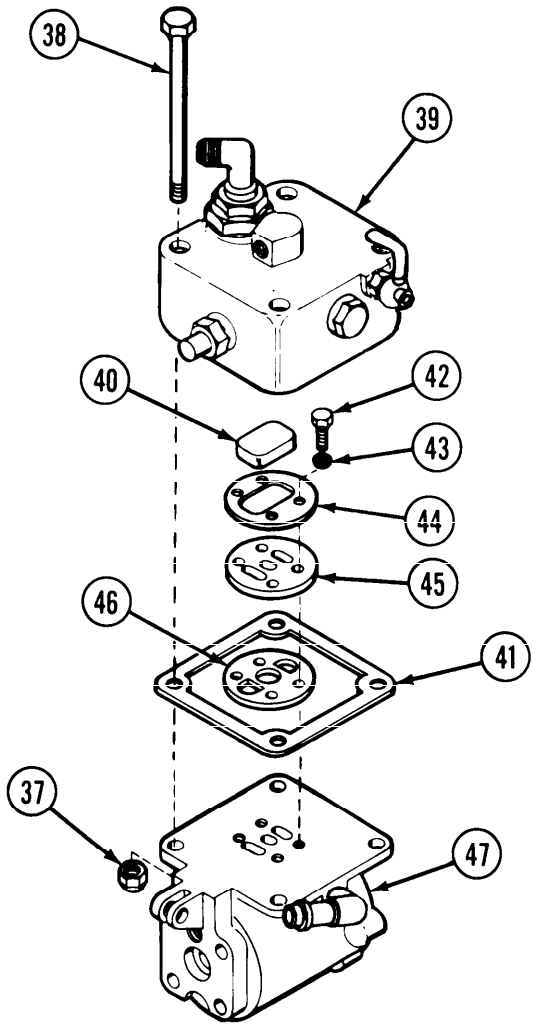


4

a. Remove four lock nuts (37) and screws (38). Remove valve cover (39).

b. Remove slide valve (40) and gasket (41).

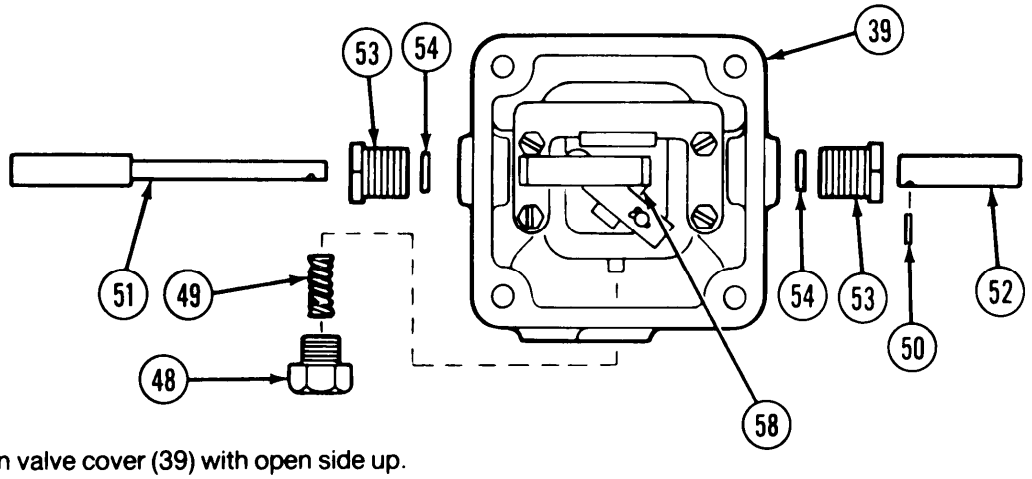
c. Remove four capscrews (42) and washers (43). Remove housing adapter (44), valve port plate (45), and gasket (46) from air cylinder assembly (47).



2-16. M4 FOG OIL PUMP - AIR MOTOR AND HYDRAULIC PISTONS (CONT).

DISASSEMBLY (CONT)

5



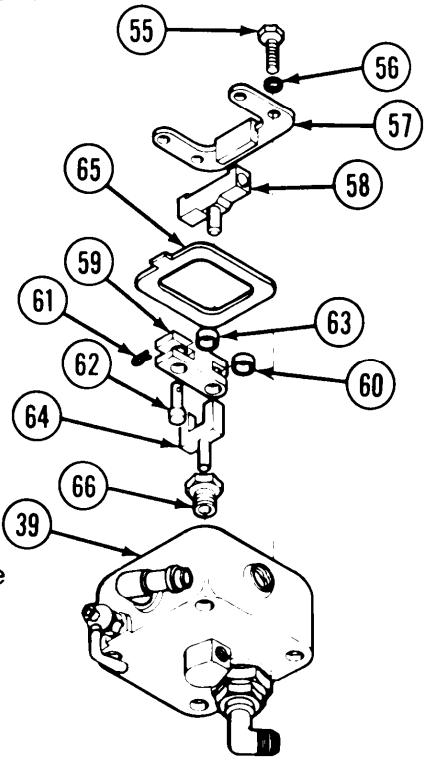
a. Position valve cover (39) with open side up.

b. Remove spring seat fastener (48) and helical compression spring (49).

c. Drive pin (50) from rod assembly and separate male rod (51) from female rod (52).

d. Remove two bushings (53). Remove preformed packings (54) from inside bushings.

6



a. Remove four capscrews (55) and washers (56). Lift off the valve roller retainer (57).

b. Remove the yoke operating valve (58), valve roller support (59), and valve operating roller (60).

c. Remove cotter pin (61) from flat head pin (62). Remove flat head pin (62) and valve operating roller (63).

d. Remove valve operating yoke (64), valve actuator frame (65), and valve yoke bushing (66) from valve cover (39).

INSPECTION/REPAIR

a. Clean old gasket material and sealing compound from pump metal parts.

WARNING

Dry cleaning solvent is flammable and toxic. Keep it away from heat or open flames. Use in well ventilated area. Avoid breathing vapors.

b. Clean parts with dry cleaning solvent and wiping rags.

c. Inspect preformed packings and seals for tears, cuts, or brittleness.

d. Inspect for torn or deteriorated gaskets and missing, bent, corroded, or broken parts.

e. Replace damaged parts (TM 3-1040-276-23P).

REASSEMBLY

1

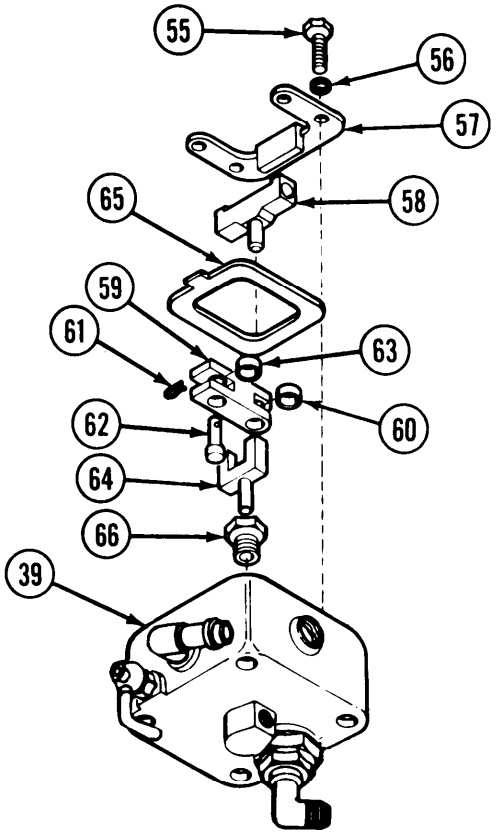
a. Position valve cover (39) with open side up, and install valve yoke bushing (66), valve actuator frame (65), and valve operating yoke (64).

b. Install valve operating roller (63) into the square end of the valve roller support (59). Push flat head pin (62) through hole in valve roller support (59) and valve operating roller (63). Secure pin (62) with cotter pin (61).

c. Install valve operating roller (60) into the rounded end of the valve roller support (59). Push the shaft of the yoke operating valve (58) through hole in valve roller support (59) and valve operating roller (60).

d. Place valve roller support (59) in the center of the valve operating yoke (64).

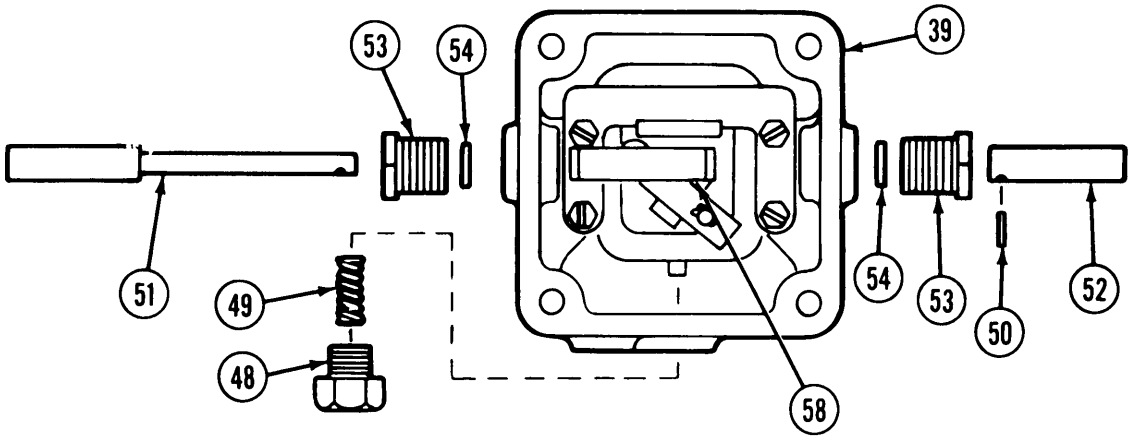
e. Install valve roller retainer (57). Secure valve roller retainer (57) with four washers (56) and capscrews (55). DO NOT TIGHTEN. Proceed to reassembly, step 2.



2-16. M4 FOG OIL PUMP - AIR MOTOR AND HYDRAULIC PISTONS (CONT).

REASSEMBLY (CONT)

2



a. Install preformed packings (54) in bushings (53).

b. Apply sealing compound on threads of two bushings (53) and spring seat fastener (48). Allow solvent to evaporate before assembling.

c. Install bushings in valve cover (39).

d. Install male rod (51) through bushing (53) and yoke operating valve (58).

e. Install female rod end (52) through bushing (53) and onto the end of male rod (51). Secure rod end (52) to rod (51) with pin (50).

f. Install helical compression spring (49) and spring seat fastener (48).

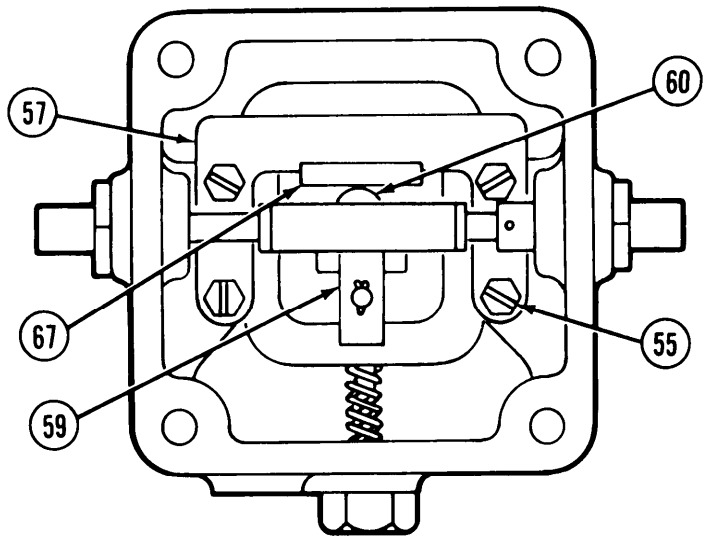
3

a. Position the valve roller support (59) so that the roller is in the center of the bearing bar (67) on the valve roller retainer (57).

b. Adjust the valve roller retainer (57) so that light maximum surface contact is made between the valve operating roller (60) and the bearing bar (67).

c. Turn the four capscrews (55) to snug down, but do not tighten.

d. Adjust valve roller clearance (step 2, p 2-66.17).



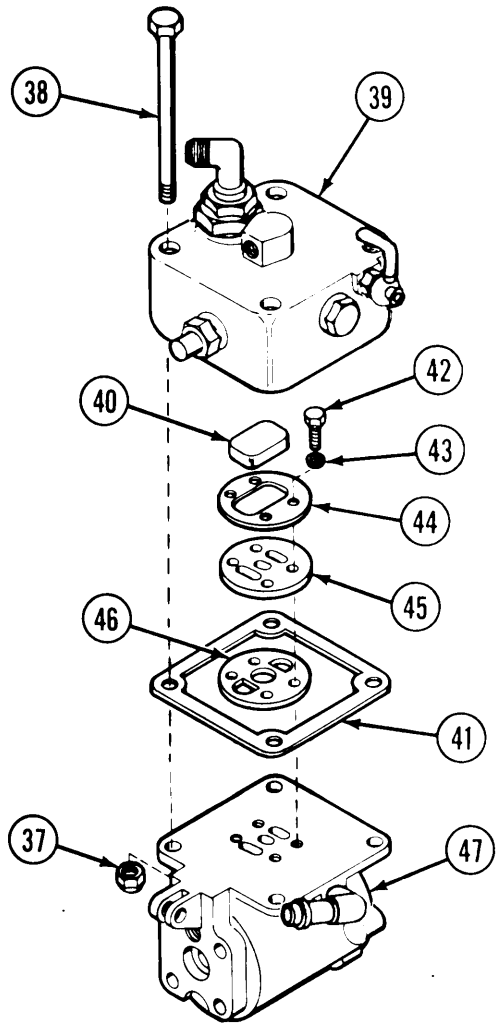
4

a. Apply a thin smooth coat of sealing compound to all gaskets. Allow solvent to evaporate before installing.

b. Place gasket (46), valve port plate (45), and housing adapter (44) on the air cylinder assembly (47). Secure housing adapter (44) with four capscrews (42) and washers (43).

c. Install gasket (41) and place slide valve (40) with hollowed out side down onto slot of the housing adapter (44).

d. Position the valve operating yoke in the valve cover (39) to mate with the slide valve (40). Place valve cover (39) onto air cylinder assembly (47). Secure with four screws (38) and lock nuts (37).



5

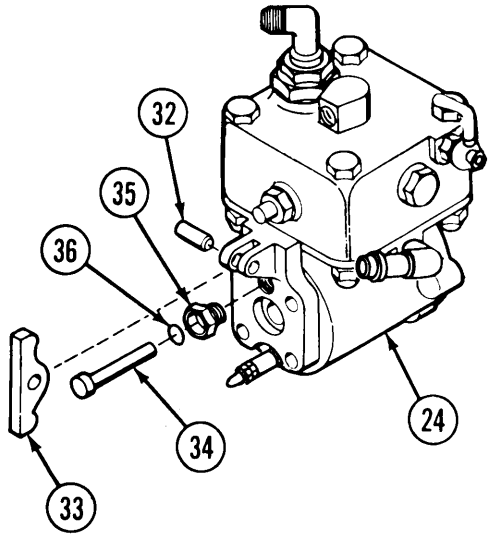
a. Install preformed packing (36) in bushing (35).

b. Apply sealing compound to bushing (35) threads. Allow solvent to evaporate before installing.

c. Install bushing in air motor (24).

d. Install valve tappet (34) in bushing (35).

e. Position rocker arm (33) on air motor (24) and secure with pin (32).



2-16. M4 FOG OIL PUMP - AIR MOTOR AND HYDRAULIC PISTONS (CONT).

REASSEMBLY (CONT)

6

a. Apply a thin smooth coat of sealing compound to gaskets (16 and 26). Allow solvent to evaporate before installing.

b. Install piston rings (30) on air cylinder piston (29).

c. Install preformed packing (31) in recess of air motor.

d. Slide hydraulic pistons (27) and piston seals (28) on piston rod (19) and install nut (18).

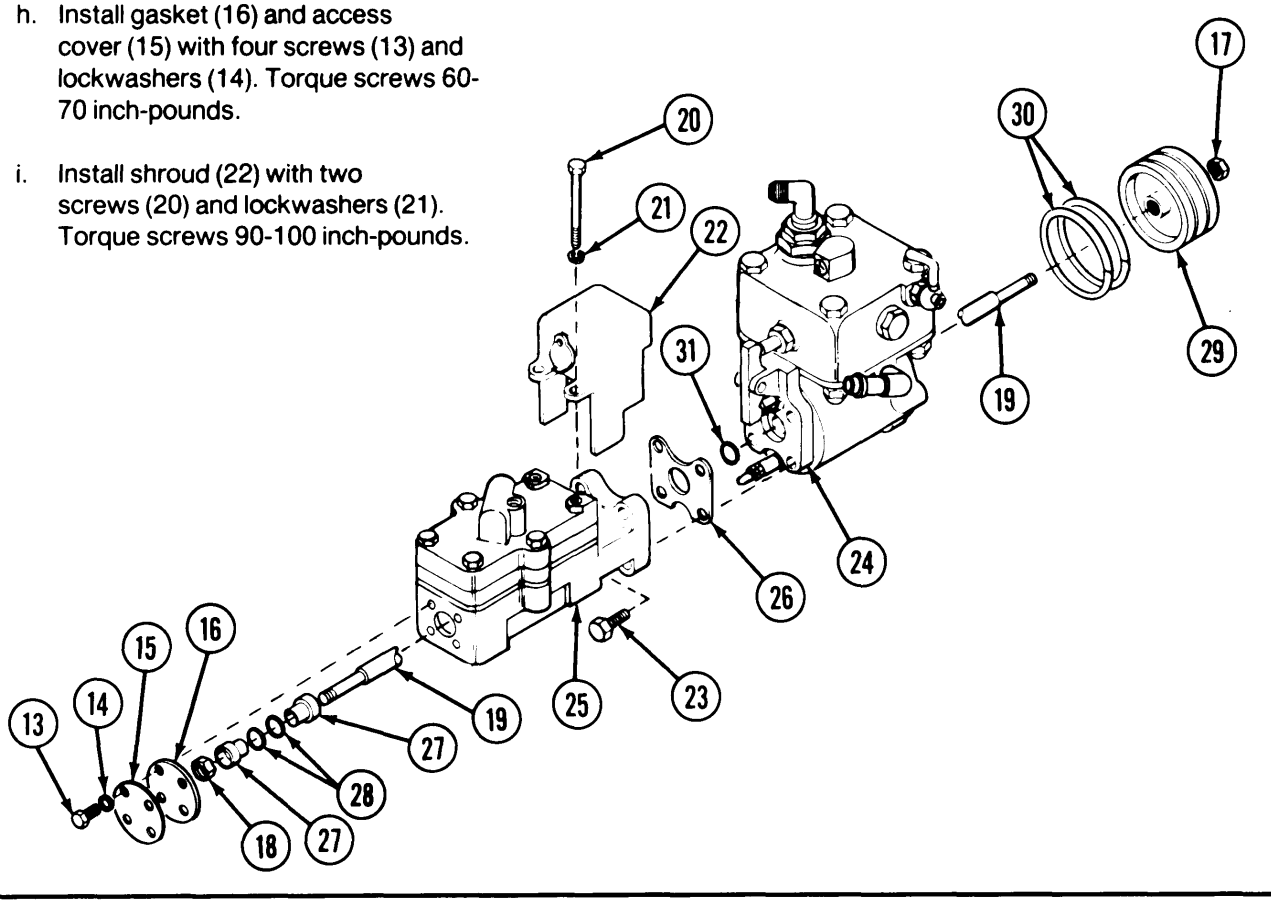
e. Insert piston rod (19) into oil pump (25) until other end of rod extends from pump.

f. Position gasket (26) over mounting holes on oil pump and insert piston rod (19) extending from oil pump into air motor (24). Join oil pump to air motor with four screws (23). Torque screws 90-100 inch-pounds.

g. Compress piston rings and insert piston (29) in air motor so that piston rod (19) extends through hole in piston. Secure piston to piston rod with self-locking nut (17) while holding self-locking nut (18).

h. Install gasket (16) and access cover (15) with four screws (13) and lockwashers (14). Torque screws 60-70 inch-pounds.

i. Install shroud (22) with two screws (20) and lockwashers (21). Torque screws 90-100 inch-pounds.



7

a. Install preformed packing (8) in bushing (7).

b. Apply a thin smooth coat of sealing compound to gasket (12) and threads of bushing (7). Allow solvent to evaporate before assembling.

c. Position gasket (12) over mounting holes on air motor and install cylinder end (11) with four screws (9) and lockwashers (10).

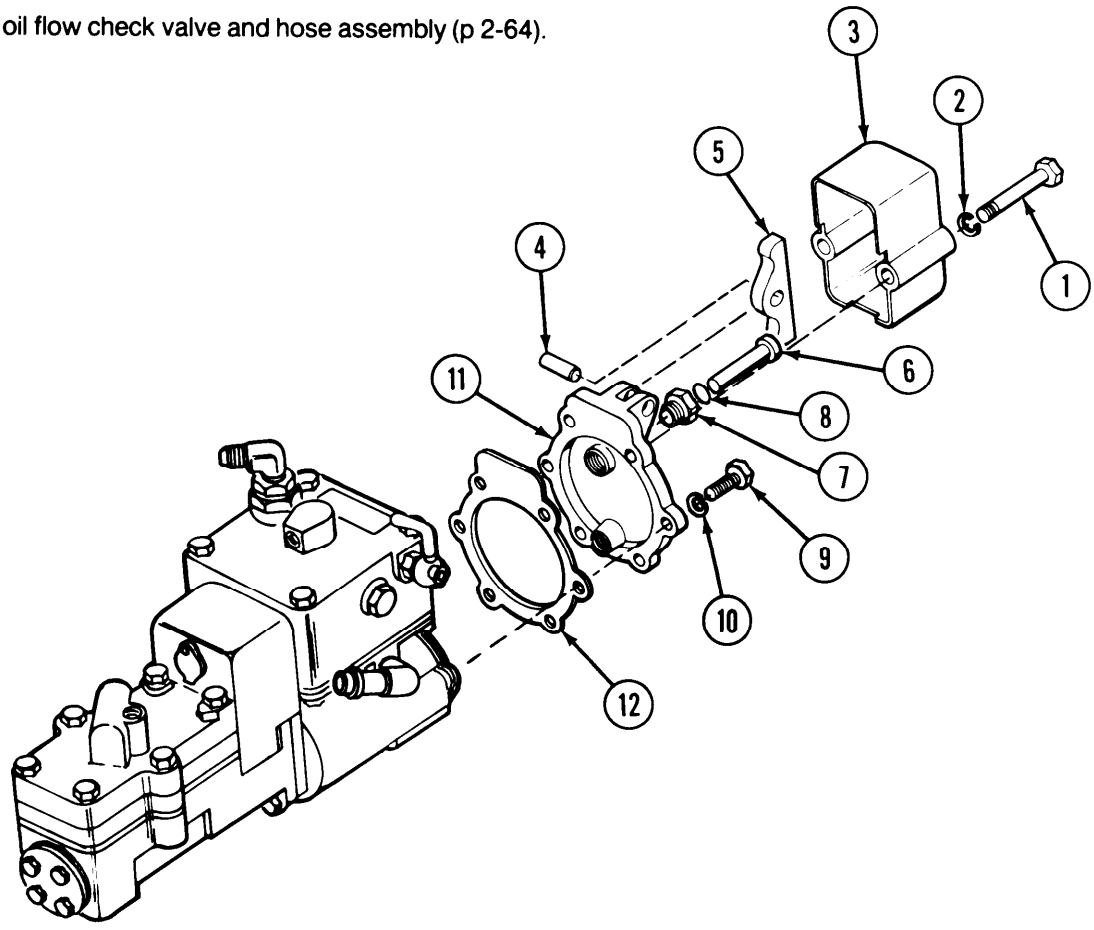
d. Install bushing (7) in cylinder end (11) and install valve tappet (6) in bushing.

e. Position rocker arm (5) on air motor and secure with pin (4).

f. Install shroud (3) using screws (1) and lockwashers (2).

g. Torque screws (1) and (9) 60-70 inch-pounds.

h. Install oil flow check valve and hose assembly (p 2-64).



2-17. M4 FOG OIL PUMP - PORT PLATE AND SEPARATOR ASSEMBLIES.

This task covers replacement of the oil port plate or oil discharge separator assembly.

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26
Torque Wrench (item 10, app B)

Materials/Parts
Dry cleaning solvent (item 4, app C)
Rag (item 9, app C)
Sealing compound (item 11, app C)

General Safety Instructions
Fog oil pump gaskets contain asbestos which can be hazardous to personnel if inhaled. Avoid creating dust. Wear an approved respirator under dusty conditions.

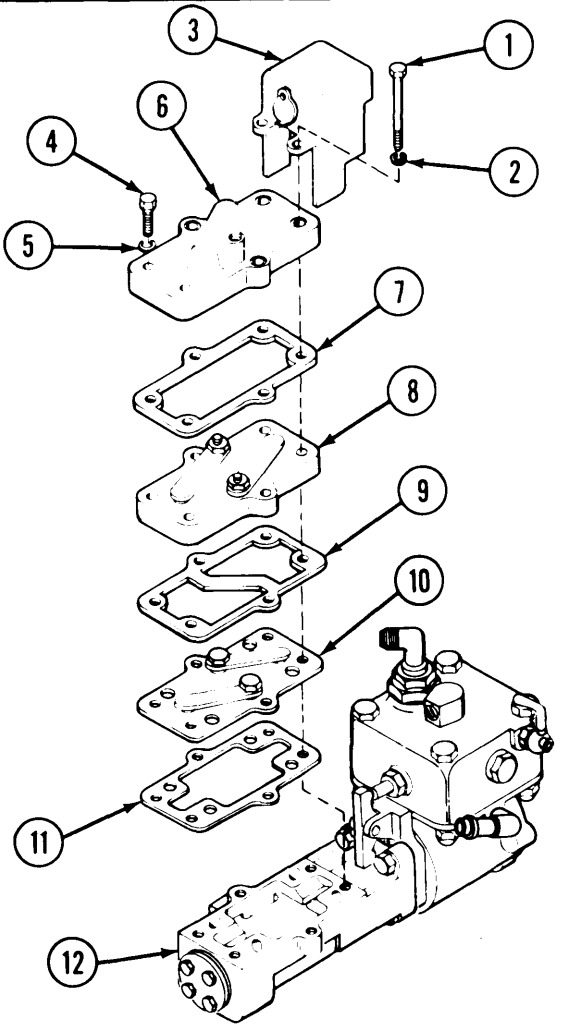
REMOVAL

a. Remove oil flow check valve and hose assembly (p 2-63).

b. Disconnect fog oil line from fog oil pump.

c. Remove two screws (1) and lockwashers (2). Remove shroud (3).

d. Remove four screws (4) and lockwashers (5). Remove cover (6), gasket (7), oil discharge separator (8), gasket (9), oil port plate (10), and gasket (11) from oil pump (12).



INSPECTION

a. Clean old gasket material and sealing compound from pump metal parts.

WARNING

Dry cleaning solvent is flammable and toxic. Keep it away from heat or open flames. Use in well ventilated area. Avoid breathing vapors.

b. Clean parts with dry cleaning solvent and wiping rags.

c. Inspect for torn or deformed gaskets and missing, bent, corroded, or broken parts.

d. Replace damaged gaskets (TM 3-1040-276-23P).

e. Repair damaged oil port plate (p 2-66.21) or oil discharge separator (p 2-66.20).

INSTALLATION

a. Apply a thin smooth coat of sealing compound to gaskets. Allow solvent to evaporate before installing.

b. Install gasket (11), oil port plate (10), gasket (9), oil discharge separator (8), gasket (7), and cover (6).

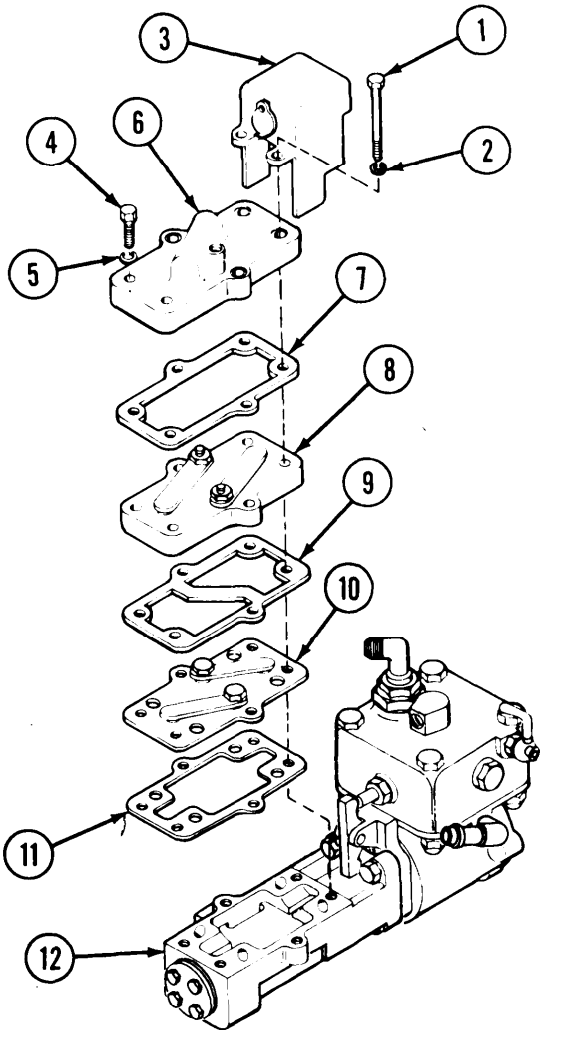
c. Secure cover (6), gasket (7), oil discharge separator (8), gasket (9), oil port plate (10), and gasket (11) to oil pump (12) with four screws (4) and lock washers (5).

d. Position shroud (3) on oil pump (12), and secure with two screws (1) and washers (2).

e. Torque screws (1 and 4) to 90-100 inch-pounds.

f. Connect fog oil line to fog oil pump.

g. Install oil flow check valve and hose assembly (p 2-64).



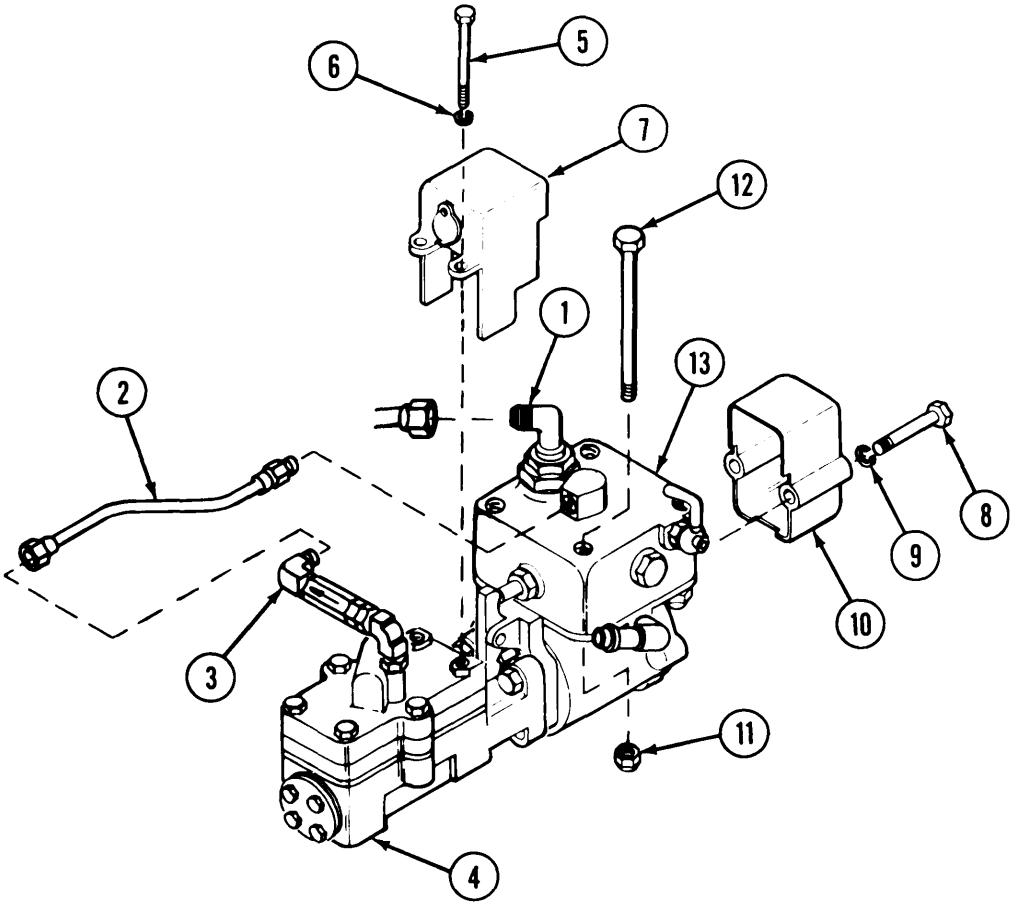
2-18. M4 FOG OIL PUMP - ADJUSTMENT.

This task adjusts the clearance between the valve roller and bearing bar in the air motor valve cover.

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26
Torque Wrench (item 10, app B)

1



a. Disconnect pressurizing line from elbow (1).

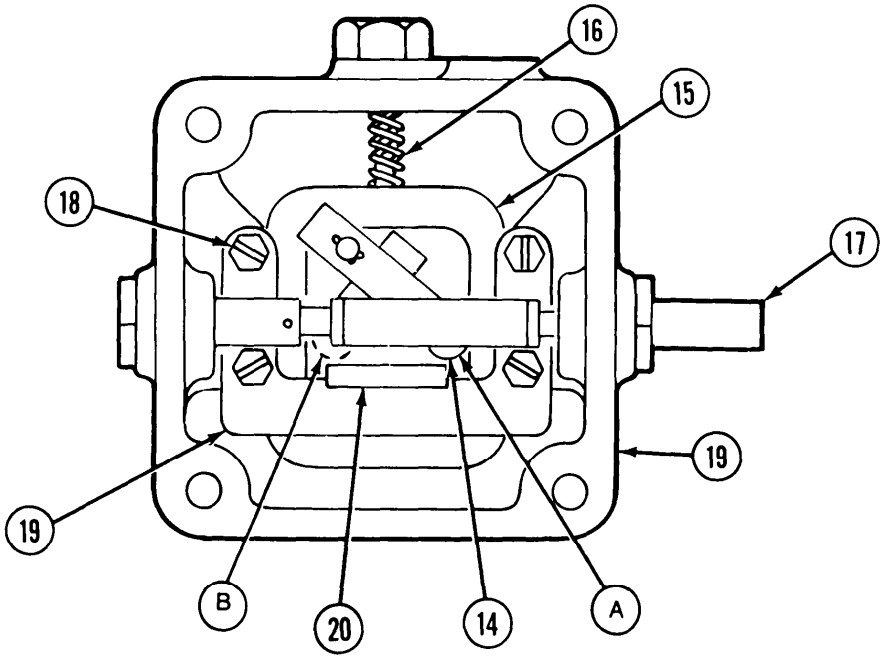
b. Disconnect hose assembly (2) from elbow (3) and fog oil pump (4).

c. Remove two screws (5) and lockwashers (6) securing shroud (7) and remove shroud.

d. Remove two screws (8) and lockwashers (9) securing shroud (10) and remove shroud.

e. Remove four nuts (11) and screws (12). Lift valve cover (13) from fog oil pump.

2



a. Remove load pressure from the valve roller (14) by depressing the actuator frame (15) and spring (16).

b. Push the pump rod (17) to move the valve roller (14) to position (B). Loosen two screws (18) securing the valve roller retainer (19) located near position (B).

c. Insert a .025 inch feeler gage between the valve roller (14) and the bearing bar (20), and slide the valve roller retainer into a position so that the clearance is .025 inch.

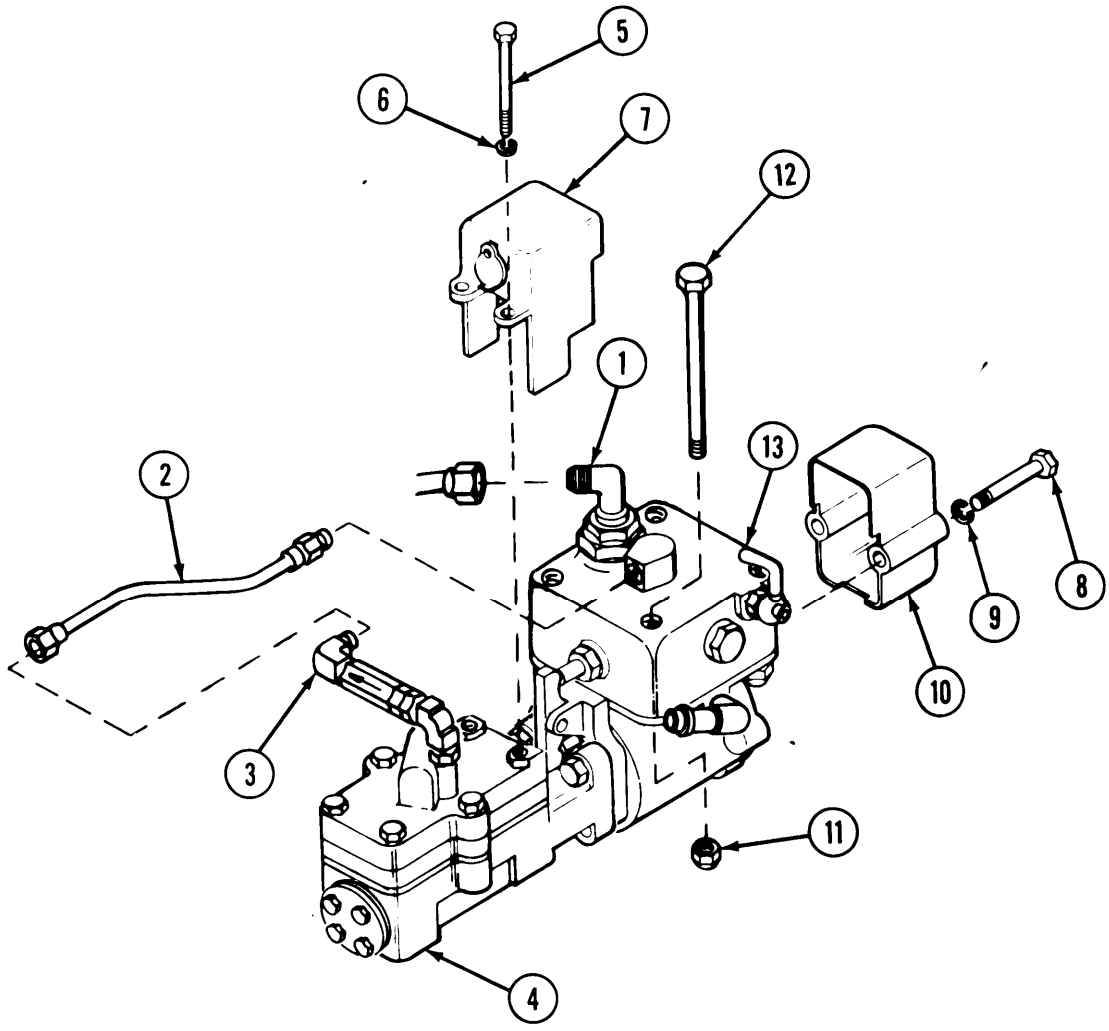
d. Lightly tighten the screws (18) on the position (B) side.

e. Repeat the adjustment for position (A) and tighten all four screws (18). Do not overtighten screws.

f. Check the clearance again for each position. If incorrect, repeat procedure (a) through (e) until .025 inch clearance is obtained at both position (A) and position (B).

2-18. M4 FOG OIL PUMP - ADJUSTMENT (CONT).

3



a. Position valve operating yoke in valve cover (13) to mate with slide valve on fog oil pump. Place valve cover on fog oil pump and secure with four screws (12) and nuts (11).

b. Install shroud (10) using two screws (8) and lockwashers (9). Torque screws 60-70 inch-pounds.

c. Install shroud (7) using two screws (5) and lockwashers (6). Torque screws 90-100 inch-pounds.

d. Connect hose assembly (2) to fog oil pump (4) and elbow (3).

e. Connect pressurizing line to elbow (1).

2-19. AIR CHECK VALVE ASSEMBLY.

This task covers disassembly/repair/reassembly.

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26
Automotive Vehicle Shop Equipment
SC 4910-95-CL-A74

Materials/Parts
Dry cleaning solvent (item 4, app C)
Lubricating oil (item 6, app C)
Rag (item 9, app C)

References
TM 3-1040-276-23P

Equipment Condition
Air check valve assembly removed from M4 fog oil pump (p 2-61).

DISASSEMBLY/REPAIR/REASSEMBLY

a. Remove retaining ring (1), disc retainer (2), and pressurizing disc (3) from valve body (4).

WARNING
Dry cleaning solvent is flammable and toxic. Keep it away from heat or open flames. Use in well ventilated area. Avoid breathing vapors.

b. Clean parts with dry cleaning solvent and rag. Inspect retaining ring for breaks or deformities; disc retainer for breaks, bends, or burrs; pressurizing disc for wear or corrosion.

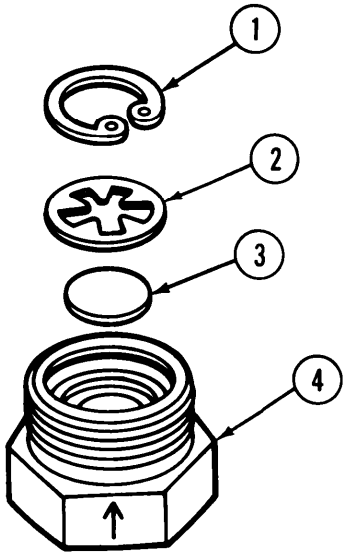
c. Inspect valve body for stripped threads.

d. Replace authorized parts which do not meet inspection criteria (TM 3-1040-276-23P).

e. Lubricate pressurizing disc (3) with light film of lubricating oil using hand oiler.

f. Install pressurizing disc (3) and disc retainer (2) in valve body (4).

g. Install retaining ring (1) in groove in valve body (4).



2-20. OIL DISCHARGE SEPARATOR ASSEMBLY.

This task covers disassembly/repair/reassembly.

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26

Materials/Parts
Dry cleaning solvent (item 4, app C)
Rag (item 9, app C)

References
TM 3-1040-276-23P

Equipment Condition
Oil discharge separator removed from fog oil pump (p 2-66.16).

DISASSEMBLY/REPAIR/REASSEMBLY

a. Remove two nuts (1), washers (2), and screws (3) securing oil valve reeds (4). Remove oil valve reeds.

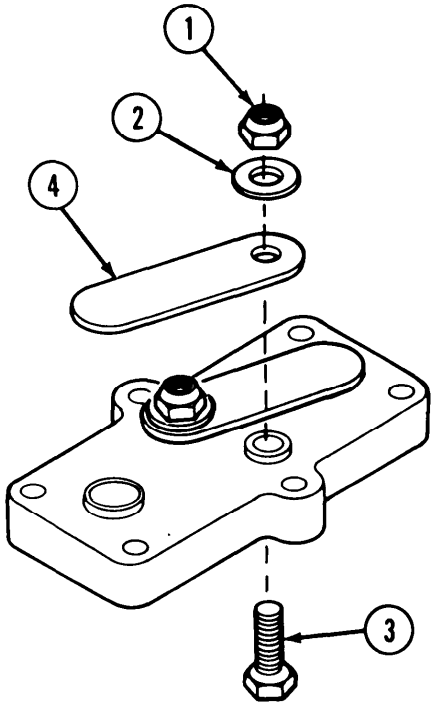
WARNING
Dry cleaning solvent is flammable and toxic. Keep it away from heat or open flames. Use in well ventilated area. Avoid breathing vapors.

b. Clean parts with dry cleaning solvent and rags.

c. Inspect for bent or corroded oil valve reeds and deformed port hole seats. Replace damaged parts.

d. Position oil valve reeds (4) over port holes and secure with nuts (1), washers (2), and screws (3).

NOTE
Do not overtighten so as to raise reeds off port holes.



2-21. OIL PORT PLATE ASSEMBLY.

This task covers disassembly/repair/reassembly.

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26

Materials/Parts
Dry cleaning solvent (item 4, app C)
Rag (item 9, app C)

References
TM 3-1040-276-23P

Equipment Condition
Oil port plate removed from fog oil pump (p 2-66.16).

DISASSEMBLY/REPAIR/REASSEMBLY

a. Remove two nuts (1), washers (2), and screws (3) securing oil valve reeds (4). Remove oil valve reeds.

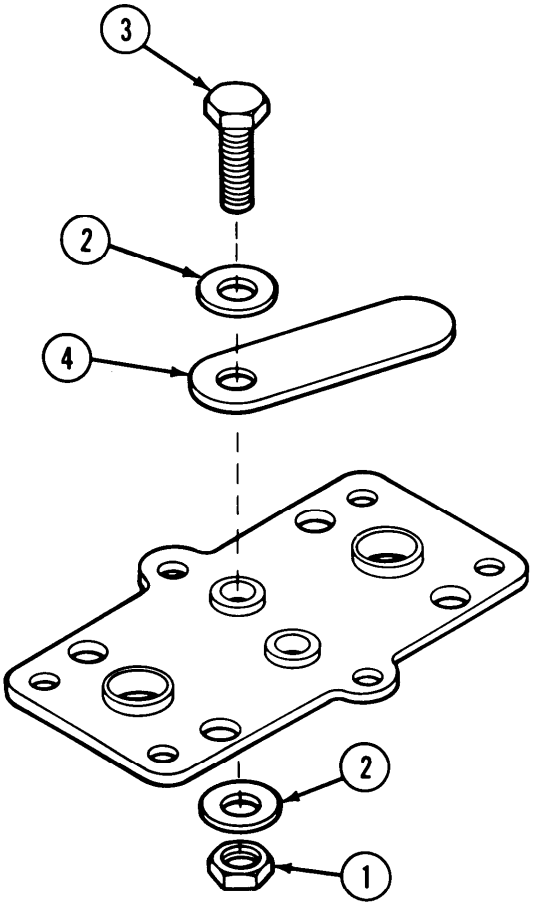
WARNING
Dry cleaning solvent is flammable and toxic. Keep it away from heat or open flames. Use in well ventilated area. Avoid breathing vapors.

b. Clean parts with dry cleaning solvent and rags.

c. Inspect for bent or corroded oil valve reeds and deformed port hole seats. Replace damaged parts.

d. Position oil valve reeds (4) over port holes and secure with nuts (1), washers (2), and screws (3).

NOTE
Do not overtighten so as to raise reeds off port holes.



2-22. AIR PUMP ASSEMBLY.

This task covers:
a. Disassembly
b. Repair
c. Reassembly

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26

Materials/Parts
Dry cleaning solvent (item 4, app C)
Lubricating oil (item 6, app C)
Rag (item 9, app C)

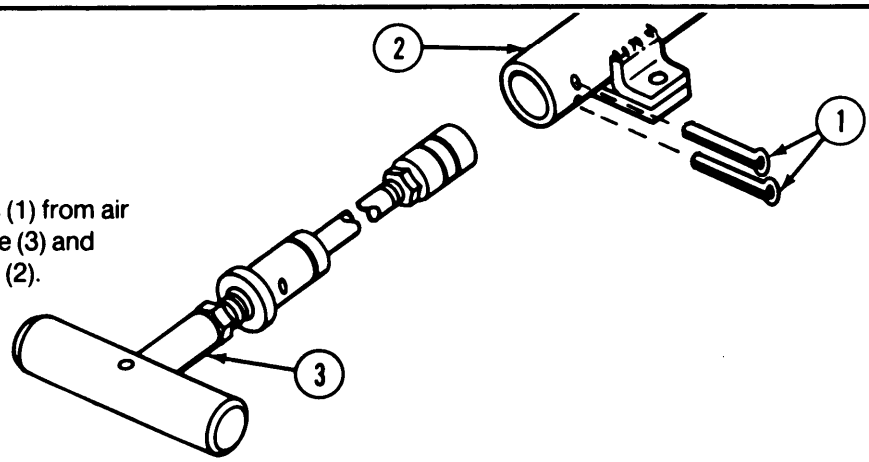
References
TM 3-1040-276-23P

Equipment Condition
Air pump assembly removed from smoke generator (p 2-32).

DISASSEMBLY

1

Straighten and pull two cotter pins (1) from air pump tube (2). Pull air pump handle (3) and attached parts from air pump tube (2).



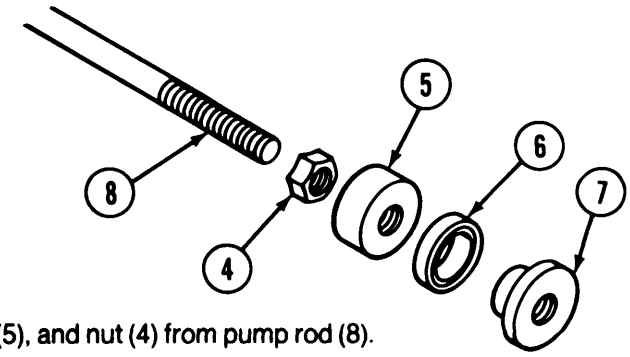
2

NOTE
To hold pump rod stationary while loosening nut (4), cover pump rod (8) with rag and grip with pliers.

a. Back off nut (4) from piston (5).

b. Slide piston seal (6) and piston (5) toward nut (4).

c. Remove piston sleeve nut (7), piston seal (6), piston (5), and nut (4) from pump rod (8).



2-22. AIR PUMP ASSEMBLY (CONT).

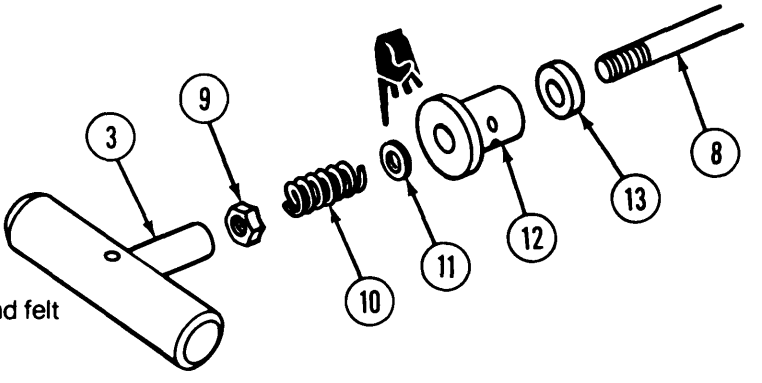
DISASSEMBLY (CONT).

3

NOTE
To hold pump rod (8) stationary while loosening nut (9), cover pump rod (8) with rag and grip with pliers.

a. Back off nut (9).

b. Remove air pump handle (3), nut (9), spring (10), washer (11), bushing (12), and felt washer (13) from pump rod (8).



REPAIR

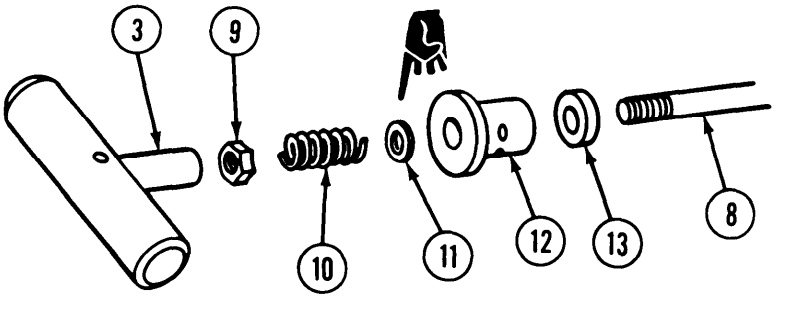
WARNING
Dry cleaning solvent is flammable and toxic. Keep it away from heat or open flames. Use in well ventilated area. Avoid breathing vapors.

a. Clean parts with dry cleaning solvent and dry with rag.

b. Check for broken or missing parts. Check for cut, torn, or frayed felt washer. Check for deformed or frayed piston seal. Check for bent pump rod and bent or punctured air pump tube. Replace missing or damaged parts (TM 3-1040-276-23P).

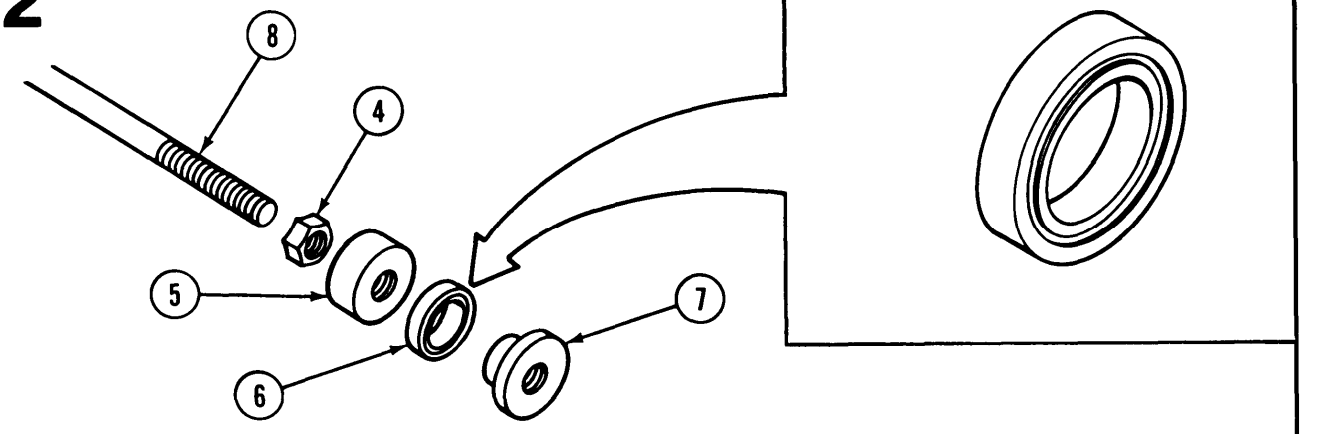
REASSEMBLY

1



Install felt washer (13), bushing (12), washer (11), spring (10), nut (9), and air pump handle (3) on pump rod (8). Tighten nut (9) against pump handle (3).

2

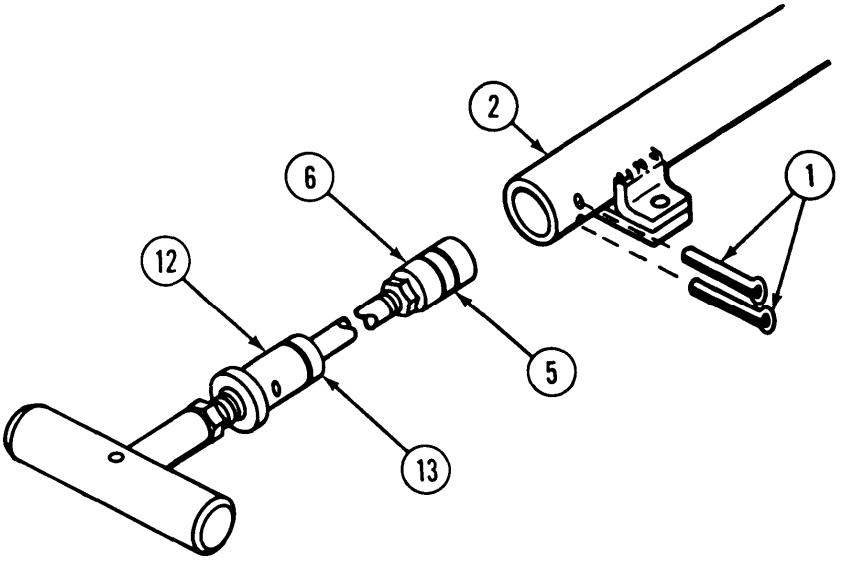


a. Install nut (4), piston (5), piston seal (6), and piston sleeve nut (7) on pump rod (8). Make sure piston seal (6) is positioned with grooved side of seal facing sleeve nut (7) as illustrated so that piston seal will function correctly.

b. Piston sleeve nut (7) must be flush with end of pump rod (8).

c. Tighten nut (4) against piston (5).

3



a. Lubricate piston seal (5) and felt washer (13) with lubricating oil.

b. Insert piston (6) end into air pump tube (2) and press pump rod bushing (12) into tube while alining two holes in bushing with two holes in tube. Insert two cotter pins (1) through two holes in air pump tube and pump rod bushing. Bend ends of cotter pins.

2-23. FRAME ASSEMBLY.

This task covers disassembly/repair/reassembly.

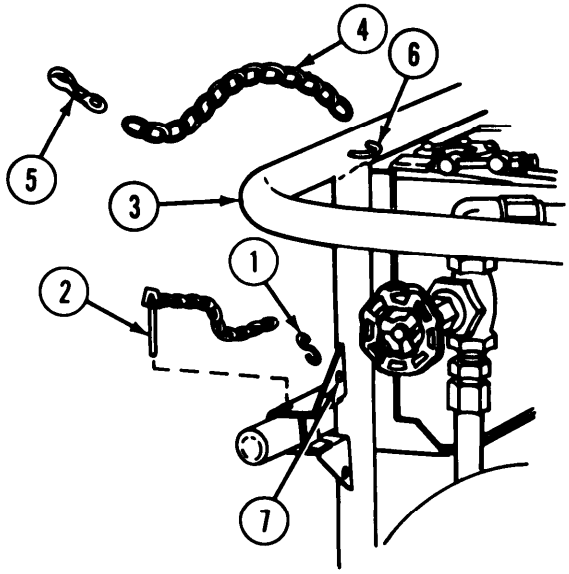
INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26

References
TM 3-1040-276-23P

Materials/Parts
Chain (fig D-5)

DISASSEMBLY/REPAIR/REASSEMBLY



a. Bend open S-hooks (1) of pin and chain assemblies (2) and remove four assemblies from frame (3).

b. Bend open attaching chain link on chains (4) and remove four snap hooks (5). Bend open last chain link and remove four chains (4) from loops (6) on frame.

c. Inspect hose chains. Replace if broken or missing. Make new chains (fig D-5).

d. Replace authorized parts which do not meet inspection criteria (TM 3-1040-276-23P).

e. Bend open links on both end of four chains (4). Insert snap hooks (5) on one end of chains and bend links closed. Insert opposite ends of chains (4) through loops (6) and bend links closed.

f. Attach S-hooks (1) to last chain links on new pin and chain assemblies (2). Insert S- hooks on pin and chain assemblies through holes (7) in lugs welded to frame. Bend S-hooks (1) closed to secure pin and chain assemblies (2) to frame.

2-24. IGNITION CABLE ASSEMBLY.

This task covers disassembly/repair/reassembly.

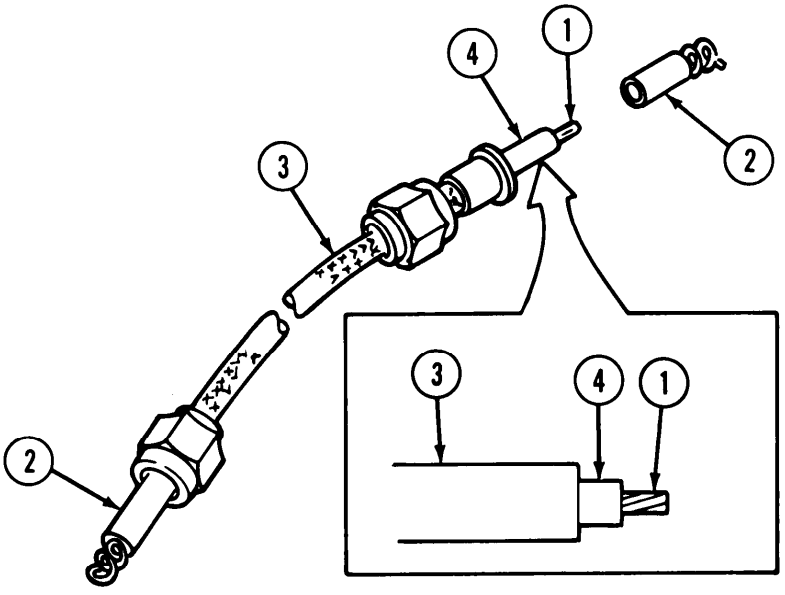
INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26
Wire Stripper GGG-S-665

Equipment Conditions
Ignition cable removed from generator (p 2-24).

References
TM 3-1040-276-23P

DISASSEMBLY/REPAIR/ASSEMBLY



a. Straighten wire leads (1) that are bent over eyelet in insulators (2) and pull insulators from cable shield assembly (3).

b. Pull wire and insulation sleeving (4) from cable shield assembly (3). Remove wire from insulation sleeving.

c. Replace wire and insulation sleeving if wire leads are broken or insulation is cut or cracked. Fabricate new items from bulk materials (TM 3-1040-276-23P). Make new wire (fig D-8) or sleeving (fig D-9) if damaged. Cut to same length as item being replaced (approximately 13 1/4 inches).

d. Install wire in insulation sleeving. Strip insulation back to expose 1/4 inch of bare wire (1) at each end of wire and insulation sleeving (4).

e. Insert wire with insulation sleeving (4) in cable shield assembly (3).

f. Replace insulators if cracked or contacts are corroded or burnt.

g. Feed bare ends of wire (1) through insulators (2) and bend wire leads over eyelet in insulator.

CHAPTER 3

DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

3-1. COMMON TOOLS AND EQUIPMENT. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) assigned to your unit.

3-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT. Refer to Maintenance Allocation Chart (app B) for support equipment.

3-3. REPAIR PARTS. Repair parts are listed and illustrated in TM 3-1040-276-23P.

Section II. DIRECT SUPPORT MAINTENANCE PROCEDURES

3-4. INTRODUCTION.

a. This section contains maintenance procedures which are the responsibility of the direct support maintenance technician as authorized by the maintenance allocation chart (MAC) (app B) and source, maintenance, and recoverability (SMR) coded items in the repair parts and special tools list (RPSTL) (TM 3-1040-276-23P).

WARNING

Flames, hot gases, or hot fog oil may shoot out from smoke outlet nozzles up to 24 hours after operation. Use two people at nozzle end, one on each side, to lift and carry a hot smoke generator.

b. One quartermaster and chemical equipment repairer (MOS 63J) can do most tasks alone. However, it takes two people to lift and carry the smoke generator, engine assembly, or frame assembly. A welder is also needed, to weld the frame. No special environmental conditions are listed because none are required.

3-5. M3A4 SMOKE GENERATOR.

This task covers removal/installation of the:
a. Fog Oil Line and Globe Valve
b. Pressurizing and Purging Air Lines
c. Drain Cock
d. Fuel Tank
e. Engine Assembly
f. Frame Assembly

INITIAL SETUP

Tools and Special Tools
Automotive Vehicle Shop Equipment
SC 4910-95-CL-A74
General Mechanic's Tool Kit
SC 5180-90-CL-N26

Materials/Parts
Dry cleaning solvent (item 4, app C)
Rag (item 9, app C)
Sealing compound (item 11, app C)

References
TM 3-1040-276-10

Personnel Required: 2
Two quartermaster and chemical equipment repairers to handle smoke generator, engine assembly and frame assembly.

a. *Fog Oil Line and Globe Valve.*

REMOVAL/INSTALLATION

a. Disconnect flexible metallic hose assembly (1) from elbow (2). Move elbow (3) counterclockwise.

b. Disconnect fog oil line (4) from pipe to tube elbow (5) and from fog oil pump (6).

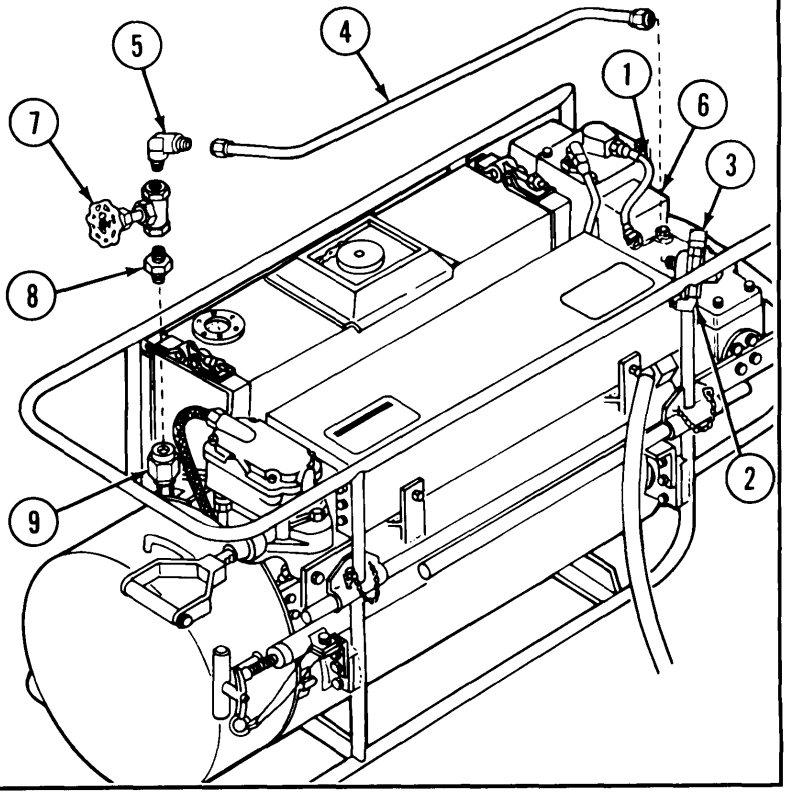
c. Remove globe valve (7) and adapter (8) from oil injection line (9).

d. Apply sealing compound to threads of adapter (8) and globe valve end of pipe to tube elbow (5).

e. Install adapter (8), globe valve (7), and pipe to tube elbow (5) into oil injection line (9). Position globe valve and elbow as shown.

f. Connect fog oil line (4) to pipe to tube elbow (5) and fog oil pump (6).

g. Turn elbow (3) clockwise and connect flexible metallic hose assembly (2) to elbow (1).



b. *Pressurizing and Purging Air Lines.*

REMOVAL/INSTALLATION

a. Remove tool box assembly (p 2-15).

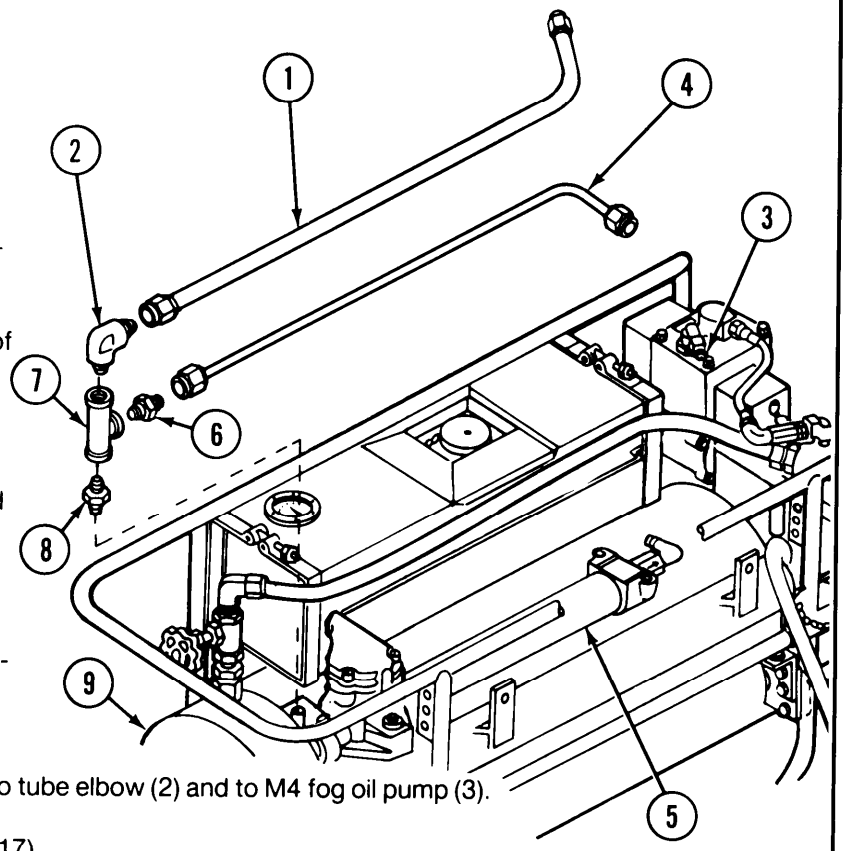
b. Disconnect pressurizing line (1) from pipe to tube elbow (2) and from M4 fog oil pump (3).

c. Disconnect purging air line (4) from magneto air pump assembly (5). Disconnect purging air line (4), adapter (6), pipe tee (7), and pipe nipple (8) from engine assembly (9).

d. Apply sealing compound to threads of adapter (8) and pipe tee ends of adapter (6), and pipe to tube elbow (2).

e. Install pipe nipple (8), pipe tee (7), and pipe to tube elbow (2). Position pipe tee and pipe to tube elbow as shown.

f. Install adapter (6) and purging air line (4) into pipe tee (7). Connect purging air line (4) to magneto air pump assembly (5).



g. Connect pressurizing line (1) to pipe to tube elbow (2) and to M4 fog oil pump (3).

h. Install tool box assembly (step 3, p 2-17).

c. *Drain Cock.*

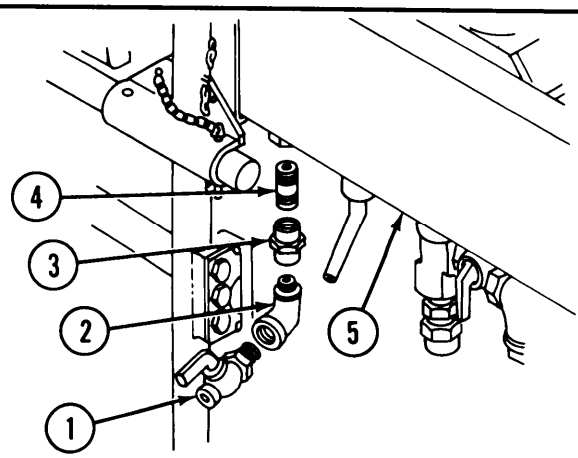
REMOVAL/INSTALLATION

NOTE

Drain fuel in fuel tank into an authorized container. Remove elbow, coupling, and nipple only as necessary for repair.

a. Remove drain cock (1), elbow (2), coupling (3), and nipple (4) from fuel tank (5).

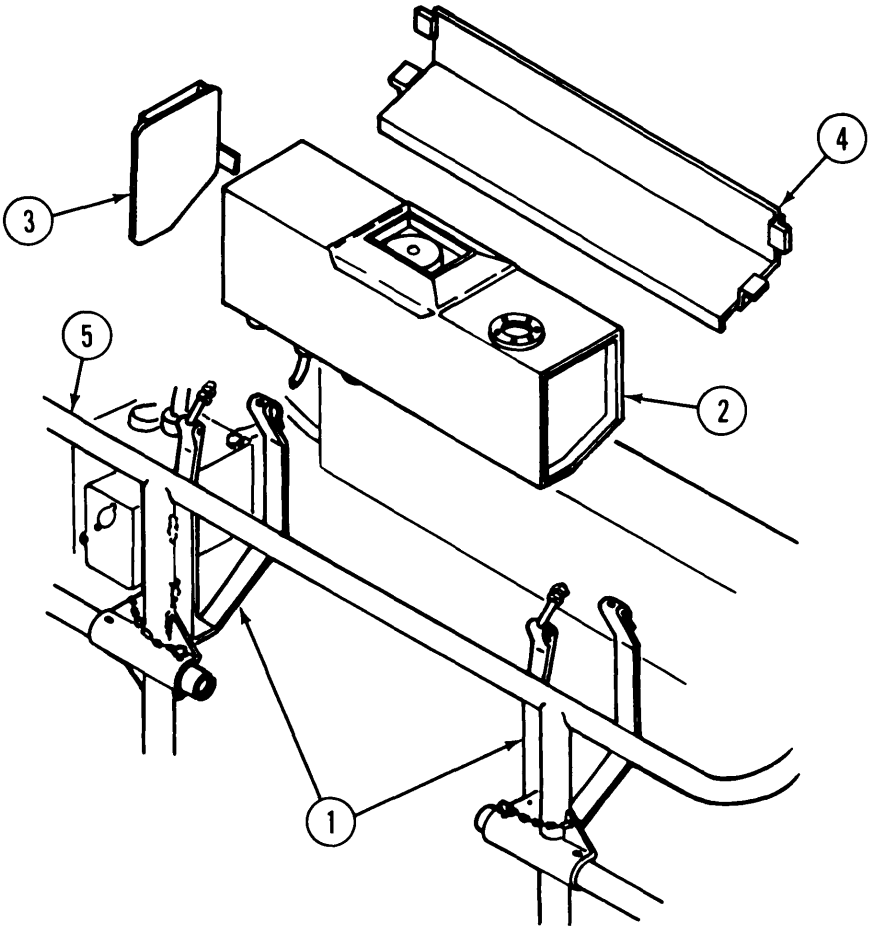
b. Apply sealing compound to male threads of drain cock (1), elbow (2), and nipple (4). Install nipple (4), coupling (3), elbow (2), and drain cock (1) in fuel tank (5). Position elbow and drain cock as shown.



3-5. M3A4 SMOKE GENERATOR (CONT).

d. *Fuel Tank.*

REMOVAL/INSTALLATION



a. Remove fuel filter, sediment strainer, shutoff valve, and fuel line (p 2-37). Remove drain cock (p 3-3).

b. Remove fog oil line (p 3-2) and spillage shield (p 2-16).

c. Loosen two nuts and spread metal straps on frame strap assembly (1).

d. Lift fuel tank assembly (2) out of frame strap assembly (1). Remove fuel tank assembly end baffle (3) and fuel tank bottom baffle (4) from frame assembly (5).

e. Install fuel tank bottom baffle (4), end baffle (3), and fuel tank assembly (2) into frame assembly (5).

f. Secure with frame strap assembly (1) and tighten two nuts.

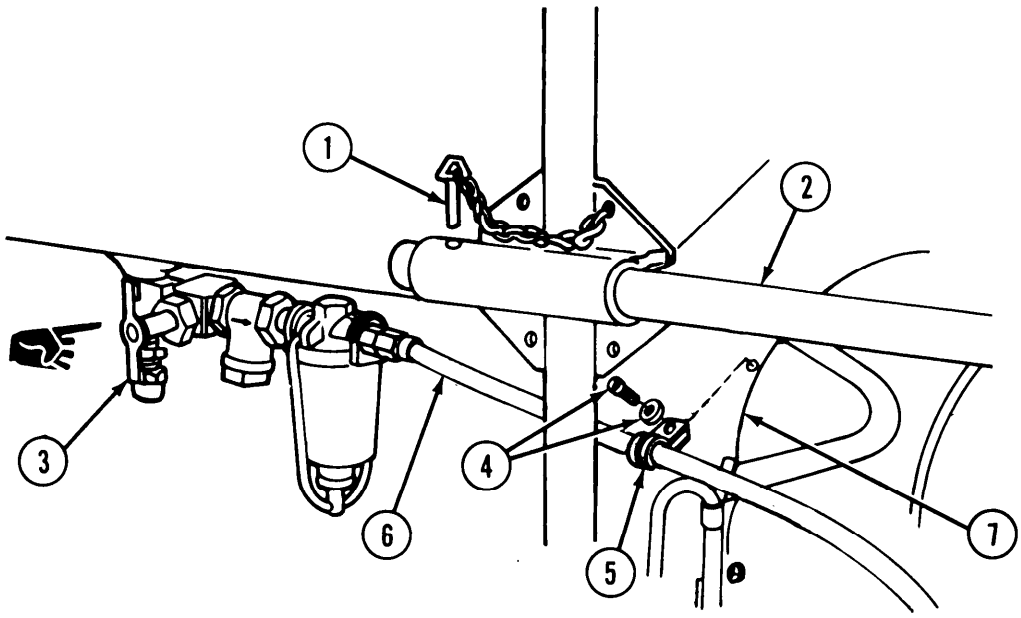
g. Install spillage shield (p 2-17) and fog oil line (p 3-2).

h. Install drain cock (p 3-3). Install fuel filter, sediment strainer, shutoff valve, and fuel line (p 2-37).

e. *Engine Assembly.*

REMOVAL/INSTALLATION

1



CAUTION
Use two people to remove and install engine assembly.

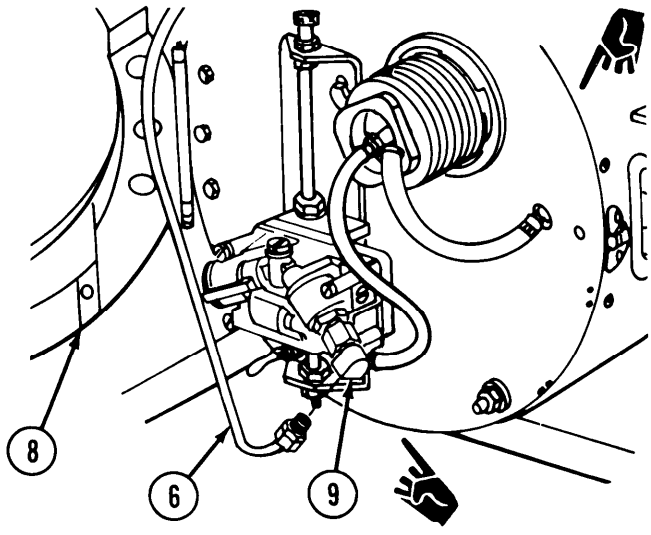
a. Pull lock pins (1) and pull out handles (2) on fuel tank side of smoke generator.

b. Close fuel shutoff valve (3).

c. Loosen screw with flat washer (4) and detach hose clamp (5) and fuel hose (6) from engine assembly outer shell (7).

2

Open front cover (8) and disconnect fuel hose (6) from elbow (9) on carburetor reservoir. Drain fuel into container. Close front cover.



3-5. M3A4 SMOKE GENERATOR (CONT).

e. *Engine Assembly (Cont).*

REMOVAL/INSTALLATION

3

a. Hold spark ignitor (10) and turn cable nut to disconnect ignition cable (11).

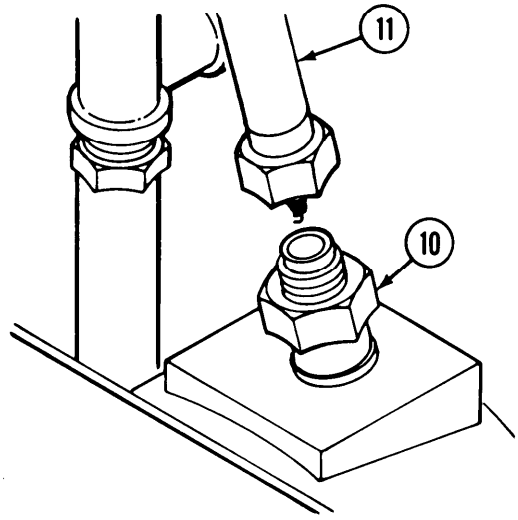
b. Remove fog oil line (p 3-2).

c. Remove tool box assembly (p 2-15).

d. Remove magneto air pump assembly with attached parts (p 2-23).

e. Remove accumulator assembly with attached parts (step 1, p 2-20).

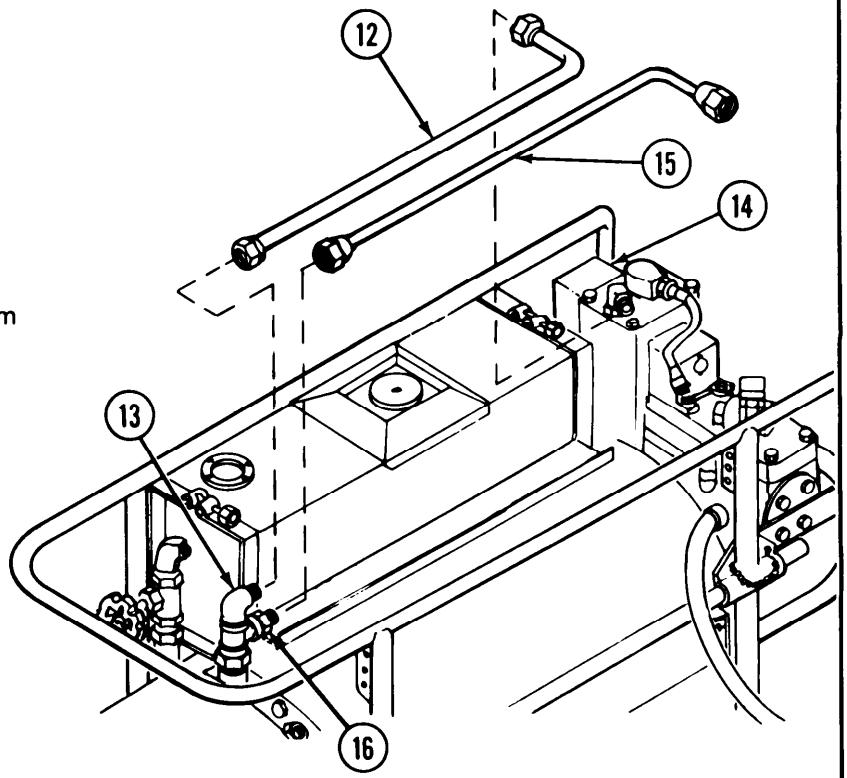
f. Remove air pump assembly with attached parts (p 2-32).



4

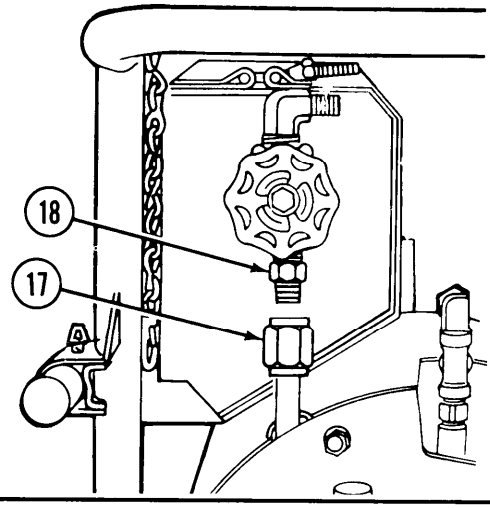
a. Disconnect pressurizing line (12) from elbow (13) and fog oil pump (14).

b. Disconnect purging air line (15) from adapter (16).

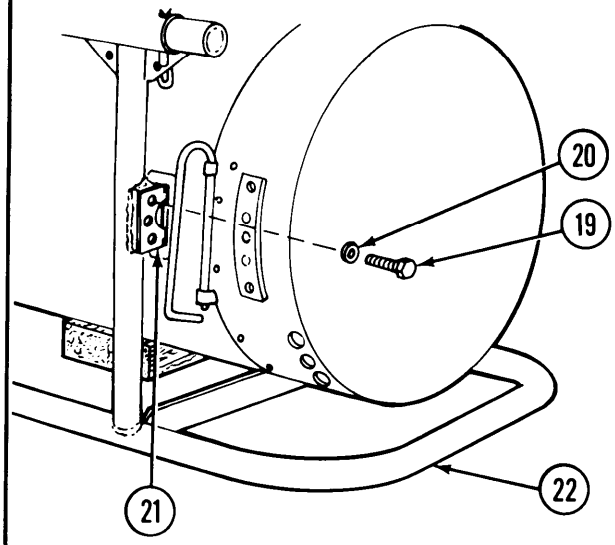


5

Disconnect coupling nut on oil injection nozzle (17) from pipe nipple (18).



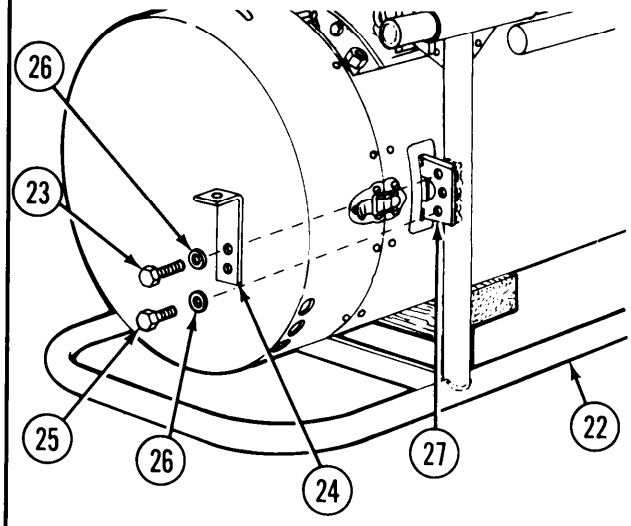
6



CAUTION
Brace engine assembly before removing machine bolts from engine supports.

Remove three machine bolts (19) and three lock washers (20) from engine end support (21) and frame (22) on front cover end of fuel tank side of generator.

7



NOTE
Four machine bolts (23) that mount the two pump support brackets (24) are longer than the other two machine bolts (25).

Remove six machine bolts (23 and 25), six lock washers (26), and two pump support brackets (24) from two engine end supports (27) and frame (22) on tool box side of generator.

8

Repeat step 6 to remove engine assembly from the smoke discharge end on the fuel tank side of the smoke generator.

3-5. M34A4 SMOKE GENERATOR (CONT).

e. Engine Assembly (Cont).

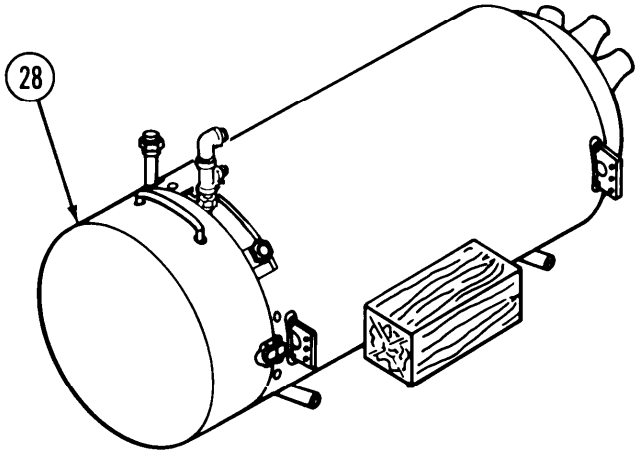
REMOVAL/INSTALLATION (CONT)

9

a. Carefully rotate and pull engine assembly (28) out of frame.

CAUTION
Engine should be carefully placed on two hoses and braced to prevent damage.

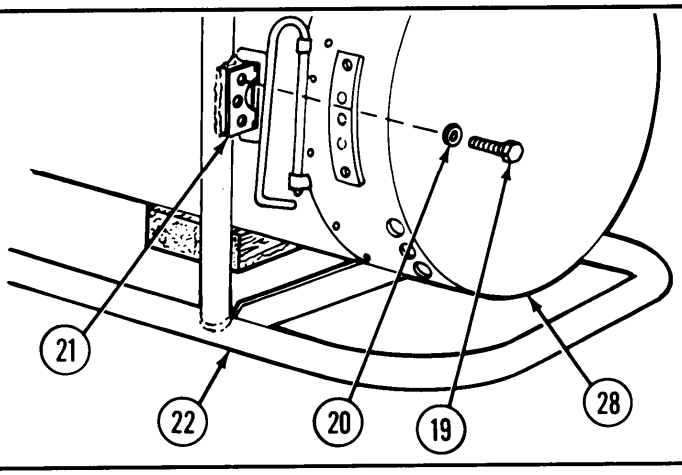
b. Carefully place engine assembly (28) on two hoses. Brace with timbers or blocks to prevent damage to engine outer shell.



10

a. Rotate engine assembly (28) as needed to position it on frame (22).

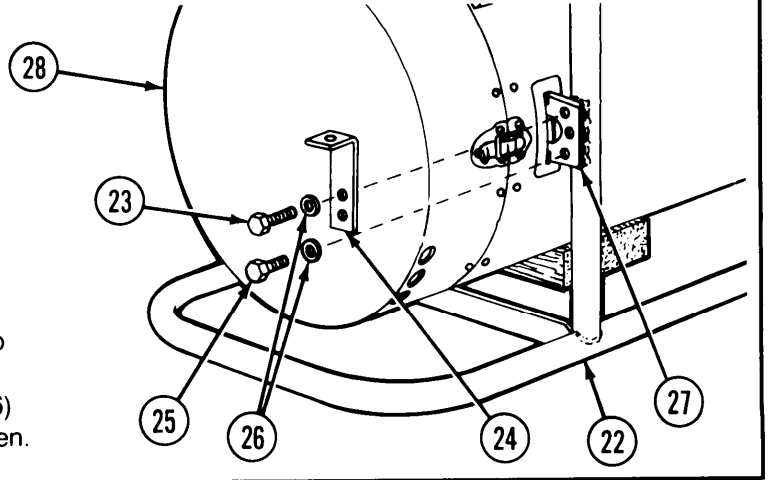
b. Install engine end support (21) on front cover end of fuel tank side of generator with three lock washers (20) and three machine bolts (19). Do not tighten.



11

NOTE
Four machine bolts (23) that mount the two pump support brackets (24) are longer than the other two machine bolts (25).

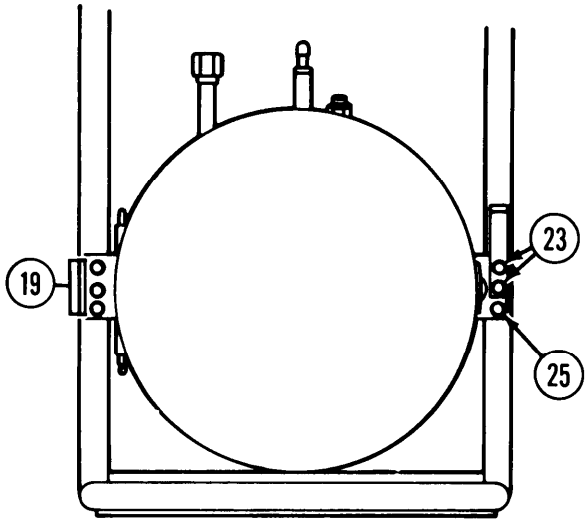
Install two pump support brackets (24) and two engine end supports (27) on frame (22) on tool box side of generator with six lock washers (26) and six machine bolts (23 and 25). Do not tighten.



12

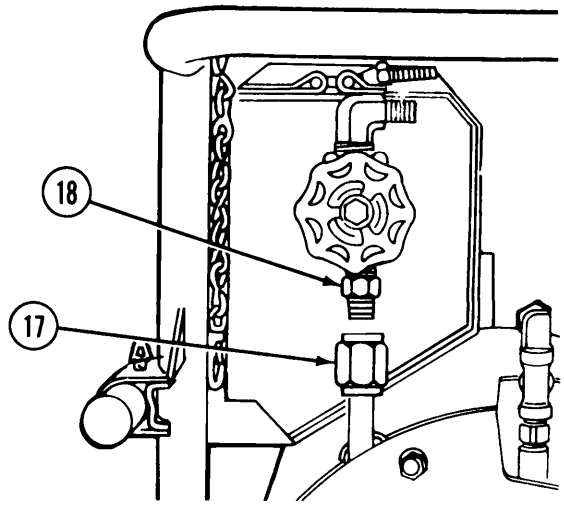
Repeat step 10b. to install engine assembly to the smoke discharge end on the fuel tank side of the smoke generator.

13



Tighten 12 machine bolts (19, 23, and 25).

14

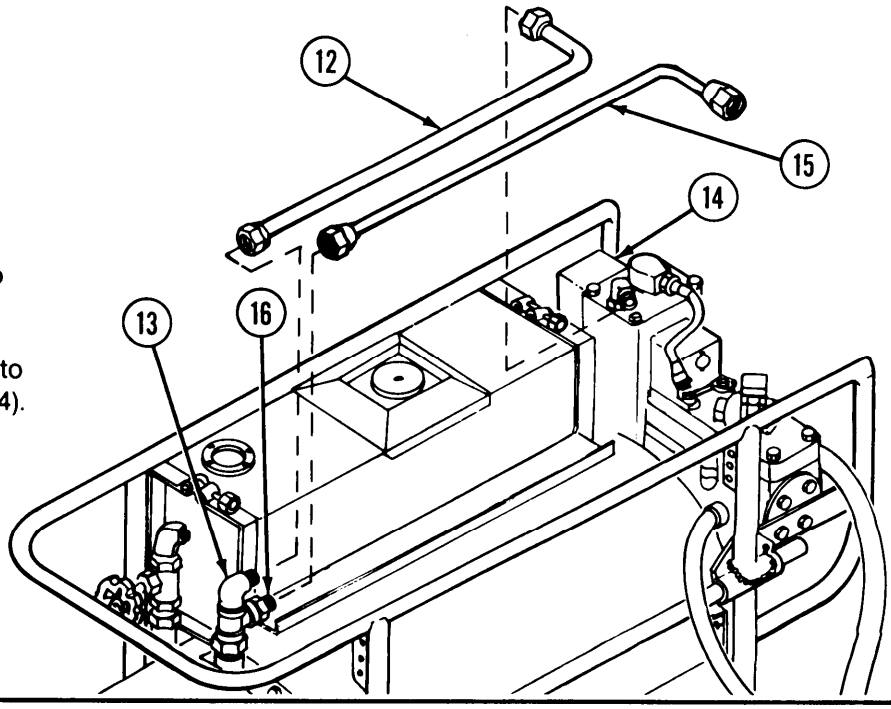


Connect coupling nut on oil injection nozzle (17) to pipe nipple (18).

15

a. Connect purging air line (15) to adapter (16).

b. Connect pressurizing line (12) to elbow (13) and fog oil pump (14).

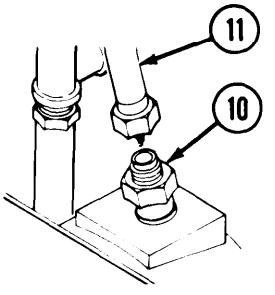


3-5. M3A4 SMOKE GENERATOR (CONT).

e. *Engine Assembly (Cont).*

REMOVAL/INSTALLATION (CONT)

16



a. Install air pump assembly with attached parts (step 5, p 2-34).

b. Install accumulator assembly with attached parts (step 3, p 2-21).

c. Install magneto air pump assembly with attached parts (step 2, p 2-23).

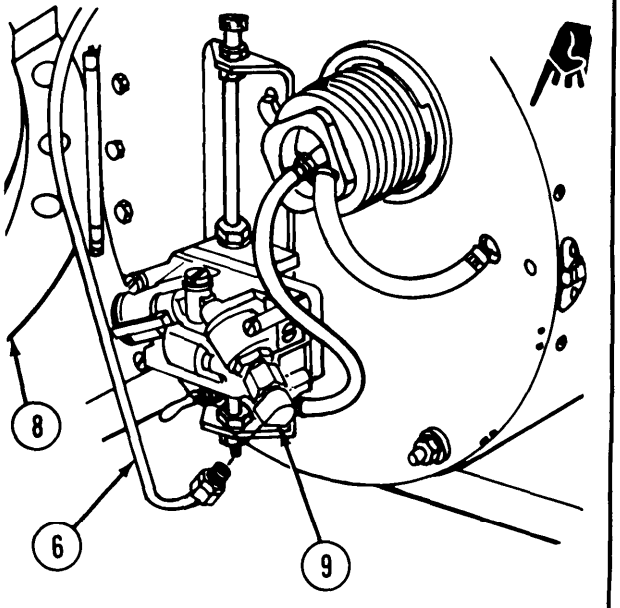
d. Connect ignition cable (11) to spark igniter (10).

e. Install tool box assembly (step 3, p 2-17).

f. Secure magneto air pump assembly to frame (step 2, p 2-23).

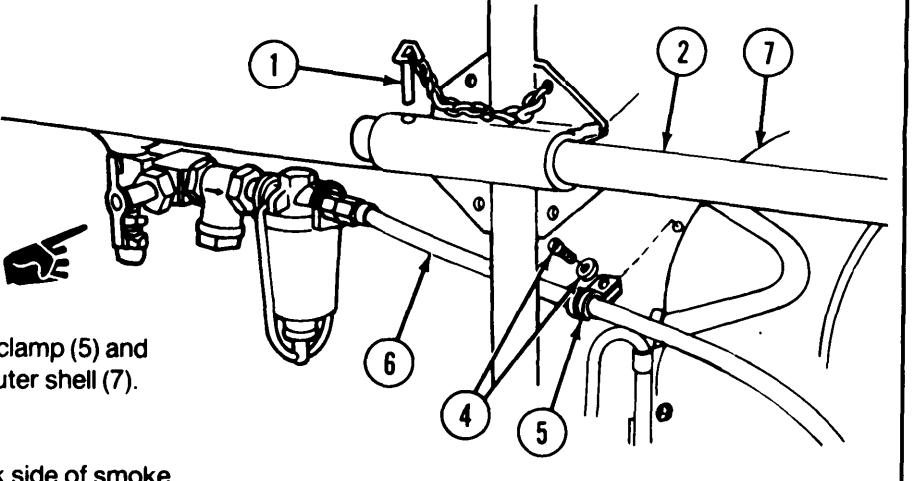
g. Install fog oil line (p 3-2).

17



Open front cover (8) and connect fuel hose (6) to elbow (9) on carburetor reservoir. Close cover.

18

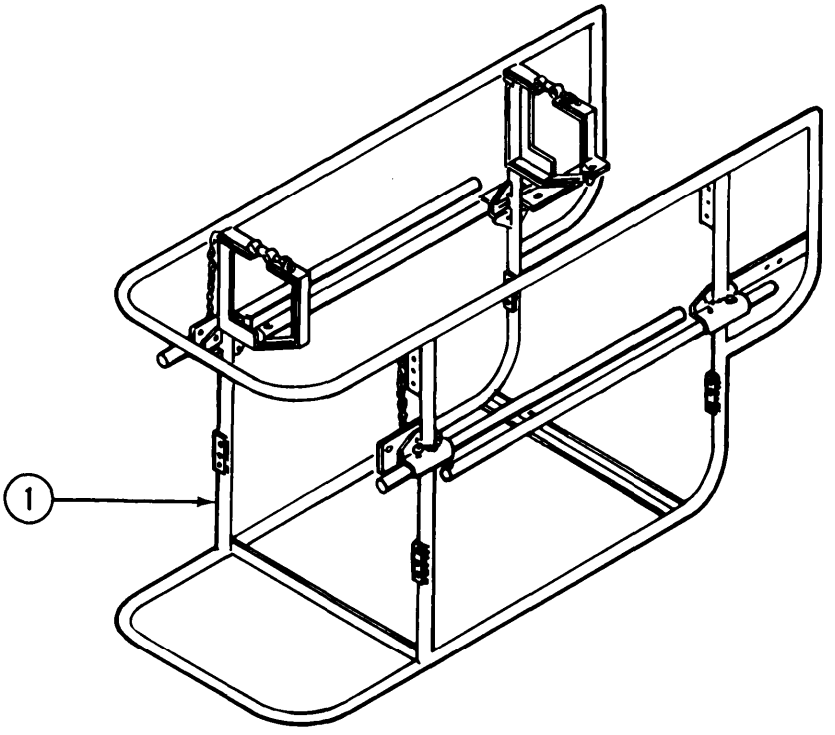


a. Attach fuel hose (6) with hose clamp (5) and screw with flat washer (4) to outer shell (7). Tighten.

b. Push in handles (2) on fuel tank side of smoke generator and secure with lock pins (1).

c. Operate smoke generator according to TM 3-1040-276-10 and check performance.

f. *Frame Assembly.*



a. Replace the frame assembly (1) by removing the following components.

(1) Tool Box Assembly and Accumulator Assembly (p 2-15).
(2) Magneto Air Pump Assembly (p 2-23).
(3) Fog Oil Inlet Hose Assembly (p 2-25).
(4) Air Pump Assembly (p 2-32).
(5) M4 Fog Oil Pump (p 2-26).
(6) Engine Assembly (p 3-5).
(7) Fuel Tank Assembly (p 3-4).

3-6. ENGINE ASSEMBLY.

This task covers:
a. Removal/Installation of the Front Cover Assembly
b. Removal/Installation of the Adjustable Float Assembly
c. Disassembly/Reassembly of the Engine Assembly

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26
Adjustable wrench 11655778-5
Torque wrench (item 10, app B)

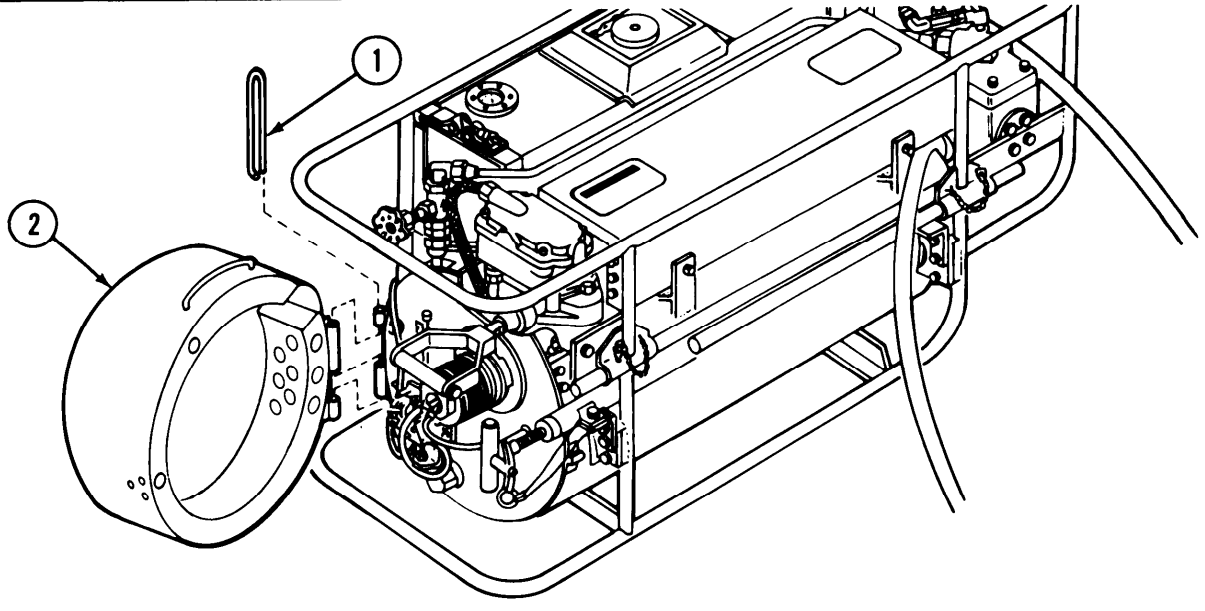
Materials/Parts
Abrasive cloth (item 3, app C)
Antiseize compound (item 1, app C)
Dry cleaning solvent (item 4, app C)
Rag (item 9, app C)
Sealing compound (item 11, app C)
Wire (fig D-6)

References
TM 3-1040-276-10
TM 3-1040-276-23P
TM 9-243

Personnel Required
Two MOS 63J quartermaster and chemical equipment repairers

a. *Front Cover Assembly.*

REMOVAL/INSTALLATION



a. Open front cover, pull lock pin (1) from front cover hinge halves, and remove front cover (2).

b. Aline front cover hinge halves and install lock pin (1) to secure front cover (2).

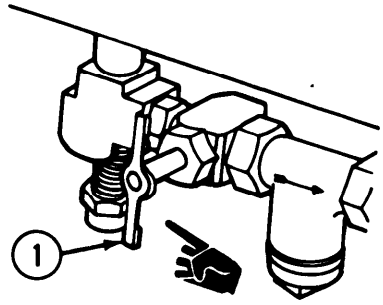
b. *Adjustable Float Assembly.*

REMOVAL/INSTALLATION

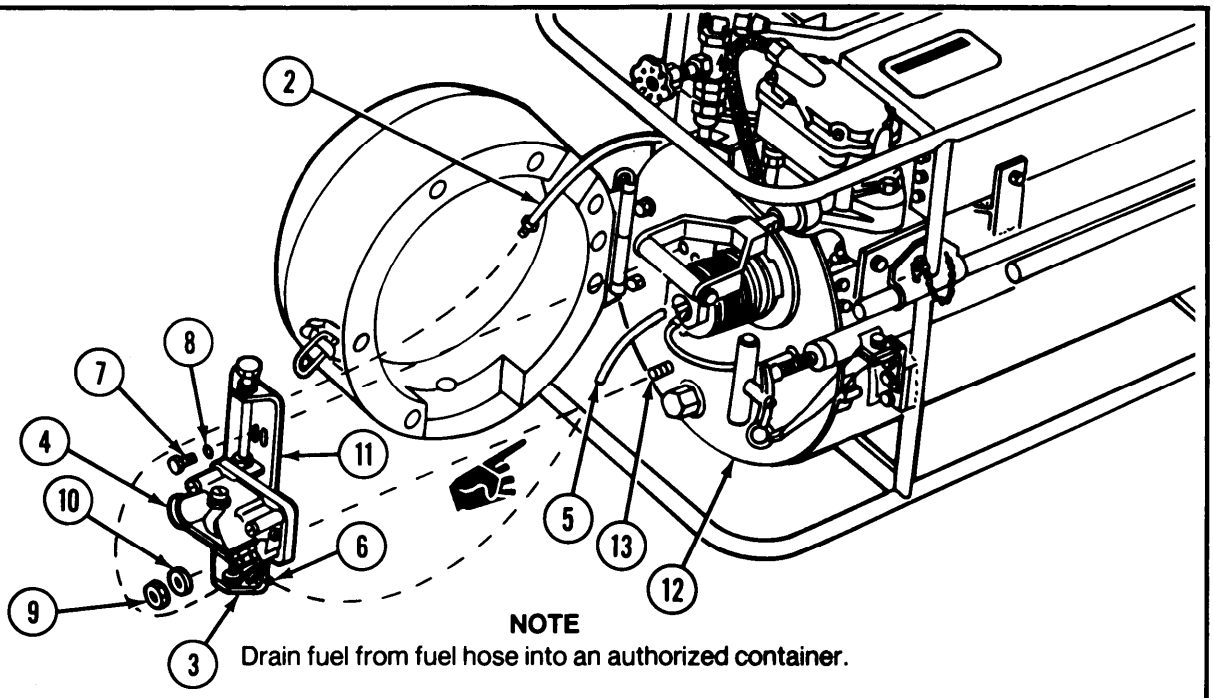
1

NOTE
Make sure fuel shutoff valve is closed before disconnecting fuel hose from carburetor reservoir.

Close fuel shutoff valve (1).



2



NOTE
Drain fuel from fuel hose into an authorized container.

a. Disconnect fuel hose (2) from elbow (3). Drain fuel from fuel hose and carburetor reservoir (4) into authorized container. Pull fuel tube (5) from metal tube assembly (6).

b. Remove two slotted machine screws (7) and two lockwashers (8). Remove lock nut (9) and washer (10). Pull adjustable float assembly (11) from cooling baffle (12).

c. Slide support bracket of adjustable float assembly (11) on stud (13). Secure bracket to cooling baffle (12) with two lockwashers (8) and two slotted machine screws (7). Install washer (10) and lock nut (9) on stud (13).

d. Connect fuel tube (5) to metal tube assembly (6). Connect fuel hose (2) to elbow (3).

3-6. ENGINE ASSEMBLY (CONT).

c. *Engine Assembly.*

DISASSEMBLY

1

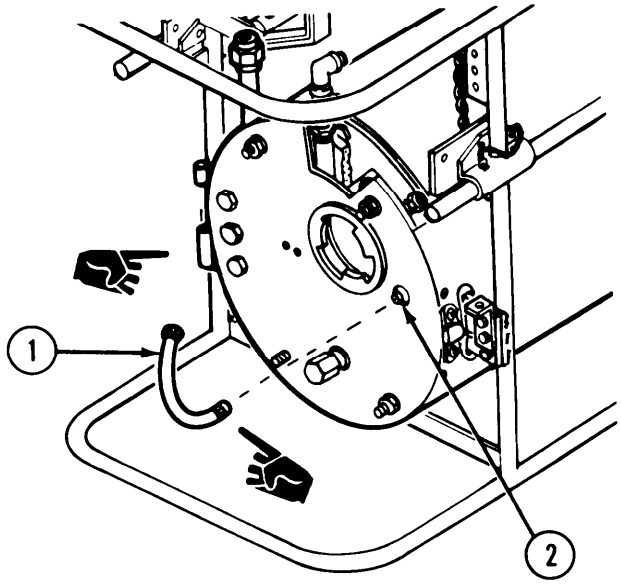
a. Remove engine assembly from smoke generator and brace with blocks to prevent damage to outer shell assembly (p 3-5).

b. Remove front cover (p 3-12).

c. Remove adjustable float assembly (p 3-13).

d. Remove engine head assembly (TM 3-1040-276-10).

e. Loosen clamp on air hose (1) and pull air hose from tube assembly (2).

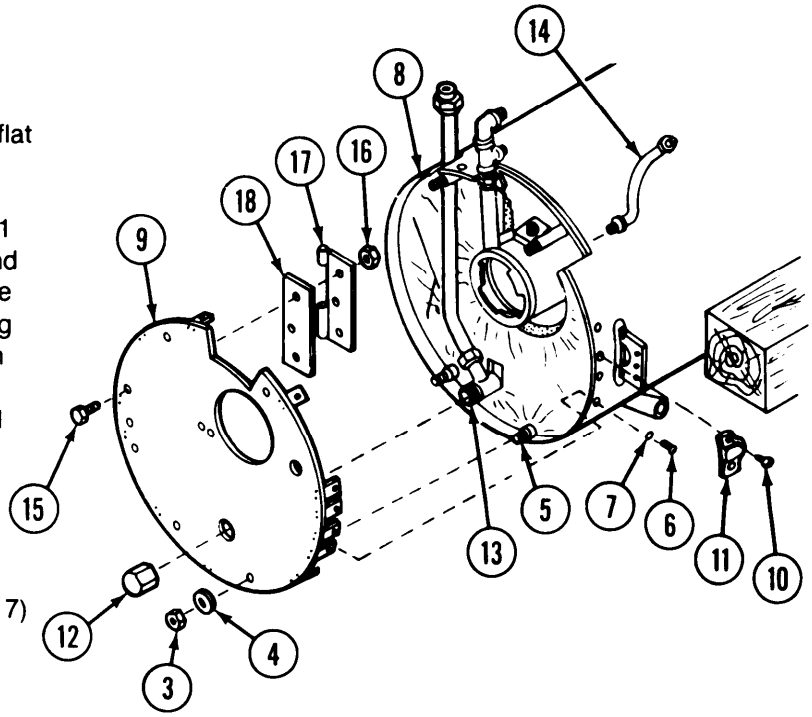


2

a. Remove three lock nuts (3) and three flat washers (4) from three studs (5).

b. Remove 11 machine screws (6) and 11 lockwashers (7) from outer shell (8) and lock nuts on cooling baffle (9). Remove two machine screws (10) and clamping catch (11). Remove pipe cap (12) from engine tube assembly (13). Pull tube assembly (14) from outer shell (8). Pull cooling baffle from four studs (5). Replace pipe cap (12) on engine tube assembly (13).

c. Remove three capscrews (15), three lock nuts (16), front cover hinge half (17) and hinge spacer (18) from cooling baffle (9).



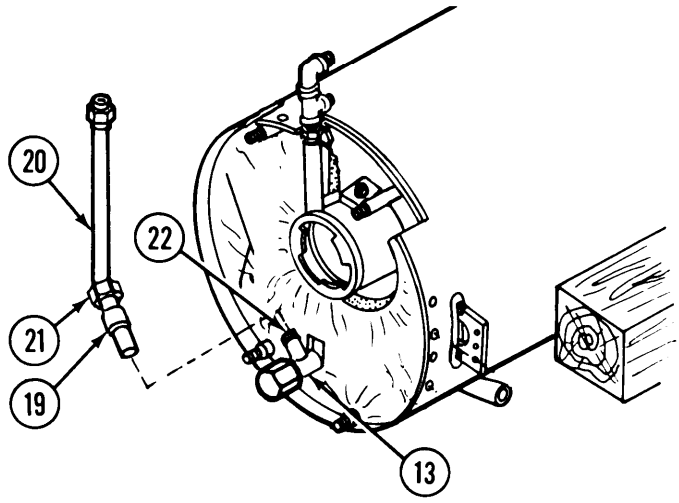
3

a. Disconnect tube coupling nut (21) from oil injection nozzle (22) of engine tube assembly (13) and pull oil injection line (20) with tube clinch sleeve (19) from oil injection nozzle (22).

NOTE

Perform the following only as needed for repair.

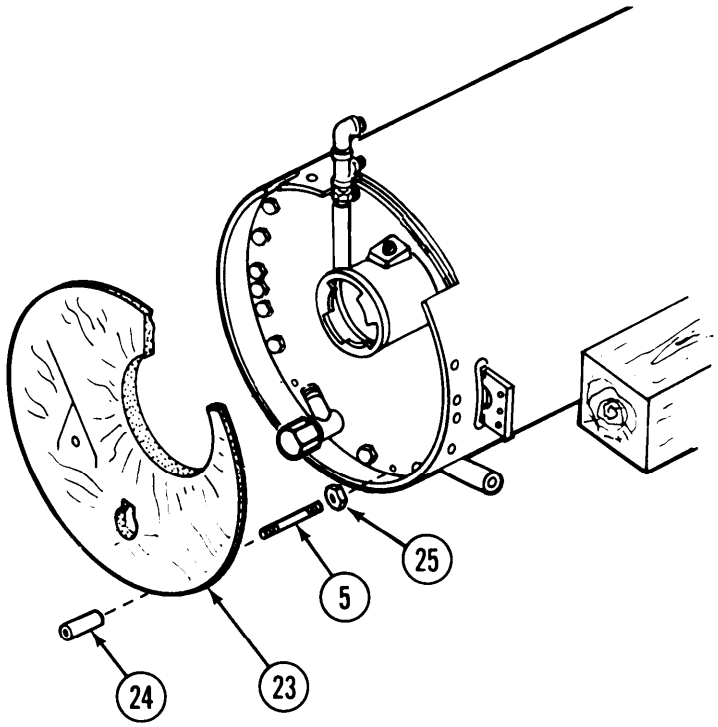
b. Cut tube clinch sleeve (19) from oil injection line (20). Remove tube coupling nut (21) from oil injection line (20).



4

a. Pull insulating pad (23) free from engine tube assembly (13) on front plate of engine tube assembly.

b. Mark location of all four studs before disassembling them to help in reassembly. Pull four sleeve spacers (24) off four studs (5). Back off four self-locking nuts (25) and remove studs (5) from engine tube assembly (13). Remove nuts from studs.



3-6. ENGINE ASSEMBLY (CONT).

c. *Engine Assembly (Cont).*

DISASSEMBLY (CONT)

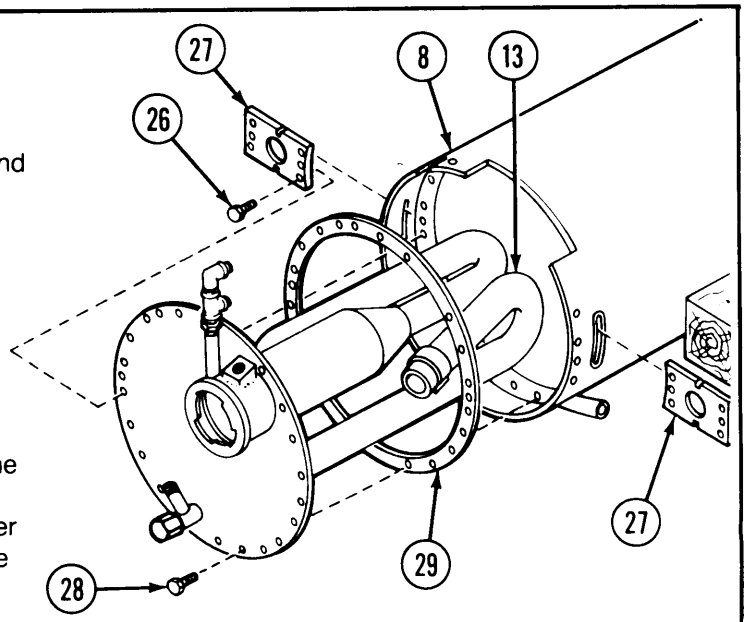
5

a. Remove six machine bolts (26) and two end supports (27) from engine tube assembly (13). Pull end supports (27) out two slots in outer shell (8).

WARNING

Asbestos fibers can cause cancer if inhaled. Handle asbestos gaskets with care.

b. Remove 15 machine bolts (28) from engine tube assembly (13) and pull engine tube assembly (13) from outer shell (8). Recover gasket (29) while withdrawing engine tube assembly. Lay engine tube assembly on hose to prevent damage to engine tube.



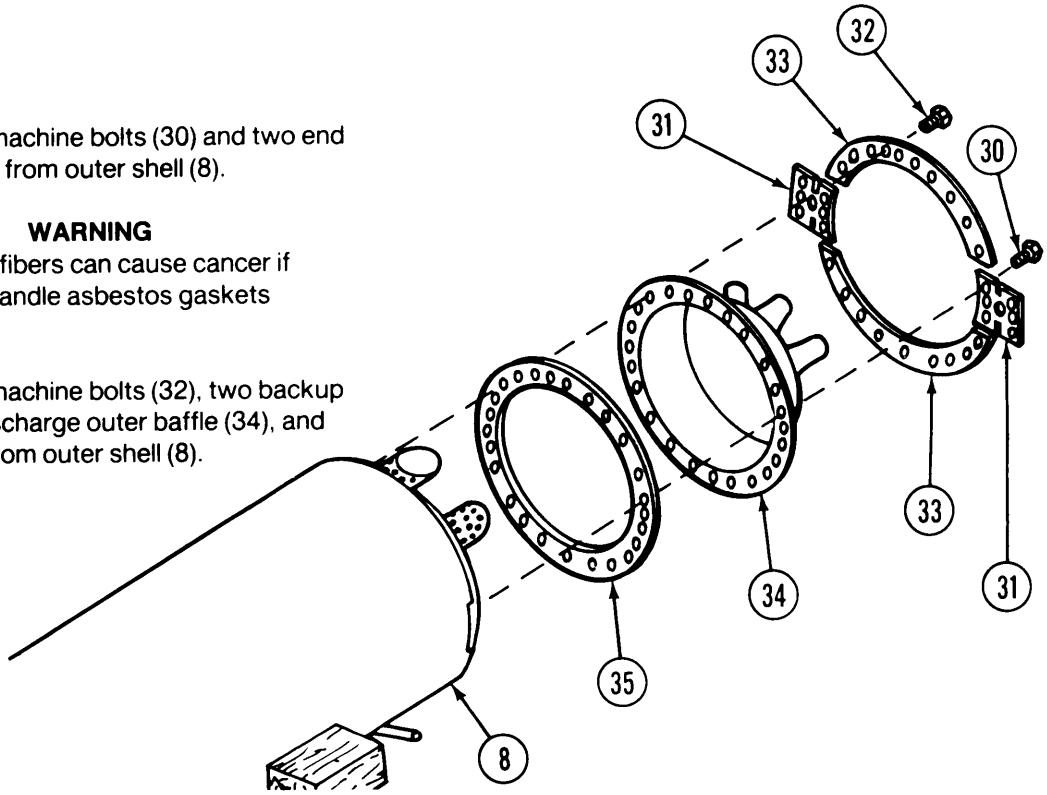
6

a. Remove six machine bolts (30) and two end supports (31) from outer shell (8).

WARNING

Asbestos fibers can cause cancer if inhaled. Handle asbestos gaskets with care.

b. Remove 18 machine bolts (32), two backup rings (33), discharge outer baffle (34), and gasket (35) from outer shell (8).



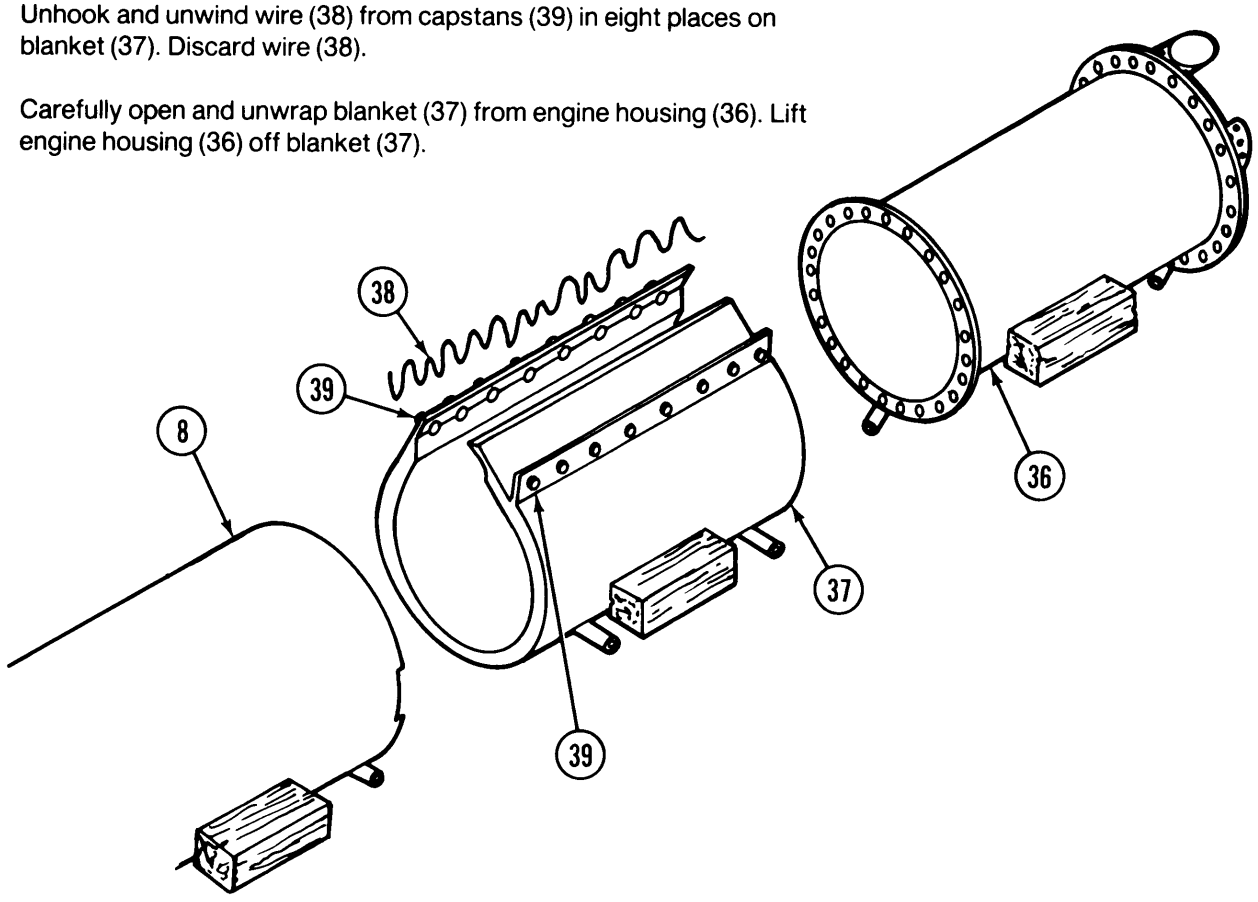
7

CAUTION
Rough handling tears blanket.

a. Carefully pull engine housing (36) out smoke discharge end of outer shell (8). Lay engine housing on hose to prevent damage to blanket (37).

b. Unhook and unwind wire (38) from capstans (39) in eight places on blanket (37). Discard wire (38).

c. Carefully open and unwrap blanket (37) from engine housing (36). Lift engine housing (36) off blanket (37).



REPAIR

1

a. Clean metal parts with dry cleaning solvent and rag. Wipe dry with rag.

b. Inspect for badly crimped, bent, cracked, broken, or missing parts. Inspect screws, cap screws, and machine bolts for stripped threads.

3-6. ENGINE ASSEMBLY (CONT).

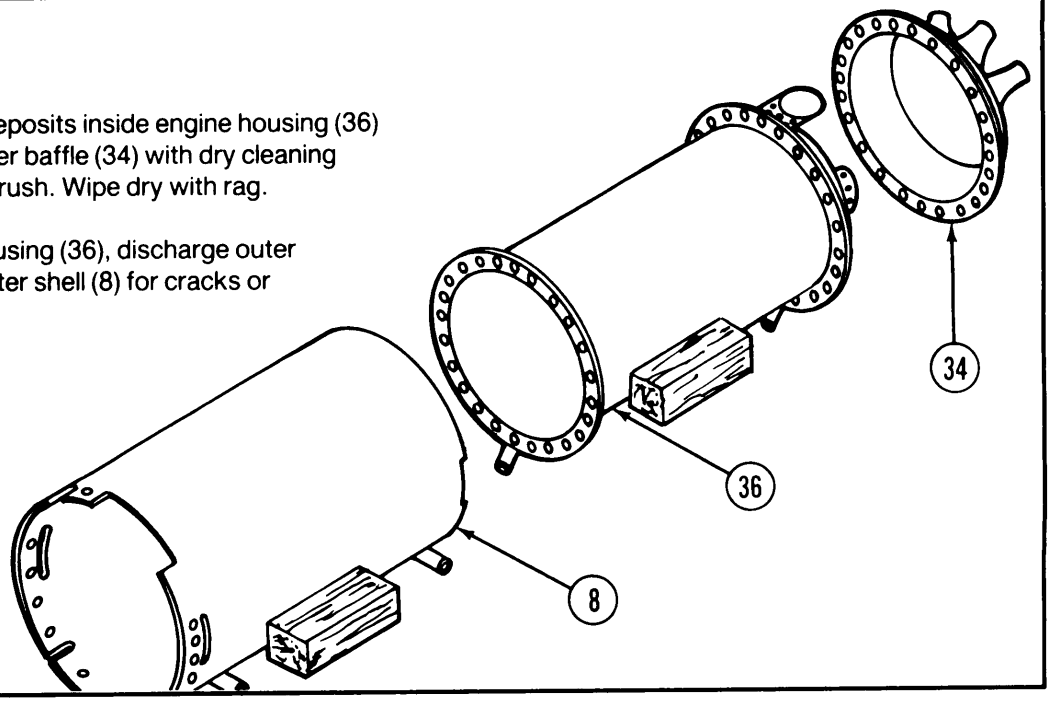
c. *Engine Assembly (Cont).*

REPAIR (CONT)

2

a. Remove carbon deposits inside engine housing (36) and discharge outer baffle (34) with dry cleaning solvent and wire brush. Wipe dry with rag.

b. Inspect engine housing (36), discharge outer baffle (34), and outer shell (8) for cracks or punctures.

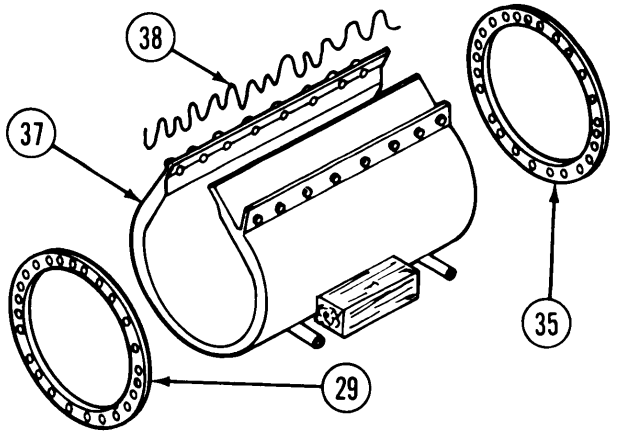


3

a. Inspect for crushed, broken, cut, or deformed gaskets (29 and 35).

b. Inspect blanket (37) for rips, tears, or punctures.

c. Replace wire (38) with new wire (fig D-6).



4

Replace authorized parts which do not meet inspection criteria. Replace missing parts (TM 3-1040-276-23P).

REASSEMBLY

1

a. Apply antiseize compound to threads of machine bolts.

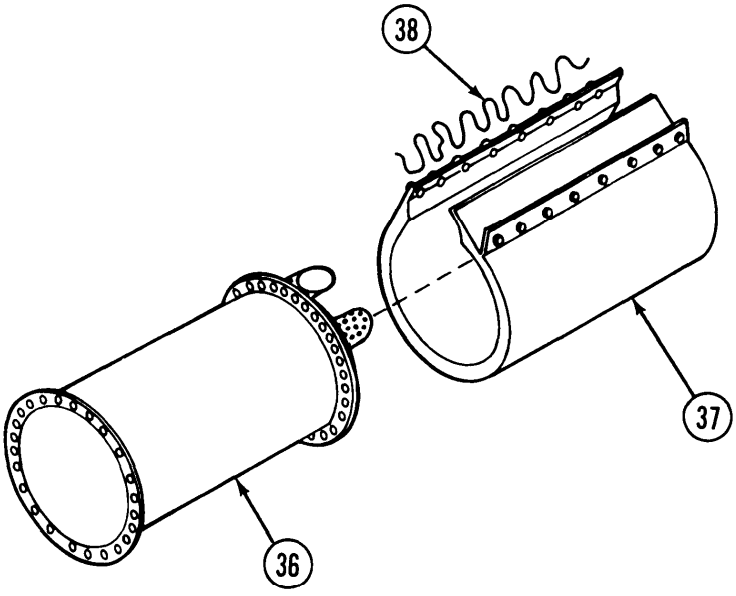
b. Apply sealing compound to both sides of gaskets.

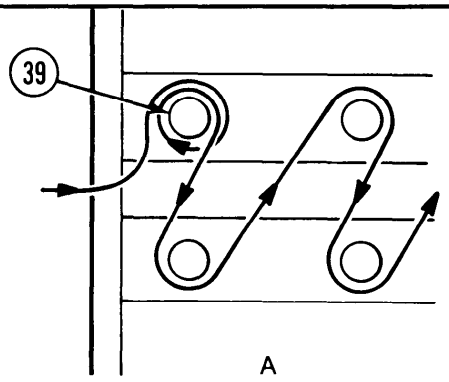
CAUTION

Do not exceed torque limits. Exceeding torque limits strips threads, crushes gaskets, and causes leakage. Under torquing causes leakage. Use torquing techniques given in TM 9-243.

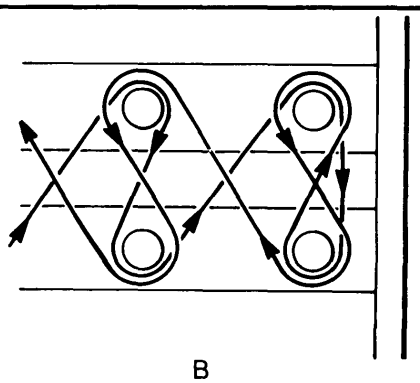
2

Carefully wrap blanket (37) around engine housing (36). Begin by snugging standing end of wire (38) around first capstan (39). (See illustration A.) Leave about 6 inches of wire free. Then continue lacing 16 capstans in 8 places on blanket with running end of wire. (See illustration B.) Follow the pattern shown. After lacing all capstans, cut wire and twist ends together. (See illustration C.) File ends smooth and bend them down so they won't tear blanket or catch on other parts.

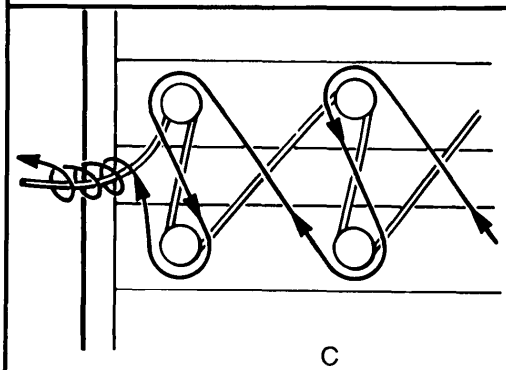




A



B



C

3-6. ENGINE ASSEMBLY (CONT).

c. *Engine Assembly (cont).*

REASSEMBLY (CONT)

3

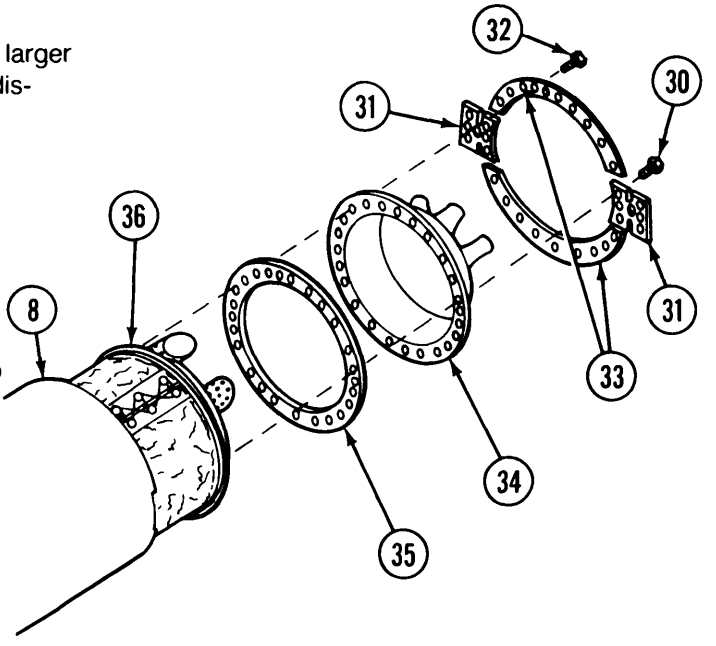
NOTE
Make sure smaller muffler is directly above larger muffler on engine housing when installing discharge outer baffle.

a. Position gasket (35) and discharge outer baffle (34) on engine housing (36) and aline mounting holes.

b. Line up two end supports (31) on discharge outer baffle (34) and install six machine bolts (30). Torque machine bolts (30) to 120 to 130 inch pounds.

c. Install 18 machine bolts (32). Torque machine bolts (32) to 120 to 130 inch pounds.

d. Carefully slide engine housing (36) into outer shell (8) from smoke discharger end. Make sure smoke discharge nozzles point up.



4

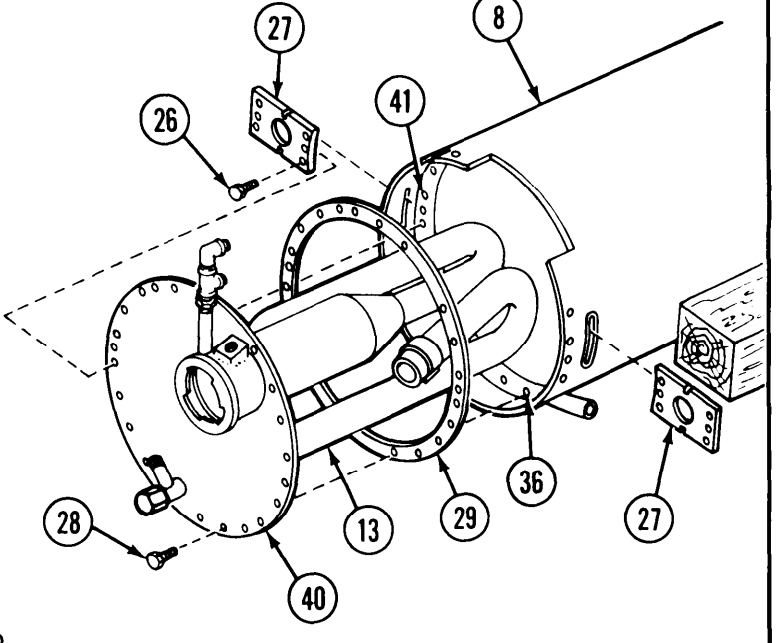
a. Pull gasket (29) over engine tube assembly (13). Line up mounting holes on gasket (29) with mounting holes on engine tube assembly front plate (40).

b. Carefully push engine tube assembly (13) with gasket (29) into engine housing (36).

c. Insert two end supports (27) in two slots outer shell (8). Line up end supports (27) with end support mounting holes (41) and install but do not tighten six machine bolts (26) on engine tube assembly front plate (40).

d. Install but do not tighten 15 machine bolts (28) through engine tube assembly front plate (40) and gasket (29) and into engine housing (36).

e. Torque machine bolts (26 and 28) to 120 to 130 inch pounds.



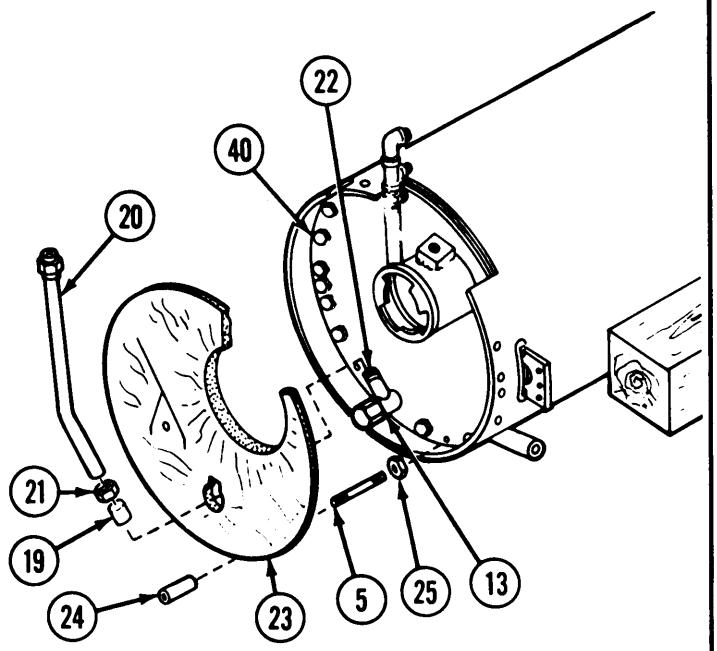
5

a. Install four self-locking nuts (25) on four studs (5). Leave about 1/2 inch of thread between ends of studs (5) and nuts (25). Install studs (5) on engine tube assembly front plate (40). Torque nuts (25) against front plate (40) to 120 to 130 inch pounds.

b. Slide four sleeve spacers (24) onto four studs (5).

c. Carefully install insulating pad (23) onto engine tube assembly (13). Fit it over combustion chamber and oil injection nozzle.

d. Install tube coupling nut (21) and tube clinch sleeve (19) on oil injection line (20). Install oil injection line (20) on oil injection nozzle (22). Tighten coupling nut (21).



6

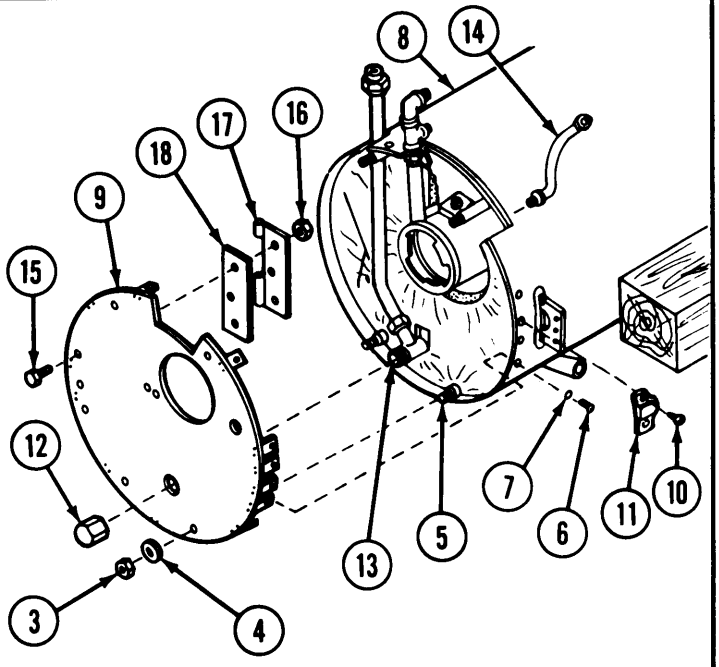
a. Remove pipe cap (12) from engine tube assembly (13).

b. Install front cover hinge half (17) and hinge spacer (18) on cooling baffle (9) with three cap screws (15) and three lock nuts (16). Tighten.

c. Push cooling baffle (9) onto four studs (5).

d. Install 11 machine screws (6) and 11 lock washers (7) through outer shell and into lock nuts on cooling baffle (9). Install clamping catch (11) with two machine screws (10).

e. Insert tubing of tube assembly (14) through hole in top of outer shell (8).



NOTE

Do not install a flat washer and lock nut on lower left stud. This lock washer and lock nut will be installed when adjustable float assembly is installed.

f. Secure cooling baffle (9) on three studs (5) with three flat washers (4) and three lock nuts (3). Tighten. Replace pipe cap (12) on engine tube assembly (13).

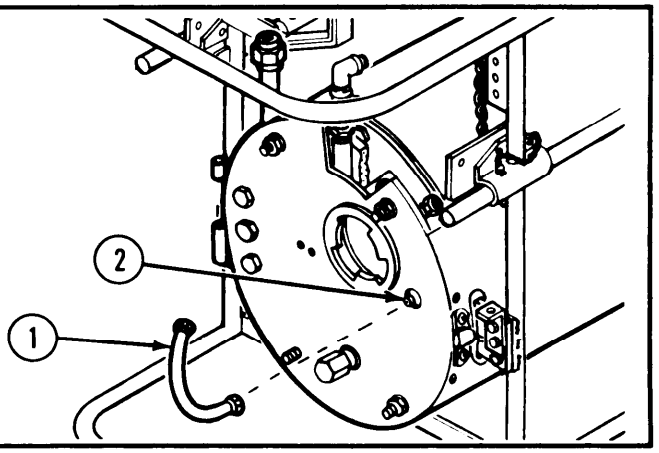
3-6. ENGINE ASSEMBLY (CONT).

c. *Engine Assembly (Cont).*

REASSEMBLY (CONT)

7

a. Install engine assembly on smoke generator (p 3-5).
b. Attach air hose (1) to tube assembly (2). Tighten hose clamp.
c. Install engine head assembly (TM 3-1040-276-10).
d. Install adjustable float assembly (p 3-13).
e. Install front cover (p 3-12).



3-7. FRONT COVER ASSEMBLY AND FRONT COVER BAFFLE.

This task covers:
a. Disassembly
b. Repair
c. Reassembly

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26

Materials/Parts
Dry cleaning solvent (item 4, app C)
Rag (item 9, app C)

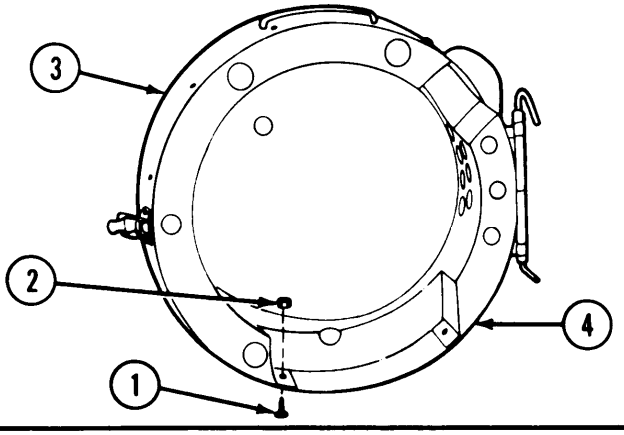
References
TM 3-1040-276-23P

Equipment Condition
Front cover assembly is removed from engine assembly (p 3-12).

DISASSEMBLY

1

Remove two machine screws (1) and two self-locking nuts (2) from front cover (3) and front cover baffle (4).



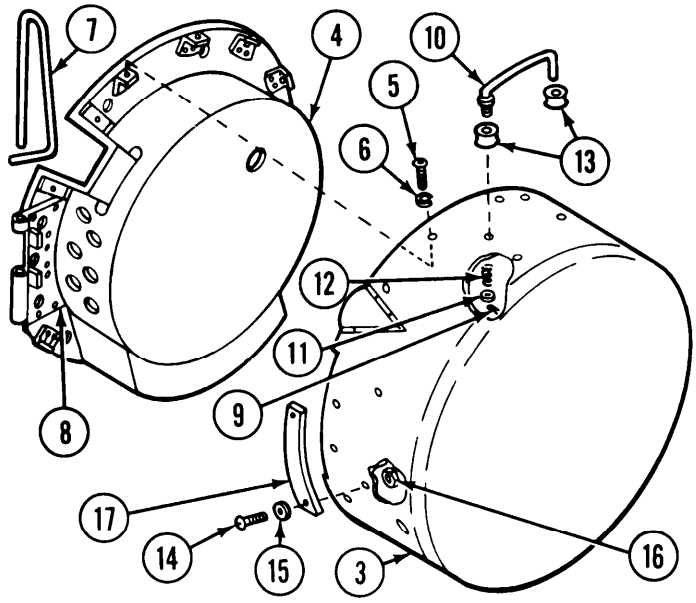
2

a. Remove 12 machine screws (5) and 12 washers (6) from front cover (3) and front cover baffle (4). Remove front cover baffle from front cover.

b. Remove lock pin (7) from front cover hinge half (8).

c. Straighten and pull cotter pin (9) from front stop (10) and remove flat washer (11) and spring (12) from front stop. Pull out front stop and pry two grommets (13) from front cover (3).

d. Remove two machine screws (14), two flat washers (15), two lock nuts (16), and rubber bumper (17) from front cover (3).



REPAIR

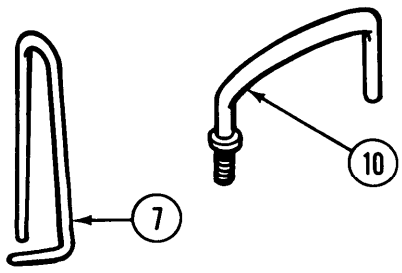
1

a. Clean metal parts with dry cleaning solvent and rag. Wipe dry with rag.

b. Inspect for missing or broken parts and stripped threads on screws.

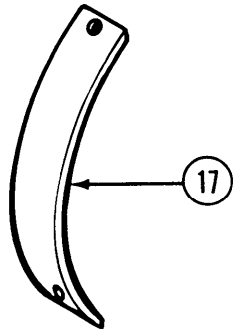
c. Inspect front cover baffle for missing lock nuts.

2



Inspect for bent front stop (10) and lock pin (7). Straighten front stop (10) and lock pin (7).

3



Inspect bumper (17) for brittle rubber.

4 Replace authorized parts which do not meet inspection criteria (TM 3-1040-276- 23P).

3-7. FRONT COVER ASSEMBLY AND FRONT COVER BAFFLE (CONT).

REASSEMBLY

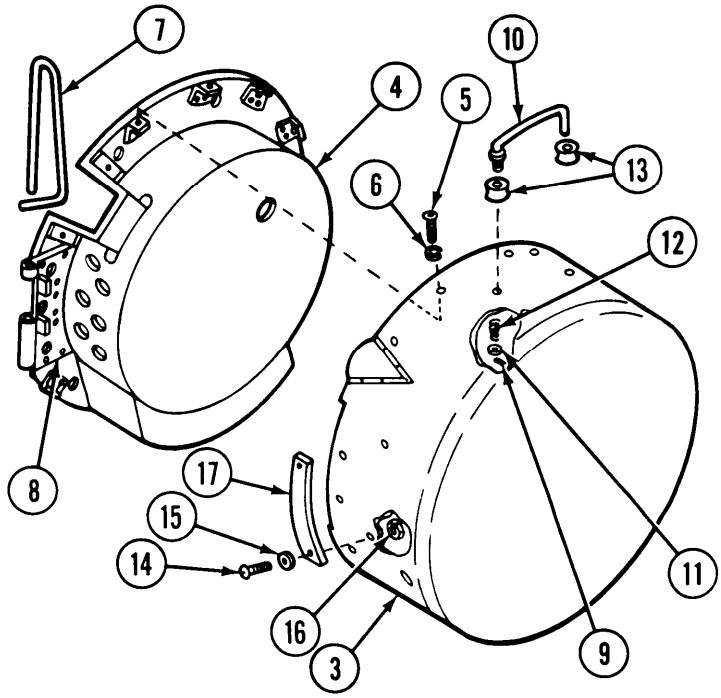
1

a. Fasten rubber bumper (17) to front cover (3) with two machine screws (14), two flat washers (14), and two lock nuts (16). Tighten.

b. Snap two grommets (13) into front cover (3). Position front stop (10) in grommets and install spring (12) and flat washer (11) on front stop with cotter pin (9). Bend one end of cotter pin.

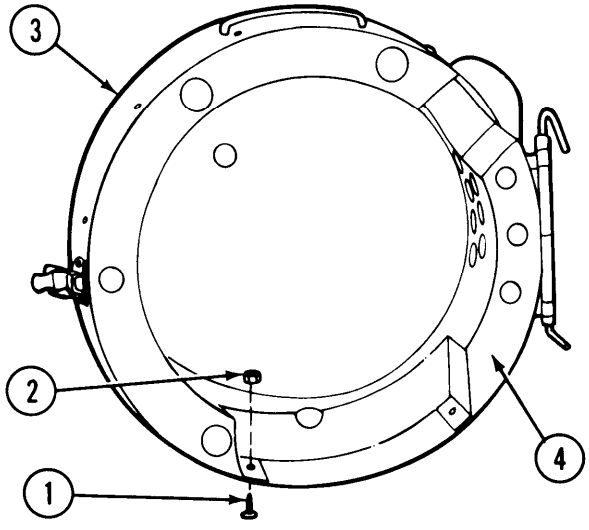
c. Install lock pin (7) in front cover hinge half (8).

d. Install front cover baffle (4) in front cover (3) with 12 machine screws (5) and 12 washers (6). Tighten.



2

Install two machine screws (1) and self-locking nuts (2) into front cover (3) and front cover baffle (4).



3-8. ADJUSTABLE FLOAT ASSEMBLY.

This task covers:
a. Disassembly
b. Repair
c. Reassembly

INITIAL SETUP

Tools and Special Tools
Automotive Vehicle Shop Equipment
SC 4910-95-CL-A74
General Mechanic's Tool Kit
SC 5180-90-CL-N26

Materials/Parts
Dry cleaning solvent (item 4, app C)
Rag (item 9, app C)
Sealing compound (item 11, app C)
Sealing compound, LOCTITE 222 (item 12, app C)

References
TM 3-1040-276-23P

Equipment Condition
Adjustable float assembly is removed from engine assembly (p 3-12). Carburetor reservoir and toggle valve removed from adjustable float assembly. (p 2-43 and 2-44).

DISASSEMBLY

1

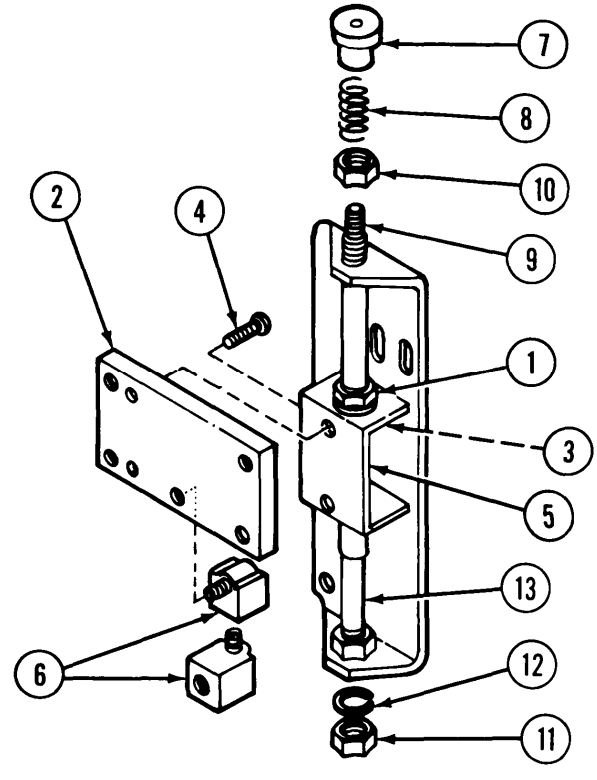
a. Loosen nut (1) and raise mounting plate (2) to clear nut (3) to remove top machine screw (4).

b. Remove two machine screws (4) from float bowl support (5) and mounting plate (2).

c. Remove two elbows (6) from mounting plate (2).

d. Remove adjustment knob (7) and spring (8) from pin (9).

e. Remove lock nut (10), nut (11), and lock washer (12) from inner tube (13).



3-8. ADJUSTABLE FLOAT ASSEMBLY (CONT).

DISASSEMBLY (CONT)

2

NOTE
Back off two nuts (14) enough to allow inner tube (13) to clear support bracket (15).

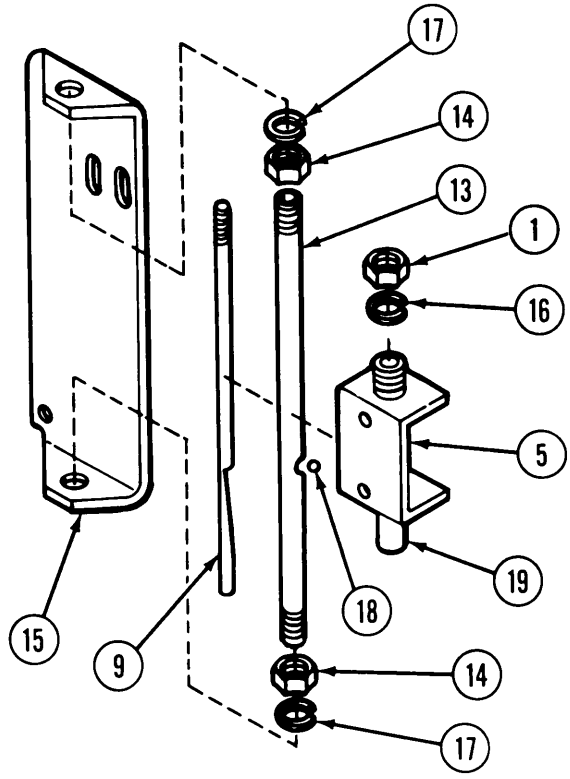
a. Back off two nuts (14) on inner tube (13) from support bracket (15).

b. Remove inner tube (13), nut (1), and lock washer (16), from support bracket (15).

c. Remove two lock washers (17) and nuts (14) from inner tube (13).

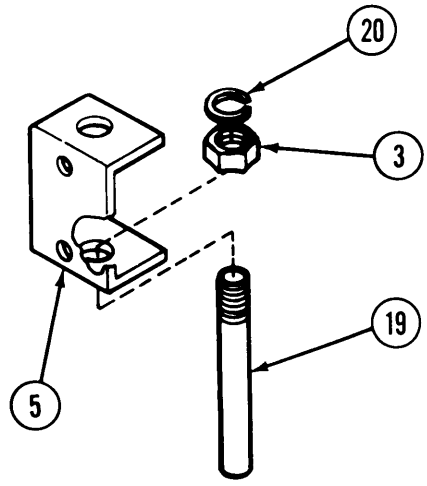
NOTE
Make sure you recover ball bearing when removing inner tube from outer tube.

d. Remove inner tube (13) by pushing in on pin (9) to release ball bearing (18) and pull inner tube (13) from outer tube (19).



3

Remove nut (3) and lock washer (20) from outer tube (19) and remove outer tube from float bowl support (5).



REPAIR

a. Clean parts with dry cleaning solvent and rag. Wipe dry with rag.

b. Inspect for broken and missing parts.

c. Inspect screws, elbows, pin, inner tube, and outer tube for stripped threads.

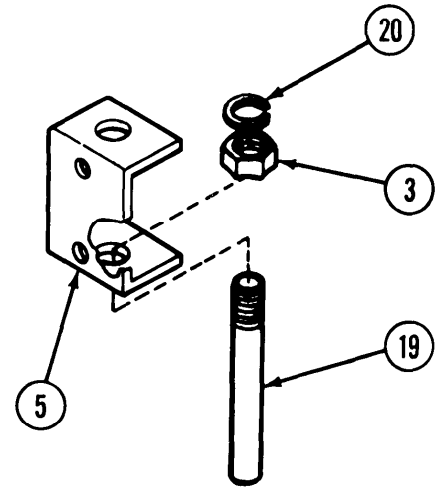
d. Replace authorized parts which do not meet inspection criteria (TM 3-1040-276-23P).

REASSEMBLY

1

Apply sealing compound to all male threads. Apply LOCTITE 222 sealing compound to adjustment knob and four screws.

2



a. Insert outer tube (19) through bottom hole of float bowl support (5).

b. Install nut (3) on outer tube (19) to end of threads.

c. Install lock washer (20) on outer tube (19) and insert outer tube through top hole of float bowl support (5).

3

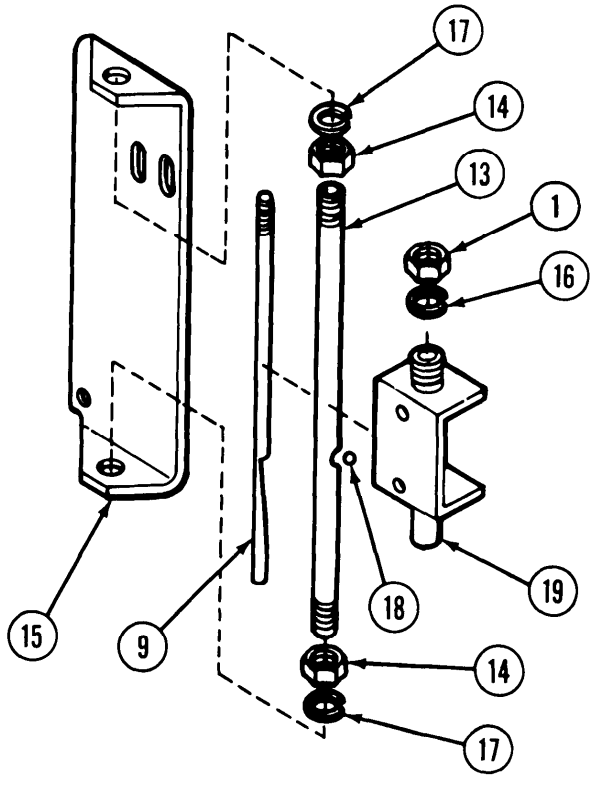
a. Install pin (9) in inner tube (13).

b. Install ball bearing (18) in hole of inner tube (13) and install inner tube in outer tube (19).

c. Slide lock washer (16) and nut (1) onto inner tube (13). Do not tighten nut (1).

d. Install two nuts (14) and two lock washers (17) on inner tube (13) to ends of threads.

e. Insert inner tube (13) into support bracket (15).



3-8. ADJUSTABLE FLOAT ASSEMBLY (CONT).

REASSEMBLY

4

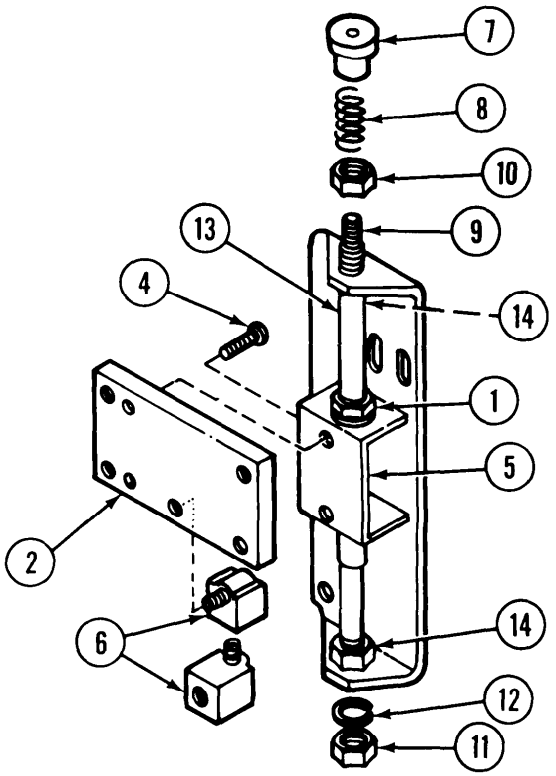
a. Install lock washer (12) and nut (11) flush with end of inner tube (13). Install lock nut (10) on inner tube (13) and tighten. Tighten two nuts (14).

b. Apply sealing compound (LOCTITE 222) to internal threads of adjustment knob (7). Pull up on pin (9) and install spring (8) and adjustment knob (7) on pin (9). Install adjustment knob (7) so that end of pin (9) is flush with top of adjustment knob.

c. Install two elbows (6) on mounting plate (2) in position shown.

d. Install mounting plate (2) on float bowl support (5) with two machine screws (4). Tighten.

e. Tighten nut (1).



3-9. CARBURETOR RESERVOIR.

This task covers:
a. Disassembly
b. Repair
c. Reassembly
d. Adjustment

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26

Materials/Parts
Reservoir repair kit (C31-15-1439)
Dry cleaning solvent (item 4, app C)
Rag (item 9, app C)

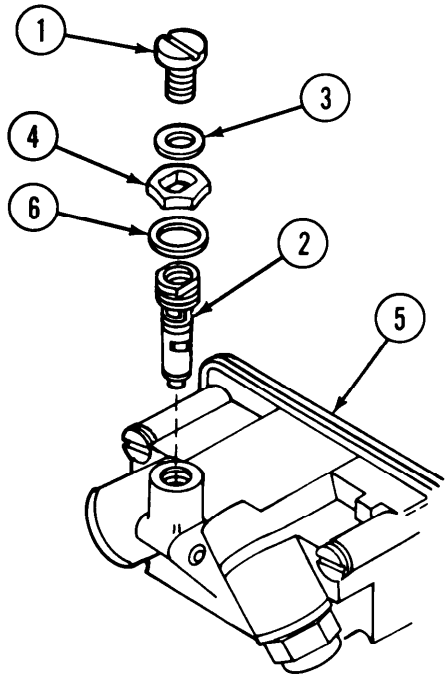
References
TM 3-1040-276-23P

Equipment Condition
Carburetor reservoir is removed from adjustable float assembly (p 2-43).

DISASSEMBLY

1

Remove lock screw (1) from inlet seat (2) and discard small inlet seat gasket (3). Turn inlet seat with nut (4) and remove inlet seat from fuel bowl (5). Remove nut (4) and large inlet seat gasket (6) from inlet seat and discard inlet seat and gasket.

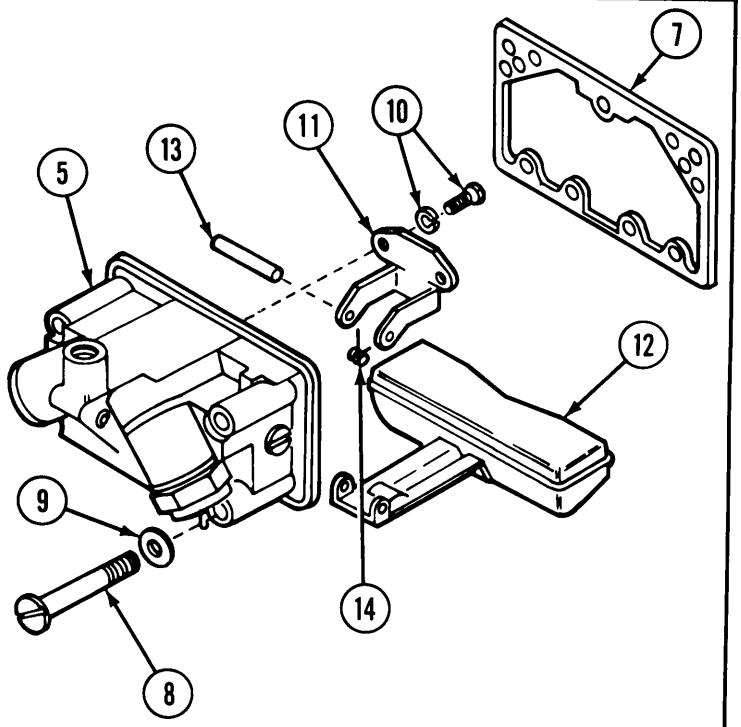


2

a. Remove fuel bowl gasket (7) from fuel bowl (5). Discard gasket.

b. Remove four fuel bowl screws (8), and four fuel bowl gaskets (9) from fuel bowl (5). Discard gaskets.

c. Remove two screw and split washer sets (10). Remove float hinge (11) with float (12) from fuel bowl (5). Pull float pin (13) and separate float hinge (11), float spring (14), and arm on float (12).



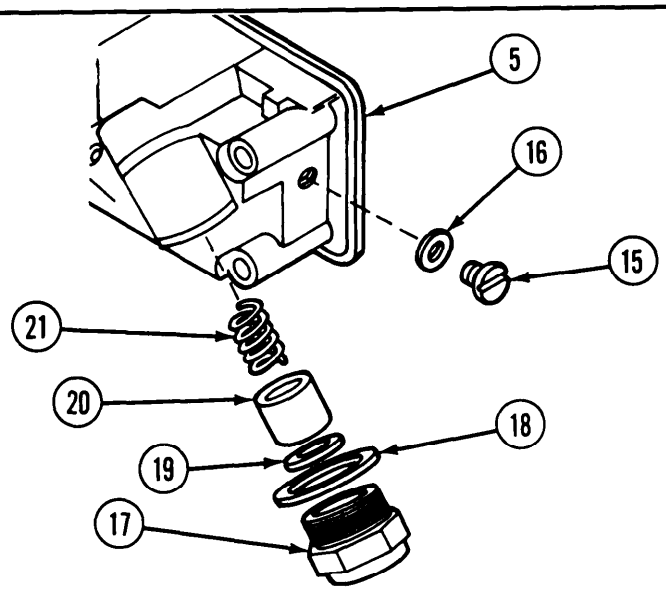
3-9. CARBURETOR RESERVOIR (CONT).

DISASSEMBLY (CONT)

3

a. Remove fuel level plug screw (15) and fuel level plug gasket (16) from fuel bowl (5). Discard gasket.

b. Remove inlet fitting (17), fuel fitting gasket (18), fuel filter gasket (19), fuel inlet filter (20), and filter spring (21) from fuel bowl (5). Discard gaskets and filter.



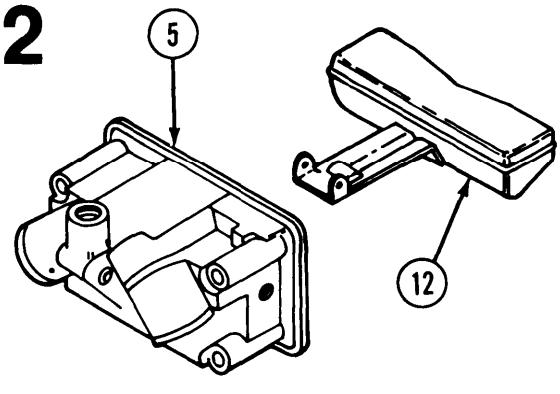
REPAIR

1

a. Clean parts with dry cleaning solvent and rag. Wipe dry with rag.

b. Inspect for missing and broken parts and stripped threads on screws and inlet fitting.

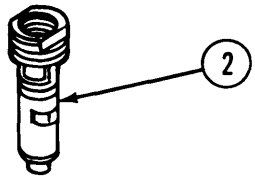
2



a. Inspect for punctured or cracked float (12) or bent arm on float. Straighten arm on float if bent.

b. Inspect for cracked or broken fuel bowl (5).

3



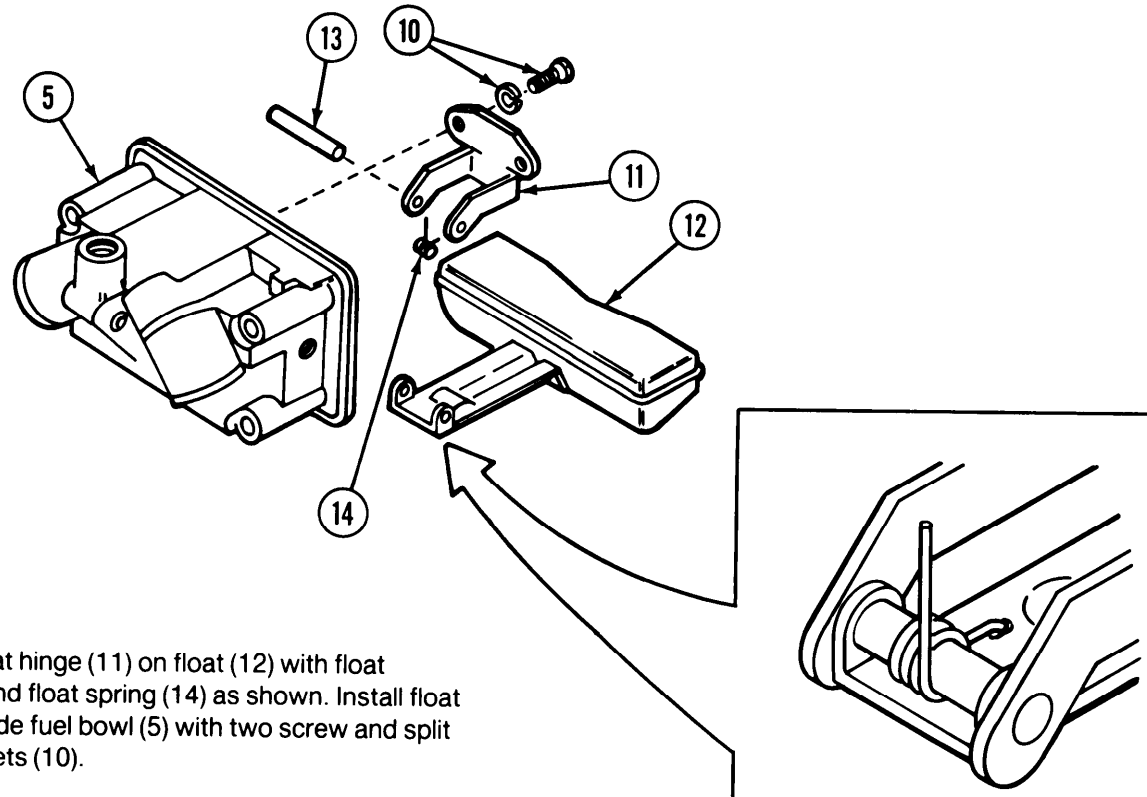
NOTE
Inlet seat assembly consists of inlet seat and two gaskets, one small and one large.

a. Replace gaskets and inlet seat (2) from kit (C31-15-1439).

b. Replace other authorized parts which do not meet inspection criteria (TM 3-1040-276-23P).

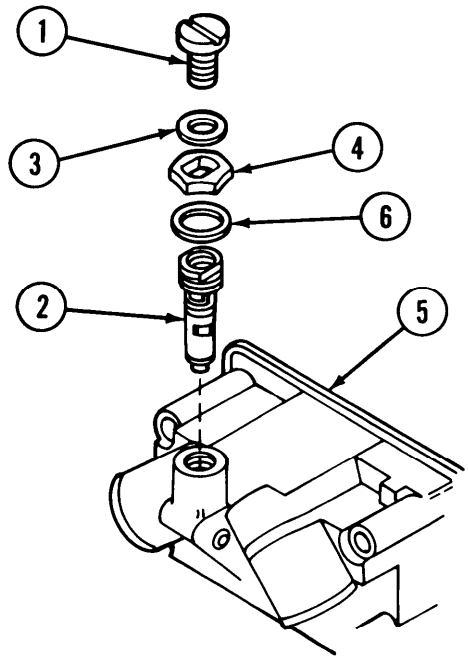
REASSEMBLY

1



Install float hinge (11) on float (12) with float pin (13) and float spring (14) as shown. Install float hinge inside fuel bowl (5) with two screw and split washer sets (10).

2



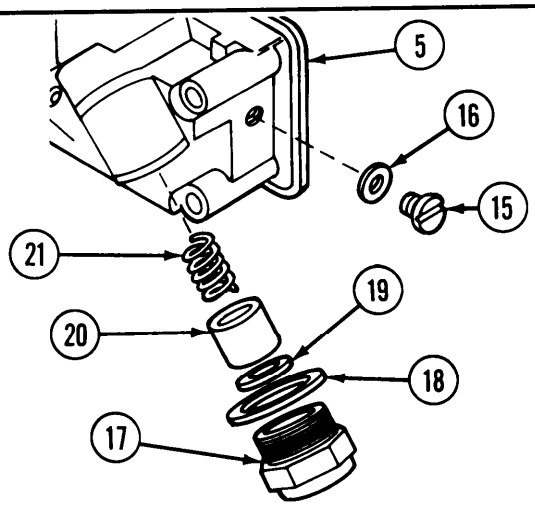
a. Install large inlet seat gasket (6) and nut (4) on inlet seat (2). Install inlet seat on fuel bowl (5). Do not tighten nut (4).

b. Push small inlet seat gasket (3) onto lock screw (1) and install but do not tighten lock screw on inlet seat.

3-9. CARBURETOR RESERVOIR (CONT).

REASSEMBLY (CONT)

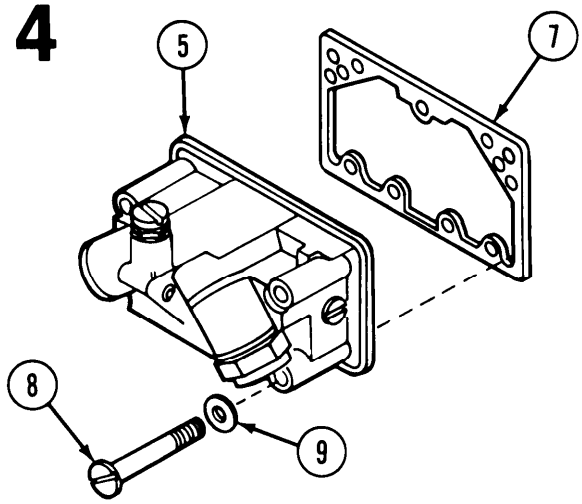
3



a. Install filter spring (21), fuel inlet filter (20), fuel filter gasket (19), fuel fitting gasket (18), and inlet fitting (17) on fuel bowl (5). Tighten inlet fitting (17).

b. Install fuel level plug gasket (16) and fuel level plug screw (15) on fuel bowl (5). Do not tighten screw (15).

4



a. Insert four fuel bowl gaskets (9) and four fuel bowl screws (8) on fuel bowl (5). Do not tighten.

b. Install fuel bowl gasket (7) on fuel bowl screws (8) and position fuel bowl gasket (7) on seating surface of fuel bowl (5).

ADJUSTMENT

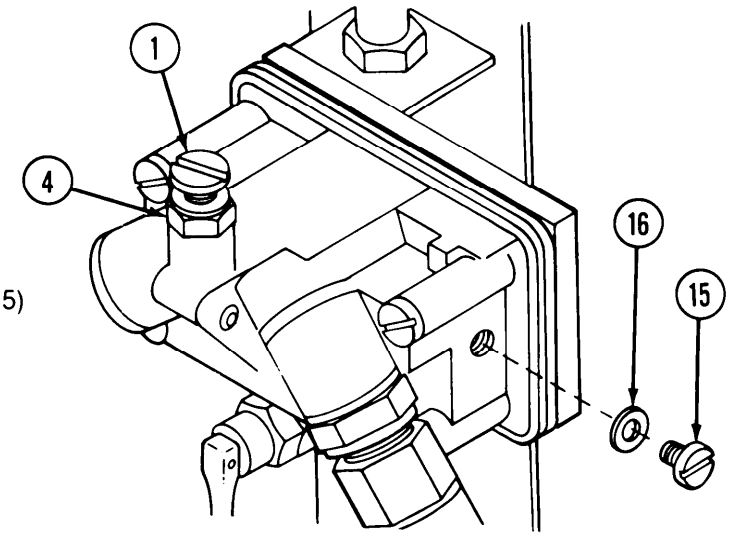
1 Install carburetor reservoir on smoke generator. See installation of adjustable float assembly (p 2-46).

2

a. Remove screw (15) and gasket (16).

b. Loosen locking screw (1) and turn adjusting nut (4) until fuel level is at bottom of screw (15) hole.

c. Tighten screw (1) and install gasket (16) and screw (15).



3-10. ENGINE TUBE ASSEMBLY.

This task covers:
a. Disassembly
b. Repair
c. Reassembly

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26
Automotive Vehicle Shop Equipment
SC 4910-95-CL-A74

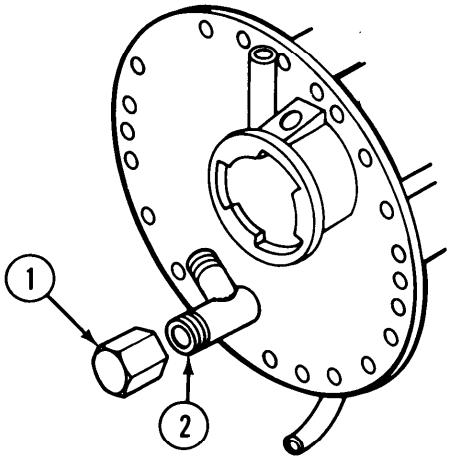
Materials/Parts
Abrasive cloth (item 3, app C)
Dry cleaning solvent (item 4, app C)
Rag (item 9, app C)

References
TM 3-1040-276-23P

Equipment Condition
Engine tube assembly is removed from engine assembly and placed on hoses for protection (p 3-5).

DISASSEMBLY

Remove pipe cap (1) from oil injection nozzle (2) and drain fog oil from nozzle into suitable container.

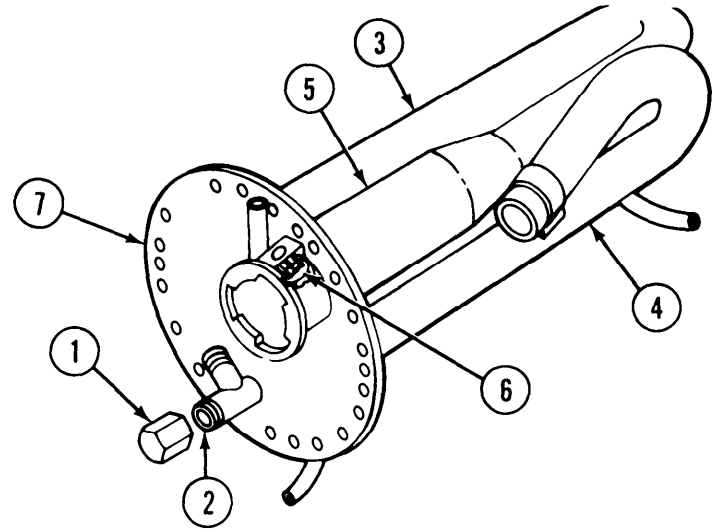


3-10. ENGINE TUBE ASSEMBLY (CONT).

REPAIR

a. Inspect engine tube assembly (3) for missing pipe cap (1), for cracked tubing (4) and combustion chamber (5), and for separated welds. Inspect outside of engine tube assembly (3) and on igniter base assembly (6) for carbon deposits.

b. Clean parts with dry cleaning solvent and rag. Wipe dry with rag.



CAUTION

Do not use wire brush bristles or abrasive cloth on combustion chamber or tubing.

c. Use wire brush on front plate (7) of engine tube assembly (3) to remove carbon deposits.

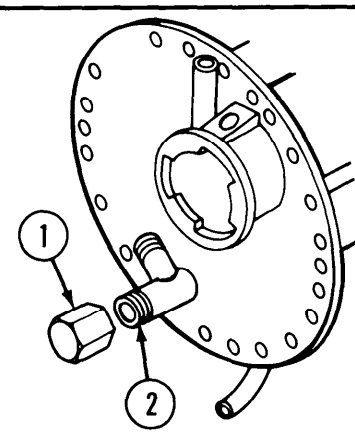
d. Remove carbon deposits on igniter base assembly (6) with rag.

e. Inspect oil injection nozzle (2) for stripped threads.

f. Replace pipe cap (1) if missing, and replace engine tube assembly (3) which does not meet inspection criteria. See TM 3-1040-276-23P.

REASSEMBLY

Install pipe cap (1) on injection nozzle (2).



3-11. FUEL TANK ASSEMBLY.

This task covers repair.

INITIAL SETUP

Tools and Special Tools
Automotive Vehicle Shop Equipment
SC 4910-95-CL-A74
General Mechanic's Tool Kit
SC 5180-90-CL-N26

Materials/Parts
Abrasive cloth (item 3, app C)
Dry cleaning solvent (item 4, app C)
Pipe plug, 1/4 inch (SC 4910-95-CL-A74)
Rag (item 9, app C)
Sealing compound (item 11, app C)
Solder (item 13, app C)

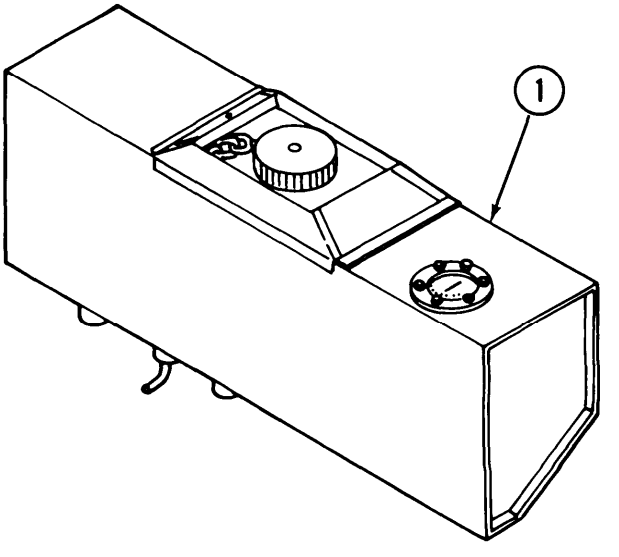
References
TB SIG-222
TM 3-1040-276-23P

Equipment Condition
Fuel tank assembly is removed from smoke generator (p 3-4). Fuel cap and chain and fuel gage assembly are serviceable (p 2-49 and 2-50).

REPAIR

1

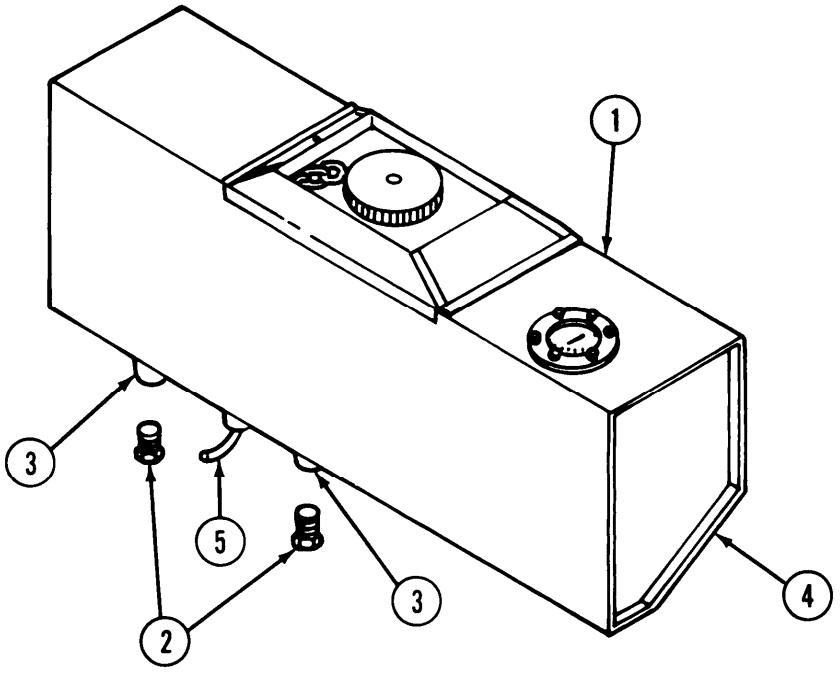
Clean external parts of fuel tank assembly (1) with dry cleaning solvent and rag. Wipe dry with rags.



3-11. FUEL TANK ASSEMBLY (CONT).

REPAIR (CONT)

2



a. Inspect fuel tank assembly (1) for punctures, cracks, and separated welds and soldered joints.

b. If operational test or reports indicate fuel tank leaks, check for leakage.

c. Apply sealing compound to threads of two pipe plugs (2) and plug two fuel tank outlet bosses (3) with two pipe plugs (2).

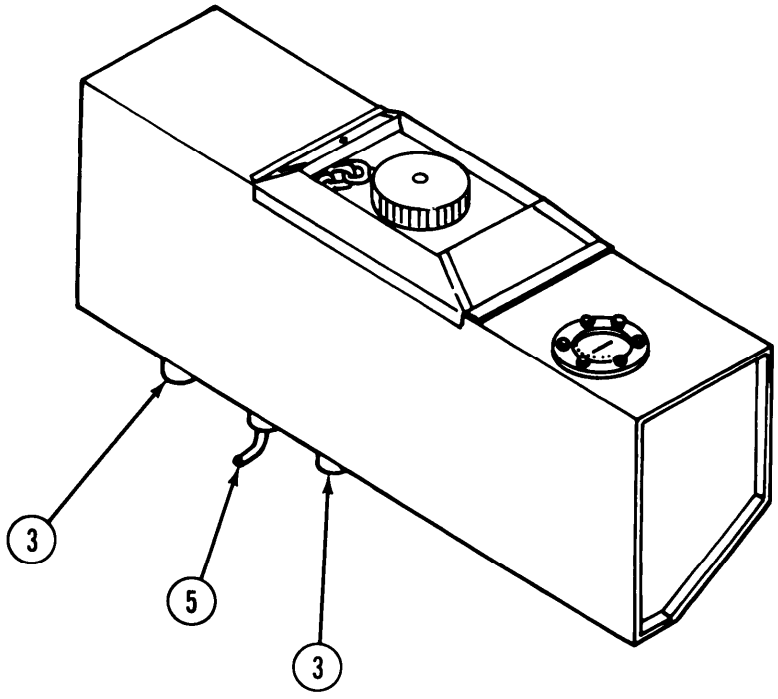
d. Submerge fuel tank assembly (1) in water up to side angle (4).

(1) If bubbles appear from body of fuel tank, replace fuel tank.

(2) If bubbles appear around soldered areas at fuel tank overflow tube (5) or outlet bosses (3), repair fuel tank by soldering.

e. Dry outside of fuel tank assembly (1) with rag and remove two pipe plugs (2).

3



WARNING

Gasoline fumes may be present even after tank has been washed and can cause an explosion and injury to personnel. Use a soldering iron to apply heat, but do not heat iron to point it glows or can cause a spark. Do not use open flame torch of any kind to apply heat to fuel tank for soldering.

If soldered areas at fuel tank overflow tube (5) or outlet bosses (3) leak or are separated, solder areas with solder according to TB SIG- 222. After solder has cooled, clean repaired areas with abrasive cloth.

3-12. TOOL BOX ASSEMBLY.

This task covers:
a. Disassembly
b. Repair
c. Reassembly

INITIAL SETUP

Tools and Special Tools
General Mechanic's Tool Kit
SC 5180-90-CL-N26

Materials/Parts
Dry cleaning solvent (item 4, app C)
Rag (item 9, app C)
Split rivets MS35685-13

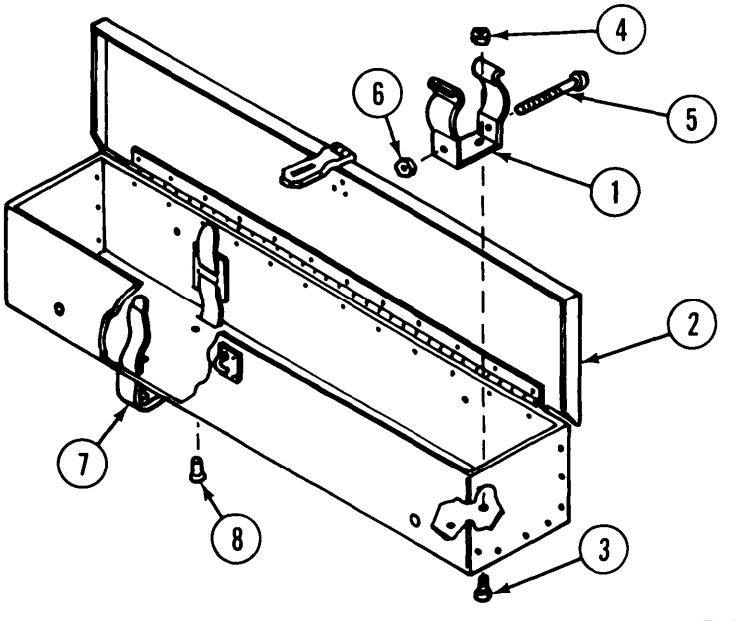
Equipment Condition
Tool box assembly is removed from smoke generator (p 2-15).

DISASSEMBLY

a. Remove engine head retainer (1) from tool box assembly (2) by removing two screws (3) and two lock nuts (4). Remove screw (5) and lock nut (6) from retainer.

NOTE
Do not remove rivets from webbing strap unless strap does not meet inspection criteria.

b. Remove webbing strap (7) from tool box assembly (2) by removing two rivets (8) and pulling strap from two slots in bottom of tool box assembly. Discard rivets.



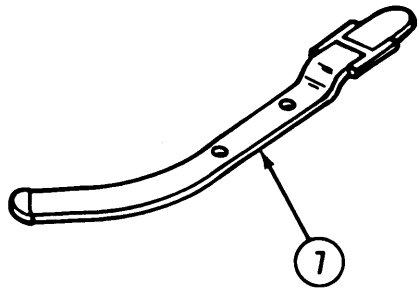
REPAIR

1

a. Clean metal parts with dry cleaning solvent and rag. Wipe dry with rag.

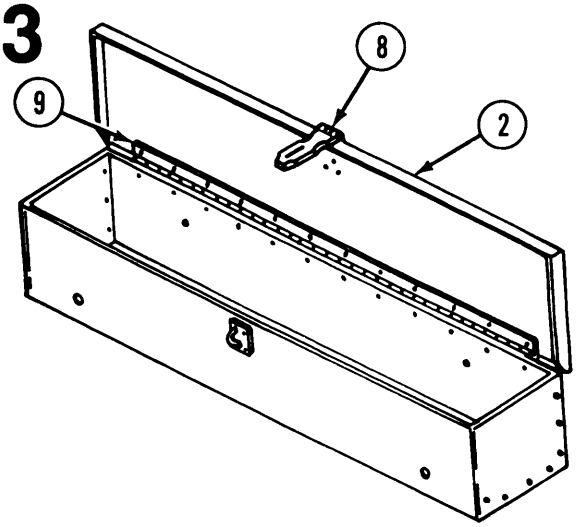
b. Replace missing parts and authorized parts which do meet the following inspection criteria.

2



Inspect webbing strap (7) for frays, cuts, or tears.

3



a. Inspect tool box assembly (2) for dents, broken hasp (8), and broken lid hinge (9). If tool box assembly (2) is dented, straighten dents.

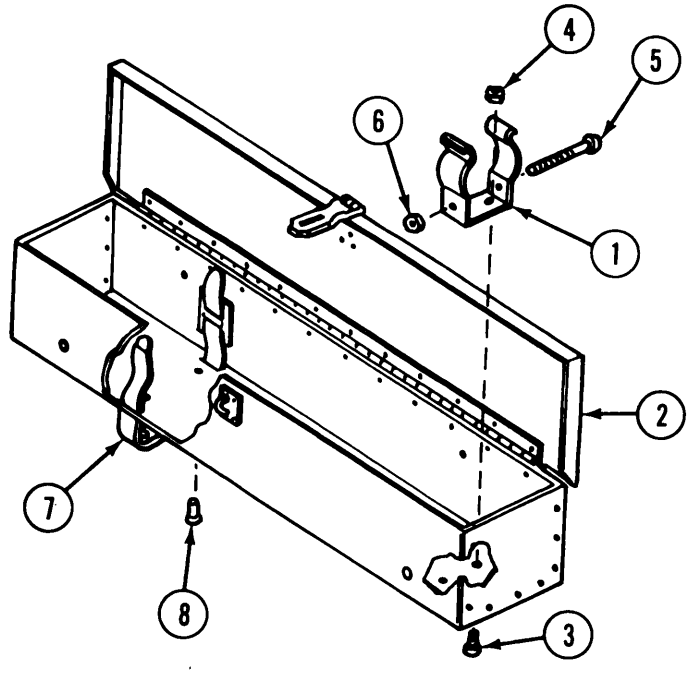
b. Inspect for missing and broken parts and for stripped screw threads.

REASSEMBLY

a. Thread tab end of webbing strap (7) through two slots in bottom of tool box assembly (2) as illustrated. Turn tool box assembly over and punch two holes through strap at two mounting hole locations. Insert two split rivets (8) through holes in strap and mounting holes and rivet strap to bottom of tool box assembly.

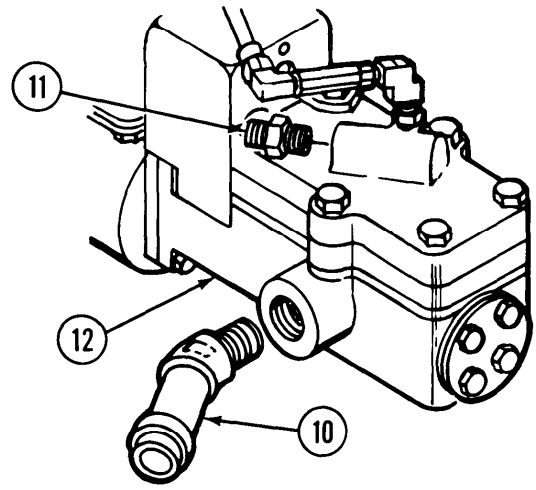
b. Install screw (5) and lock nut (6) on engine head retainer (1).

c. Install engine head retainer (1) on tool box assembly (2) with two screws (3) and two lock nuts (4). Tighten.



2

Remove pipe-to-hose elbow (10) and straight pipe adapter (11) from oil pump (12).



REPAIR

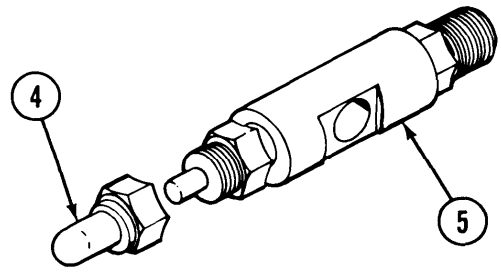
1

a. Clean parts with dry cleaning solvent and wiping rags.

b. Inspect for missing or broken parts and stripped threads on fittings.

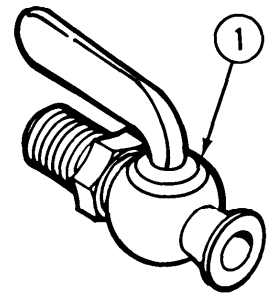
c. Replace damaged parts which do not meet the following inspection criteria.

2



Inspect for cut or torn boots (4) and make sure switches work on safety relief valves (5). Replace defective boots (4) and safety relief valves (5).

3



Turn lever on drain cock (1) to the position illustrated and look through nozzle for light. If air passage is blocked when lever is parallel to air passage, drain cock is defective. Replace defective drain cock (1).

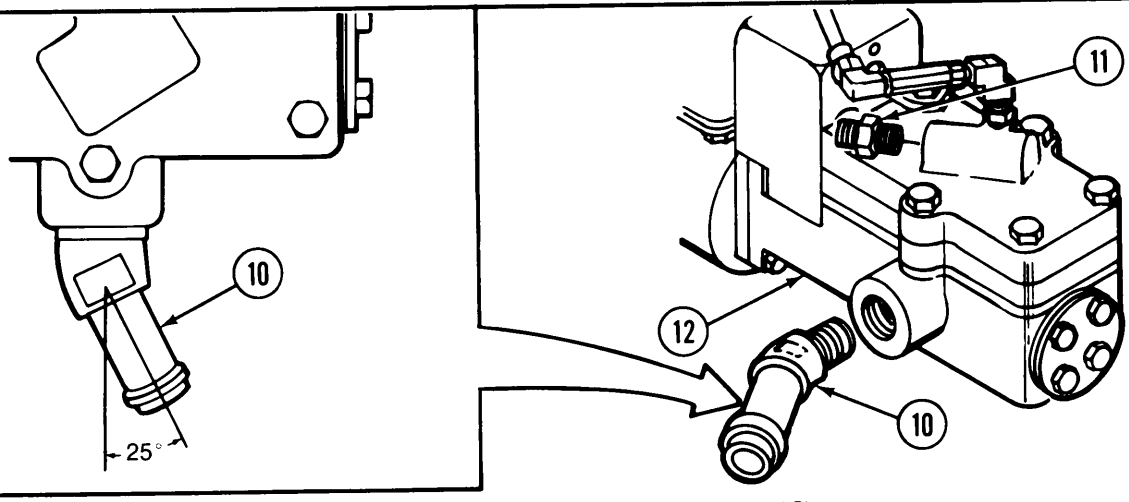
REASSEMBLY

1 Apply sealing compound to male threads.

3-13. M4 FOG OIL PUMP (CONT).

REASSEMBLY (CONT)

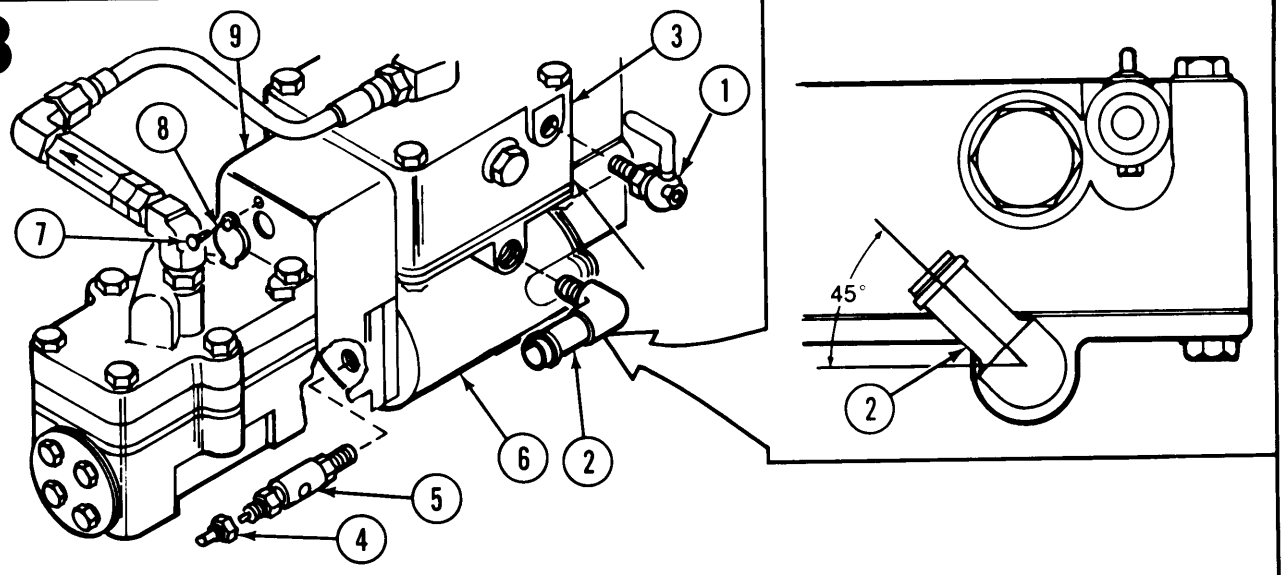
2



a. Install straight pipe adapter (11) and pipe-to- hose elbow (10) on oil pump (12).

b. Offset pipe-to-hose elbow (10) so tube is pointing at approximately 25° as illustrated. Make sure tube also points downward.

3



a. Install two access covers (8) on two shrouds (9) with two tapping screws (7).

b. Install pipe-to-hose elbow (2) on air motor (3) so tube is pointing at approximately 45° as illustrated.

c. Install drain cock (1) on air motor (3) so lever is upright as illustrated.

d. Install two safety relief valves (5) and two boots (4) on air cylinder (6). Make sure drain holes on the relief valves (5) point downward.

3-14. FRAME ASSEMBLY.

This task covers:
a. Disassembly
b. Repair
c. Reassembly

INITIAL SETUP

Tools and Special Tools
Automotive Vehicle Shop Equipment
SC 4910-95-CL-A74
General Mechanic's Tool Kit
SC 5180-90-CL-N26

Materials/Parts
Dry cleaning solvent (item 4, app C)
Rag (item 9, app C)
Welding rod (item 10, app C)
Strap (fig D-7)

References
TM 3-1040-276-23P
TM 9-237
TM 9-243
TM 9-270

Equipment Condition
Frame assembly is removed from smoke generator (p 3-11).

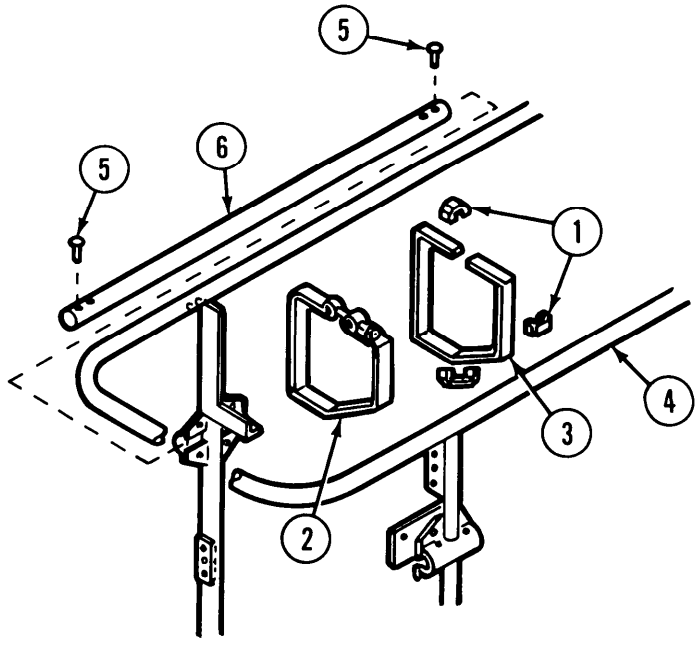
Personnel Required
One quartermaster and chemical equipment repairer to perform MOS 63J related tasks and one welder to weld frame.

DISASSEMBLY

a. Bend open six seals (1) and remove two strap assemblies (2) and two webbing straps (3) from frame (4).

NOTE
Do not remove rivets unless handle is damaged.

b. Remove eight solid rivets (5) from four handles (6) and pull handles from handle brackets on frame (4). Discard rivets.



3-14. FRAME ASSEMBLY (CONT).

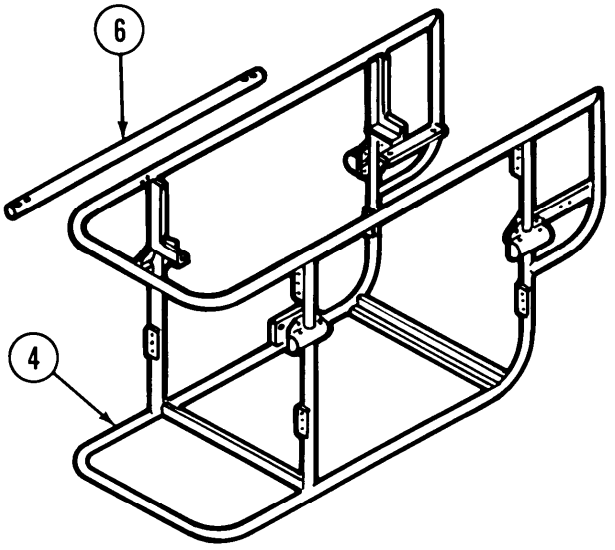
REPAIR

a. Clean metal parts with dry cleaning solvent and rag. Wipe dry with rag.

b. Inspect tubing for bends or dents and welded joints for separations or cracking. Reweld all separated and weakened joints on frame using welding rod. See TM 9-237. Straighten any tubing on frame (4) that is bent or dented. Straighten tubing on handles (6) if bent. See TM 9-270.

c. Inspect two strap assemblies for frays or tears. Make new webbing straps from webbing (fig D-7).

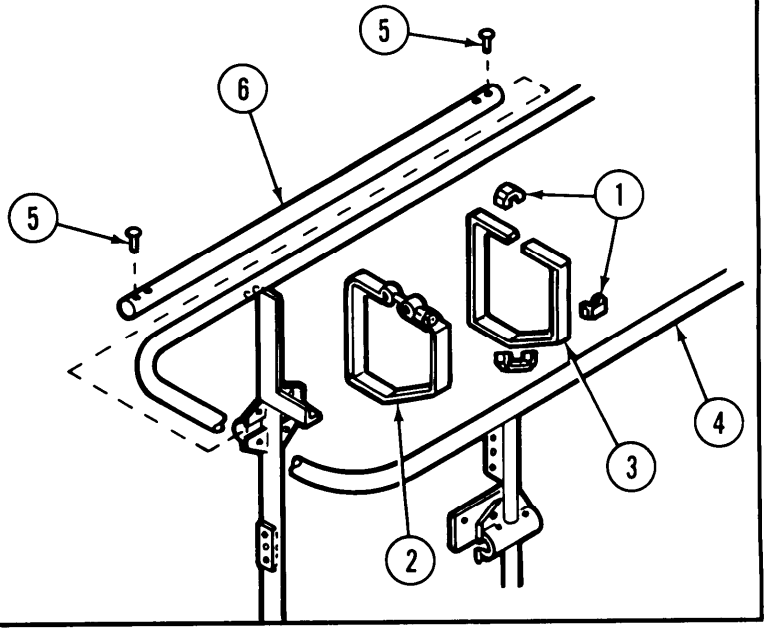
d. Replace missing parts and authorized repair parts which do not meet inspection criteria.



REASSEMBLY

a. Insert four handles (6) through handle brackets at four corners of frame (4). Rivet eight solid rivets (5) on four handles, one at each end of handle (TM 9- 243).

b. Install two webbing straps (3) and two strap assemblies (2) on frame (4) with six seals (1).



APPENDIX A
REFERENCES

A-1. TECHNICAL MANUALS.

TM 3-1040-276-10 . . . . . Operator's Manual-Generator, Smoke, Mechanical: Pulse Jet, M3A4 (1040-01-143-9506)

TM 3-1040-276-23P . . . . . Organizational and Direct Support Maintenance Repair Parts and Special Tools List for Generator, Smoke, Mechanical: Pulse Jet, M3A4 (NSN 1040-01-143-9506)

TM 9-237 . . . . . Operator's Manual for Welding Theory and Application

TM 9-243 . . . . . Use and Care of Hand Tools and Measuring Tools

TM 9-270 . . . . . Wood and Metal Repair

TM 43-0139 . . . . . Painting Instructions for Field Use

TM 740-90-1 . . . . . Administrative Storage of Equipment

A-2. TECHNICAL BULLETIN.

TB SIG 222 . . . . . Solder and Soldering

A-3. PAMPHLETS.

DA PAM 310-1 . . . . . Military Publications: US Army Equipment Index of Modification Work Orders

DA PAM 738-750 . . . . . The Army Maintenance Management System (TAMMS)

A-4. FIELD MANUAL.

FM 21-11 (TEST) . . . . . First Aid for Soldiers

A-5. SUPPLY CATALOGS.

SC 4910-95-CL-A74 . . . . . Shop Equipment Automotive Maintenance and Repair: Organizational Maintenance, Common No. 1, Less Power (NSN 4910-00-754-0654) (LINW32593) and MAP only (NSN 4910-00-919-0098)

SC 5180-90-CL-N26 . . . . . Tool Kit, General Mechanic's Automotive (NSN 5180-00-177-7033)

A-6. COMMON TABLES OF ALLOWANCES.

CTA 8-100	Army Medical Equipment Expendable/Durable Supplies
CTA 50-970	Expendable/Durable Items (Except: Medical Class V, Repair Parts and Heraldic Items)

A-7. BLANK FORMS.

DA Form 2028	Recommended Changes to Publications and Blank Forms
DA Form 2028-2	Recommended Changes to Equipment Technical Publications
DA Form 2404	Equipment Inspection and Maintenance Worksheet
SF 364	Report of Discrepancy (ROD)
SF 368	Quality Deficiency Report (Category 11)

APPENDIX B
MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. GENERAL.

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

b. The Maintenance Allocation Chart (MAC) in section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance categories.

c. Section Ill lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from section ll.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. MAINTENANCE FUNCTIONS. Maintenance functions will be limited to and defined as follows:

a. *Inspect.* To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).

b. *Test.* To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. *Service.* Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

d. *Adjust.* To maintain or regulate, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

e. *Aline.* To adjust specified variable elements of an item to bring about optimum or desired performance.

f. *Calibrate.* To determine and cause corrections to be made or to be adjusted on instruments or test, measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. *Remove/Install.* To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. *Replace.* To remove an unserviceable item and install a serviceable counterpart in its place. “Replace” is authorized by the MAC and is shown as the 3d position code of the SMR code.

i. *Repair.* The application of maintenance services[1] including fault location/troubleshooting[2], removal/installation, and disassembly/assembly[3] procedures, and maintenance actions[4] to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

[1] Services - inspect, test, service, adjust, aline, calibrate, and/or replace.

[2] Fault locate/troubleshoot - The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or unit under test (UUT).

[3] Disassemble/assemble - encompasses the step-by-step taking apart (or breakdown) of a spare/functional group coded item to the level of its least componency identified as maintenance significant (i.e., assigned as SMR code) for the category of maintenance under consideration.

[4] Actions - welding, grinding, riveting, straightening, facing, remachining, and/or resurfacing.

j. *Overhaul.* That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. *Rebuild.* Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II.

a. *Column 1, Group Number.* Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group number shall be "00."

b. *Column 2, Component/Assembly.* Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. *Column 3. Maintenance Function.* Column 3 lists the functions to be performed on the item listed in column 2. (For detailed explanation of these functions, see paragraph B-2.)

d. *Column 4, Maintenance Category.* Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the category of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate work time figures will be shown for each category. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance categories are as follows:

C . . . . . Operator or Crew
O . . . . . Organizational Maintenance
F . . . . . Direct Support Maintenance
H . . . . . General Support Maintenance
L . . . . . Specialized Repair Activity (SRA)[5]
D . . . . . Depot Maintenance

e. *Column 5, Tools and Equipment.* Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated function.

f. *Column 6, Remarks.* This column shall, when applicable, contain a letter code, in alphabetic order, which shall be keyed to the remarks contained in Section IV.

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III.

a. *Column 1, Reference Code.* The tool and test equipment reference code correlates with a code used in the MAC, section 11, column 5.

b. *Column 2, Maintenance Category.* The lowest category of maintenance authorized to use the tool or test equipment.

c. *Column 3, Nomenclature.* Name or identification of the tool or test equipment.

d. *Column 4, National Stock Number.* The National stock number of the tool or test equipment.

e. *Column 5, Tool Number.* The manufacturer's part number.

B-5. EXPLANATION OF COLUMNS IN REMARKS, SECTION IV.

a. *Column 1, Reference Code.* The code recorded in column 6, Section II.

b. *Column 2, Remarks.* This column lists information pertinent to the maintenance function being performed as indicated in the MAC, section II.

[5]This maintenance category is not included in Section II, column (4) of the Maintenance Allocation Chart. To identify functions to this category of maintenance, enter a work time figure in the "H" column of Section II, column (4), and use an associated reference code in the Remarks column (6). Key the code to Section IV, Remarks, and explain the SRA complete repair application there. The explanatory remark(s) shall reference the specific Repair Parts and Special Tools List (RPSTL) TM which contains additional SRA criteria and the authorized spare/repair parts.

Section II. MAINTENANCE ALLOCATION CHART FOR GENERATOR, SMOKE, MECHANICAL PULSE: JET, M3A4

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT	(6) REMARKS
			C	O	F	H	D		
00	M3A4 SMOKE GENERATOR	Inspect	0.1	0.1					
		Test	0.2						
		Service	0.2	0.5				1,6	
		Repair		0.8	1.0			3,4	A
		Overhaul					26.5		
01	ENGINE ASSEMBLY	Inspect	0.1						
		Service	0.1						
		Remove/ Install			0.5			3	
		Repair	0.1	0.3	1.2			3,6,10	A
0101	Front Cover Assembly	Inspect	0.1						
		Service	0.1						
		Replace			0.2			3	
		Repair			0.5			3	
010101	Front Cover Baffle	Repair			0.1			3	
0102	Adjustable Float Assembly	Inspect	0.1						
		Service	0.1						
		Replace			0.2			3	
		Repair		0.2	0.3			3,4	A
010201	Carburetor Reservoir	Inspect	0.1						
		Replace		0.2				3	
		Repair			0.3			3	
0103	Engine Head Assembly	Inspect	0.1					11	
		Replace	0.1					3,11	
		Repair	0.2	0.3				3,11-14	A
0104	Engine Manifold	Replace			0.6			3	
		Repair		0.1	0.1			3,4	
02	FUEL TANK ASSEMBLY	Inspect	0.1						
		Service	0.2						
		Replace			0.4			3	
		Repair		0.2	0.4			3,4	A,B

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT	(6) REMARKS
			C	O	F	H	D		
03	TOOL BOX ASSEMBLY	Inspect	0.1						
		Replace		0.4				3	
		Repair			0.7			3	
04	MAGNETO AIR PUMP ASSEMBLY	Inspect	0.1	0.1				3	
		Service		0.1				3	
		Replace		0.3				3	
		Repair		0.7				3, 4	
0401	Ignition Magneto	Inspect	0.1						
		Replace		0.2				3	
		Repair		0.4				3	
05	FOG OIL INLET HOSE ASSEMBLY	Inspect	0.1						
		Service	0.1						
		Replace		0.1				3	
		Repair		0.1				3	
06	M4 FOG OIL PUMP	Inspect	0.1						
		Adjust		0.3				3, 10	
		Replace		0.3				3, 10	
		Repair		6.0				3, 10, 16, 17, 18	A
0601	Air Check Valve Assembly	Replace		0.1				3	
		Repair		0.1				3, 4	
		Service	0.2						
0602	Oil Discharge Separator Assembly	Replace		0.1					
		Repair		0.1				3, 10	
0603	Oil Port Plate Assembly	Replace		0.1					
		Repair		0.1				3, 10	
07	MANUAL INFLATING PUMP ASSEMBLY	Inspect	0.1	0.1				3	
		Service		0.1				3	
		Replace		0.1				3	
		Repair		0.3				3	
08	FRAME ASSEMBLY	Inspect	0.1						
		Replace			1.4			3	
		Repair		0.2	2.3			3,4	A,C
09	IGNITION CABLE ASSEMBLY	Replace		0.1				3	
		Repair		0.1				3, 15	
10	ON-BOARD SPARES & TOOLS	Inspect	0.1						
		Repair	0.1						D

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR GENERATOR, SMOKE, MECHANICAL: PULSE JET, M3A4

(1) TOOL OR TEST EQUIP REF CODE	(2) MAINTE-NANCE CATE-GORY	(3) NOMENCLATURE	(4) NATIONAL/ NATO STOCK NUMBER	(5) TOOL NUMBER
1	C	Screwdriver, Flat Tip: 6 in. lg	5120-00-227-7356	SSDE-66
2	C	Screwdriver, Flat Tip: 8 in. lg	5120-00-237-6985	SD8
3	O	Tool Kit, General Mechanic's	5180-00-177-7033	SC5180-90-CL-N26
4	O	Shop Equipment, Automotive Vehicle	4910-00-754-0654	SC4910-95-CL-A74
5	C	Wrench, Bung	5120-00-507-4886	GGG-W-00647
6	C	Wrench, Adjustable	5120-00-264-3796	11655778-5
7	C	Extension, Socket Wrench	5120-00-227-8074	11655788-1
8	C	Handle, Socket Wrench	5120-00-241-3142	510
9	C	Socket, Socket Wrench	5120-00-243-7342	628NR
10	O	Wrench, Torque	5120-00-776-1841	
11	C	Wrench, Open End	5120-00-203-4795	1268
12	C	Wrench, Adjustable	5120-00-240-5328	TL476U
13	C	Pliers, Adjustable	5120-00-227-7097	GGG-P-471
14	C	Board, Lapping	1040-00-568-9677	C31-15-1083
15	O	Wire Stripper	5110-00-268-4224	GGG-S-665
16	O	Crowfoot Attachment, Socket Wrench	5120-00-184-8384	
17	O	Punch, Drive Pin	5120-00-840-7289	
18	O	Wrench Set, Socket	5120-00-322-6231	

Section IV. REMARKS

Reference Code	Remarks
A	All repair and replacement of parts performed by organizational maintenance limited to authorized items listed in TM 3-1040-276-23P.
B	Work time at DS includes repair by soldering.
C	Work time at DS includes repair by welding.
D	Repair constitutes replacement of spare parts and tools to support components of end item list requirements.

APPENDIX C
EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

C-1. SCOPE. This appendix lists expendable/durable supplies and materials you will need to operate and maintain the smoke generator. This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

C-2. EXPLANATION OF COLUMNS.

a. *Column (1) - Item Number.* This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use lubricating oil, item 6, app C").

b. *Column (2) - Level.* This column identifies the lowest level of maintenance that requires the listed item.

O- Organizational Maintenance
F - Direct Support Maintenance

c. *Column (3) - National Stock Number.* This is the National stock number assigned to the item; use it to request or requisition the item.

d. *Column (4) - Description.* Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

e. *Column (5) - Unit of Measure (U/M).* Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	F	8030-00-251-3980	ANTISEIZE COMPOUND: 1 LB CN or TU (81349) MIL-A-907	LB
2	O	8020-00-721-9650	BRUSH, PAINT: 1 1/2 IN. (80244) H-B-451 TY2SZ1-1/2	EA
3	O	5350-00-174-1001	CLOTH, ABRASIVE: 25/BD (58536) A-A-1200	EA
4	O	6850-00-281-1985	DRY CLEANING SOLVENT: 1 GL CN (58536) A-A-711	GL
5	O	9150-00-944-8953	GREASE, AIRCRAFT: 1 LB CN (81349) MIL-G-81322	LB

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
6	O	9150-00-273-2389	LUBRICATING OIL, GENERAL PURPOSE: 4 OZ CN (81348) VV-L-800	OZ
7	O	8010-01-144-9874	POLYURETHANE COATING: Forest Green, TYPE 2 1 GL KT (81349) MIL-C-46168	EA
8	O	8010-00-082-1714	PRIMER COATING: KT (81349) MIL-P-52192	EA
9	O	7920-00-205-1711	RAG, WIPING: 50/B (58536) A-A-531	LB
10	F	3439-00-165-4198	ROD, WELDING: 10 LB (31505) AWSA5.18-69 E70S-18 E70SA 10lb	LB
11	O	8030-01-054-0740	SEALING COMPOUND: 50 ML Tube (05972) 592-31	EA
12	O	8030-01-069-3046	SEALING COMPOUND: 50 CC BT (05972) LOCTITE222	CC
13	F	3439-00-273-2536	SOLDER, TIN ALLOY: Rosin Core SL (81348) SN60WRP2 0.125 1LB	LB

APPENDIX D
ILLUSTRATED LIST OF MANUFACTURED ITEMS

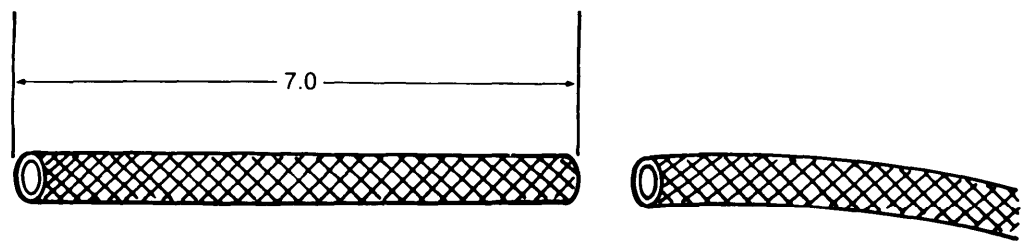
D-1. INTRODUCTION.

a. This appendix includes complete instructions for making items authorized to be manufactured or fabricated at organizational or direct support maintenance level.

b. A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the figure which covers fabrication criteria.

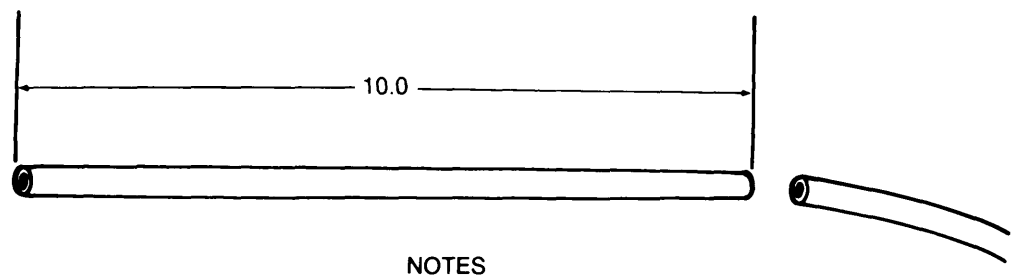
c. All bulk materials needed for manufacture of an item are listed by National stock number and part number on the illustration.

INDEX



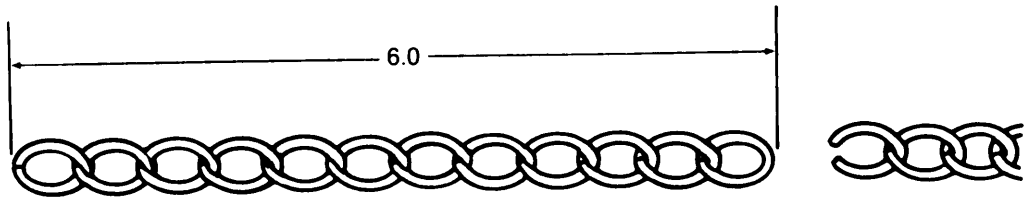
NOTES
1. FABRICATE FROM 5/8 IN. ID NONMETALLIC HOSE (NSN 4720-00-278-1107, P/N MIL-H-6000-5/8-ID-X-1 OD).
2. DIMENSIONS ARE IN FEET.

Figure D-1. Fog Oil Exhaust Hose (E31-15-2000-28).



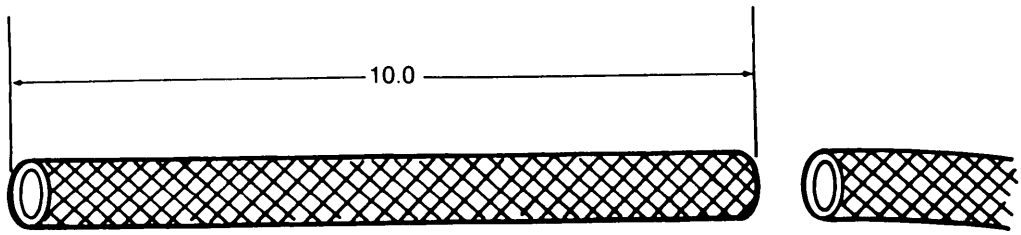
NOTES
1. FABRICATE FROM NONMETALLIC TUBING (P/N 27001).
2. DIMENSIONS ARE IN INCHES.

Figure D-2. Fuel Tube (E31-15-2035-9 or PL31-15-2063-4).



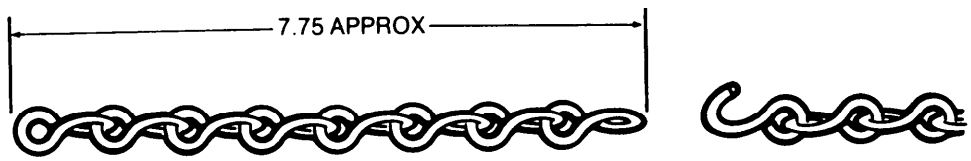
NOTES
1. FABRICATE FROM WELDLESS CHAIN (NSN 4010-00-228-9976, P/N RR-C-271).
2. DIMENSIONS ARE IN INCHES.

Figure D-3. Chain (E31-15-1021-CHAIN).



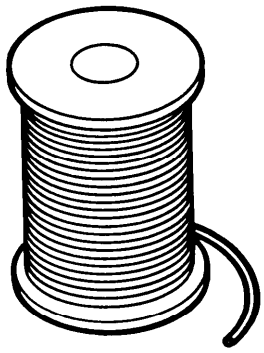
NOTE
1. FABRICATE FROM 3/4 IN. ID NONMETALLIC HOSE (NSN 4720-00-809-2889, P/N CS4720-0018FR).
2. DIMENSIONS ARE IN FEET.

Figure D-4. Hose (C31-15-1161-HOSE).



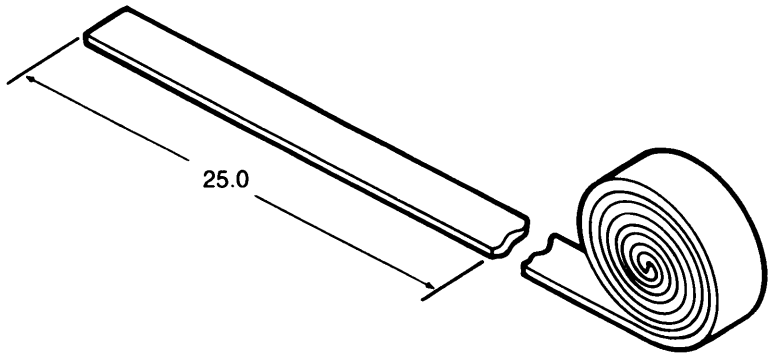
NOTES
1. FABRICATE FROM WELDLESS CHAIN (NSN 4010-00-228-9974) P/N RRC271).
2. DIMENSIONS ARE IN INCHES.

Figure D-5. Chain (E31-15-1260-CHAIN).



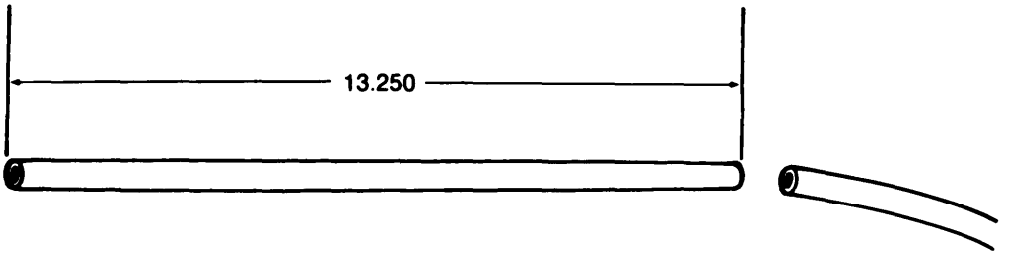
NOTE
1. FABRICATE FROM WIRE (NSN 9905-00-293-4208, P/N MS20995C32).
2. CUT WIRE TO LENGTH AFTER LACING.

Figure D-6. Wire (E31-15-2035-30).



NOTES
1. FABRICATE FROM TEXTILE WEBBING (NSN 8305-00-263-2476, P/N MIL-W-530).
2. DIMENSIONS ARE IN INCHES.

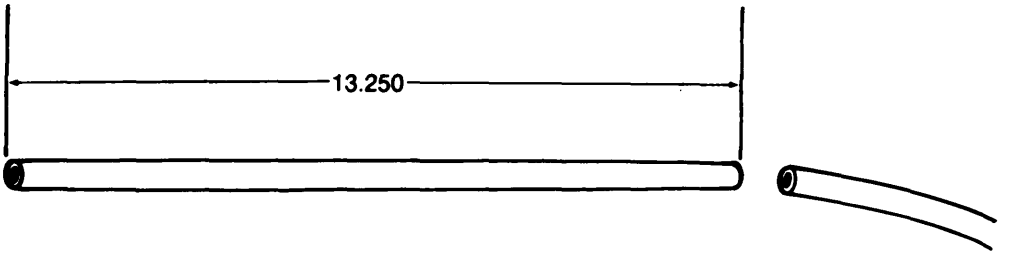
Figure D-7. Strap (E31-15-1260-WEBBING).



NOTE

1. FABRICATE FROM ELECTRICAL WIRE (NSN 6145-01-010-7014, P/N 3702U5MS).
2. DIMENSIONS ARE IN INCHES.

Figure D-8. Electrical Wire (D31-15-1453-1).



NOTE

1. FABRICATE FROM INSULATION SLEEVING (NSN 5970-00-899-6653, P/N ASTMD 3295).
2. DIMENSIONS ARE IN INCHES.

Figure D-9. Insulation Sleeving (D31-15-1453-2).

ALPHABETICAL INDEX

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TM 3-1040-276-23	Date of TM	Generator, Smoke, Mechanical: Pulse Jet, M3A4 (1040-01-143-9506)

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PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.
2-12			
	3-6		

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

A troubleshooting procedure is needed to find the cause of failure of magneto-air pump assembly to purge smoke and hot exhaust gases from engine after shutdown.

REASON: In addition to providing the electrical charge for starting the engine, the magneto-air pump assembly is used after shutdown to purge smoke and hot exhaust gases from the engine. The purging air from the magneto-air pump assembly reduces the possibility of the engine catching fire or backfiring and cools the engine combustion chamber making it easier to restart. The cause of failure could be in the magneto-air pump assembly, the purging air check valve, or the purging air line.

The engine assembly maintenance instructions do not describe the procedures for lacing the blanket assembly. The instructions should describe procedures and illustrate the pattern for wiring the capstans on the blanket instead of making the wiring pattern "optional."

REASON: Leaving the pattern for wiring or lacing the blanket optional for the maintenance specialist is confusing and could cause equipment failure if not done properly. This repair step should be uniformly applied to establish standards of workmanship and to avoid improper procedures and equipment damage.

NOTE TO THE READER:

Your comments will go directly to the writer responsible for this manual, who will reply to you. To help evaluate your recommendations, please explain the reason for each of them, unless the reason is obvious. All comments will be appreciated and will be given immediate attention. Handwritten comments are acceptable.

For your convenience, blank "tear out" forms, preprinted, addressed, and ready to mail, are included in this manual.

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The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-28, Organizational and Direct Support requirements for Mechanical Smoke Generators.

*U.S. GOVERNMENT PRINTING OFFICE: 1985-554-049:20020

THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 Lb
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

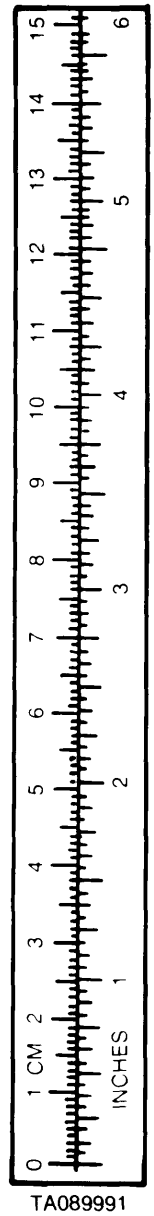
TEMPERATURE

5/9 (°F - 32) = °C
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5 C° + 32 = F°

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0 425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



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