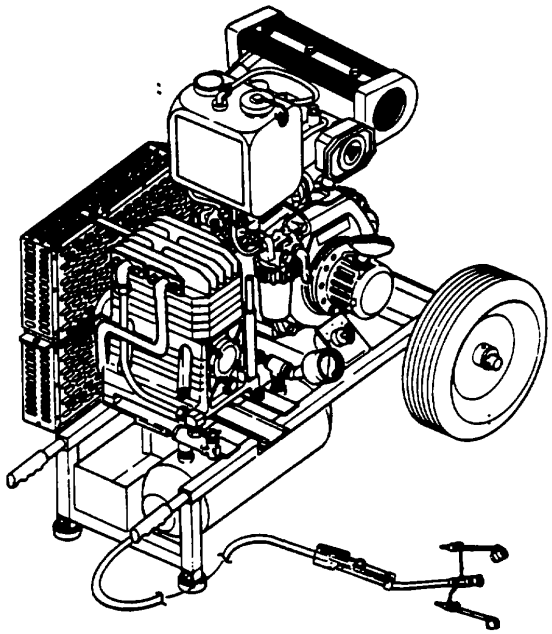
TECHNICAL MANUAL

OPERATOR'S, UNIT, AND DIRECT SUPPORT MAINTENANCE MANUAL

AIR COMPRESSOR, PORTABLE, 5 CFM MODEL PD32T5 NSN 4310-01-365-9013



HEADQUARTERS, DEPARTMENT OF THE ARMY
31 MAY 1994

WARNING
CARBON MONOXIDE (EXHAUST GAS) CAN KILL YOU

Carbon monoxide is without color or smell, but can kill you. Breathing air with carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, a sleepy feeling, and coma. Heavy exposure can cause brain damage or death. Carbon monoxide gas occurs in the exhaust fumes of internal combustion engines, and can become dangerously concentrated under conditions of no air movement. To ensure your safety and that of other maintenance personnel, always observe the following precautions:

- DO NOT operate engine in a closed place unless the place has a lot of moving air. Engine should be kept at least five feet away from buildings and other equipment during operation.
- DO NOT idle engine for long periods without proper ventilation.
- BE ALERT at all times for exhaust odors and exposure symptoms. If either is present, IMMEDIATELY VENTILATE personnel compartments; remove affected crew to fresh air; keep warm; if necessary, give artificial respiration. FOR ARTIFICLAL RESPIRATION REFER TO FM 21-11.
- BE AWARE; the field protective mask for chemical-biological-radiological (CBR) protection will not protect you against carbon monoxide poisoning.

THE BEST DEFENSE AGAINST CARBON MONOXIDE POISONING IS GOOD VENTILATION.

WARNING

Mishandling fuel could result in death or serious injury. Engine must be turned off and cool before refueling. Use proper refueling procedures and equipment to avoid spillage. Wipe away fuel spills with a clean cloth. Refuel only in a well-ventilated area away from open flame, arcing equipment, ignition sources, heaters, or excessive heat. Do not run engine near open fuel containers. Always store fuel in properly, marked containers. DO NOT SMOKE when refueling.

WARNING

Touching or handling heated parts will cause severe injury to operating personnel. Muffler and related components get hot enough during air compressor operation to cause severe burns. Avoid contact with muffler and related components during repair procedures described in this text. Do not perform any repair procedures until the unit has cooled down sufficiently.

WARNING

Operating engine without protective covers could result in serious injury. If any item becomes loose or cracked, immediately stop the engine and repair. After completing any "Remove, Replace, or Repair" procedures ensure that protective covers are reinstalled before operating the air compressor.

WARNING

Misuse of compressed air could result in death or serious injury. Death or serious injury could occur if compressed air is directed against skin. Do not use compressed air for cleaning or drying unless the pressure is/has been reduced to 30 PSI or less. When working with compressed air, always use eye protection and any other protective equipment.

TECHNICAL MANUAL
NO. 9-4310-394-13

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON D.C., 31 May 1994

Operator's, Unit, and Direct Support Maintenance Manual

For

AIR COMPRESSOR, PORTABLE, 5 CFM
MODEL PD32T5
NSN 4310-01-365-9013

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, U.S. Army Aviation and Troop Command, ATTN: AMSAT-I-MP, 4300 Goodfellow Blvd. , St. Louis, MO. 63120-1798. A reply will be furnished to you.

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HOW TO USE THIS MANUAL

GENERAL. This technical manual provides you with the information needed to operate and to maintain the air compressor. By properly using this manual, you will be able to identify any problem you may have in operating the air compressor and then locate the proper procedure needed to correct any problem found.

MANUAL ORGANIZATION. This manual has been organized in a manner that groups together the information that an operator or a maintenance technician will need to perform their duties. The following list indicates how this information has been organized.

Chapter 1 This chapter contains a complete description of the air compressor and includes such information as general equipment data, location/descriptions of major air compressor components, and general theory of operations for the air compressor.

Chapter 2 The information needed to set up and to operate the air compressor is included in this chapter. It includes assembly information, operator PMCS, and special instructions for unusual or emergency operating conditions.

Chapter 3 All operator maintenance procedures have been placed within this chapter.

Chapter 4 In the event that unit level maintenance is required for the air compressor, the required maintenance instructions can be found in this chapter.

Chapter 5 The direct support level maintenance required for the air compressor can be found in this chapter.

Appendix A Some of the procedures in this manual have references to other military technical manuals and forms. A complete list of all of these Reference Documents is included in this appendix.

Appendix B This appendix contains the Maintenance Allocation Chart for the air compressor. This chart defines which of the items on the air compressor will likely require maintenance and what military maintenance level is authorized to perform these maintenance procedures.

Appendix C The Components of End Item List containing a complete listing of all of the items required for a complete air compressor and the Basic Issue Items List showing the essential items needed to operate the air compressor are contained in this appendix.

Appendix D If any additional items are authorized for support of the air compressor, they will be shown on the Additional Authorization List contained in this appendix.

Appendix E As you operate and maintain the air compressor you will be required to use some special expendable items. The Expendable/Durable Supplies and Materials List in this appendix is a complete list of these items which appear elsewhere in the operating and maintenance procedures in this manual.

Appendix F Some components of the air compressor must be manufactured from bulk or stock material before they can be replaced on the unit. A complete set of instructions required to manufacture these items from bulk stock is included in this Illustrated List of Manufactured Parts.

Appendix G It is very important to properly tighten all fasteners used in the air compressor to insure proper operation of the air compressor and to protect operating personnel. To assist you in properly tightening these fasteners, this appendix contains the standard Torque Limits for the fasteners used on the air compressor.

Appendix H During the repair of some of the components of the air compressor, there are parts that cannot be reused. This Mandatory Replacement Parts Appendix lists all of the parts which must be replaced if they are removed from the unit during any maintenance operation.

AIDS TO FINDING INFORMATION. The following aids have been placed within this technical manual to help you quickly locate the information you may need.

Front Cover Index To provide you with a quick reference to the most used portions of this manual, an index has been placed on the cover of this manual.

Bleeder Edges On Pages On the right edge of the front cover index of this manual you will see a black box area that goes to the edge of the front cover page. If you hold this manual with you left hand and bend back the outer right edges of the pages with your right hand, you will find that there are pages inside the technical manual that also have black boxes on the right edges of the page and that these boxes line up with the boxes on the front cover index. By turning to the page in the technical manual that lines up with the box on the front cover, you will be able to quickly turn to the topic shown in the front cover index.

Table Of Contents and Boxed Titles In the event that the front cover has been removed from this manual, the items that appear in the front cover index have also been placed in a box where they appear in the Table of Contents of this manual.

Alphabetical Index To assist you in locating any other information not found in the front cover index or the Table of Contents, an alphabetical index has been placed in the back of this manual to help you find any information you may need.

GENERAL MAINTENANCE METHOD. Although your local standard operating and maintenance procedure may vary, a simple method of using this technical manual to operate and maintain the air compressor is shown in the following steps.

WARNING And CAUTION

Always Read, Understand, and Perform ALL WARNINGS and CAUTIONS
Found In This Technical Manual BEFORE Performing
The Step Immediately Following The
WARNING or CAUTION.

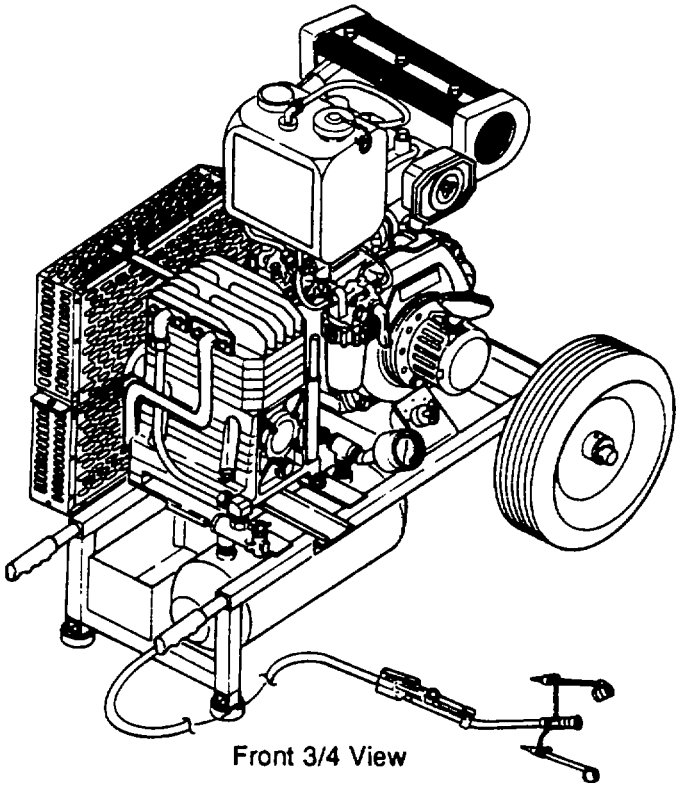
Throughout this technical manual there are certain procedures and operations that are hazardous to you or to the air compressor. If you see a WARNING, pay special attention to the information stated in it because all WARNINGS provide you with data that will prevent serious injury to you or others around you. When you see a CAUTION read it carefully because the information given in it will keep you from damaging the air compressor and making the air compressor unable to fulfill its mission.

Equipment Set Up And Operation. Unpack and set up the air compressor in accordance with the procedures shown in Chapter 2.

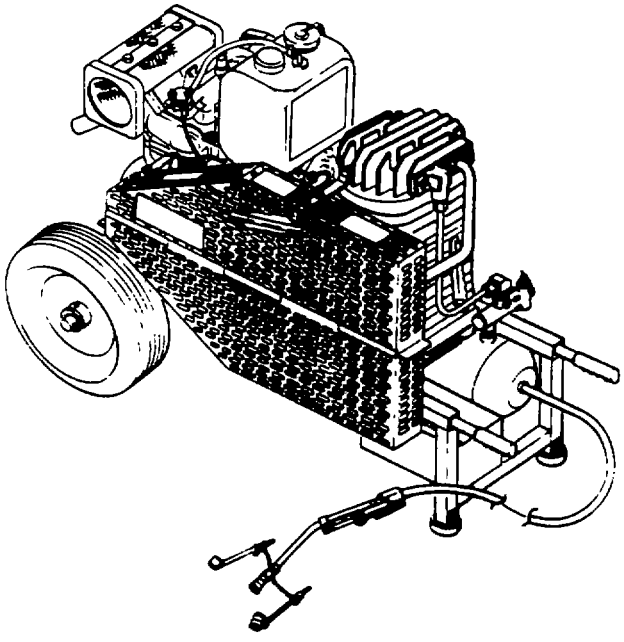
Preventive Maintenance Checks And Services (PMCS). Perform the operator PMCS procedures shown in Chapter 2.

Troubleshooting Procedures. If the air compressor should not operate properly, refer to either the operating troubleshooting procedures in Chapter 3, the unit troubleshooting procedures in Chapter 4, or the direct support troubleshooting procedures in Chapter 5. The most likely air compressor malfunctions have been placed within these troubleshooting procedures and a test and/or repair procedure paragraph has been indicated to correct the malfunction found. If a repair is required, refer to the maintenance paragraph shown in the troubleshooting procedure.

Maintenance Procedures. The complete repair procedures needed to correct a problem found with the air compressor have been included in Chapters 3, 4, and 5.



Front 3/4 View



Rear 3/4 View

Figure 1-1. Air Compressor, Portable, 5 cfm.

CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE.

a. ***Type of Manual***. Operator's, Unit, and Direct Support Maintenance Manual
b. ***Model Number and Equipment Name***. Model PD32T5 Air Compressor, Portable, 5 cfm.
c. ***Purpose of Equipment***. The air compressor unit covered by this manual is intended for use in providing compressed air in remote areas where electricity is not available.

1-2. MAINTENANCE FORMS AND RECORDS. 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) and (Maintenance Management UPDATE).

1-3. CORROSION AND PREVENTION CONTROL. Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

While corrosion is typically associated with the rusting of metals, it can also include deterioration of other materials such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of the materials may be a corrosion problem.

If a corrosion problem is identified, it can be reported using Standard Form 368, Product Quality Deficiency Report. Use of key words such as "rust", "deterioration", "corrosion", or "cracking" will insure that the information is identified as a CPC problem. The form should be submitted to the address specified in the DA PAM 738-750.

1-4. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE. Refer to TM 750-244-2, Procedures for Destruction of Equipment to Prevent Enemy Use.

1-5. PREPARATION FOR STORAGE OR SHIPMENT. Contact unit maintenance for preparation and storage or shipment. Refer to Section VI, Chapter 4.

1-6. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR'S). If your pump assembly 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.
Put it on a SF 368 (Product Quality Deficiency Report). Mail it to us at;

Commander
U.S. Army Aviation and Troop Support Command
Attention: AMSAT-I-MDO
4300 Goodfellow Blvd.
St. Louis, Missouri 63120-1798.

We will send you a reply.

1-7. NOMENCLATURE CROSS-REFERENCE LIST. To simplify the use of certain terms used in this technical manual, some common names have been used to replace longer or more complex terms. The following list shows the common name used in this technical manual and the official nomenclature of the terms these common names replace.

Common Name	Official Nomenclature
Air Compressor Unit	Air Compressor, Portable, 5 cfm,

1-8. LIST OF ABBREVIATIONS. All abbreviations use within this technical manual conform to the standard military abbreviations found in MIL-STD-12, Abbreviations for Use on Drawings, and in Specifications, Standards, and Technical Documents.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-9. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

a. ***Characteristics and Capabilities***. The Air Compressor Unit (ACU) is designed to provide compressed air and has the following characteristics and capabilities.

(1) Self contained diesel engine driven unit.

(2) The ACU is capable of continuously providing compressed air at the pressure of 175 psig at a rate of 5 cubic feet per minute.

b. ***Features***. The ACU has the following features.

(1) The diesel engine is equipped with an electrical starter when battery power is available to assist in the starting of the unit. It is also equipped with a manual recoil type starter when battery power is not available.

(2) The ACU is mounted on a special chassis equipped with two handles mounted at the end of the chassis to provide an easy way of manually moving the ACU to various operating sites.

(3) The ACU has been designed as a lightweight unit capable of being moved easily by only two operators.

1-10. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS. The followingmajor components of the ACU are described below and are located as shown on Figure 1-2.

a. ***Air Hose (1)***. A 50 feet long air hose is provided to transfer the compressed air for the receiver tank on the ACU to the component requiring the compressed air.

b. ***Chassis Assembly (2)***. All of the components of the ACU are mounted and assembled to a chassis assembly. This chassis is equipped with two lifting handles to allow for easier movement of the ACU to other locations.

c. ***Compressor (3)***. A two stage air compressor is attached to the diesel engine assembly. This reciprocating compressor unit uses two sets of piston assemblies to compress air to a pressure of 175 psig.

d. ***Diesel Engine Assembly (4)***. A 3.8 horsepower one cylinder air cooled diesel engine is provided to drive the air compressor. This engine is capable of running on a variety of fuels including diesel and jet fuel.

e. ***Inflation Gauge (5)***. An inflation gauge is attached to the end of the air hose to provide a method of indicating the amount of air pressure being supplied by the ACU. The inflation gauge is also equipped with a variety of inflator tools to allow pressurization of components having different styles of inflation valve.

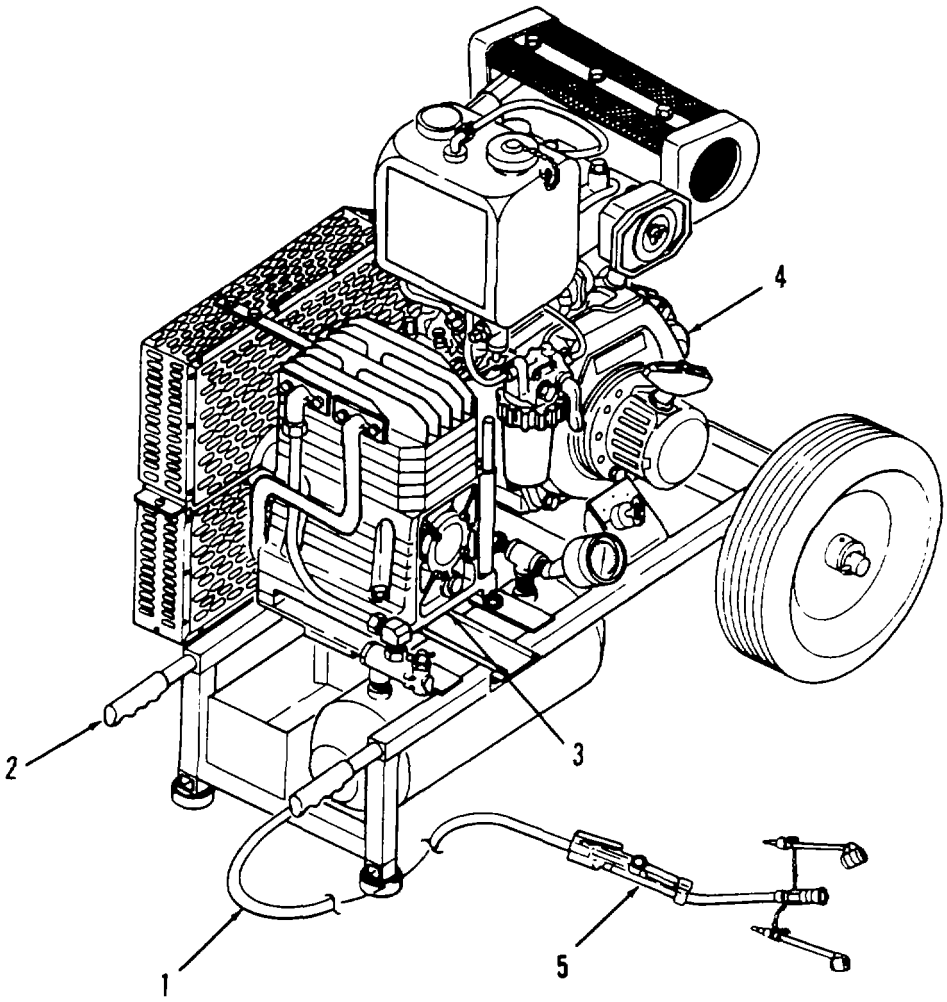


Figure 1-2. Location of Major Components.

1-11. EQUIPMENT DATA. Refer to Table 1-1. for general equipment and performance data for the DED pump assembly.

Table 1-1. Equipment Data.

AIR COMPRESSOR

Manufacturer	Curtis-Toledo, Inc.
Duty Cycle	Continuous
Rated Output Pressure	175 psig
Rated Output Volume	5 CFM
Rotation	Clockwise (facing front of unit)

ENGINE

Manufacturer	Yanmar
Model	L40AE-DECT
Horsepower	3.8
Type	Four-stroke, forced air cooled by flywheel fan
Number of Cylinders	One
Bore	2.677 in. (68 mm)
Stroke	2.165 in. (55 mm)
Displacement	12.14 cu in. (0.199 liter)
Compression Ratio (nominal)	20.5 to 1
Direction of Rotation	Counterclockwise (facing shaft end)
Number of Main Bearings	Two

AIR CLEANER

Manufacturer	Yanmar
Type	Dry type, paper cleaner element

CAPACITIES

Fuel Tank	1.2 gallon (4.5 liters)
Engine Crankcase	0.79 quart (0.75 liter)

DIMENSIONS AND WEIGHT

Overall Width	26.25 in (66.68 cm)
Overall Length	50.25 in (127.64 cm)
Overall Height	38.00 in (96.52 cm)
Shipping Weight	280.00 lb (127.12 kg)
Shipping Volume	29 cubic feet (0.6 cubic meter)

Section III. PRINCIPLES OF OPERATION

1-12. THEORY OF OPERATIONS. The ACU is a self contained, transportable, diesel engine driven centrifugal air compressor designed for compressing air and delivering it as needed. It consists of a two stage reciprocating air compressor, a four stroke air cooled diesel engine, and a chassis for the mounting of the ACU components and to provide a means of transporting the ACU. The ACU performs its operations in the following manner.

a. Air Compressor. The air compressor operates to compress air through the use of a two stage compressing system. This two stage system consists of two complete piston assemblies which are mounted internally to the compressor crankshaft.

As the compressor crankshaft rotates, the first stage (low pressure) piston moves downward to draw outside air. This air is passed through a filter, through a set of valve plates, and then into the cylinder area of the first stage piston. As the compressor crankshaft continues to rotate, the first stage piston moves upward to compress and push out this air through the valve plates and into an intercooler tube which transports and cools the partially compressed air into the cylinder head of the second stage piston.

This second stage (high pressure) piston is also attached to the compressor crankshaft. As the second stage piston moves downward, it draws in the air partially compressed by the first stage piston. When the second stage piston moves upward, it further compresses this air and then forces the air through an exit port of the cylinder head of the compressor. The air is transferred from this exit port to a receiver tank by means of a discharge tube. The receiver tank stores the fully compressed air until needed by the operator.

b. Diesel Engine. To cause the crankshaft inside the air compressor to rotate, the compressor flywheel mounted on the air compressor crankshaft is driven by a V-belt attached to a pulley connected to the output shaft of a diesel engine. This diesel engine is equipped with both an electrical starter and a manual recoil starter for starting the engine. The operating speed of the engine is controlled by a throttle control mechanism which is factory set to provide a constant operating speed for the air compressor. The electric starter can be powered by a 12 volt direct current battery (not furnished with the ACU).

CHAPTER 2

OPERATING INSTRUCTIONS

CHAPTER 2 INDEX

Section I. DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

2-1. INTRODUCTION. The air compressor unit is designed for operation in a wide range of climatic conditions. Operators must be aware of any peculiarities or operational limitations for their specific installation. Before setting up and operating this system, be sure that you have determined the type of terrain and climate in which you will use the unit and that you have assembled and serviced the system to match the existing needs.

2-2. OPERATOR'S CONTROLS AND INDICATORS. For controls and indicators applicable to the ACU, refer to the following descriptions and to Figure 2-1.

a. Air Pressure Gauge (1). An air pressure gauge is mounted on the tank to determine the pressure of the compressed air stored inside of the receiver tank.

b. Air Tank Drain Cock (2). A drain cock is attached to the bottom of the air tank to allow water to be drained from the tank and to allow compressed air to be removed from the tank when maintenance must be performed on the tank.

c. Cold Weather Plug (3). During ACU operation in colder weather, engine starting can be further helped by removing the cold weather plug on the top of the engine rocker arm cover and adding 5 or 6 drops of engine oil. This reduces the additional friction caused by colder weather and makes the engine easier to start.

d. Compressor Lube Oil Drain Plug (4). In the event that the compressor oil must be changed, the oil can be drained from the unit by removing the drain plug and allowing the oil to drain down the drain pan into a suitable container.

e. Decompression Handle (5). Because of the high internal cylinder pressure inside a diesel engine, it can be difficult to start manually since the operator must overcome this internal pressure to start the engine rotation. To relieve this internal cylinder pressure for starting purposes, an engine decompression handle is furnished to vent the cylinder pressure and allow for easier engine starting.

f. Diesel Engine Speed Control Knob (6). After the diesel engine has been started, the engine speed can be controlled by loosening the engine speed control knob, moving it to desired speed, and then tightening speed control knob.

g. Engine Oil Dipstick (7). To provide a method of checking for the correct amount of oil in the diesel engine, the engine is equipped with an engine oil dipstick. By removing this dipstick and checking the indicated oil level, proper engine oil may be added as needed. Engine oil is added through the engine oil dipstick opening in the engine crankcase.

h. Fuel Filter Handle (8). When maintenance must be performed on the fuel filter, a handle on the side of the fuel filter can be used to turn off the fuel flow from the fuel tank.

i. Fuel Tank Drain Plug (9). There are times when the fuel must be removed from the fuel tank. To accomplish this task, a fuel tank drain plug is located on the bottom of the fuel tank.

j. Fuel Valve (10). To control the flow of fuel from the fuel tank or auxiliary fuel source to the engine, a three way fuel valve is included to select which fuel source is to be used.

k. Fuel Tank Gauge (11). The amount of fuel in the engine fuel tank is shown by a fuel gauge located on the top of the fuel tank.

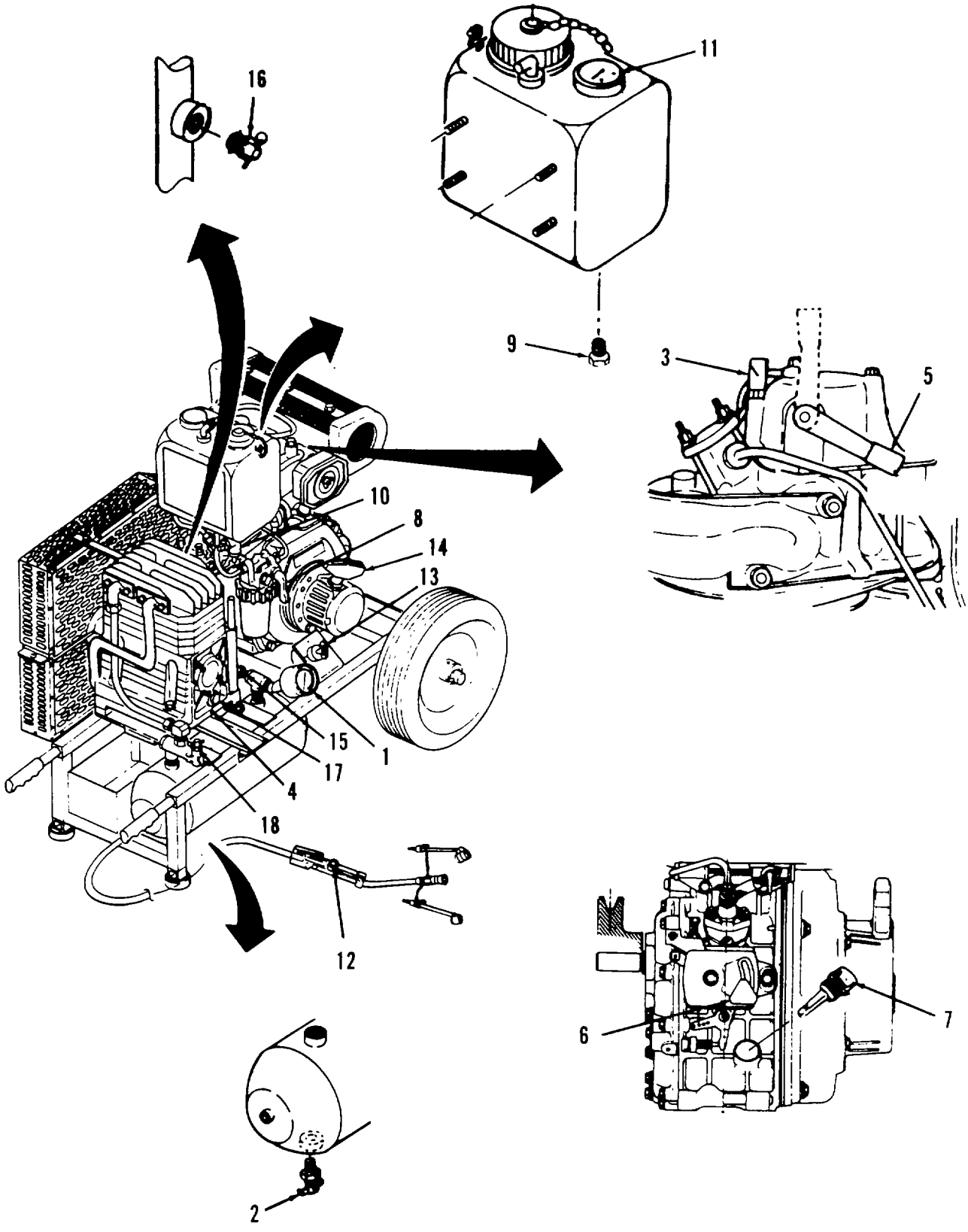


Figure 2-1. Operator's Controls and Indicators.

2-2. OPERATOR'S CONTROLS AND INDICATORS. - Continued.

l. Inflation Gauge (12). During the inflation process, it is very important to know what the pressure is within the component being inflated. An inflation gauge is mounted at the end of the air hose which shows this internal pressure.

m. Key Switch (13). When the ACU is connected to a battery, this key switch will allow the operator to operate the intake air preheater or start the diesel engine by using the electric starter.

n. Manual Recoil Starter (14). When the diesel engine is not connected to a battery, it can be started by use of the manual recoil starter located on the side of the engine. After pulling the handle out firmly and quickly, the engine will start.

o. Relief Valve (15). To maintain a constant pressure in the system, this relief valve will automatically open or closed as needed to maintain a constant pressure 175 psi.

p. Safety Valve (16). In the event that the relief valve malfunctions, this safety valve is set to release air from the system if the air pressure exceeds 220 psi.

q. Sight Glass (17). A sight glass is provided on the compressor to indicate the compressor crankcase oil level.

r. Unloader Valve (18). Because the pressure within the air compressor system can resist the action of the diesel engine during start up of the ACU, an unloader valve is provided to release the compressed air in everything but the receiver tank to allow for easier staring of the engine.

Section II. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES

2-3. GENERAL. Preventive Maintenance Checks and Services (PMCS) means systematic caring, inspecting, and servicing of equipment to keep it in good condition and to prevent breakdowns. As the operator of the air compressor unit, your mission is to:

a. Be sure to perform your PMCS each time you operate your air compressor unit. Always do your PMCS in the same order, so it gets to be a habit. Once you've had some practice, you'll quickly spot anything wrong.

b. Do your **BEFORE** (B) PMCS just before you operate the air compressor unit. Pay special attention to all WARNINGS, CAUTIONS, and NOTES.

c. Do your **DURING** (D) PMCS while you are operating the air compressor unit. During operations means to monitor the air compressor unit and its related components while it is actually being operated. Pay special attention all WARNINGS, CAUTIONS, and NOTES.

d. Do your **AFTER** (A) PMCS right after you have operated the air compressor unit. Pay special attention to all WARNINGS, CAUTIONS, and NOTES.

e. Do your **WEEKLY PMCS** once a week.

f. Do you **MONTHLY PMCS** once a month.

g. Use DA Form 2404 (Equipment Inspection and Maintenance Worksheet) to record any faults that you discover before, during, or after operation unless you can fix them. You do not need to record faults that you fix.

h. Be prepared to assist unit maintenance in any lubrication procedures. Perform any other services when required by unit maintenance.

2-4. PMCS PROCEDURES.

a. Your Preventive Maintenance Checks and Services, Table 2-1, lists inspections and care to keep your air compressor unit in good operating condition. It is set up so you can make your BEFORE (B) Operation checks as you perform a general examination of the air compressor unit.

b. The "ITEM NO." column of Table 2-1 is the numerical sequence in which the PMCS must be performed. When completing DA Form 2404, include the item number for the check/service indicating fault.

c. The "INTERVAL" column of Table 2-1 tells you when to do a certain check or service.

d. The "LOCATION, ITEM TO CHECK/SERVICE" column of Table 2-1 provides the location of the item to be checked or serviced.

e. The "PROCEDURE" column of Table 2-1 tells you how to do required checks and services. Carefully follow these instructions. If you do not have tools or if the procedure tells you to, notify your supervisor.

NOTE

Terms "ready/available" and "mission capable" refer to the same status: Equipment is on hand and ready to perform combat missions. (See DA PAM 738-750.)

f. The "NOT MISSION CAPABLE IF:" column in Table 2-1 tells you when your air compressor unit is not capable and why the air compressor unit cannot be used.

g. If the air compressor unit does not perform as required, refer to Section III, Operator Troubleshooting.

h. If anything looks wrong and you can't fix it, write it on your DA Form 2404 IMMEDIATELY and report it to your supervisor.

i. When you do your PMCS, you will always need a rag or two. The following items are common to all of the air compressor unit components:

(1) **Keep It Clean**. Dirt, grease, oil, and debris only get in the way and may cover up a serious problem. Clean as you work and as needed. Use dry cleaning solvent (Appendix E, Item 3) on all metal surfaces. Use soap (Appendix E, Item 5) when you clean rubber or plastic material.

(2) **Rust and Corrosion**. Check the components of the air compressor unit for rust and corrosion. If any bare metal or corrosion exists, clean and apply a thin coat of oil. Report it to your supervisor.

(3) **Bolts, Nuts, and Screws**. Check them for obvious looseness, missing, bent, or broken condition. You can't try them all with a tool, but look for chipped paint, bare metal, or rust around bolt heads. If you find a bolt, nut, or screw you think is loose, tighten it or report it to your supervisor.

(4) **Welds**. Look for loose or chipped paint, rust, or gaps where metal parts are welded together. If you find a bad weld, report it to your supervisor.

2-4. PMCS PROCEDURES. - Continued.

(5) Hoses. Look for wear, damage, or leaks and make sure clamps and fittings are tight. Wet spots show obvious leaks, but a stain around a fitting or connector can also mean a leak. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, report it to your supervisor.

j. When you check for "proper operating condition", you look at the component to see if its serviceable.

2-5. SPECIAL INSTRUCTIONS. If the equipment must be kept in continuous operation, check and service only those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

2-6. LEAKAGE DEFINITIONS FOR OPERATOR PMCS. It is necessary for you to know how fluid leakage affects the status of the air compressor unit. Following are types and classes of leakage an operator needs to know to be able to determine the status of the air compressor unit. Learn these leakage definitions and remember -- when in doubt, notify your supervisor.

CAUTION

- Equipment operation is allowable with minor leakages (Class I or II). Of course, consideration must be given to fluid capacity in the item/system being checked/inspected. When in doubt, notify your supervisor.
- When operating with Class I or II leaks, continue to check fluid levels as required by your PMCS.
- Class III leaks should be reported immediately to you supervisor.

a. CLASS I Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.

b. CLASS II. Leakage of fluid great enough to form drops, but not enough to cause drops to drip from item being checked/inspected.

c. CLASS III. Leakage of fluid great enough to form drops that fall from item being checked/inspected.

Table 2-1. Operator Preventive Maintenance Checks and Services for the Air Compressor Unit, Model PD32T5.

Item No.	Interval	Location Item to Check/Service	Procedure	Not Mission Capable If:
		ENGINE		
1	Before	**V-BELT**	Inspect v-belt for cracks and frays.	V-belt is cracked or frayed.
2	Before	**SHEAVE**	Inspect for loose or missing set screws.	Set screw is loose or missing.
3	Before	**FUEL LINES**	Check all fuel lines for leaks. Check all clamps for tightness.	Fuel lines leak. Clamps are loose.
4	Before	**FUEL VALVE**	Check fuel valve for leaks. Inspect valve for damage. damaged. Check that fuel valve handle turns smoothly.	Fuel valve leaks or is Fuel valve does not turn smoothly.
5	Before	**FUEL TANK**	Inspect for missing cap, strainer or fuel gauge. fuel gauge. Check fuel tank and fittings for leaks.	Missing cap, strainer, or Fuel tank or fittings leak.
6	Before	**FUEL FILTER**	Inspect filter for broken bowl. Check for damaged parts or fuel leaks.	Bowl is broken. Filter parts are damaged or filter leaks.
7	Before	**ENGINE OIL DRAIN**	Inspect for missing plug. Check extension pipe for damage. Check for leaks. Check for proper oil level. **NOTE** The engine is equipped with two dipsticks. The oil level may be checked using either dipstick.	Plug is missing. Extension pipe is damaged. Drain is leaking. Oil level is incorrect.
8	Before	**WIRE ASSEMBLIES**	Inspect all wire assemblies for cuts or exposed conductors. Check for loose or missing terminal attaching hardware.	Wire assemblies are damaged. Wires are cut or conductors are exposed. Terminal attaching hardware is loose or missing.

Table 2-1. Operator Preventive Maintenance Checks and Services for the Air Compressor Unit, Model PD32T5 - Continued.

Item No.	Interval	Location Item to Check/Service	Procedure	Not Mission Capable If:
9	Before	**AIR CLEANER HOUSING**	Inspect air cleaner housing for damage. Check for loose or missing mounting hardware.	Air cleaner housing is damaged. Mounting hardware is loose or missing.
10	Before	**FILTER ELEMENT**	Remove cover from air cleaner housing and inspect filter for clogging.	Filter element is missing. filter element is very dirty or clogged.
11	Before	**MUFFLER**	Inspect muffler for excessive corrosion. Check for loose/ missing mounting hardware.	Muffler is badly corroded. Mounting hardware is loose or missing.
12	Before	**OIL CAP/ GAUGES**	Inspect for missing or damaged oil cap/gauges.	Oil cap/gauges is missing or damaged.
13	Before	**LABELS AND GASKETS**	Inspect all engine labels for readability. engine gaskets for leaks.	Engine gaskets leak. Check all visible
14	Before	**DECOMPRESSION HANDLE**	Operate handle and check that lever on engine is moving.	Handle does not actuate. decompression lever on engine.
15	During	**MUFFLER**	Check that muffler does not allow excessive engine noise.	Muffler does not reduce engine noise properly.
16	After	**FUEL TANK**	Inspect fuel level in tank. Fill with fuel as needed.	
17	After	**OIL/CAP GAUGES**	Check for proper oil level. Fill with oil as needed. See LO 94310-394-12.	
		COMPRESSOR		
18	Before	**SAFETY VALVE**	Inspect for damaged safety valve.	Safety valve is damaged.
19	Before	**COMPRESSOR OIL DRAIN**	Inspect for damaged drain pan or missing mounting hardware. Check for proper oil level.	Drain pan is damaged. Mounting hardware is missing. Oil level is incorrect.

Table 2-1. Operator Preventive Maintenance Checks and Services for the Air Compressor Unit, Model PD32T5.

Item No.	Interval	Location Item to Check/Service	Procedure	Not Mission Capable If:
20	After	**COMPRESSOR OIL DRAIN**	a. Check for proper oil level Fill with oil as needed. See LO 9-4310-394-12. b. Inspect for damaged drain trough or missing mounting hardware.	
		AIR RECEIVER		
21	Before	**AIR HOSE**	Inspect air hose for cracks and cuts. Check fittings for damage.	Air hose is cut or cracked. Fittings are damaged.
22	Before	**INFLATION GAUGE**	Inspect for broken glass or damaged handle.	Glass is broken or handle is damaged.
23	Before	**AIR GAUGE**	Inspect gauge for broken glass.	Glass is broken.
24	Before	**RELIEF VALVE**	Inspect relief valve for damage.	Relief valve is damaged.
25	Before	**UNLOADER VALVE**	Inspect unloader valve for any damage.	Unloader valve is damaged.
26	Before	**UNLOADER VALVE MUFFLER**	Inspect for damaged muffler. damaged.	Unloader valve muffler is is damaged.
27	Before	**VIBRATION MOUNTS**	Inspect for damaged vibration mounts. Check for loose or missing mounting hardware.	Vibration mounts are damaged. Mounting hardware is loose or missing.
28	Before	**AIR RECEIVER**	Inspect air receiver tank for damage.	Air receiver tank is damaged.
29	Before	**DRAIN COCK**	Inspect drain pipe for damage. Check that drain cock operates smoothly. Check that drain cock is closed.	Drain cock is damaged. Drain cock does not operate smoothly.
30	During	**AIR HOSE**	Check that air hose does not leak when air pressure is present in hose.	Air hose leaks air.

Table 2-1. Operator Preventive Maintenance Checks and Services for the Air Compressor Unit, Model PD32T5 - Continued.

Item No.	Interval	Location Item to Check/Service	Procedure	Not Mission Capable If:
31	During	**INFLATION GAUGE**	Check that inflation gauge operates to indicate air pressure.	Inflation gauge does not operate.
32	During	**AIR GAUGE**	Check that air gauge indicates 175-200 psi air pressure in receiver tank. If pressure exceeds 200 psi, shut down unit and notify unit maintenance.	Air gauge does not indicate 175-200 air pressure.
33	During	**RELIEF VALVE**	Activate relief valve and check that air is released from valve.	Activated relief valve does not release air.
34	During	**UNLOADER VALVE**	Activate unloader valve and check that air is released from valve.	Unloader valve does not release air when activated.
35	During	**UNLOADER VALVE MUFFLER**	Check that muffler reduces air noise when unloader valve is activated.	Muffler does not reduce air noise when unloader valve is activated.
36	During	**SAFETY VALVE**	Pull ring on safety valve and check that air is released from valve.	Air is not released from safety valve when ring is pulled.
37	During	**AIR RECEIVER**	Check that air receiver tank does not leak air when tank is pressurized.	Air receiver tank leaks when pressurized.
38	During	**DRAIN COCK**	Drain cock leaks air when air receiver tank is pressurized.	Drain cock leaks air when air receiver tank is pressurized.
39	After	**DRAIN COCK**	Open drain cock on receiver to drain condensation from tank. Leave drain cock open.	
		CHASSIS		
40	Before	**INFORMATION PLATES AND DECALS**	Inspect plates and decals for damage and readability. Check for loose or missing mounting hardware.	

Table 2-1. Operator Preventive Maintenance Checks and Services for the Air Compressor Unit, Model PD32T5.

Item No.	Interval	Location Item to Check/Service	Procedure	Not Mission Capable If:
41	Before	**BELT GUARD**	Inspect belt guard for damaged. Check for loose or missing attaching hardware.	Belt guard is damaged. Attaching hardware is loose or missing.
42	Before	**KEY SWITCH**	Inspect key switch for damage. Check that switch operates smoothly.	
43	Before	**TAKE-UP SCREW**	Inspect damaged or missing take-up screw.	Take-up screw is missing or damaged.
44	Before	**TOOL BOX**	Inspect tool box for damage. Check for loose or missing mounting hardware.	
45	Before	**TIRE/WHEEL ASSEMBLIES**	Check for missing or damaged tires/wheels.	Tires/wheels are missing or damaged.

Section III. OPERATION UNDER USUAL CONDITIONS

2-7. ASSEMBLY AND PREPARATION FOR USE. The air compressor unit is delivered fully assembled and requires no further assembly before use. Before the air compressor unit can be put to use, however, it must be prepared for operation as described by the following procedures.

a. Filling the Fuel Tank. (Refer to Figure 2-2.) Before starting the air compressor unit, the fuel tank must be fined with fuel. The unit can be operated on various fuels or JP8 jet fuel. Contact your supervisor to find out which fuel will be used in your unit. To fill the fuel tank, perform the following procedures.

(1) Check the fuel tank gauge (1) on the top of the fuel tank (2) to insure that fuel tank is filled with fuel. If fuel tank is not full, perform steps (2) through (5) to fill the tank.

WARNING

Improper care in handling fuel can cause fire and explosion which can cause severe injury or death to operating personnel. To avoid fire or explosion during engine refueling:

- DO NOT allow any flame producing material within 50 feet (15.25 m) of fuel during equipment filling.
- DO NOT smoke while refueling.
- DO NOT let fuel drip onto any hot surface.
- DO NOT overfill fuel tank.
- DO NOT refuel unit while engine is running.

(2) Remove fuel tank cap (3).

(3) Check the inlet fuel strainer (4) inside the top of the fuel tank (2) and carefully remove any debris that may have collected inside the strainer.

(4) Carefully pour fuel from the fuel container into the fuel tank (2) while checking the fuel gauge (1) on the top of the fuel tank. When the fuel gauge indicates that the tank is full, stop filling fuel tank.

(5) Replace fuel tank cap (3) onto fuel tank (2).

(6) Turn handle on fuel valve (6) toward rear of unit to allow fuel from fuel tank to enter engine.

b. Alternate Fuel Source. The three way fuel valve can be used to connect the air compressor unit to an alternate source of fuel. To connect to an auxiliary fuel source, perform the following procedures.

(1) Attach fuel hose from auxiliary fuel source onto hose fitting (5) on fuel valve (6).

(2) Turn fuel valve (6) handle to front of unit.

c. Connection of Motor Starter to Auxiliary Power Source. Before the electric motor starter on the engine can be used, it must be connected to an external electric power source. To connect the starter to this power source, perform the following steps.

WARNING

HIGH VOLTAGE
is used in operation of this equipment.
DEATH ON CONTACT
may result if personnel fail to observe safety precautions.

Never work on electrical equipment unless there is another person nearby who is familiar with operation and hazards of equipment and who is competent in administering first aid. When technician is aided by operators, he must warn them about dangerous areas.

Whenever possible, input power supply to equipment must be shut off before beginning work. Take particular care to ground every capacitor likely to hold a dangerous charge. When working inside, after power has been turned off, always ground every part before touching it. Be careful not to contact high voltage connections when installing or operating this equipment.

Whenever nature of operation permits, keep one hand away from equipment to reduce hazard to current flowing through vital organs of body. Do Not operate equipment without all guards, louvers, and covers in place and tightly secured.

(1) Connect the positive connector of the power source to the top terminal of the motor starter solenoid.

(2) Connect the negative connector of the power source to the axle of the unit. Rotate the connector a little to insure that the connector is in good contact with the metal of the chassis.

d. Connection of Air Hose To Unit. (Refer to Figure 2-2). Before the air compressor is fully operational, the air hose must be installed onto the air receiver tank. To install the air hose, attach the air hose (7) into the air receiver tank (8).

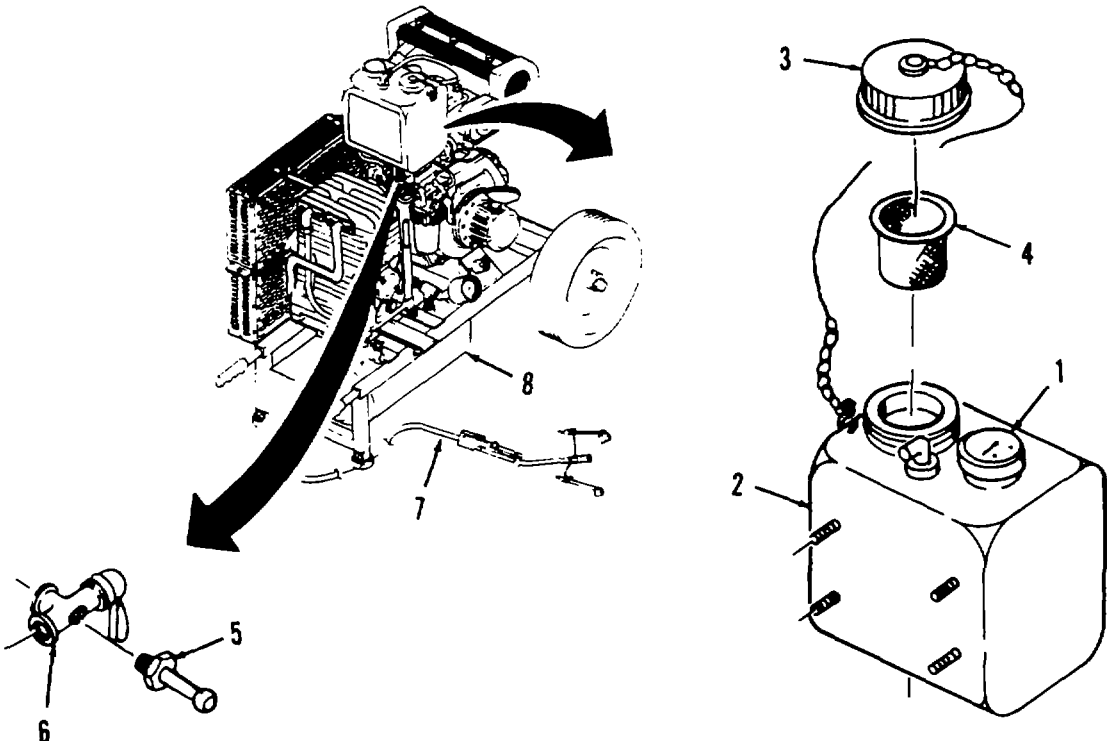


Figure 2-2. Refueling Air Compressor Unit.

2-8. INITIAL ADJUSTMENTS, DAILY CHECKS, AND SELF TESTS. Before the air compressor unit can be operated, the following daily checks to the unit must be made.

(1) Inspect all air compressor unit for completeness, damage, and for proper operation as applicable. Report any deficiencies to unit maintenance.

(2) Perform the preventative maintenance checks and services listed in Table 2-1.

(3) (Refer to Figure 2-3). Before operating the air compressor unit, check that the engine oil level is correct by performing the following steps.

CAUTION

Operating the engine with either too much oil or too little oil can seriously damage the engine. When checking oil level, be sure the air compressor unit is sitting on a level surface. When filling engine with oil, be sure that the correct amount has been added to the engine before engine is started.

(a) Remove engine oil dipstick (1) from engine (2).

(b) Wipe all oil from dipstick using a clean cloth (Appendix E, Item 1).

(c) Place dipstick (1) back into engine (2) for a moment.

(d) Remove engine oil dipstick (1) from engine (2) again and check that the oil level is correct as indicated on the dipstick.

(e) If oil level is low, refer to Lubrication Order LO 9-4310-394-12 and fill engine to the mouth of the engine filler port with the proper oil.

(f) Replace engine oil dipstick (1) into engine (2).

(4) (Refer to Figure 2-4). Before operating the air compressor unit, check that the air compressor oil level is correct by performing the following steps.

CAUTION

Operating the air compressor with too little oil can seriously damage the air compressor. When checking oil level, be sure the air compressor unit is sitting on a level surface. When filling air compressor with oil, be sure that the correct amount has been added to the compressor crankcase before engine is started.

(a) Check the sight glass (1) on the front of the air compressor crankcase (2) to see if oil level is correct. Oil level is correct when oil level is located halfway up the sight glass as indicated by the red dot (3).

(b) If oil level is low, refer to Lubrication Order LO 9-4310-394-12 and fill air compressor crankcase with the proper oil by removing and replacing oil filler (4).

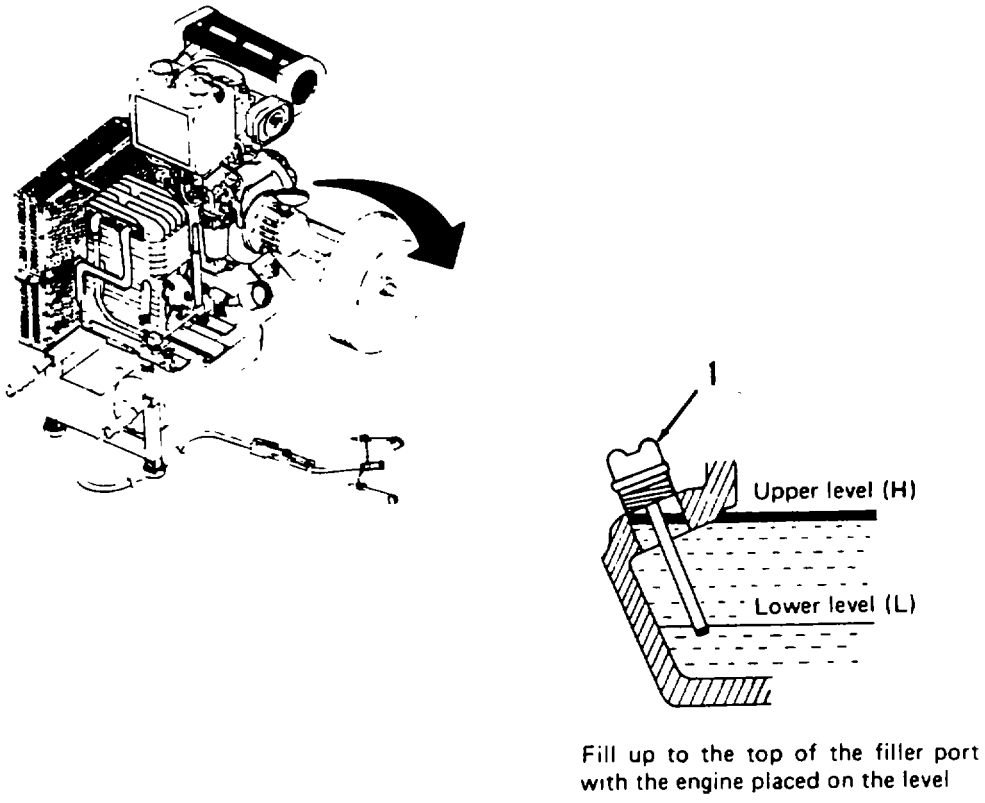


Figure 2-3. Checking Engine Oil Level.

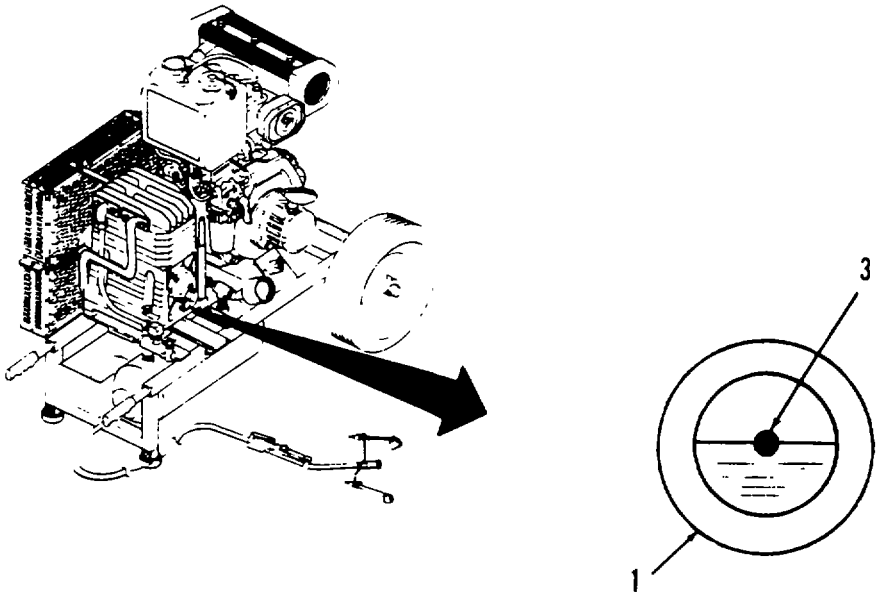


Figure 2-4. Checking Compressor Oil Level.

2-9. OPERATING PROCEDURES.

a. Starting. After insuring that the air compressor unit has been properly prepared for use as indicated in paragraphs 2-7 and 2-8, the air compressor unit may be started by performing the following steps.

NOTE

The air compressor unit is equipped with and electric starter motor and with a manual recoil starter. If you are using your unit with an auxiliary battery, start the engine using step (1). If you do not have the unit connected to a battery, start the engine using step (2).

(1) Starting Engine With Motor Starter. (Refer to Figure 2-5).

(a) Perform all Operator PMCS listed in Table 2-1.

(b) Loosen engine speed control lever knob (1) and move knob to the START full (downward) position. Tighten knob to hold in start position.

(c) Push the decompression lever (2) down and release. It will return automatically to the normal position when the electric starter is activated.

(d) Put the release lever of the unloader valve (3) into the vertical position to release all internal compressed air that may be in the system.

(e) Position fuel tank three way fuel valve (4) to point arrow on valve handle toward belt guard.

(f) Position fuel filter handle (5) to down position.

(g) Insert key into the key switch (6) and turn the key to START position.

(h) Listen carefully for the engine to begin to run on its own and then quickly turn the key to the **RUN** position.

(i) Put the lever of the unloader valve (3) in the horizontal position to allow the system to become pressurized.

(2) Starting Engine With Manual Recoil Starter. (Refer to Figure 2-5).

(a) Perform all Operator PMCS listed in Table 2-1.

(b) Loosen engine speed control lever knob (1) and move knob to the START full (downward) position. Tighten knob to hold in start position.

(c) Push the decompression lever (2) down and release. It will return automatically to the normal position when the recoil starter is pulled.

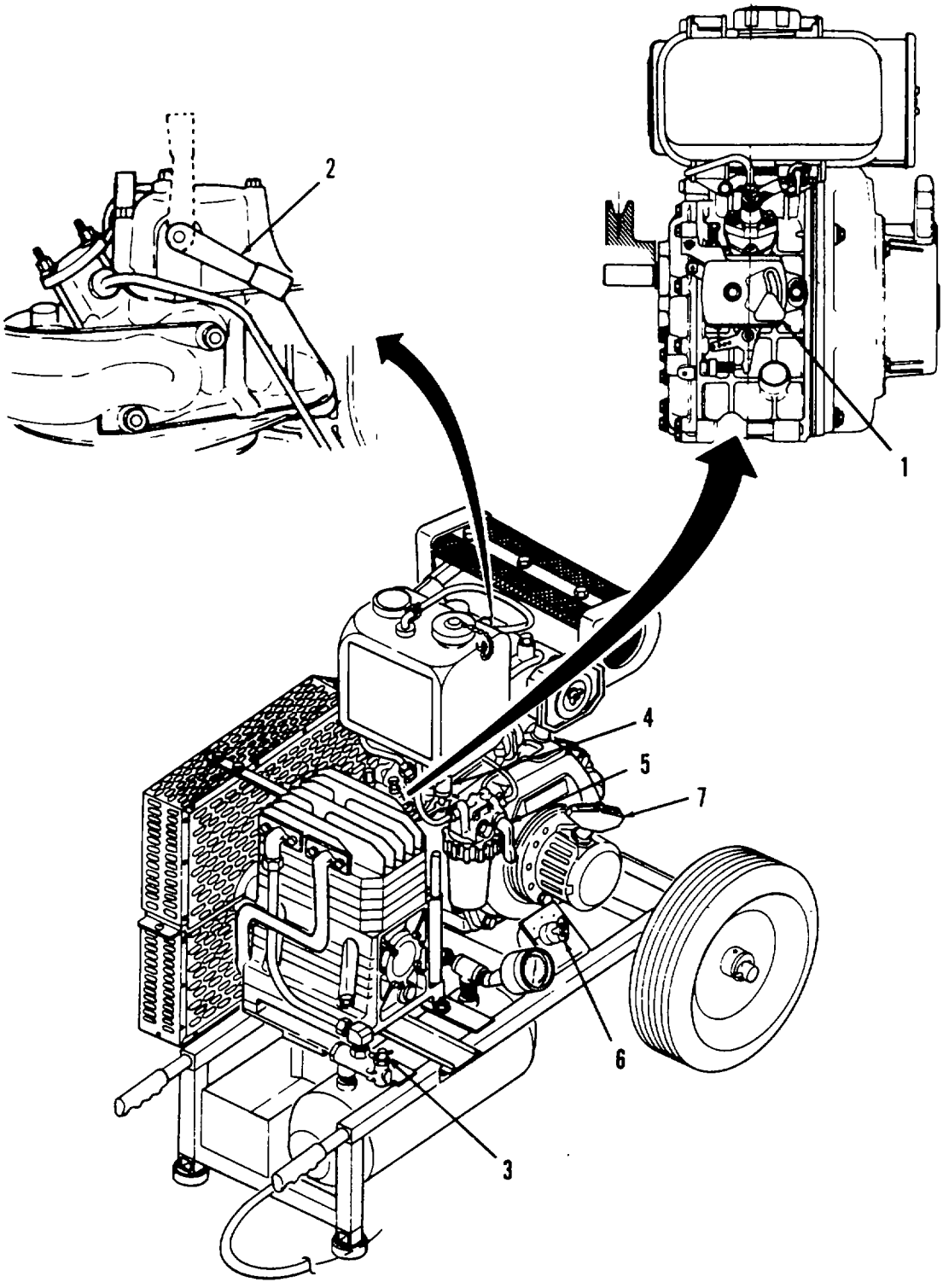


Figure 2-5. Starting and Operating the Air Compressor Unit.

2-9. OPERATING PROCEDURES. - Continued.

a. Starting. - Continued.

(d) Put the release lever of the unloader valve (3) into the up position to release all internal compressed air that may be in the system.
(e) Position fuel tank three way fuel valve (4) to position arrow on valve handle toward belt guard.
(f) Position fuel filter handle (5) into down position.
(g) Slowly pull out starting handle (7) until you feel resistance, and then return it to the initial position.

CAUTION
Do not allow the handle grip to snap back. Return it gently to prevent damage to the starter.

(h) Hold recoil starting handle (7) firmly and pull out the handle briskly. Engine will start and go to maximum operating speed.

NOTE
If engine does not start on first pull, repeat steps (c), (g), and (h).

(i) Put the lever of the unloader valve (3) in the horizontal position to allow the system to become pressurized.

b. Adjusting Speed. After engine has been started, the engine speed must not be adjusted. The engine must run at full throttle to allow the air compressor unit to provide the maximum available rate of compressed air.

c. Stopping. When the air compression operation is complete, the air compressor unit must be shutdown by stopping the engine. To shutdown the air compressor unit, perform the following steps.
(Refer to Figure 2-5.)

CAUTION

- Do not stop engine suddenly since it may cause the temperature to get too high and cause possible damage to the engine. When stopping the engine, reduce the load slowly and allow the engine to run at idle speed for 3 minutes before stopping engine.
- Do not stop engine with the decompression lever as engine damage may result. If the engine cannot be stopped by the speed control lever knob, then move the handle on the fuel filter to the up position to cut off fuel flow to the engine.
- Be careful when loosening speed control knob because its spring loaded mechanism will automatically pull the speed control knob to STOP position. Grip the speed control knob firmly as it is being loosened.

NOTE

The air compressor unit is equipped with an electric starter motor and with a manual recoil starter. If you are using your unit with an auxiliary battery, stop the engine using step (1). If you do not have the unit connected to a battery, stop the engine using step (2).

(1) Stopping Engine Equipped With Motor Starter.

(a) Loosen speed control knob (1) and slowly move knob upward until engine is running at idle speed. Tighten speed control knob.
(b) Allow engine to run at idle speed for 3 minutes.
(c) Turn the key in the key switch (6) to the OFF position.
(d) Loosen speed control knob (1) and move knob all the way up to the STOP position and let engine slow until it stops. Tighten speed control knob.
(e) Remove the key from the key switch (6).

(2) Stopping Engine Equipped With Manual Recoil Starter.

(a) Loosen speed control knob (1) and slowly move knob upward until engine is running at idle speed. Tighten speed control knob.
(b) Allow engine to run at idle speed for 3 minutes.
(c) Loosen speed control knob (1) and move all the way up to the STOP position and let engine slow until it is stopped.

2-10. PREPARATION FOR MOVEMENT. When the air compressor unit is to be moved, the services of unit maintenance shall be employed for the necessary preparations. For general preparation of the air compressor unit for movement, perform the following steps (Refer to Figure 2-6).

a. Open drain cock (1) on bottom of air receiver tank (2) and allow all water to drain from tank.
b. Disconnect the air hose (3) from air receiver tank (2).

Figure 2-6. Preparation for Movement of Air Compressor Unit.

2-11. OPERATION INSTRUCTIONS ON DECALS AND INSTRUCTION PLATES. To assist the operator in the use of the air compressor unit, various decals and information plates have been placed on the unit. The location of each of these decals or instruction plates and the wording of each one is shown in Figure 2-7.

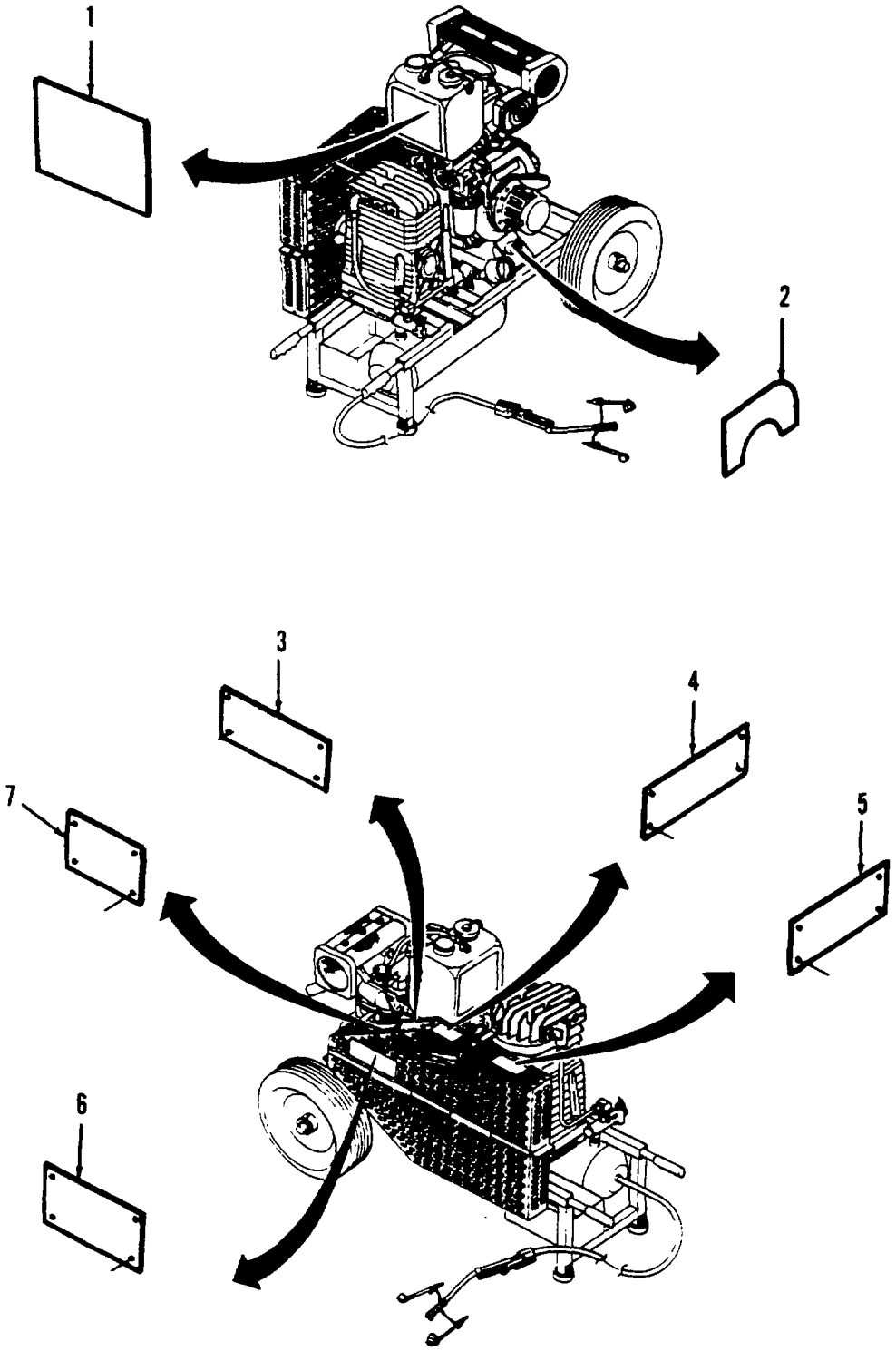


Figure 2-7. Decals and Instruction Plates. (Sheet I of 3) 2-20

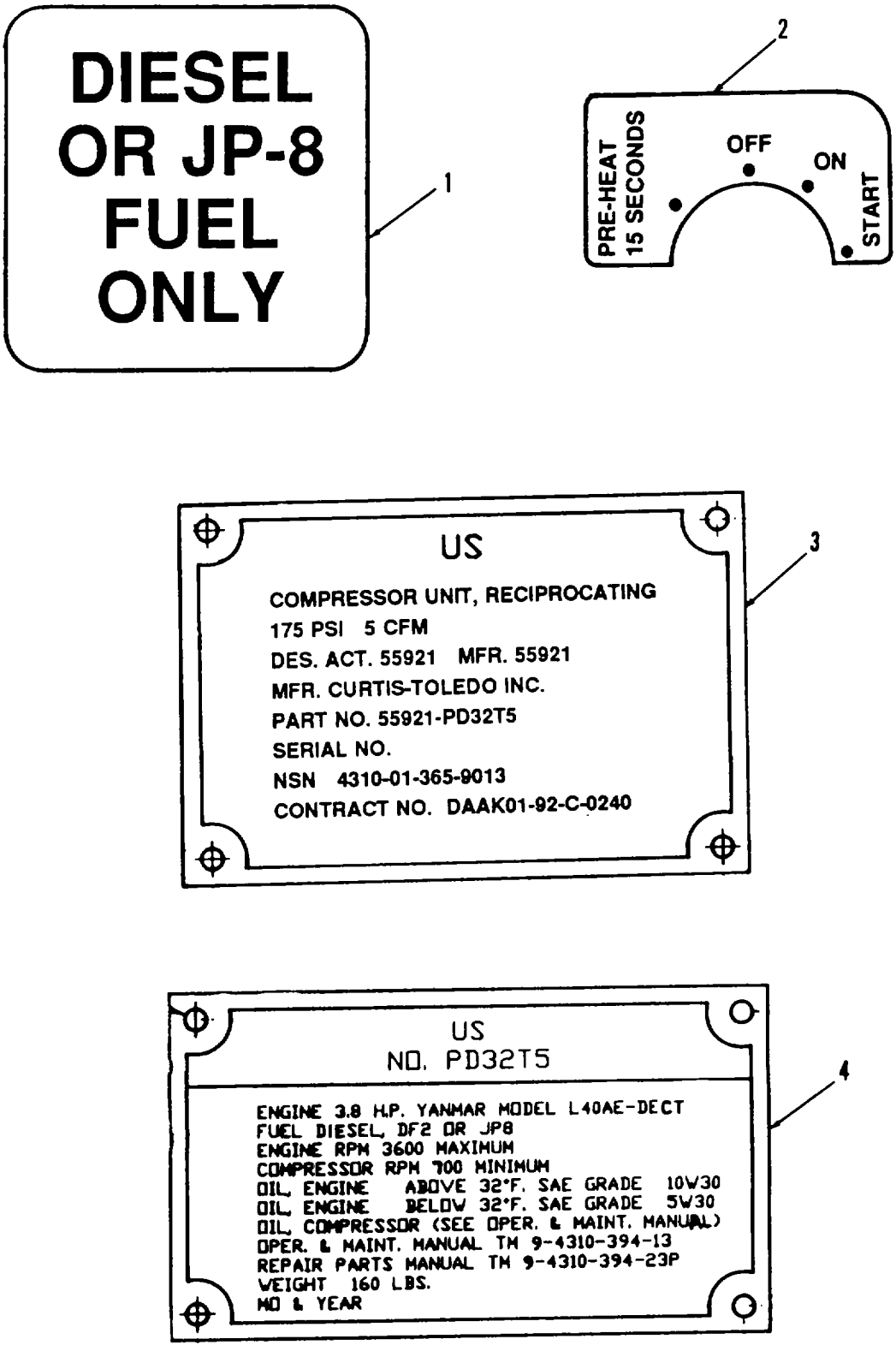


Figure 2-7. Decals and Instruction Plates. (Sheet 2 of 3)

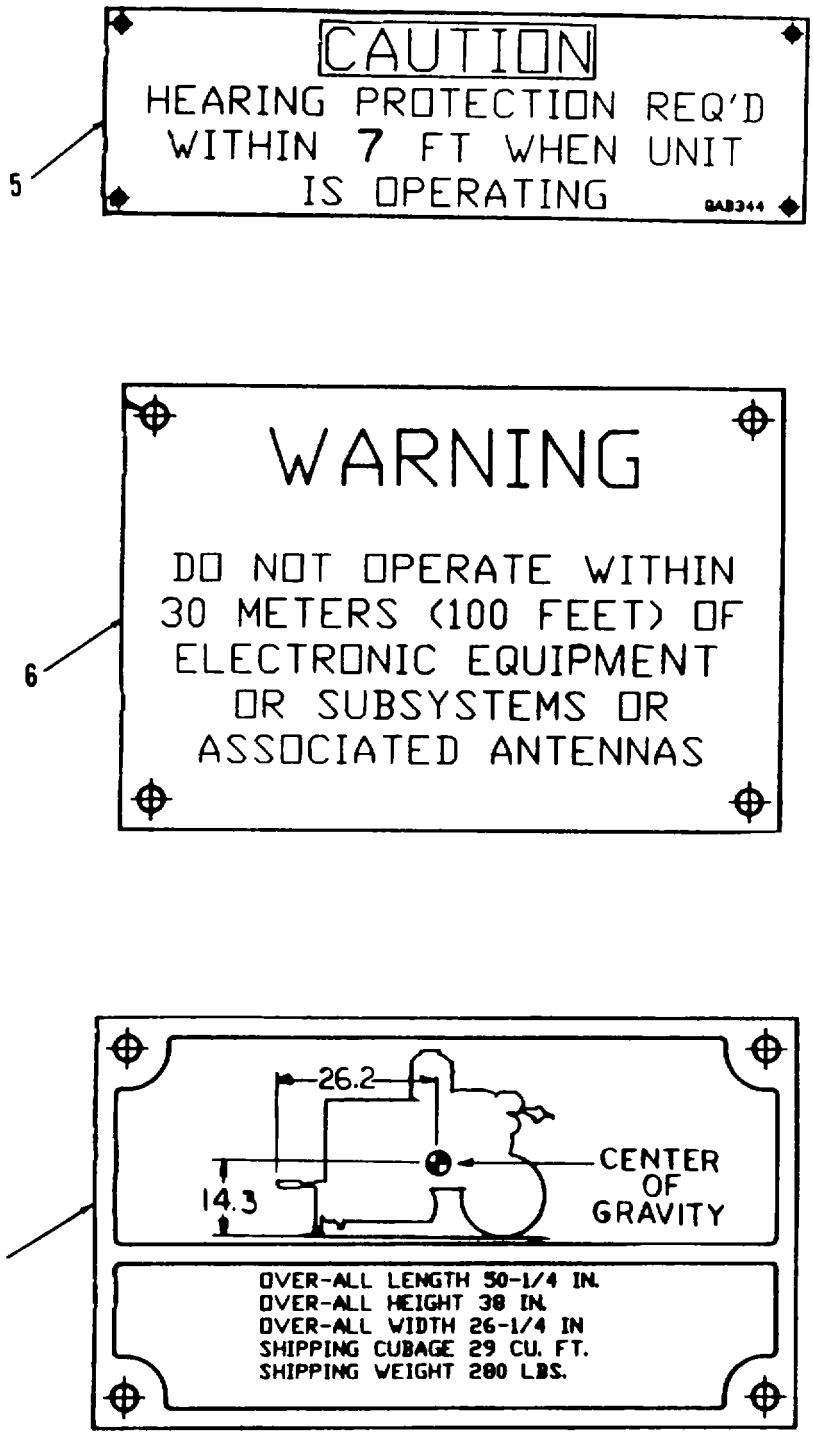


Figure 2-7. Decals and Instruction Plates. (Sheet 3 of 3)

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-12. OPERATION UNDER UNUSUAL WEATHER. The air compressor unit is designed to operate normally within a wide range of climatic conditions. However, some extreme conditions require special operating and servicing procedures to prevent undue loading and excessive wear on the equipment. These unusual conditions and the special steps to be performed are listed in the following paragraphs.

a. Operation in Extreme Cold. Cold weather causes the engine oil and the compressor oil to become quite thick. This can cause all of the internal components of the air compressor unit to resist any movement during starting of the unit in cold weather. To reduce this binding action, perform the following procedures before attempting to start the unit.

(1) Be sure to use proper engine oil required for cold weather operation of the engine. Refer to Lubrication Order LO 9-4310-394-12 for the correct type of oil to use in the temperatures you will be experiencing.

(2) Keep fuel tank full to prevent condensation. Condensation can freeze and clog the lines, filters, and injectors. Water in the fuel can also make the engine hard to start and may make the engine run very roughly.

NOTE

Before attempting to use the electric starter motor to start the engine in cold weather, be sure to check the battery. For cold starting of the engine, the battery must be able to supply a full 12 volts DC at a rating of 60 amps. If the battery is not able to supply this amount of electricity, the engine may not be able to be started in cold weather.

(3) (Refer to Figure 2-5). Hold the decompression lever (3) on the engine down and use the key switch (6) to run the electric starter motor to rotate the engine a few times to distribute oil inside the engine crankcase and in the compressor crankcase.

WARNING

Use of gasoline, paint thinner, or any other volatile liquid either as a fuel or as a starting aid can result in serious injury to operating personnel. Addition of highly volatile liquids put directly into engine could cause an explosion or fire. Use only diesel fuel or specified jet fuel to operate the air compressor unit.

CAUTION

Do not use more oil than specified as a starting agent or equipment damage could result. Too much oil could result in engine reversal. Should this occur, engine exhaust will be emitted from the air intake. Stop engine at once using speed control lever knob or decompression lever. The oil pump in the engine does not work in reverse and severe engine damage could result.

CAUTION

If rubber plug is not in place contaminants may enter engine and cause accelerated wear of internal parts. Keep rubber plug in rocker arm cover except when adding oil.

2-12. OPERATION UNDER UNUSUAL WEATHER. Continued.

a. Operation in Extreme Cold. Continued.

(4) (Refer to Figure 2-8.) Cold weather starting can be improved by the addition of engine oil in rocker arm cover. Remove rubber plug (1) of rocker arm cover and add five or six drops of engine oil before starting.
(5) Replace rubber plug (1) immediately after oil is added.
(6) Turn key (2) in key switch to preheat position and hold key there for 30 seconds.
(7) Release key (2) and allow it to return to OFF position.
(8) Start the engine immediately as described in paragraph 2-9.

b. Operation in Extreme Heat.

(1) Protect air compressor unit from direct heat of the sun.
(2) Make sure oil is maintained on the top oil level mark.
(3) If overheating occurs in extreme conditions, shut down engine immediately. If possible protect air compressor unit from direct heat or the sun.
(4) Check the engine air cleaner element frequently. If it appears dirty, contact unit support for a replacement air cleaner element.

c. Operation in Sandy or Dusty Areas. Dusty and sandy conditions can seriously affect the operation of the air compressor unit. When operating the air compressor unit in these dusty and sandy conditions, perform the following steps.

(1) Accumulation of dust or sand in the filters of the diesel engine will cause the air compressor to overheat and damage the equipment. Replace engine air filter and all other areas of dust and sand accumulation frequently. In extreme conditions, daily cleaning of filter may be necessary.
(2) Accumulation of dust or sand in the air intake filter of the air compressor unit can also cause the air compressor to overheat and to fail to compress air efficiently.
(3) Check engine oil and the air compressor oil more often to make sure oil level of each component is maintained at the full level.
(4) During the handling of fuel, while performing any PMCS procedure, or while refueling, be sure that sand or dust is not allowed to enter fuel or lubrication system.

d. Operation in Salt Water Areas. The nature of salt presents serious corrosion problems. Frequent cleaning is necessary during which all exposed surfaces should be thoroughly sprayed, rinsed, or sponged with fresh water to remove salt.

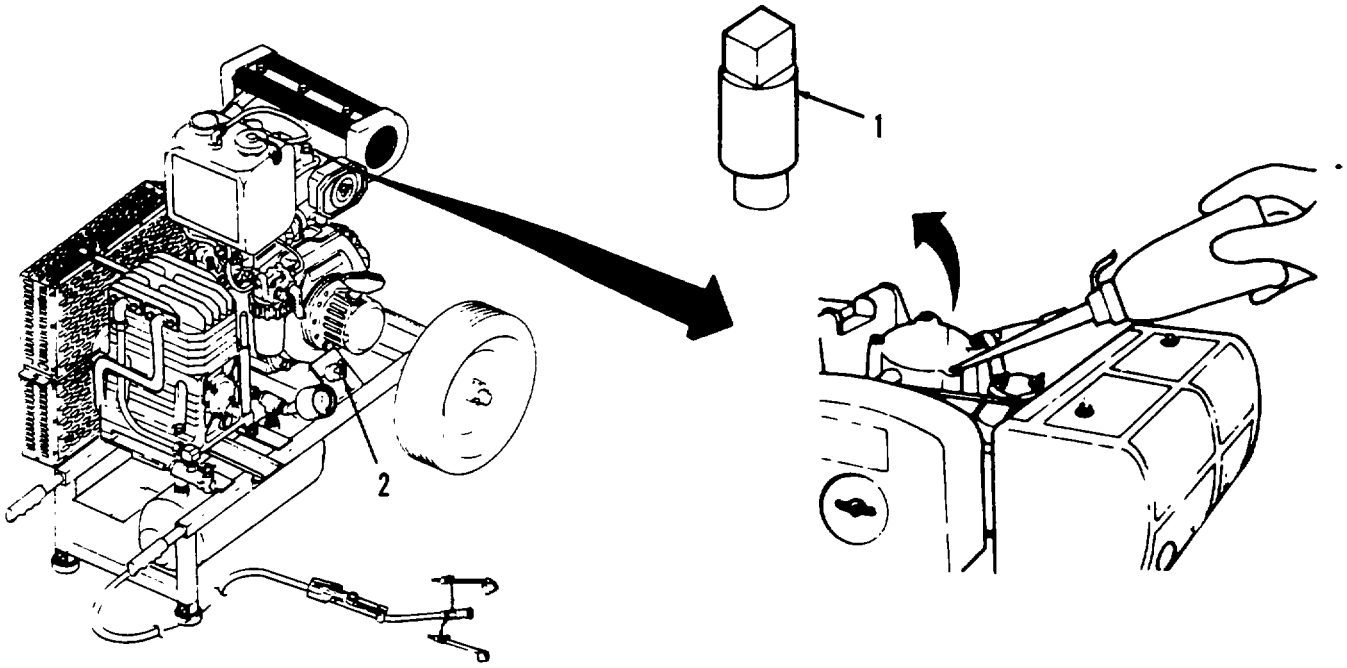


Figure 2-8. Cold Weather Starting Aid.

2-13. EMERGENCY PROCEDURES. Emergency shutdown of the air compressor unit is done by turning off the diesel engine as soon as possible. (Refer to Figure 2-5).

CAUTION

Do not stop engine with the decompression lever as engine damage may result. If the engine cannot be stopped by the speed control knob (1), then move the fuel valve (4) to the closed position to stop the flow of fuel to the engine.

Loosen speed control knob (1) and quickly move speed control knob all the way upward to the STOP position and tighten knob.

CHAPTER 3

OPERATOR MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

3-1. GENERAL. Refer to Lubrication Order LO 9-4310-394-12 for the for proper lubrication procedures.

Section II. OPERATOR TROUBLESHOOTING PROCEDURES

3-2. INTRODUCTION. This section contains troubleshooting information for locating and correcting most of the operating troubles which may develop in the air compressor unit. Each malfunction for an individual component, unit, or system is followed by a list of tests or inspections which will help you to determine corrective actions to take. You should perform the tests/inspections and corrective actions in the order listed.

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.

Table 3-1 lists the common malfunctions which you may find during the operation or maintenance of the I air compressor unit or its components. You should perform the tests/inspections and corrective actions in the order listed.

3-3. MALFUNCTION INDEX.

MALFUNCTION **PAGE NO.**

3-4. OPERATOR TROUBLESHOOTING. Refer to Table 3-1 for the operator troubleshooting procedures authorized for the air compressor unit.

Table 3-1. Operator Troubleshooting.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

1. STARTING HANDLE FAILS TO PULL.

Step 1. Check decompression lever.

Push decompression lever down to release engine compression. (Refer to para 2-9).

Step 2. Notify unit maintenance.

2. STARTING HANDLE PULLS BUT ENGINE FAILS TO START.

Step 1. Check for low fuel supply. Check for fuel in fuel tank and in fuel filter.

Fill fuel tank, if necessary.

Step 2. Check three way fuel valve.

Open fuel valve by pointing arrow on handle toward belt guard. (Refer to para 2-9).

Step 3. Check fuel filter handle.

Open fuel filter handle by placing in down position. (Refer to para 2-9).

Step 4. Check position of speed control lever.

Move to START position (refer to para 2-9).

Step 5. Check the starting procedure under prevailing conditions. (Refer to Chapter 2, Section III or IV.)

If the starting procedures have been performed correctly but engine still fails to start, notify unit maintenance.

3. UNEVEN RUNNING OR FREQUENT STALLING.

Step 1. Check for closed three way fuel valve or fuel filter handle.

Refer to MALFUNCTION 2, Steps 2 and 3.

Step 2. Check for low fuel supply. Check for fuel in fuel tank and in fuel filter.

Fill fuel tank, if necessary.

If fuel tank is full, notify unit maintenance.

4. LACK OF POWER.

Step 1. Check position of speed control lever knob.

Move to START position to increase engine speed (refer to para 2-9).

Table 3-1. Operator Troubleshooting.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 2. Check for low fuel supply. Check for fuel in fuel tank and in fuel filter.

Fill fuel tank, if necessary.

Step 3. Check for clogged air cleaner element.

If air cleaner is dirty clean element as much as possible.

If air cleaner element is not cleanable, notify unit maintenance to replace element.

5. ENGINE STOPS RUNNING.

Step 1. Check for low fuel supply. Check for fuel in fuel tank and in fuel filter.

Fill fuel tank, if necessary.

Step 2. Check for clogged air cleaner element.

If air cleaner is dirty clean element as much as possible.

If air cleaner element is not cleanable, notify unit maintenance to replace element.

6. AIR PRESSURE VOLUME IS TOO LOW.

Step 1. Check for low engine speed.

Move speed control lever knob to START position to increase engine speed (refer to para 2-9).

Step 2. Check for open unloader valve.

Put lever on unloader valve into horizontal position.

Step 3. Check for open safety valve.

Check that safety valve is closed by pulling ring out on safety valve and allowing valve to reseat.

Step 4. Check for leaking air hose.

If air hose is leaking, notify unit maintenance.

Step 5. Check for lack of engine power.

Refer to MALFUNCTION 4.

Section III. OPERATOR MAINTENANCE PROCEDURES

3-5. GENERAL. This section contains the maintenance procedures which the Maintenance Allocation Chart authorizes the operator to perform. If the air compressor unit still does not operate properly after performing these maintenance procedures, contact unit maintenance for assistance.

3-6. SERVICING FUEL INLET STRAINER. To service the fuel inlet strainer, perform the following steps. (Refer to Figure 3-1.)

a. Removal

(1) Remove fuel tank cap (1) from fuel tank (2).
(2) Remove fuel inlet strainer (3) from fuel tank (2).

b. Servicing.

(1) Remove any debris that has collected inside the fuel inlet strainer (3).
(2) If fuel inlet strainer cannot be cleaned, contact unit maintenance for a replacement strainer.

c. Installation.

(1) Install fuel inlet strainer (3) into fuel tank (2).
(2) Install fuel tank cap (1) onto fuel tank (2).

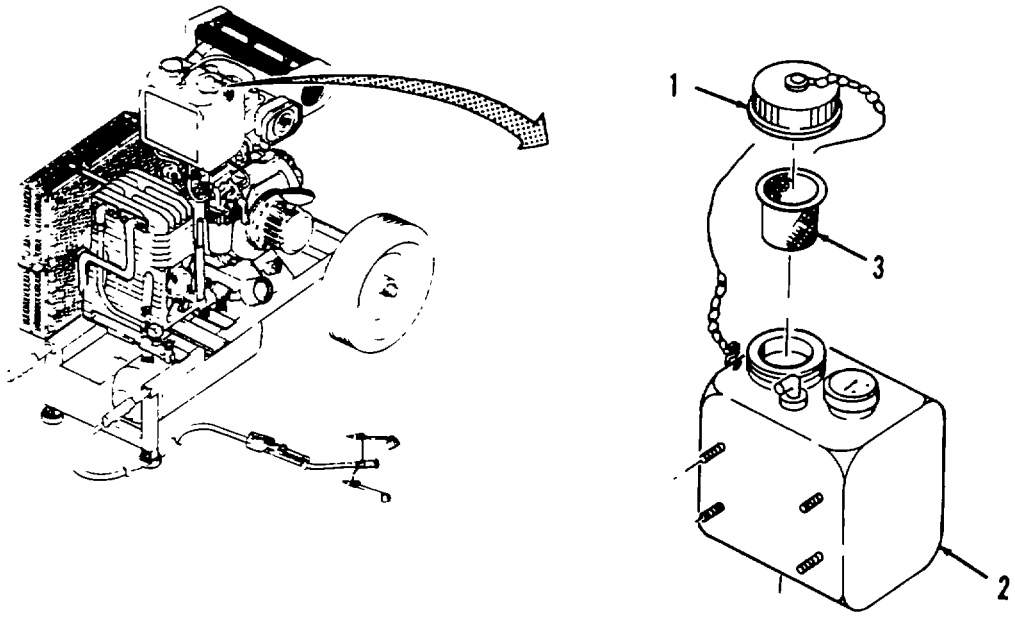


Figure 3-1. Servicing Fuel Inlet Strainer.

3-7. SERVICING ENGINE AIR CLEANER FILTER ELEMENT. To service the engine air cleaner filter element, perform the following steps. (Refer to Figure 3-2.)

a. Removal

(1) Remove wing nut (1) and washer (2).
(2) Remove air cleaner cover (3) from air cleaner assembly (4).
(3) Remove air cleaner element (5) from air cleaner assembly (4).

b. Servicing.

(1) Remove dirt and debris from inside surfaces of air cleaner housing.
(2) If element cannot be cleaned, contact unit maintenance for a replacement element.

c. Installation.

(1) Place air cleaner element (5) into air cleaner assembly (4).
(2) Place air cleaner cover (3) onto air cleaner assembly (4) and install washer (2) and wing nut (1).

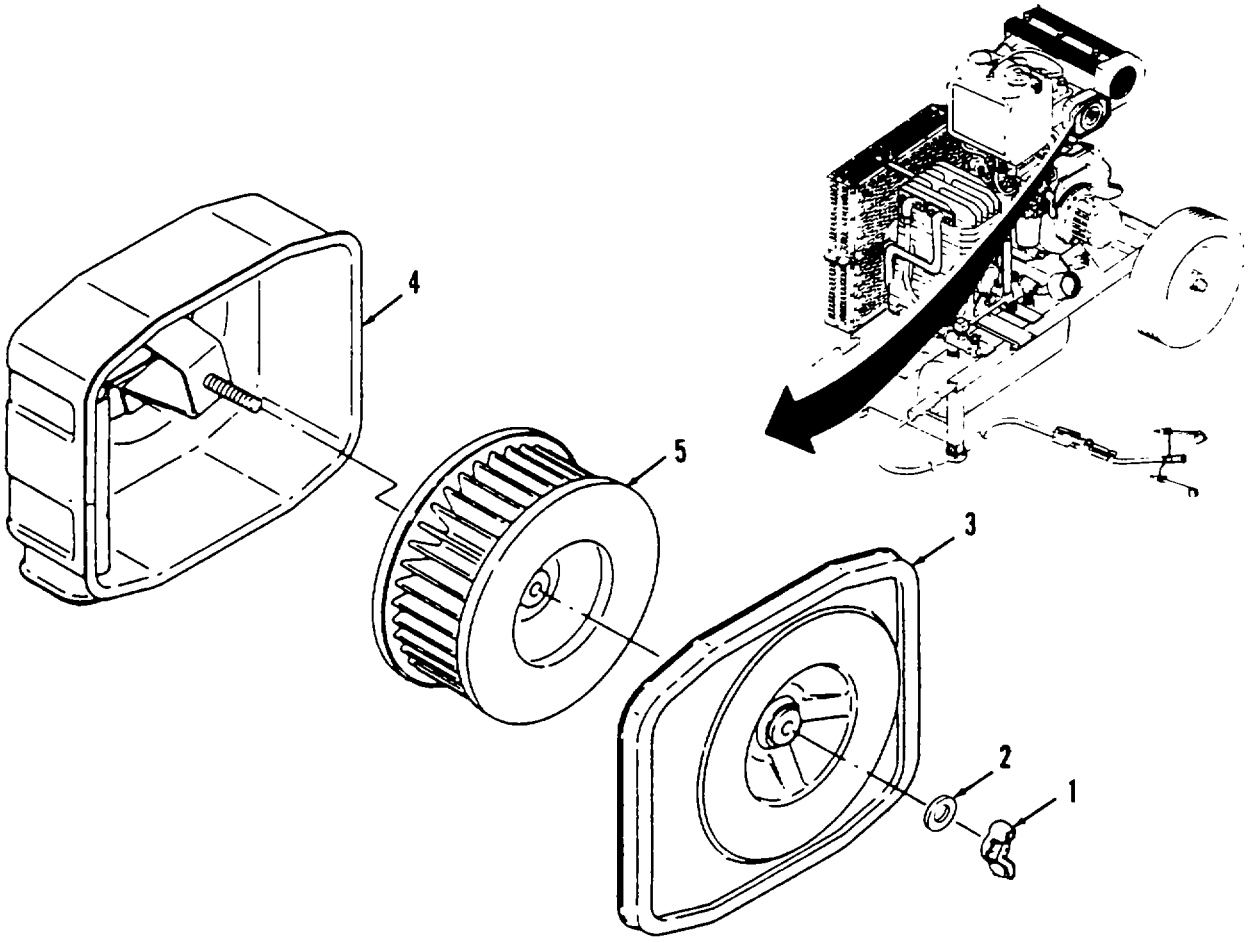


Figure 3-2. Servicing Air Cleaner Element.

CHAPTER 4

UNIT MAINTENANCE INSTRUCTIONS

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

4-1. COMMON TOOLS AND EQUIPMENT. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

4-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT. No special tools are required for maintenance of the equipment. Test, Measurement, and Diagnostic Equipment (TMDE) and Support Equipment include standard equipment found in any maintenance shop.

4-3. REPAIR PARTS. Repair parts are listed and illustrated in the Repair Parts and Special Tools List (RPSTL), TM 9-4310-394-23P, covering unit and direct support maintenance for this equipment.

Section II. UNIT SERVICE UPON RECEIPT OF EQUIPMENT

4-4. SITE AND SHELTER REQUIREMENTS. Before beginning set up of the air compressor unit, be sure that you have selected the proper site and shelter for the unit as described in the following paragraphs.

WARNING

CARBON MONOXIDE (EXHAUST GAS) CAN KILL YOU

Carbon monoxide is without color or smell, but can kill you. Breathing air with carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, a sleepy feeling, and coma. Heavy exposure can cause brain damage or death. Carbon monoxide gas occurs in the exhaust fumes of internal combustion engines, and can become dangerously concentrated under conditions of no air movement. To ensure your safety and that of other maintenance personnel, always observe the following precautions:

- DO NOT operate engine in a closed place unless the place has a lot of moving air. Engine should be kept at least five feet away from buildings and other equipment during operation.
- DO NOT idle engine for long periods without proper ventilation.
- BE ALERT at all times for exhaust odors and exposure symptoms. If either is present, IMMEDIATELY VENTILATE personnel compartments; remove affected crew to fresh air; keep warm; if necessary, give artificial respiration. FOR ARTIFICIAL RESPIRATION REFER TO FM 21-11.
- BE AWARE; the field protective mask for chemical-biological-radiological (CBR) protection will not protect you against carbon monoxide poisoning.

4-4. SITE AND SHELTER REQUIREMENTS. Continued.

a. Siting. Select an installation site for the air compressor unit that is relatively level. Be very sure that the site you have selected will provide adequate air circulation around the unit to prevent dangerous accumulation of poisonous exhaust gases from the engine.

b. Shelter Requirements. Operation of the air compressor unit within a shelter is not recommended since the collection of exhaust gases present extremely dangerous hazards to operating personnel.

4-5. SERVICE UPON RECEIPT. The following paragraphs contain the procedures for unloading, unpacking, and general checking of the unpacked air compressor unit.

a. Unloading. The air compressor unit is packaged in a container designed for shipment and handling with the unit in an upright position. The base of the container is constructed as a shipping pallet with provisions for the insertion of the tongs of a fork-lift. The unit may be lifted by fork-lift, crane, or sling. To unload the air compressor unit, perform the following steps.

(1) Remove all blocking and tie downs that may have been used to secure the container to the carrier.

WARNING

Do not allow the unit to swing while suspended from a lifting device. Failure to observe this warning may result in injury to personnel and damage to the equipment.

CAUTION

Use care in handling to avoid damage to the air compressor unit. If an overhead lifting device must be used, use an appropriate sling so that the weight of the unit is supported by the base of the shipping container.

(2) Use a forklift truck or other suitable material handling equipment to remove the unit from the carrier.

b. Unpacking.

CAUTION

To protect the air compressor and prevent damage, the air compressor should be left packaged until it is moved to the location where it is to be installed.

NOTE

The shipping container is of such a design that it may be retained for re-use for mobility purposes if frequent relocation of the air compressor is anticipated.

(1) Remove outer crating material.
(2) Remove the cushioning around the top of the unit and retain, if re-use is anticipated.

(3)Remove any preservation barrier by tearing around the bottom of the cabinet.

(4) Remove the technical publications envelope and accessory sack that are taped to the unit and put them in a safe place.

(5) Remove and retain the pallet and crate if re-use is anticipated.

(6) Put the unit onto floor in the desired position.

c. Checking Unpacked Equipment. To check the unpacked air compressor unit, perform the following steps.

(1) Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report damage on DD Form 6, Packaging Improvement Report.

(2) Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions as defined within DA PAM 738-750. See that all components of end item and basic issue items are with the equipment.

(3) Check to see whether the equipment has been modified.

4-6. INSTALLATION INSTRUCTIONS. Because the air compressor unit is a self contained operating system, it requires no installation.

4-7. PRELIMINARY SERVICING AND ADJUSTING OF EQUIPMENT. The air compressor unit must be filled with fuel and the V-belt must be adjusted before the unit can be put into operation. To fill with fuel, refer to paragraph 2-7. To adjust the V-belt, perform the following procedures.

(1) (Refer to Figure 4-1). Remove four screws (1), four lock washers (3), and four flat washers (2).

(2) Remove two screws (4), two lock washers (5), and two flat washers (6).

(3) Remove nut (7), screw (8), bracket (9), and bracket (10).

(4) Remove top of belt guard assembly (11) from unit.

(5) (Refer to Figure 4-2). Check that the deflection of the V-belt (3) is 1/4 in. as indicated in the figure. If deflection is incorrect, change deflection by adjusting the engine take-up screw by performing the following procedures.

(a) Loosen four nuts (1) which hold engine (2) onto chassis.

(b) Adjust take-up screw (4) until 1/4 in. deflection is measured on the V-belt (3).

(c) Tighten four nuts (1) which hold the engine (2) to the chassis.

(6) (Refer to Figure 4-1). Place top of belt guard assembly (11) onto unit and install two flat washers (6), two lock washers (5), and two screws (4).

(7) Install bracket (10), bracket (9), screw (8), and nut (7).

(8) Install four flat washers (2), four lock washers (3), and four screw (1).

4-7. PRELIMINARY SERVICING AND ADJUSTING OF EQUIPMENT. Continued.

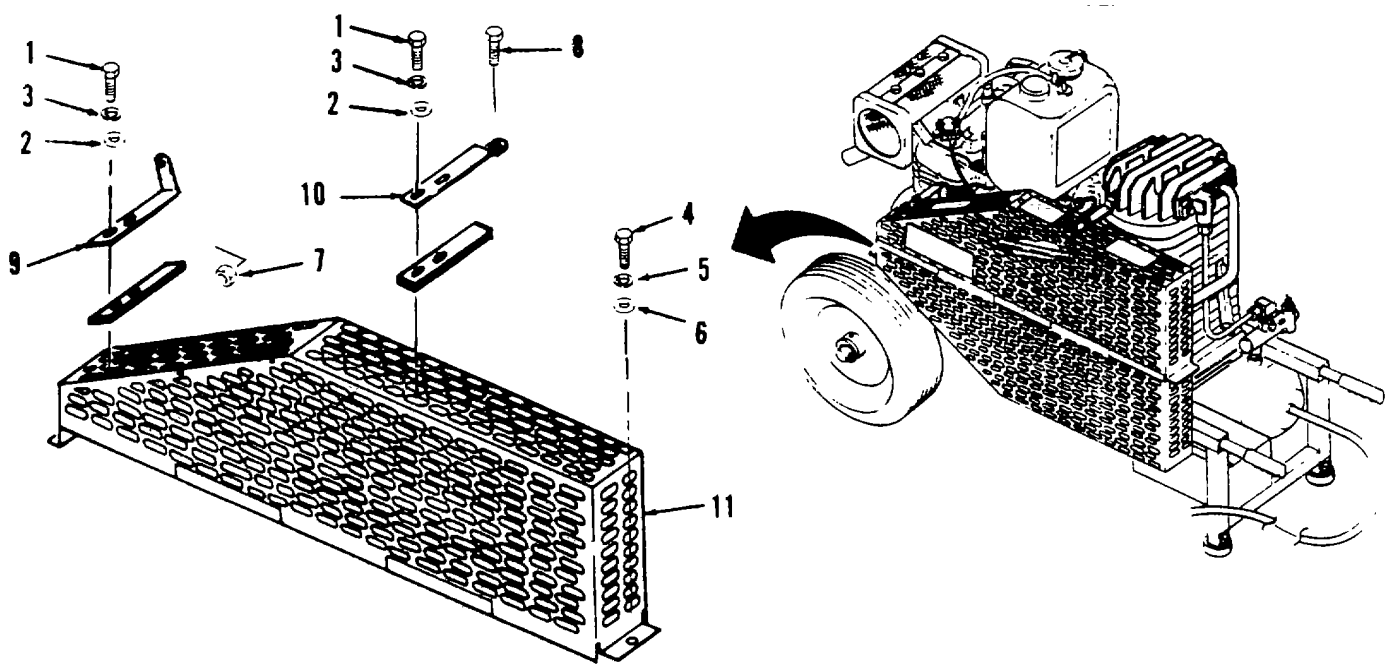


Figure 4-1. Belt Guard Removal for V-Belt Adjustment.

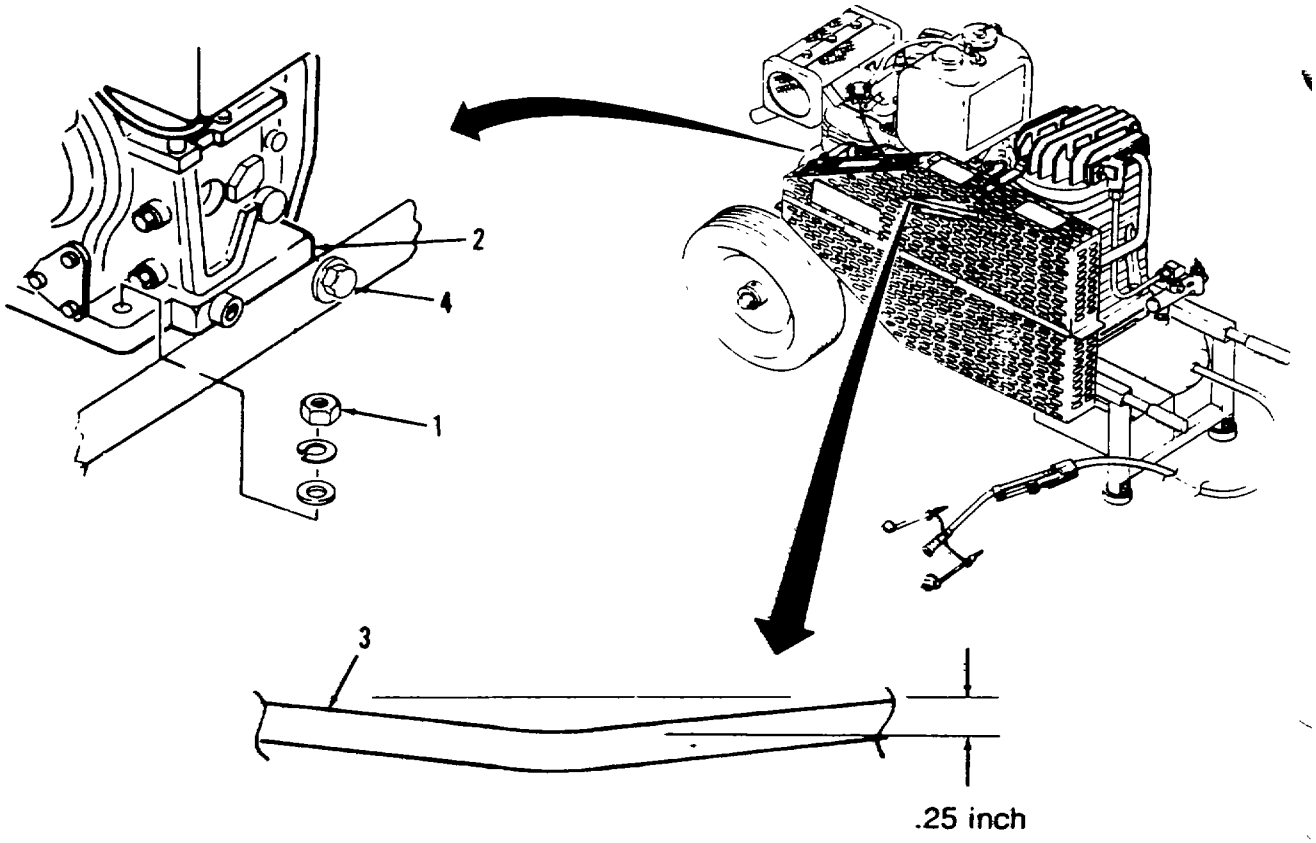


Figure 4-2. V-Belt Adjustment

Section III. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

4-8. INTRODUCTION. Systematic, periodic, Preventive Maintenance Checks and Services (PMCS) are essential to ensure that the air compressor unit is ready for operation at all times. The purpose of a preventive maintenance program is to discover and correct defects and deficiencies before they can cause serious damage or complete failure of the equipment. Any effective preventive maintenance program must begin with the indoctrination of operators to report all unusual conditions noted during daily checks or actual operation to unit maintenance. All defects and deficiencies discovered during maintenance inspections must be recorded, together with corrective action taken, on DA Form 2404 (Equipment Inspection and Maintenance Worksheet).

A schedule for unit preventive maintenance inspection and service should be established immediately after installation of the air compressor unit. A quarterly interval, equal to three calendar months or 250 hours of operation (whichever occurs first) is recommended for usual operating conditions. When operating under unusual conditions, such as a very dusty or sandy environment, it may be necessary to reduce the interval to monthly or even less if conditions are extreme.

Table 4-1 lists the unit preventive maintenance checks and services that should be performed at quarterly (or otherwise established) intervals. The PMCS items in the table have been arranged and numbered in a logical sequence to provide for greater personnel efficiency and least amount of required maintenance downtime.

4-9. PMCS TABLE. Refer to Table 4-1. for the unit Preventive Maintenance Checks and Services required for the air compressor unit. A description of the columns in the table is included in the following paragraphs.

a. Item Number Column. This column is a list of every check and service task in the PMCS. They are numbered in logical order of performance regardless of the interval. This column is to be used 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.

b. Interval Column. This column is subdivided into three categories; M-Monthly, Q-Quarterly, and A-Annually. A dot in the appropriate column signifies the interval at which a specific item needs to be checked or serviced.

c. Item To Be Inspected Column. This column provides the name of the item to be checked or serviced.

d. Procedures Column. This column describes the procedures to check or service an item. It includes all the information required to perform the checks or services. It indicates tolerances where applicable and adjustment limits where required.

Table 4-1. Unit Preventive Maintenance Checks and Services (PMCS).

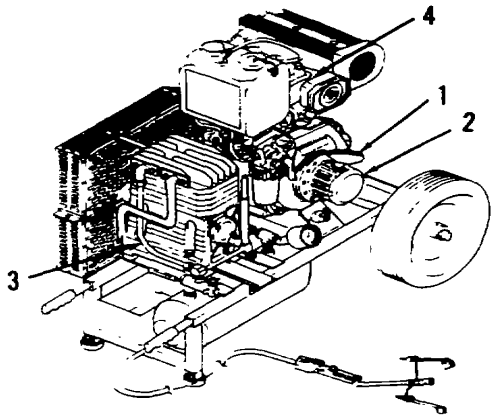
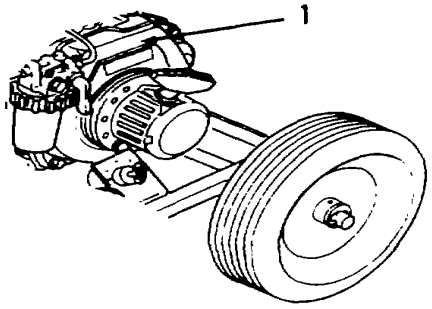
Item No.	Interval M	Q	A	Item to be Inspected	Procedures
1			•	Discharge Tube	Inspect the discharge tube (3) for cracks and air leaks. Check fittings on tube for cracks and leaks.
2			•	Air Intake Pipe	• Inspect engine air intake pipe (4) for loose or missing mounting hardware. • Check for or damaged air intake pipe gasket.
3			•	Recoil Starter	• Pull starter handle (1) and check that recoil starter (2) engages and rotates engine. • Check that recoil starter (2) retracts starter handle when starter rope handle (1) is released. 
4			•	Flywheel Cover	• Inspect engine flywheel cover (1) for loose or missing mounting hardware. • Check flywheel cover for cracked or damaged surfaces. 

Table 4-1. Unit Preventive Maintenance Checks and Services (PMCS).

Item No.	Interval M	Q	A	Item to be Inspected	Procedures
5			•	Starter	Check that starter engages with engine to start engine properly. During the starting procedure, listen for any grinding noises which may indicate an internal problem with the starter.
6		•		Lube Oil Strainer	• Remove bolt (1), O-ring (2) and lube oil strainer (3). • Clean any dirt and debris that may have collected in the lube oil strainer (3). • Check lube oil strainer (3) for damaged screen or cracked O-ring (2). If repairs are required, refer to paragraph 4-31. • Install lube oil strainer (3), O-ring (2) and bolt (1).

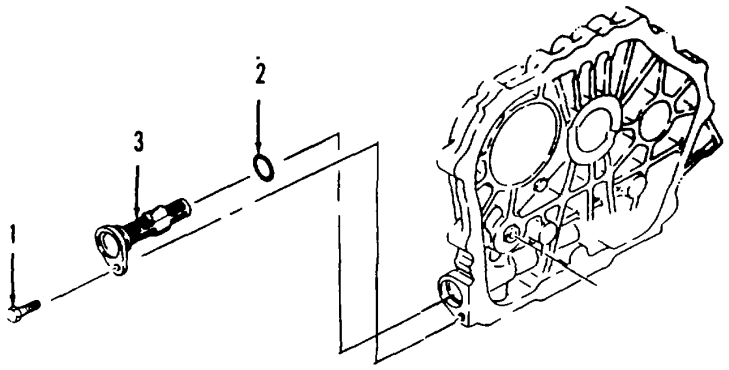


Table 4-1. Unit Preventive Maintenance Checks and Services (PMCS). Continued.

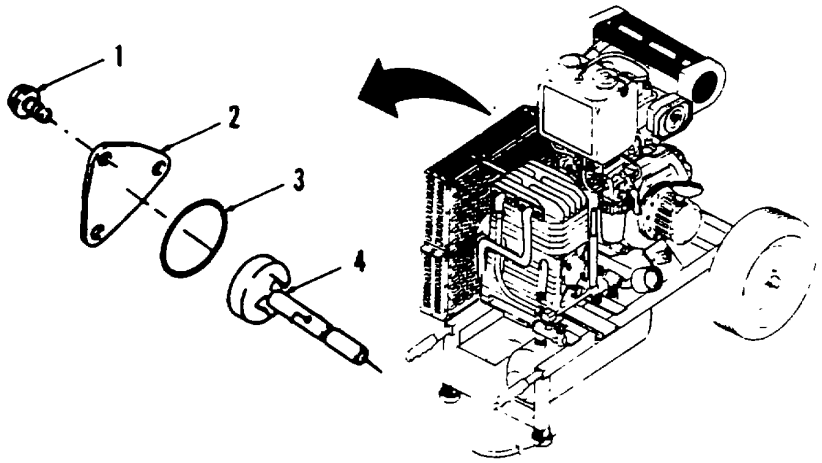
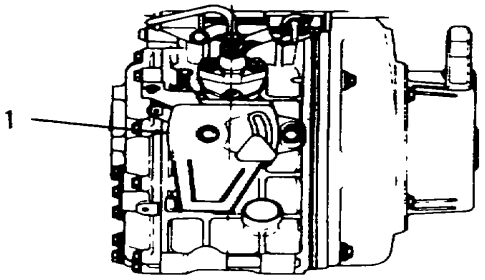
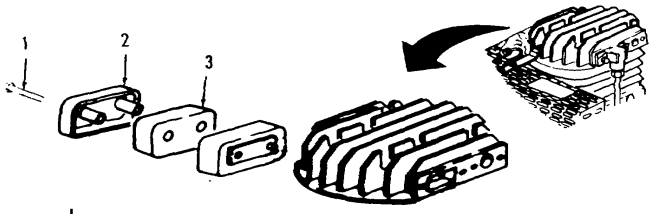
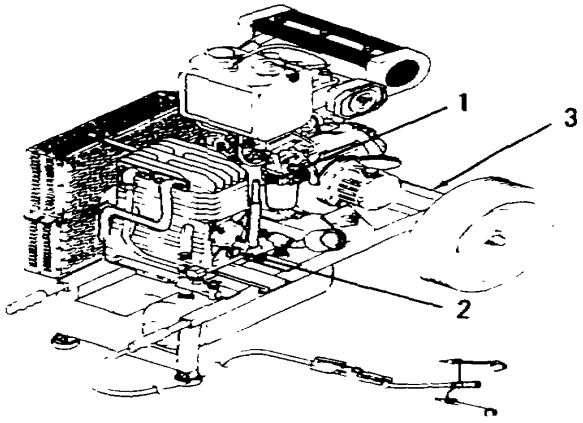
Item No.	Interval M	Q	A	Item to be Inspected	Procedures
7			•	Lube Oil Pump	• Remove belt guard assembly per para. 4-15. • Remove three screw (1), cover (2), O-ring (3), from lube oil pump (4). Discard O-ring (3). • Check lube oil pump (4) for damage. • Install new O-ring (3), cover (2), and three screws (1). • Install belt guard assembly per para. 4-15.
					
8			•	Regulator Bracket	• Check regulator bracket assembly (1) for loose or missing hardware. • Inspect for damaged or deformed springs.
					
9			•	Compressor Flywheel	Check compressor flywheel for loose set screw. Verify that the flywheel is completely engaged with the compressor crankshaft. Inspect pulley groove for excessive wear.

Table 4-1. Unit Preventive Maintenance Checks and Services (PMCS).

Item No.	Interval M	Q	A	Item to be Inspected	Procedures
10			•	Intercooler Tube	Inspect Intercooler tube for cracks and for air leaks when unit is pressurized. Check for collapsed or severely bent tubing. 
11			•	Filter Assembly	• Remove two screws (1). • Remove filter cover (2) and filter (3). • Inspect filter (3) for clogging. • Install filter (3), filter cover (2), and two screws (1).
12			•	Oil Filler Breather	• Check missing or broken oil filler (1) on compressor crankcase and examine breather for clogging.
13			•	Sight Glass	Inspect sight glass (2) for broken glass and for oil leakage from compressor crankcase.
14			•	Chassis Frame	Check for any deformed metal tubing or other metal chassis frame (3) parts. Check that axles for wheel are not bent. 

Section IV. UNIT TROUBLESHOOTING PROCEDURES.

4-10. INTRODUCTION. This section contains troubleshooting information for locating and correcting most of the operating troubles which may develop in the air compressor unit. Each malfunction for an individual component, unit, or system is followed by a list of tests or inspections which will help you to determine corrective actions to take. You should perform the tests/inspections and corrective actions in the order listed.

In general, engine exhaust is an excellent way to tell what kind of condition your air compressor unit is in. Exhaust color of black, or bluish-white, smoke is normal before the engine warms up fully. As the engine reaches normal operating temperature, the exhaust becomes clear or light blue, provided there are no problems. If the exhaust does not clear up, a problem is indicated.

When exhaust color is abnormal, turn off the engine immediately and notify your supervisor. Use Table 4-2 as a guideline to exhaust symptoms.

Table 4-2. Troubleshooting by Exhaust Color.

EXHAUST COLOR:	LIKELY INDICATES:
Clear or light bluish condition	Normal operating
Continuous black smoke	Overloading Seizure of moving part Incorrect combustion
Continuous bluish-white smoke	Lubricating oil is being consumed

4-11. UNIT TROUBLESHOOTING. 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.

Table 4-3 lists the common malfunctions which you may find during the operation or maintenance of the air compressor unit. You should perform the tests/inspections and corrective actions in the order listed.

WARNING

CARBON MONOXIDE (EXHAUST GAS) CAN KILL YOU

Carbon monoxide is without color or smell, but can kill you. Breathing air with carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, a sleepy feeling, and coma. Heavy exposure can cause brain damage or death. Carbon monoxide gas occurs in the exhaust fumes of internal combustion engines, and can become dangerously concentrated under conditions of no air movement. To ensure your safety and that of other maintenance personnel, always observe the following precautions:

- DO NOT operate engine in a closed place unless the place has a lot of moving air. Engine should be kept at least five feet away from buildings and other equipment during operation.
- DO NOT idle engine for long periods without proper ventilation.
- BE ALERT at all times for exhaust odors and exposure symptoms. If either is present, IMMEDIATELY VENTILATE personnel compartments; remove affected crew to fresh air; keep warm; if necessary, give artificial respiration. FOR ARTIFICIAL RESPIRATION REFER TO FM 21-11.
- BE AWARE; the field protective mask for chemical-biological-radiological (CBR) protection will not protect you against carbon monoxide poisoning.

THE BEST DEFENSE AGAINST CARBON MONOXIDE POISONING IS GOOD VENTILATION.

NOTE

Before you use this table, be sure you have performed all applicable operating checks.

Table 4-3. Unit Troubleshooting.

MALFUNCTION **TEST OR INSPECTION** **CORRECTIVE ACTION**
1. STARTING HANDLE PULLS BUT ENGINE FAILS TO START.
Step 1. Check for air in fuel pipe to injection nozzle. Remove fuel injection pipe from fuel injection nozzle. Push decompression lever down. Hold pipe in same hand as decompression lever. Pull the recoil starter several times with no compression until fuel is ejected from pipe. Reconnect injection pipe to injection nozzle.

Table 4-3. Unit Troubleshooting. Continued.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 2. Check for air in fuel lines.

Refer to MALFUNCTION 7.

Step 3. Check for clogged fuel filter element.

Refer to para. 4-19 and check fuel filter element for clogging. If element is clogged, replace it.

If element is not clogged, notify direct support maintenance.

Step 4. Check for clogged fuel lines.

Refer to para. 4-17 and disconnect/check that all fuel lines are clear and open.

If fuel lines are not clogged, notify direct support maintenance.

2. EXCESSIVE LUBRICATION OIL CONSUMPTION.

Step 1. Check for leakage at oil drain plug or oil filler cap.

Tighten oil drain plug or oil filler cap.

Step 2. Check for a black smoky exhaust and oil in exhaust discharge.

Notify direct support maintenance.

3. RECOIL STARTER ROPE DOES NOT UNWIND FREELY.

Step 1. Visually inspect rope for fraying, wear, or jamming.

Replace frayed or worn rope. (Refer to para 4-29.) Step 2. Check recoil spring for jamming.

Replace defective recoil starter. (Refer to para 4-29.)

4. RECOIL STARTER ROPE DOES NOT REWIND.

Visually check if rope and mechanism are binding.

Replace starter rope of recoil starter. (Refer to para 4-29.)

5. ENGINE CRANKSHAFT DOES NOT TURN AS THE ROPE IS PULLED.

Remove recoil starter and inspect cam.

Replace recoil starter (Refer to para 4-29.)

Table 4-3. Unit Troubleshooting.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

6. AIR COMPRESSOR AIR VOLUME IS TOO LOW.

Step 1. Check for clogged air compressor filter.

Replace air compressor filter (Refer to paragraph 4-36).

Step 2. Check for loose fittings or cracked tubes on air receiver tank, discharge tube, or intercooler tube.

Tighten all loose fittings and replace any defective tubing.

Step 3. Check for loose V-belt.

Refer to para. 4-7 and adjust V-belt.

If V-belt does not need adjusting, notify direct support maintenance.

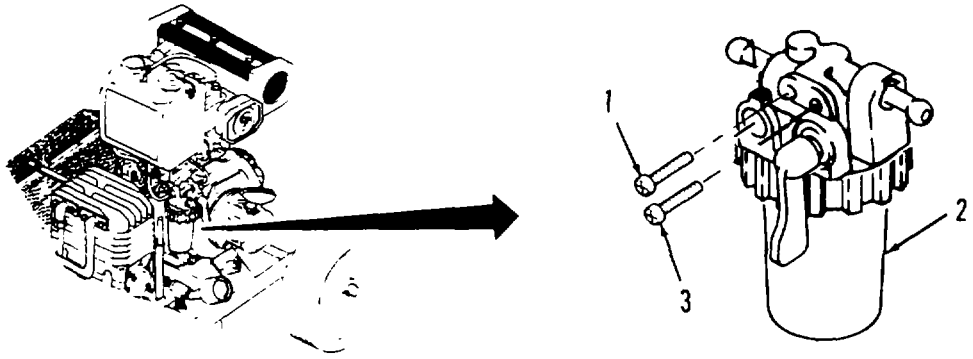
7. ENGINE RUNS ROUGHLY.

Check for air in fuel lines.

WARNING

Do not let fuel drip onto any surfaces of the air compressor unit. Fuel can explode and severely injure or kill operating personnel. Have a container ready to catch any leaking fuel before performing the next procedure.

Loosen screw (1) on fuel filter (2) and let fuel leak from loosened screw until no air bubbles appear in draining fuel. Repeat for screw (3).



Section V. UNIT MAINTENANCE PROCEDURES

4-12. INTRODUCTION. Maintenance procedures at unit level of maintenance include as necessary: removal, cleaning and inspection, repair or replacement, and installation. Unless the procedure requires special resources or tools, more than one maintenance person or specific equipment conditions, these are not listed for each maintenance procedure. They are listed only for those procedures that require them.

4-13. INFORMATION PLATES AND DECALS REPLACEMENT.

This Task Covers:
a. Removal **b. Cleaning** **c. Installation**

INITIAL SETUP

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)
Drill, Hand Portable (Appendix B, Item 2)
Drill Bits (Appendix B, Item 5)
Riveter, Blind, Hand (Appendix B, Item 4)

Material's/Parts Required
Rivets, 97517A015 (Appendix H, Item 1)

Equipment Condition
Air compressor unit shut down and cool.

a. Removal (Refer to Figure 4-3).

(1) Drill out four .125 in. dia. rivets (1) that holds information plate (2) onto unit. Repeat for other information plates as required.

(2) Remove information plate (2) from unit.

(3) Use a scraper to remove decals (3) or (4) from unit.

b. Cleaning.

Remove all build up of dirt, oil, and debris from all surfaces.

c. Installation.

(1) Remove protective backing from new decals (3) or (4) and carefully position and install decals onto unit.

(2) Place information plate (2) into position on unit and install four rivets (1). Repeat for other information plates as required.

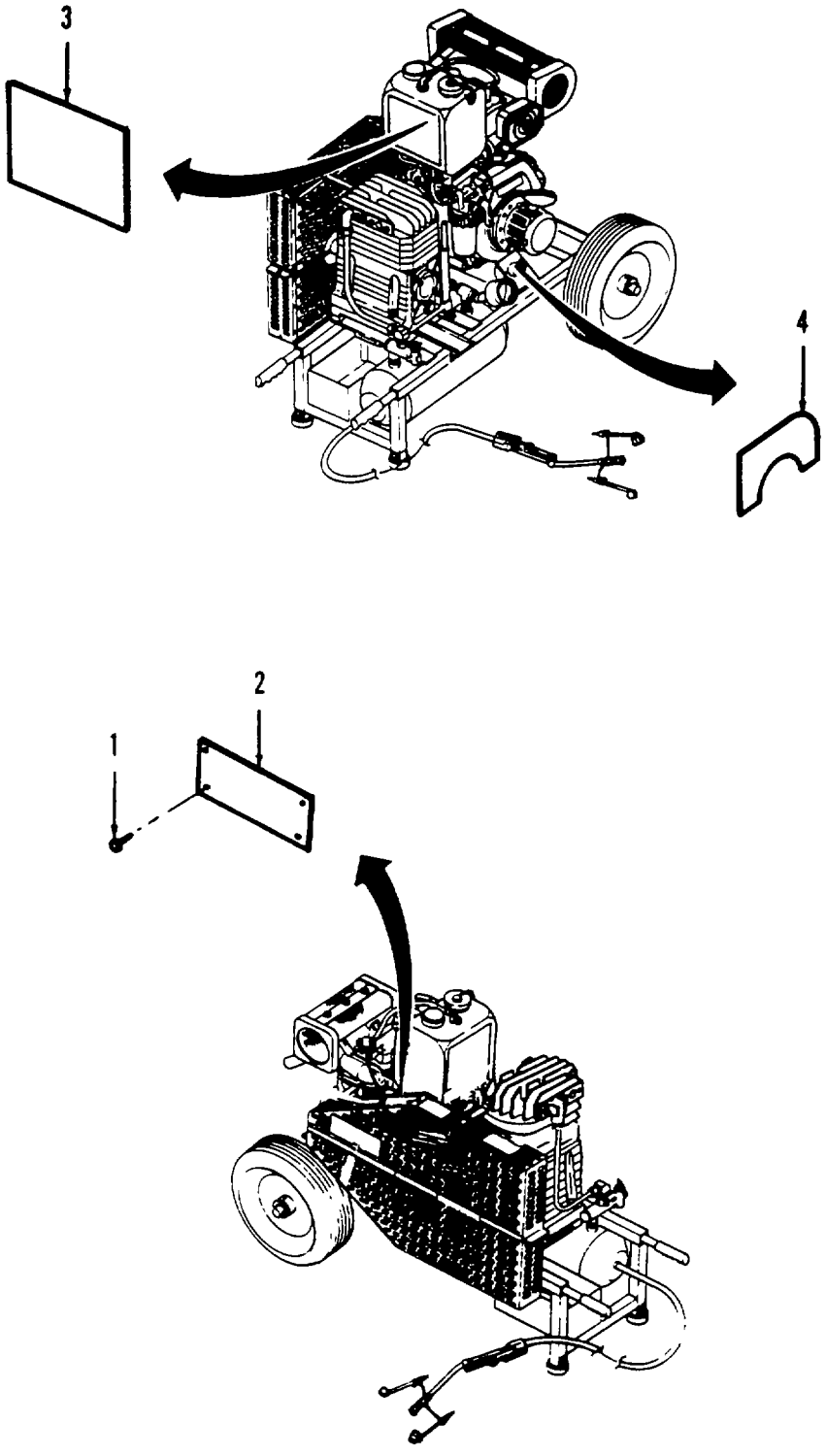


Figure 4-3. Information Plates and Decals Replacement.

4-14. AIR HOSE AND INFLATION GAUGE REPAIR AND REPLACEMENT.

This Task Covers:

a. Removal **b. Cleaning** **c. Inspection**
d. Repair **e. Installation**

INITIAL SETUP:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's/Parts Required

Cloth, Lint-Free (Appendix E, Item 1)
Brush, Medium Bristle (Appendix E, Item 2)

Equipment Condition

Air compressor unit shut down and cool.

a. Removal. (Refer to Figure 4-4).

(1) Unscrew air hose (1) from receiver air tank (2) and remove air hose from unit.

(2) Unscrew inflation gauge (3) from air hose (1).

b. Cleaning.

(1) Clean all metallic parts with water and a clean soft cloth or a medium bristle brush.

(2) Allow parts to dry.

c. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Check air hose for cut or cracked surfaces.

(3) Inspect inflation gauge for broken gauge glass.

(4) Inspect inflation tools on inflation gauge for any damage.

d. Repair. Repair is limited to replacement of parts found defective during inspection.

e. Installation.

(1) Install inflation gauge (3) onto air hose (1).

(2) Install air hose (1) into receiver tank (2).

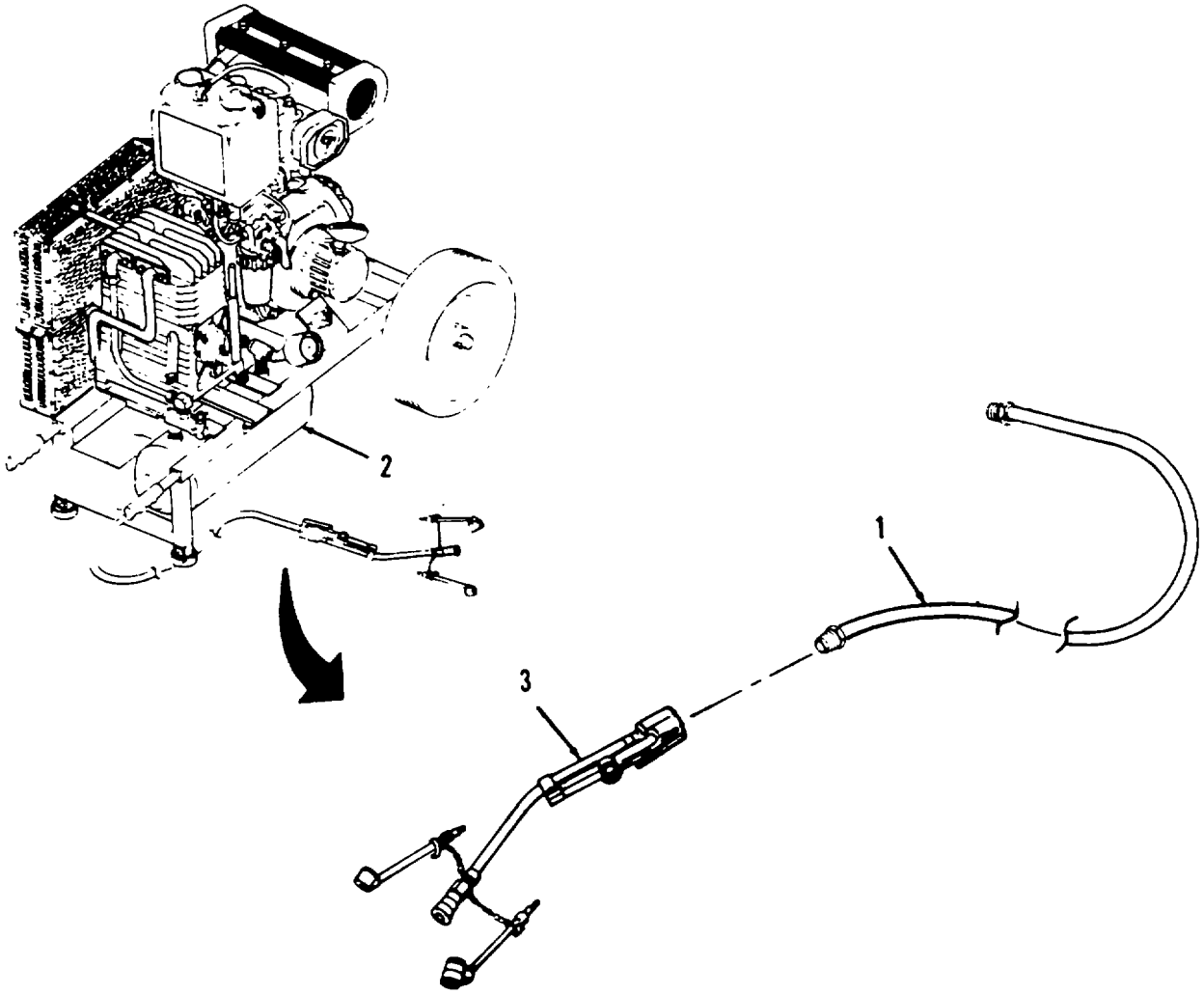


Figure 4-4. Air Hose and Inflation Gauge Repair and Replacement.

4-15. BELT GUARD REPAIR AND REPLACEMENT.

This Task Covers:

a. Removal **b. Cleaning** **c. Inspection**
d. Repair **e. Installation**

INITIAL SETUP

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's/Parts Required

Cloth, Lint-Free (Appendix E, Item 1)
Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)

Equipment Condition

Air compressor unit shut down and cool.
Information plates removed (refer to para. 4-13) (Only if replacing belt guard).

a. Removal. (Refer to Figure 4-5).

(1) Remove four screws (1), four lock washers (2), and four flat washers (3).

(2) Remove two screws (4), two lock washers (5), and two flat washers (6).

(3) Remove nut (7), screw (8), washer (9), bracket (10), bracket (11), rubber mount (12), and rubber mount (13).

(4) Remove upper belt guard frame (14) from lower belt guard frame (15).

(5) Remove two screws (16), two lock washers (17), two flat washers (18), and bracket (19).

(6) Remove lower belt guard frame (15) from unit.

(7) Remove two screws (20), two lock washers (21), two flat washers (22), and gasket (23) from unit.

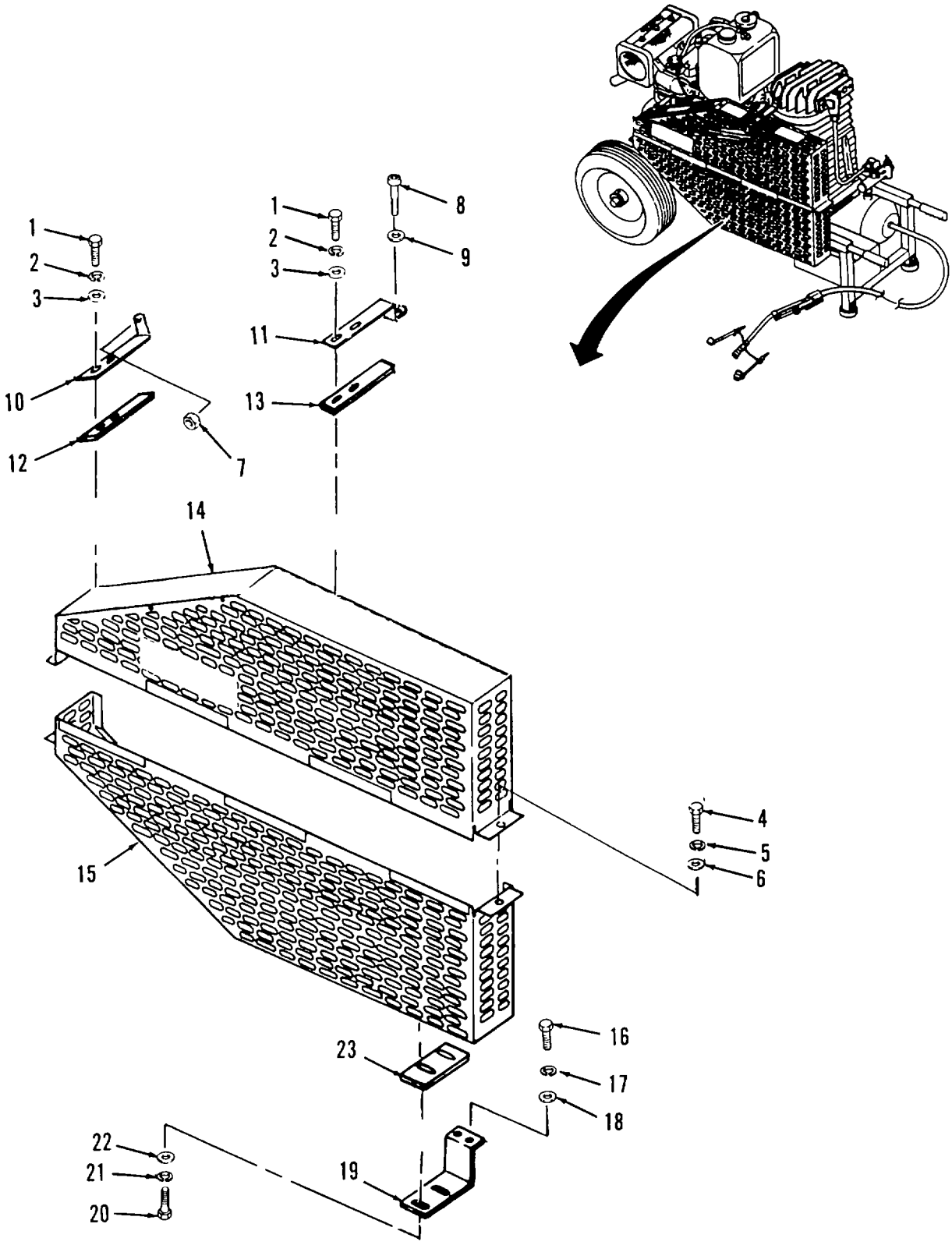


Figure 4-5. Belt Guard Repair and Replacement.

4-15. BELT GUARD REPAIR AND REPLACEMENT. - Continued.

b. Cleaning.

(1) Remove all build up of dirt, oil, and debris from all surfaces.

WARNING

Serious injury can result in breathing fumes of dry cleaning solvent. Serious injury or death can result from explosion of fumes from solvent. When using this solvent:

- Clean parts in a well ventilated area.
- Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly.
- Do not use near open flame or excessive heat. Flash point of solvent is 100° F to 1380 F (38° C to 59° C).
- Wear eye protection when blowing solvent from parts. Air pressure should not exceed 30 psig (2. 1 kg/cm^2).

(2) Clean all metallic parts with a clean soft cloth or a medium bristle brush, and cleaning solvent.

(3) Allow parts to dry.

c. Inspection.

(1) Inspect all metal parts for cracks or bends.

(2) Check all fasteners for damaged threads.

d. Repair. Repair is limited to replacement of parts found defective during inspection.

e. Installation.

(1) Install lower belt guard (15), gasket (23), two screws (20), two flat washers (21), and two lock washers (22).

(2) Install bracket (19), two screws (16), two lock washers (17), and two flat washers (18).

(3) Install upper belt guard frame (14), two screws (4), two lock washers (5), and two flat washers (6) onto lower belt guard frame (15).

(4) Install rubber mount (13), rubber mount (12), bracket (11), bracket (10), washer (9), screw (8), and nut (7).

(5) Install four screws (1), four lock washers (2), and four flat washers (3) onto upper belt guard frame (14).

4-16. V-BELT AND SHEAVE REPAIR AND REPLACEMENT.

This Task Covers:

a. Removal **b. Cleaning** **c. Inspection**
d. Repair **e. Installation**

INITIAL SETUP

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)
Torque Wrench (Appendix B, Item 2)
Socket Wrench Attachment, Socket Head Screw (Appendix B, Item 6)

Material's/Parts Required

Cloth, Lint-Free (Appendix E, Item 1)
Brush, Medium Bristle (Appendix E, Item 2)

Equipment Condition

Air compressor unit shut down and cool.
Belt guard removed (see para. 4-15).

a. Removal. (Refer to Figure 4-6).

(1) Loosen two set screws (1) and sheave (2).

(2) Loosen V-belt (3) per paragraph 2-8.

(3) Remove V-belt (3) from sheave (2).

(4) Remove two set screws (1) from sheave (2).

(5) Install one set screw (1) into hole (6) and tighten set screw to pull bushing (5) from sheave (2). If tightening the set screw does not readily pull bushing from sheave, tap sheave with rubber mallet to loosen bushing.

(6) Remove sheave (2) and bushing (5) from engine shaft.

b. Cleaning.

(1) Remove all build up of dirt, oil, and debris from all surfaces.

(2) Clean all metallic parts with a clean soft cloth or a medium bristle brush.

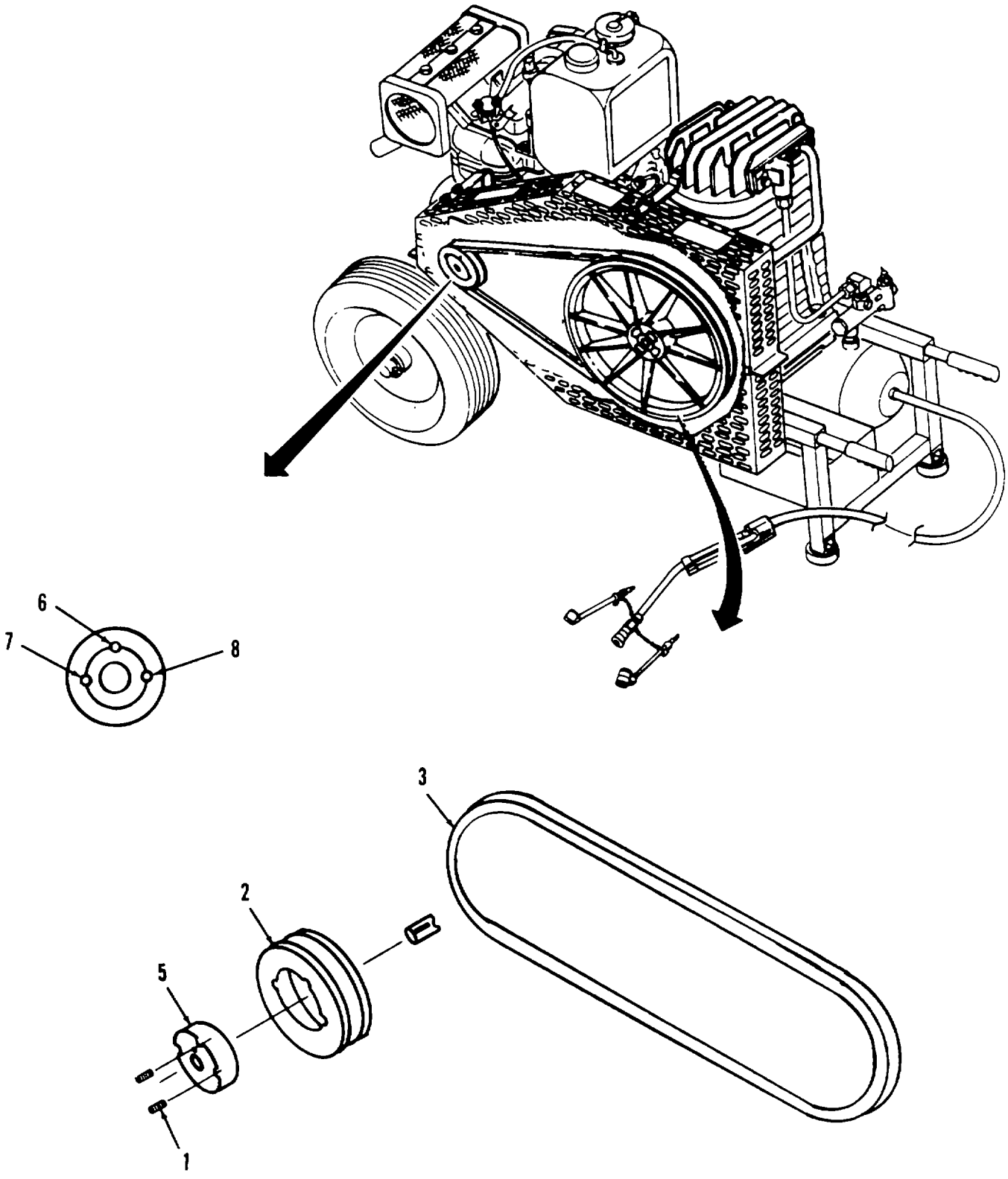


Figure 4-6. V-Belt and Sheave Repair and Replacement.

4-16. V-BELT AND SHEAVE REPAIR AND REPLACEMENT. - Continued.

c. Inspection.

(1) Inspect all metal parts for cracks or bends.

(2) Check all fasteners for damaged threads.

(3) Inspect V-Belt for cracks and frays.

d. Repair. Repair is limited to replacement of parts found defective during inspection.

e. Installation.

(1) Install sheave (2) and bushing (5) onto engine shaft.

(2) Position sheave (2) on engine so that groove in sheave aligns with groove in compressor flywheel and face of bushing is flush with end of shaft.

(3) Install two set screws into holes (7) and (8) and tighten both set screws to 175 lb. in.

(4) Install V-belt (3) onto sheave (2) and onto compressor flywheel pulley.

(5) Adjust V-belt per paragraph 4-7.

4-17. FUEL LINES AND FUEL VALVE REPAIR AND REPLACEMENT.

This Task Covers:

a. Removal **b. Cleaning** **c. Inspection**
d. Repair **e. Installation**

INITIAL SETUP

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)
Pan, Drain (Appendix B, Item 2)

Material's/Parts Required

Cloth, Lint-Free (Appendix E, Item 1)
Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Diesel Fuel (Appendix E, Item 5)

Equipment Condition

Air compressor unit shut down and cool.

a. Removal (Refer to Figure 4-7).

WARNING

Improper care in handling fuel can cause fire and explosion which can cause severe injury or death to operating personnel. To avoid fire or explosion during engine refueling:

- DO NOT allow any flame producing material within 50 feet (15.25 m) of fuel during equipment filling.
- DO NOT smoke while fuel is exposed.
- DO NOT let fuel drip onto any hot surface.
- DO NOT let fuel spill onto hot surfaces.

(1) Drain fuel from fuel tank as follows.

a. Remove fuel tank cap from fuel tank.

b. Position three way fuel valve handle so that arrow on valve handle points toward bottom of fuel tank to shut off fuel flow from tank.

c. Loosen clamp (3) and remove fuel line hose (4) from fuel filter.

d. Position open end of fuel line hose (4) over drain pan.

e. Position three way fuel valve handle so that arrow on valve handle points toward belt guard and allow fuel to drain from fuel line hose (4) into drain pan.

f. When all fuel has drained from fuel tank, replace fuel tank cap onto fuel tank.

g. Position three way fuel valve handle so that arrow on valve handle points toward bottom of tank to shut off any residual fuel from fuel tank.

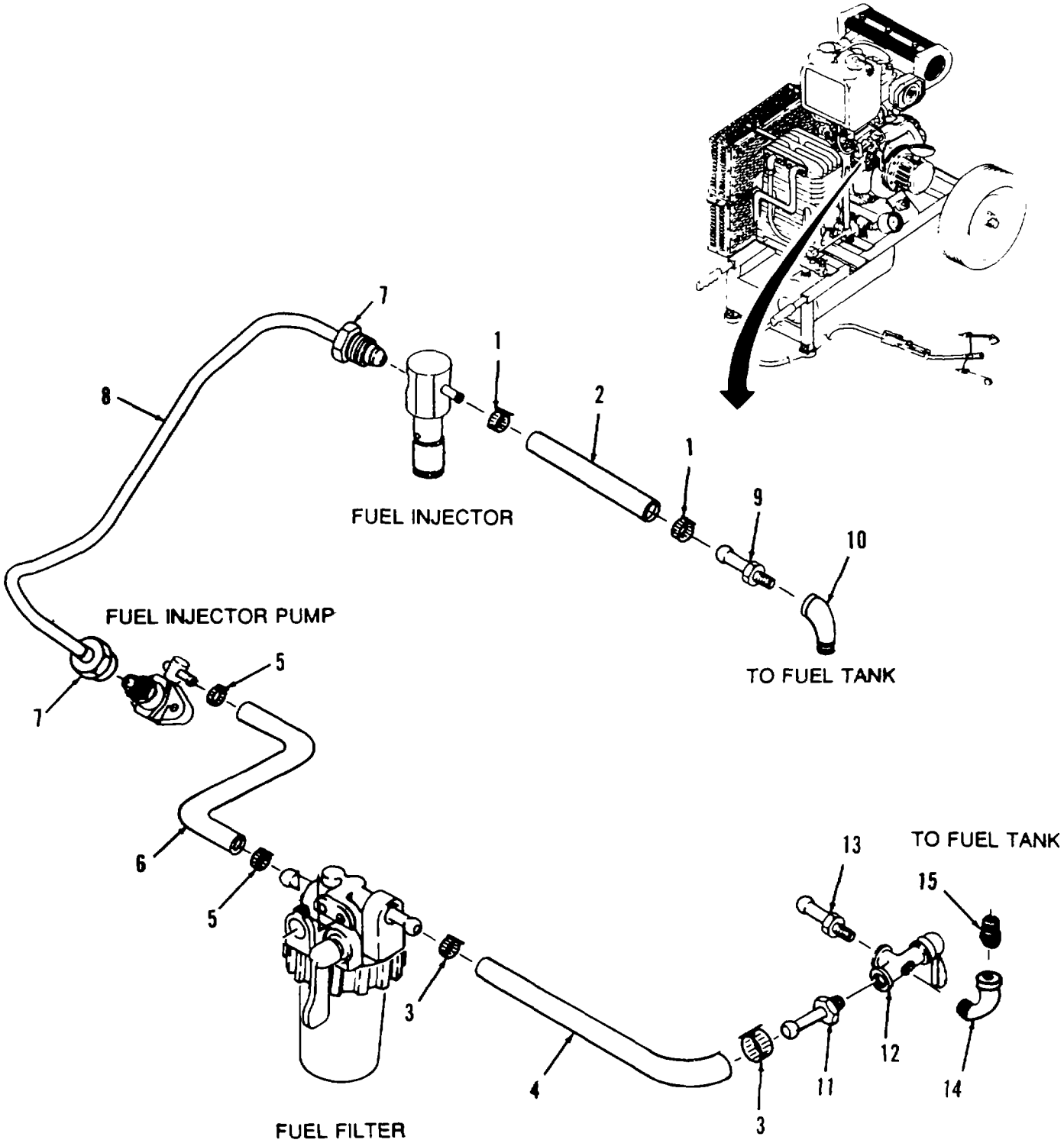


Figure 4-7. Fuel Lines and Fuel Valve Replacement.

4-17. FUEL LINES AND FUEL VALVE REPAIR AND REPLACEMENT. - Continued.

a. Removal. - Continued.

(2) Remove two clamps (1) and fuel line hose (2).

(3) Remove two clamps (3) and fuel filter hose (4).

(4) Remove two clamps (5) and fuel injector hose (6).

(5) Loosen connectors (7) at each end of fuel injection pipe (8).

(6) Remove fuel injection pipe (8).

(7) Remove hose adapter (9) and street elbow (10) from fuel tank.

(8) Remove hose connector (11), fuel valve (12), hose connector (13), street elbow (14), and nipple (15) from fuel tank.

b. Cleaning.

(1) Thoroughly wash the fuel injection pipe in diesel fuel. Insure that line is clear. Wipe with clean, lint-free cloth.

(2) Remove all build up of dirt, oil, and debris from all hose surfaces.

WARNING

Serious injury can result in breathing fumes of dry cleaning solvent. Serious injury or death can result from explosion of fumes from solvent. When using this solvent:

- Clean parts in a well ventilated area.
- Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly.
- Do not use near open flame or excessive heat. Flash point of solvent is 100° F to 138° F (38° C to 59° C).
- Wear eye protection when blowing solvent from parts. Air pressure should not exceed 30 psig (2.1 kg/cm^2).

(3) Clean all metallic parts with a clean soft cloth or a medium bristle brush, and cleaning solvent.

(4) Allow parts to dry.

c. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Check hoses and tubing for cracks and leaks.

d. **Repair**. Repair is limited to replacement of parts found defective during inspection.

e. **Installation.**

(1) Install nipple (15), street elbow (14), hose connector (13), fuel valve (12), and hose connector (11) onto fuel tank.

(2) Install street elbow (10) and hose adapter (9) onto fuel tank.

(3) Position fuel injection pipe (8) between fuel injection nozzle and fuel injection pump. Position the pipe so that the fittings line up.

(4) Carefully hand tighten connectors (7) on fuel injection pipe (8). Finish tightening the two connectors (7) with a wrench taking care not to strip the fittings.

(5) Install fuel injector hose (6) and two clamps (5). Refer to Appendix F for hose manufacturing instructions.

(6) Install fuel filter hose (4) and two clamps (3). Refer to Appendix F for hose manufacturing instructions.

(7) Install fuel line hose (2) and two clamps (1). Refer to Appendix F for hose manufacturing instructions.

4-18. FUEL TANK REPAIR AND REPLACEMENT.

This Task Covers:		
a. Removal	b. Cleaning	c. Inspection
d. Repair	e. Installation	

INITIAL SETUP

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's/Parts Required

Cloth, Lint-Free (Appendix E, Item 1)
Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Lock Nuts MS51922-17 (Appendix H, Item 20)

Equipment Condition

Air compressor unit shut down and cool.
Fuel drained from fuel tank (see para. 4-17).
Adjacent fuel lines removed (see para. 4-17).

a. Removal. (Refer to Figure 4-8).

WARNING

Improper care in handling fuel can cause fire and explosion which can cause severe injury or death to operating personnel. To avoid fire or explosion during engine refueling:

- DO NOT allow any flame producing material within 50 feet (15.25 m) of fuel during equipment filling.
- DO NOT smoke while fuel is exposed.
- DO NOT let fuel drip onto any hot surface.
- DO NOT let fuel spill onto hot surfaces.

(1) Remove drain plug (1) from fuel tank (2). Retain drain plug if fuel tank is being replaced.

(2) Remove two lock nuts (3) and two flat washers (4). Discard lock nuts.

(3) Remove two lock nuts (5) and two flat washers (6). Discard lock nuts.

(4) Cap fuel inlet of fuel filter to prevent fuel leakage.

(5) Remove fuel tank (2) and flat washer (7) from unit.

(6) Remove screw (8), lock washer (9), and bracket (10) from unit.

(7) Remove two screws (11), two lock washers (12), fuel filter bracket (13), and fuel tank bracket (14).

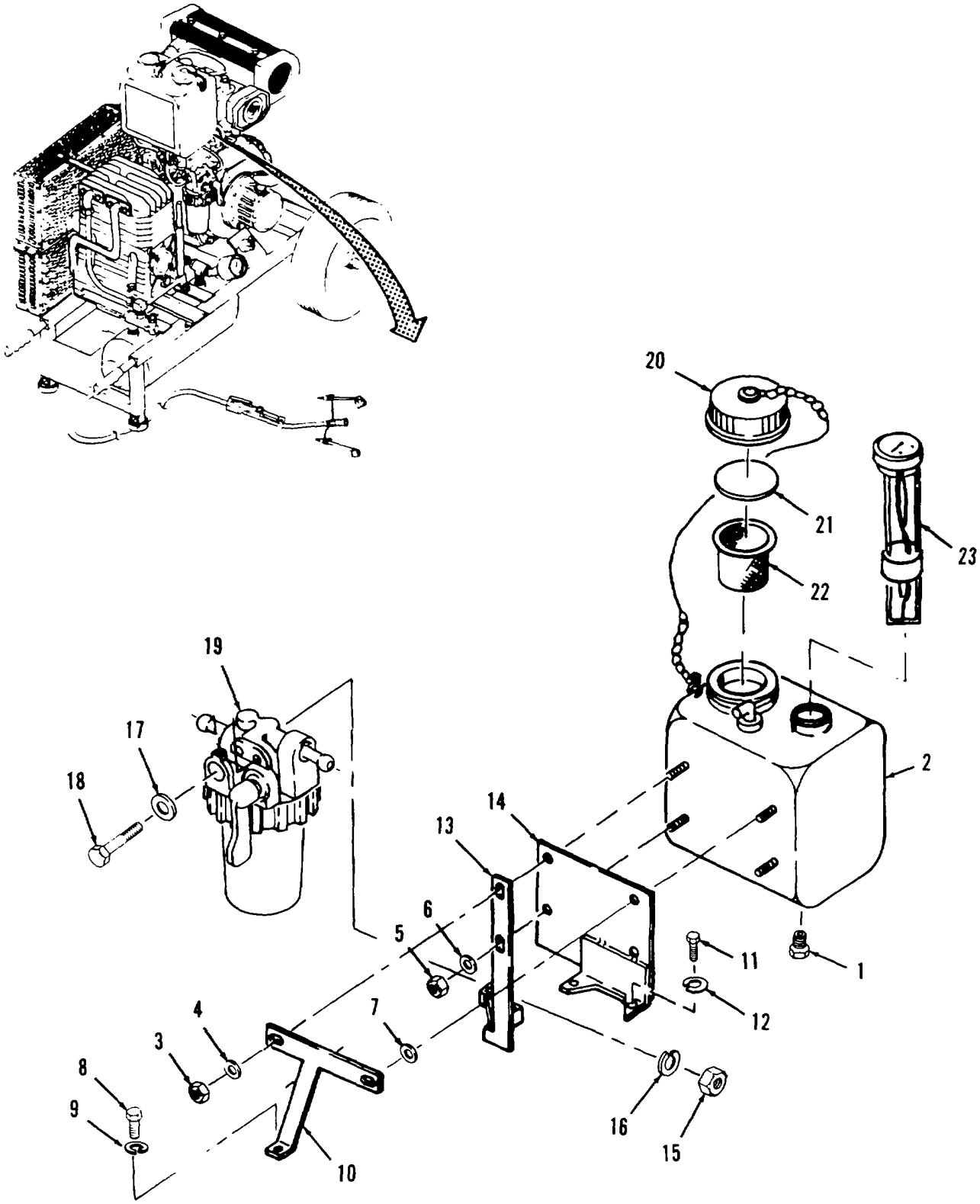


Figure 4-8. Fuel Tank Repair and Replacement.

4-18. FUEL TANK REPAIR AND REPLACEMENT. - Continued.

a. Removal. - Continued.

(8) Remove nut (15), lock washer (16), flat washer (17), screw (18), and fuel filter (19) from fuel filter bracket (13).

(9) Remove cap (20), gasket (21), and strainer (22), and fuel gauge (23) from fuel tank (2).

b. Cleaning.

(1) Remove all build up of dirt, oil, and debris from all surfaces.

(2) Wipe outside of fuel tank with clean, dry, lint-free cloth to remove any oil or grease deposits.

WARNING

Misuse of compressed air could result in death or serious injury. Death or serious injury could occur if compressed air is directed against skin. Do not use compressed air for cleaning or drying unless the pressure is/has been reduced to 30 PSI or less. When working with compressed air, always use eye protection and any other protective equipment.

(3) When tank is completely clean of any residual fuel, clean away any deposits with compressed air.

WARNING

Serious injury can result in breathing fumes of dry cleaning solvent. Serious injury or death can result from explosion of fumes from solvent. When using this solvent:

- Clean parts in a well ventilated area.
- Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly.
- Do not use near open flame or excessive heat. Flash point of solvent is 100° F to 138° F (38° C to 59° C).

Wear eye protection when blowing solvent from parts. Air pressure should not exceed 30 psig (2.1 kg/cm^2).

(4) Clean all exterior metallic parts with a clean soft cloth or a medium bristle brush, and cleaning solvent.

(5) Allow parts to dry.

c. Inspection.

(1) Inspect fuel tank for cracks, corrosion, or stripped threads.

(2) Check all fasteners for damaged threads.

(3) Inspect fuel gauge for cracked glass or damaged float mechanism.

(4) Check fuel cap gasket for cracks and tears.

d. Repair. Repair is limited to replacement of parts found defective during inspection.

e. Installation.

(1) Install fuel gauge (23), strainer (22), gasket (21), and cap (20) onto fuel tank (2).

(2) Install fuel filter (19), screw (18), flat washer (17), lock washer (16), and nut (15).

(3) Install fuel tank bracket (14), fuel filter bracket (13), two screws (11), and two lock washers (12).

(4) Install bracket (10), lock washer (9), and screw (8).

(5) Install fuel tank (2) and flat washer (7) onto fuel tank bracket (14) and install two new lock nuts (5) and two flat washers (6).

(6) Install two flat washers (4) and two new lock nuts (3).

(7) Replace drain plug (1) into bottom of fuel tank (2).

(8) Refill fuel tank (2) (see paragraph 2-7).

4-19. FUEL FILTER REPAIR AND REPLACEMENT.

This Task Covers:

a. Removal **b. Disassembly** **c. Cleaning**
d. Inspection **e. Repair** **f. Assembly**
g, Installation

INITIAL SETUP

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's/Parts Required

Cloth, Lint-Free (Appendix E, Item 1)
Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Packing, 102103-55520 (Appendix H, Item 2)
Element 124550-55700 (Appendix H, Item 21)

Equipment Condition

Air compressor unit shut down and cool.
Adjacent fuel lines removed (see para. 4-17).

a. Removal (Refer to Figure 4-9).

(1) Remove screw (1), flat washer (2), lock washer (3), and nut (4).

(2) Remove fuel filter (5) from unit.

b. Disassembly.

(1) Remove ring (6), body (7), and packing (8) from fuel filter (5). Discard packing.

(2) Remove element (9) and spring (10) from fuel filter (5). Discard element.

c. Cleaning.

(1) Remove all build up of dirt, oil, and debris from all surfaces.

WARNING

Serious injury can result in breathing fumes of dry cleaning solvent. Serious injury or death can result from explosion of fumes from solvent. When using this solvent:

- Clean parts in a well ventilated area.
- Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly.
- Do not use near open flame or excessive heat Flash point of solvent is 100' F to 138° F (38° C to 59° C).
- Wear eye protection when blowing solvent from parts. Air pressure should not exceed 30 psig (2.1 kg/cm^2).

(2) Clean all metallic parts with a clean soft cloth or a medium bristle brush, and cleaning solvent.

(3) Allow parts to dry.

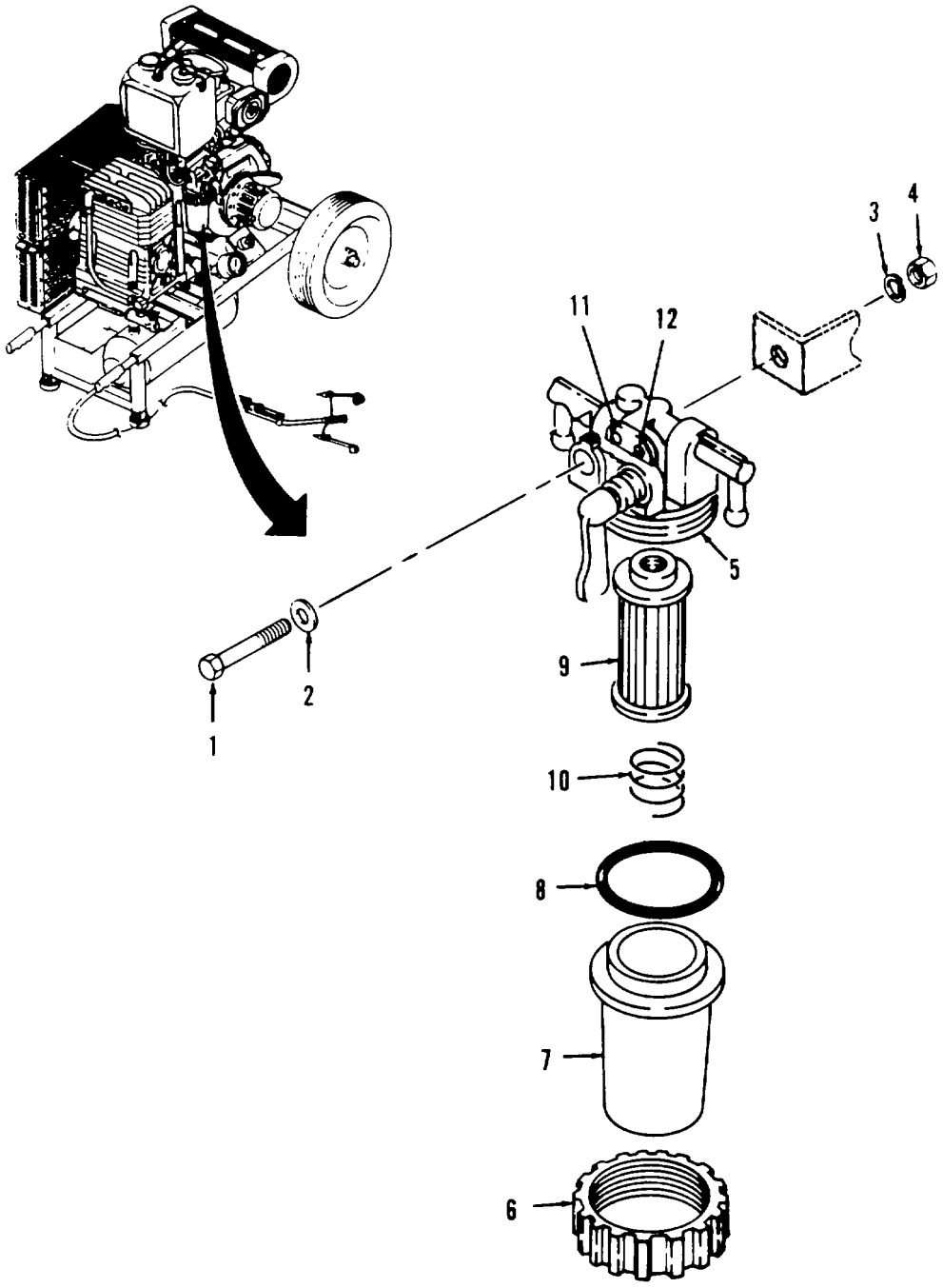


Figure 4-9. Fuel Filter Repair and Replacement.

4-19. FUEL FILTER REPAIR AND REPLACEMENT. - Continued.

d. Inspection.

(1) Inspect all metal surfaces for cracks, corrosion, stripped threads, or broken fittings.

(2) Check element for clogging and deterioration.

e. Repair. Repair is limited to replacement of parts found defective during inspection.

f. Assembly.

(1) Install new element (9) and spring (10) onto fuel filter (5).

(2) Install new packing (8), body (7), and ring (6) onto fuel filter (5).

g. Installation.

(1) Install fuel filter (5), flat washer (2), screw (1), lock washer (3) and nut (4) onto bracket.

(2) Loosen screw (11) and let fuel leak from loosened screw until no air bubbles appear in draining fuel. Repeat for screw (12).

4-20. KEY SWITCH REPLACEMENT.

This task covers:

a. Removal **b. Cleaning** **c. Inspection**
d. Test **e. Installation**

INITIAL SETUP

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)
Multimeter (Appendix B, item 2)

Materials/Parts Required

Cloth, Lint-Free (Appendix E, Item 1)
Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)

Equipment Condition

Air compressor unit shut down and cool.

a. Removal (Refer to Figure 4-10).

WARNING

Electricity can severely injure personnel. Be sure that all power sources have been completely disconnected from unit before beginning any maintenance on any electrical items.

(1) Unscrew key switch retainer ring (2), two washers (3), and remove key switch (1) from unit.

(2) Tag and disconnect all wiring connected to key switch (1).

b. Cleaning.

(1) Remove all build up of dirt, oil, and debris from all surfaces.

WARNING

Serious injury can result in breathing fumes of dry cleaning solvent. Serious injury or death can result from explosion of fumes from solvent. When using this solvent:

- Clean parts in a well ventilated area.
- Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly.
- Do not use near open flame or excessive heat. Flash point of solvent is 100° F to 138° F (38° C to 59° C).
- Wear eye protection when blowing solvent from parts. Air pressure should not exceed 30 psig (2.1 kg/cm^2).

(2) Clean all metallic parts with a clean soft cloth or a medium bristle brush, and cleaning solvent. Be sure that all gasket adhesive residue is removed if gasket material is being replaced.

(3) Allow parts to dry.

c. Inspection. Inspect terminal screws on key switch for stripped threads.

d. Test.

(1) Use a multimeter and test to see that all circuits open and close properly. Refer to Table 4-4 for proper circuit control.

(2) When checking circuit, check that key switch makes firm contact as key is turned.

	B	R1	R2	BR	C
PREHEATING	○	○		○	
OFF	○				
ON	○			○	
START	○		○	○	○

Table 4-4. Key Switch Circuits

e. Installation.

(1) Refer to tags on wires and install wires to key switch (1). Remove all tags installed during key switch removal. Refer to Figure 4-15 for wiring diagram.

(2) Place key switch (1) into position on unit and install two washers (3) and key switch retainer ring (2).

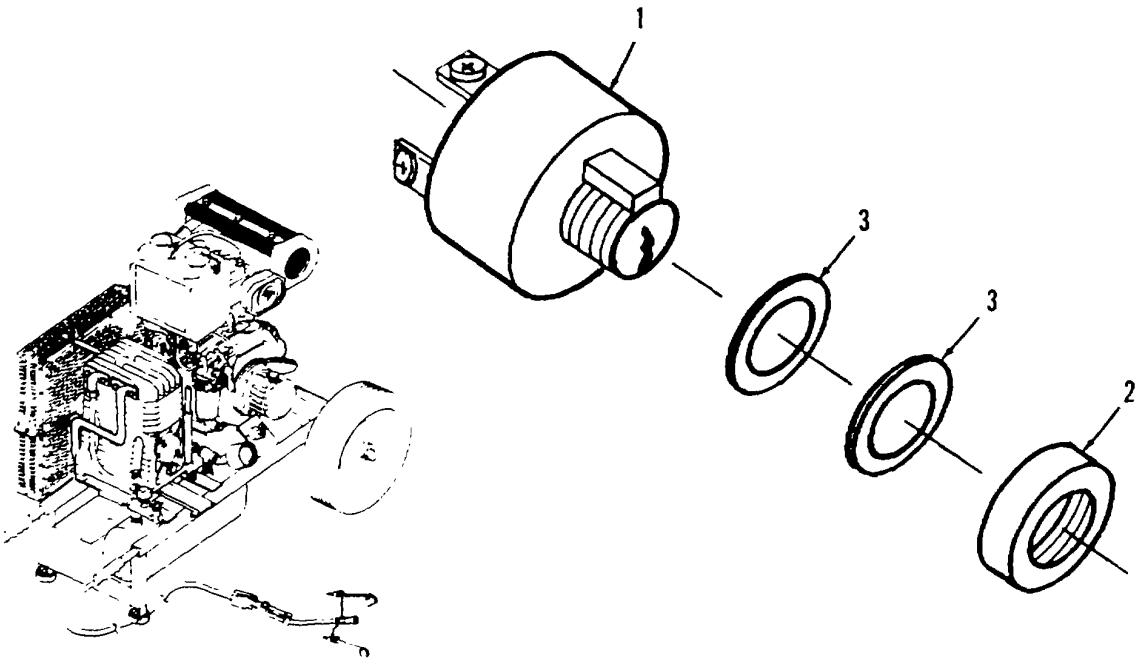


Figure 4-10. Key Switch Replacement.

4-21. AIR GAUGE, RELIEF VALVE, UNLOADER VALVE, UNLOADER VALVE MUFFLER, SAFETY VALVE, DISCHARGE TUBE, VIBRATION MOUNTS, AIR RECEIVER, AND DRAIN COCK REPLACEMENT.

This Task Covers:

a. Removal **b. Cleaning** **c. Test**
d. Inspection **e. Installation**

INITIAL SETUP

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's/Parts Required

Cloth, Lint-Free (Appendix E, Item 1)
Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Tape, Antiseize (Appendix E, Item 8)

Equipment Condition

Air compressor unit shut down and cool.
Air hose removed (see para.4-14).

a. Removal. (Refer to Figure 4-11).

(1) Carefully open drain cock (1) on bottom of air receiver tank (2) and allow all air to bleed from air tank.

(2) Remove air gauge (3).

(3) Remove discharge tube (4).

(4) Remove relief valve (5), safety valve (6), and unloader valve muffler (7).

(5) Remove two nuts (8), two flat washers (9), two lock washers (10), two rubber bumpers (11), and air receiver tank (2) from unit.

(6) Remove elbow (12), tee (13), nipple (14), elbow (15), unloader valve (16), and nipple (17) from air receiver tank (2).

(7) Remove drain cock (1) from air receiver tank (2).

b. Cleaning.

(1) Remove all build up of dirt, oil, and debris from all surfaces.

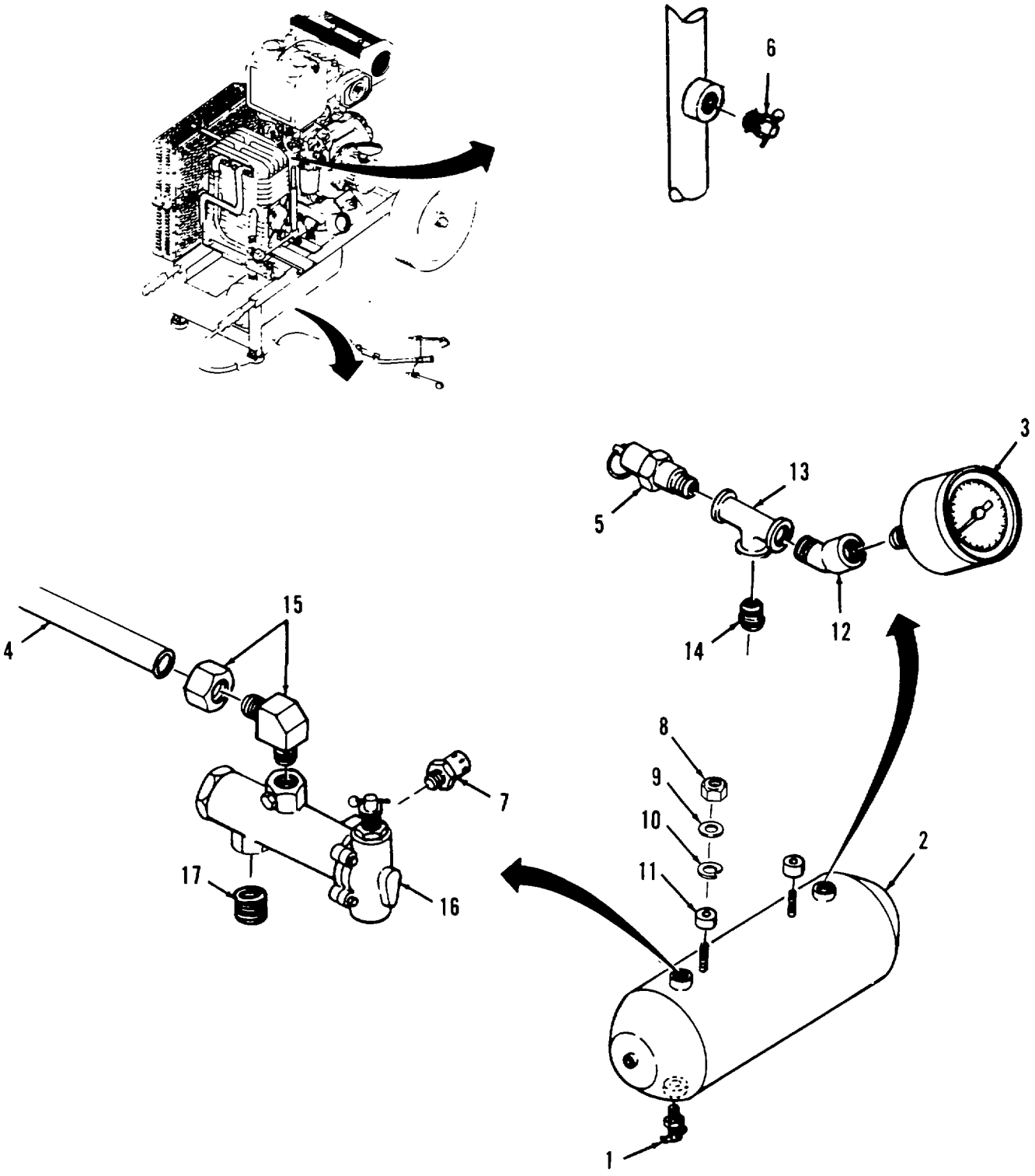


Figure 4-11. Air Gauge, Relief Valve, Unloader Valve, Unloader Valve Muffler, Safety Valve, Discharge Tube, Vibration Mounts, Air Receiver, and Drain Cock Replacement.

4-21. AIR GAUGE, RELIEF VALVE, UNLOADER VALVE, UNLOADER VALVE MUFFLER, SAFETY VALVE, VIBRATION MOUNTS, AIR RECEIVER, DRAIN COCK, DISCHARGE TUBE REPLACEMENT. - Continued.

b. Cleaning. - Continued.

WARNING

Serious injury can result in breathing fumes of dry cleaning solvent. Serious injury or death can result from explosion of fumes from solvent. When using this solvent:

- Clean parts in a well ventilated area.
- Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly.
- Do not use near open flame or excessive heat. Flash point of solvent is 100' F to 138° F (38' C to 59° C).
- Wear eye protection when blowing solvent from parts. Air pressure should not exceed 30 psig (2.1 kg/cm^2).

(2) Clean all metallic parts with a clean soft cloth or a medium bristle brush, and cleaning solvent.

(3) Allow parts to dry.

c. Test.

(1) Manually activate relief valve by pulling ring on manual release. Check that manual release activates smoothly and does not bind.

(2) Manually activate unloader valve by pulling ring on manual release. Check that manual release activates smoothly and does not bind.

(3) Manually activate safety valve by pulling ring on manual release. Check that manual release activates smoothly and does not bind.

d. Inspection.

(1) Inspect all pipe and fastener threads for damage.

(2) Check all metal surfaces for cracks.

(3) Inspect air receiver tank for cracks, leaks, and dents.

(4) Inspect rubber bumpers for damage.

e. Installation.

NOTE
Wrap all male pipe threads with anti-seize tape before assembly of pipe threaded items.

(1) Install drain cock onto air receiver tank (2).

(2) Install nipple (17), unloader valve (16), elbow (15), nipple (14), tee (13), and elbow (12) onto air receiver tank (2).

(3) Install air receiver tank (2), two rubber bumpers (11), two lock washers (10), two flat washers (9), and two nuts (8) onto unit.

(4) Install unloader valve muffler (7), safety valve (6), and relief valve (5).

(5) Install discharge tube (4).

(6) Install air gauge (3).

(7) Check that drain cock is fully closed.

4-22. COMPRESSOR OIL TROUGH AND ENGINE OIL DRAIN REPAIR AND REPLACEMENT.

This Task Covers:

a. Removal **b. Cleaning** **c. Inspection**
d. Repair **e. Installation**

INITIAL SETUP

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)
Pan, Drain (Appendix B, Item 2)

Material's/Parts Required

Cloth, Lint-Free (Appendix E, Item 1)
Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)

Equipment Condition

Air compressor unit shut down and cool.

a. Removal. (Refer to Figure 4-12).

(1) Remove plug (1) from drain adapter (2) and drain oil into drain pan.

(2) Remove drain adapter (2).

(3) Remove two screws (3), two flat washers (5), and two lock washers (4).

(4) Remove compressor oil trough (6) from unit.

b. Cleaning.

(1) Remove all build up of dirt, oil, and debris from all surfaces.

WARNING

Serious injury can result in breathing fumes of dry cleaning solvent. Serious injury or death can result from explosion of fumes from solvent. When using this solvent:

- Clean parts in a well ventilated area.
- Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly.
- Do not use near open flame or excessive heat. Flash point of solvent is 100° F to 138° F (38° C to 59° C).
- Wear eye protection when blowing solvent from parts. Air pressure should not exceed 30 psig (2.1 kg/cm^2).

(2) Clean all metallic parts with a clean soft cloth or a medium bristle brush, and cleaning solvent. Be sure that all gasket adhesive residue is removed if gasket material is being replaced.

(3) Allow parts to dry.

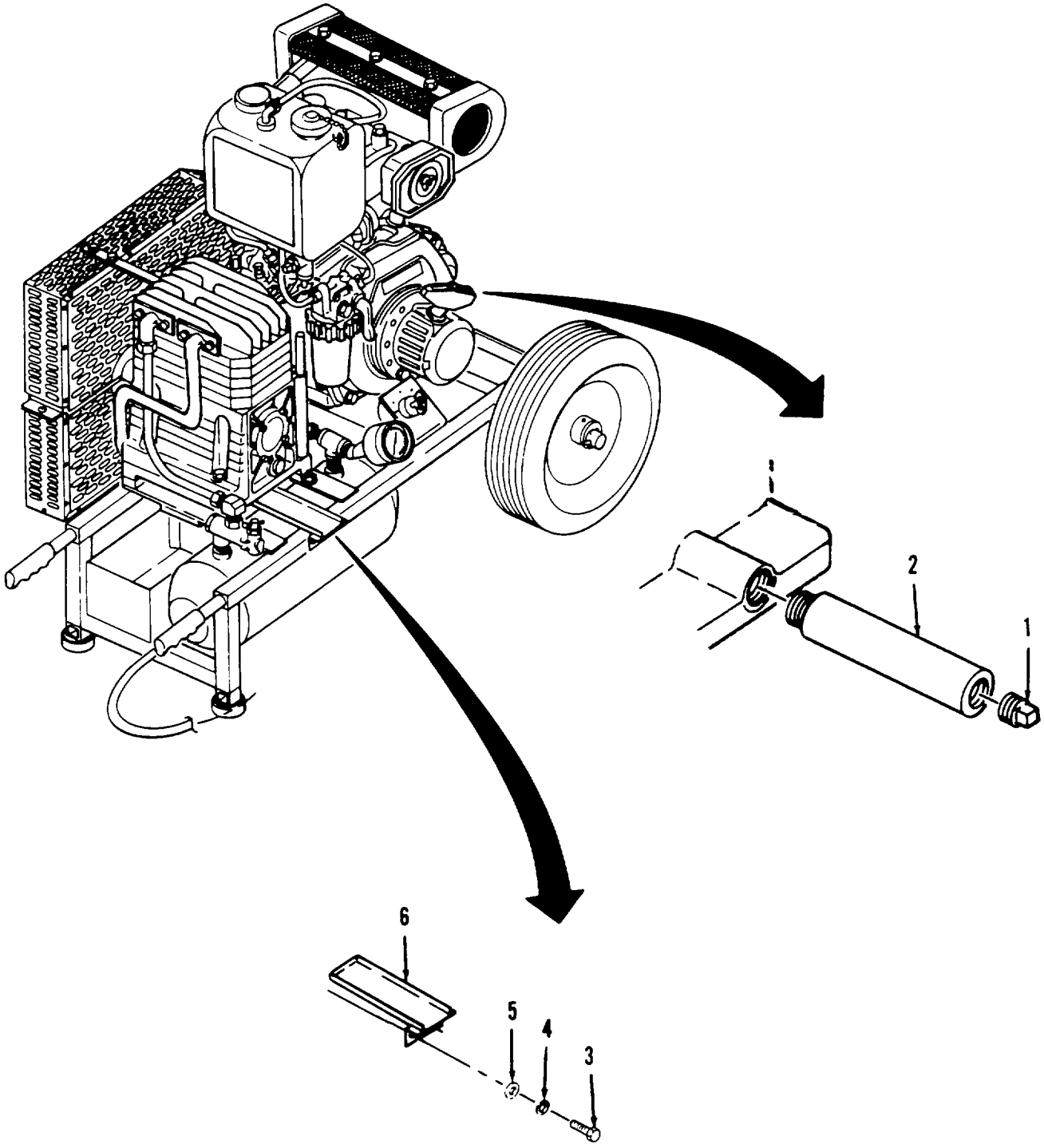


Figure 4-12. Compressor Oil Trough and Engine Oil Drain Repair and Replacement.

4-22. COMPRESSOR OIL TROUGH AND ENGINE OIL DRAIN REPAIR AND REPLACEMENT. - Continued.

c. Inspection.

(1) Inspect metal parts for cracks, dents, or other damage.

(2) Check all fasteners for damaged threads.

d. Repair. Repair is limited to replacement of parts found defective during inspection.

e. Installation.

(1) Install compressor oil trough (6), two lock washers (4), two flat washers (5), and two screws (3).

(2) Install drain adapter (2) and plug (1).

(3) Refill compressor and engine with oil per LO 94310-394-12.

4-23. TAKE-UP SCREW REPLACEMENT.

This task covers:
a. Removal **b. Cleaning** **c. Inspection** **d. Installation**

INITIAL SETUP:

Tools Required
Tool Kit, General Mechanic's (Appendix B, Item 1)
Material's/Parts Required
Cloth, Lint-Free (Appendix E, Item 1)
Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Equipment Condition
Air compressor unit shut down and cool.

a. Removal. (Refer to Figure 4-13).

(1) Remove screw (1) and flat washer (2).

(2) Remove nut (3), lock washer (4), flat washer (5), and engine bolt (6) from engine housing (7).

b. Cleaning.

(1) Remove all build up of dirt, oil, and debris from all surfaces.

WARNING

Serious injury can result in breathing fumes of dry cleaning solvent. Serious injury or death can result from explosion of fumes from solvent. When using this solvent:

- Clean parts in a well ventilated area.
- Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly.
- Do not use near open flame or excessive heat. Flash point of solvent is 100°° F to 138° F (38° C to 59° C).
- Wear eye protection when blowing solvent from parts. Air pressure should not exceed 30 psig (2.1 kg/cm^2).

(2) Clean all metallic parts with a clean soft cloth or a medium bristle brush, and cleaning solvent. Be sure that all gasket adhesive residue is removed if gasket material is being replaced.

(3) Allow parts to dry.

c. Inspection.

Inspect metal parts for cracks or damaged thread.

d. Installation.

(1) Install engine bolt (6), flat washer (5), lock washer (4), and nut (3) into engine housing (7).

(2) Install flat washer (2) and screw (1).

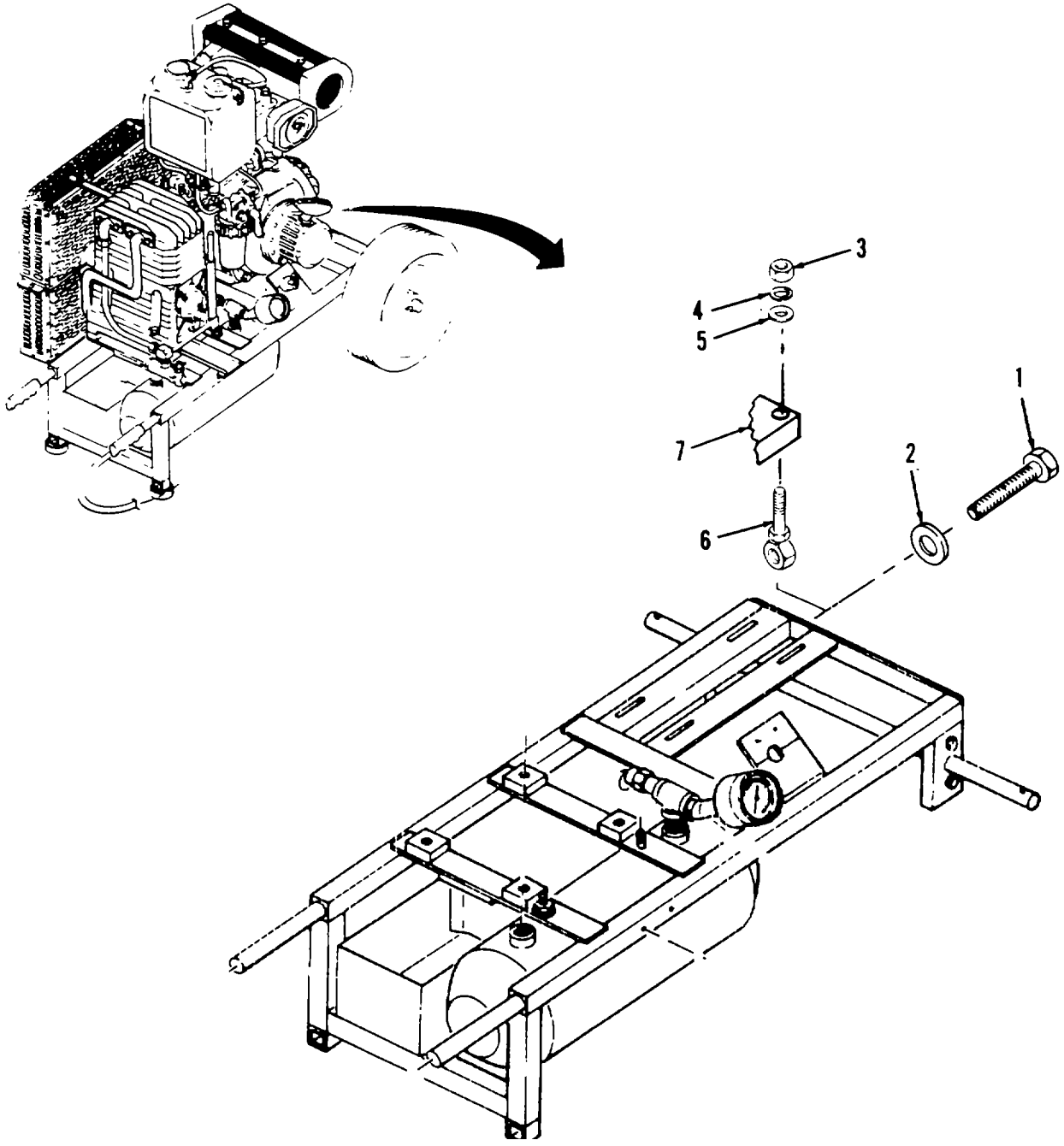


Figure 4-13. Take-Up Screw Replacement.

4-24. TOOL BOX REPLACEMENT.

This task covers:
a. Removal **b. Cleaning** **c. Inspection** **d. Installation**

INITIAL SETUP:

Tools Required
Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's/Parts Required
Cloth, Lint-Free (Appendix E, Item 1)
Brush, Medium Bristle (Appendix E, Item 2)

Equipment Condition
Air compressor unit shut down and cool.

a. Removal. (Refer to Figure 4-14).

(1) Remove screw (1), lock washer (2), and flat washer (3).

(2) Remove two screws (4), two lock washers (5), and two flat washers (6).

(3) Remove tool box (7) from unit.

b. Cleaning.

(1) Remove all build up of dirt, oil, and debris from all surfaces.

(2) Clean all metallic parts with a clean soft cloth or a medium bristle brush.

c. Inspection.

(1) Inspect all threads for damage.

(2) Check tool box for cracks dents.

d. Installation.

(1) Install tool box (7), two flat washers (6), two lock washers (5), and two screws (4).

(2) Install flat washer (3), lock washer (2), and screw (1).

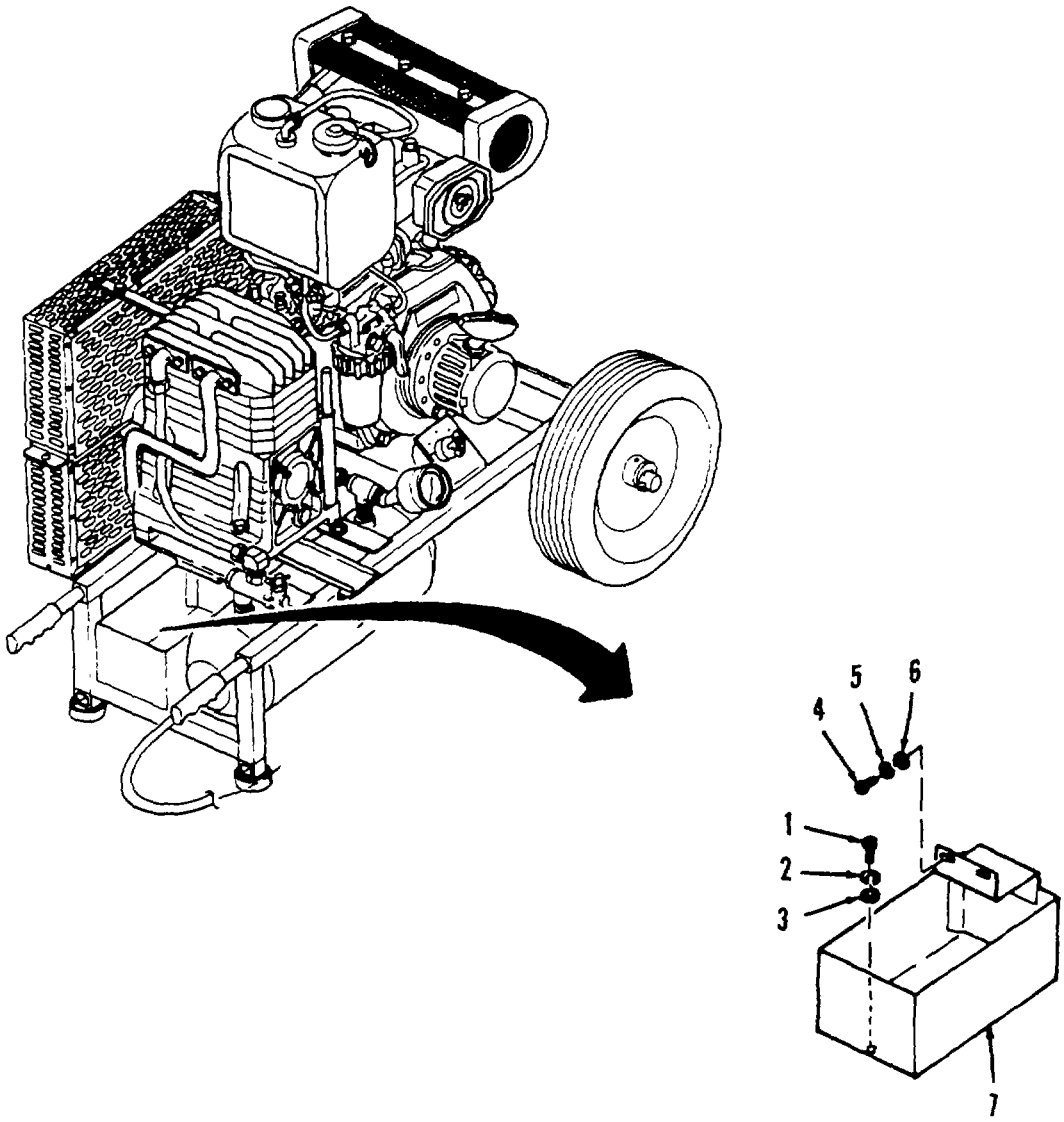


Figure 4-14. Tool Box Replacement.

4-25. WIRE ASSEMBLIES REPAIR AND REPLACEMENT.

This task covers:
a. Removal **b. Test** **c. Repair** **d. Installation**

INITIAL SETUP:

Tools Required
Tool Kit, General Mechanic's (Appendix B, Item 1)
Multimeter (Appendix B, Item 2)

Material's/Parts Required
None

Equipment Condition
Air compressor unit shut down and cool.

a. Removal.

Tag and disconnect any wires suspected of being defective.

b. Test.

Use a multimeter to check wiring for continuity. Repair or replace any wire that indicates a shorted circuit.

c. Repair. Repair methods consist of replacing wires, terminals, connectors, etc., rather than splicing wires, bending ends to form terminals, and other make-shift procedures; although the latter may be appropriate for emergency field repairs. Determine the proper size and length of wire, or the terminal, or connector to be used for replacement before repair. General repair of wires is accomplished by wire splicing or by terminal replacement in accordance with the following procedures.

(1) **Splicing Wires**. To repair broken or cut wires that are otherwise sound, the mating ends can be stripped and spliced. A commercial butt splice can be crimped onto the end to join them, or a: Western Union wire splice can be made. The latter is made by stripping 1/4 to 1/2 inch (0.6 to 1.3 c,) of insulation from the wire ends, holding the ends parallel and facing opposite directions, then twisting each end around the other wire at least three turns. Solder and apply insulation as described above.

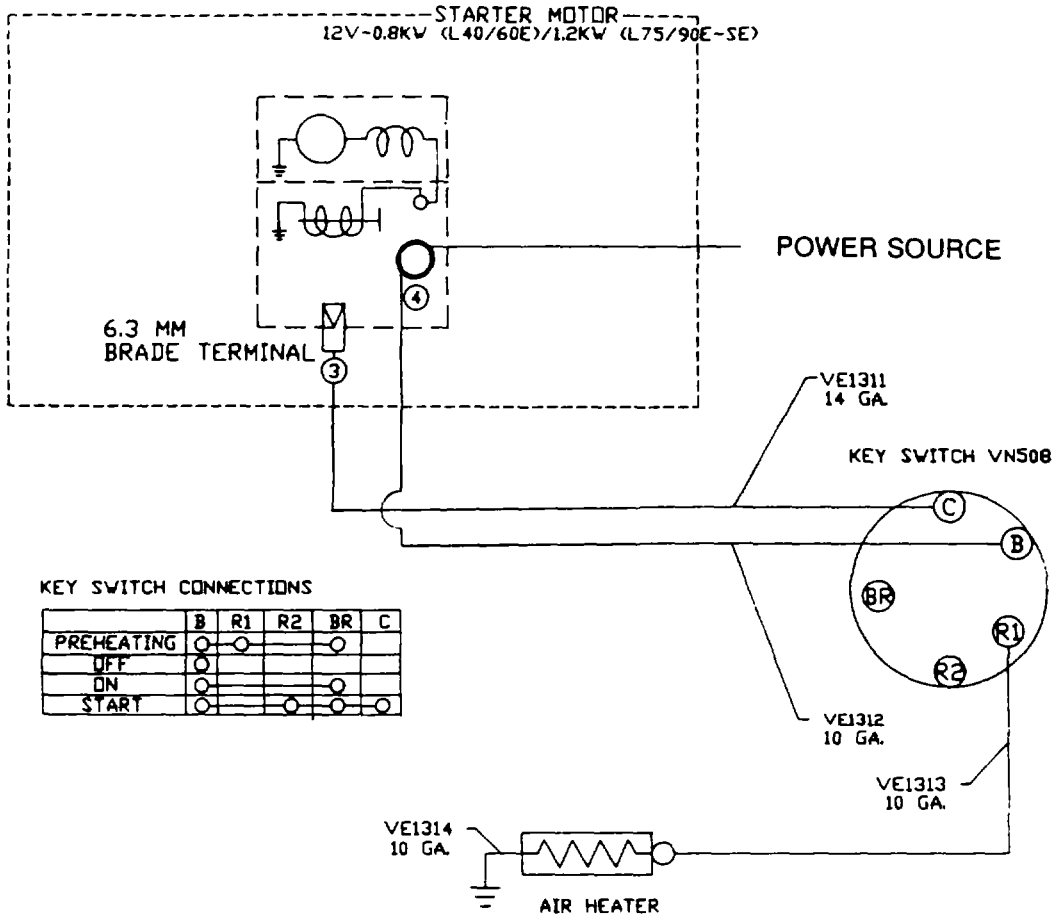
(2) **Crimping Terminals**. To install a terminal on the end of a wire, strip 1/4 to 1/2 inch (0.6 to 1.3 cm) of insulation from the end of the wire, apply a one-inch piece of heat-shrink tubing (if the terminals are of the uninsulated type), and insert wire end into the shank of the terminal. Crimp the shank, and install heat-shrink tubing, if necessary.

(3) **Soldering Connections**. Wire connections must be made mechanically sound before they are soldered; solder alone does not provide sufficient strength to prevent breakage. Joining surfaces of connections to be soldered must be clean and bright. If a separate flux is used, it should conform to soldering flux (Appendix E, item 9) and should be brushed onto the joint before soldering. If an uncored solder is used, it should be a lead-tin solder, (Appendix E, item 10). Wires should always be heated to the point at which the solder will melt completely and flow into all parts of the joint. Excessive build-up solder "gobs" on the joint should be avoided or removed.

(4) **Heat Shrink Tubing**. The preferred method of insulating electrical joints is by the use of heatshrink tubing. To apply, cut a piece of heat-shrink tubing of suitable diameter to a one-inch length for covering joints at terminals or connectors, or to a length about 1/2 inch (1.3 cm) longer than the joint to be insulated, and slide the tubing over the wire before making the joint. After the joint is made, slide the tubing so that it covers the joint, and shrink in place with moderate heat.

d. Installation.

Refer to wire tags and Figure 4-15 to install repaired wire into unit. Remove wire tags.



1. **BE SURE TO GROUND ENGINE.**
2. **SECTION ENCLOSED WITHIN DOTTED SQUARE IS PRE-WIRED AT FACTORY.**
3. **BATTERY AND CABLES ARE NOT INCLUDED WITH COMPRESSOR. ALTERNATE 12 VDC, 50 AMP POWER SOURCE MAY BE USED.**

Figure 4-15. Wiring Diagram.

4-26. AIR CLEANER, FILTER ELEMENT, AIR INLET HEATER REPAIR, AND AIR INTAKE PIPE REPAIR AND REPLACEMENT.

This task covers:

a. Removal **b. Inspection** **c. Installation**

INITIAL SETUP:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's/Parts Required

Gasket, 114250-12200 (Appendix H, item 3)
Gasket, 114250-12210 (Appendix H, Item 4)

Equipment Condition

Air compressor unit shut down and cool.
Cooling fan case removed (see para. 4-29)(Only if air intake pipe is being removed.)

a. Removal. (Refer to Figure 4-16).

(1) Remove wing nut (1) and washer (2).

(2) Remove air cleaner housing cover (3).

(3) Remove air cleaner element (4).

(4) Remove three bolts (5) securing the air cleaner housing (6).

(5) Remove air cleaner housing (6). Discard gasket (7).

(6) Remove nut (8), washer (9), washer (10), and terminal lug (11) from air inlet heater (12).

(7) Remove nut (13), lock washer (14), and terminal lug (15) from air inlet heater (12).

(8) Remove four bolts (16), air inlet heater spacer (17), gasket (18), air inlet heater (12), and spacer (19).

(9) Remove three nuts (20), spacer (21), gasket (22), screw (23), intake pipe (24), and gasket (25).

b. Inspection.

(1) Check that air cleaner housing (6) and cover (3) are free from dirt.

(2) Check air cleaner housing (6) and cover (3) for damage. Replace if necessary.

(3) Inspect air inlet heater for broken heating elements.

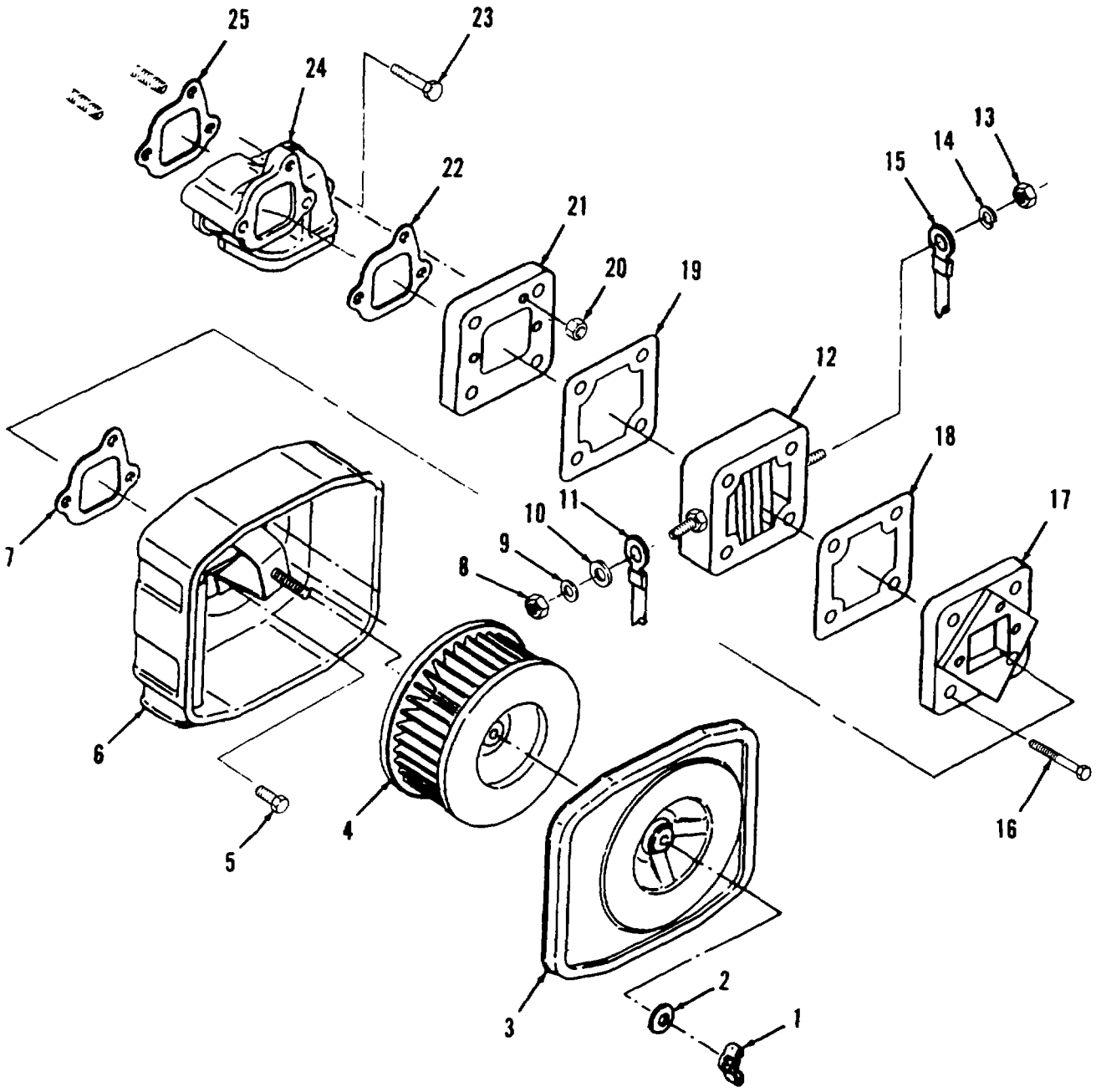


Figure 4-16. Air Cleaner, Filter Element, Air Inlet Heater, and Air Intake Pipe Repair and Replacement.

4-26. AIR CLEANER, FILTER ELEMENT, AIR INLET HEATER REPAIR, AND AIR INTAKE PIPE REPAIR AND REPLACEMENT. - Continued.

c. Installation.

WARNING

Never run the engine without the air cleaner element. Rapid engine wear may result.

(1) Install gasket (25), air intake pipe (24), screw (23), gasket (22), spacer (21), and three nuts (20).

(2) Install terminal lug (15), lock washer (14), and nut (13) onto air inlet heater (12).

(3) Install terminal lug (11), washer (10), washer (9), and nut (8) onto air inlet heater (12).

CAUTION

Air inlet heater can be damaged if improperly installed. Be sure long stud on air inlet heater points away from muffler.

(4) Install spacer (19), air inlet heater (12), gasket (18), inlet air heater spacer (17), and four bolts (16).

(5) Install new gasket (7), air cleaner housing (6), and three bolts (5).

(6) Install air cleaner element (4) into air cleaner housing (6).

(7) Replace air cleaner housing cover (3).

(8) Replace and tighten washer (2) and wing nut (1).

4-27. MUFFLER REPAIR AND REPLACEMENT.

This task covers:

a. Removal **b. Inspection** **c. Installation**

INITIAL SETUP:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's/Parts Required

Gasket, 114250-13200 (Appendix H, Item 5)

Equipment Condition

Air compressor unit shut down and cool.

a. Removal. (Refer to Figure 4-17).

(1) Remove clamp (1) and spark arrester (2).

(2) Remove two screws (3), two lock washer (4), two flat washer (5).

(3) Remove two hex head nuts (6) and bracket (7) securing the muffler (8) to studs on the exhaust port of the engine.

(4) Remove two hex head screws (9) securing the bracket on muffler (8) to the rear of the engine.

(5) Lift muffler (8) and gasket (10) from the studs. Discard gasket.

(6) Remove six screws (11) and muffler cover (12).

b. Inspection.

Carefully inspect muffler for cracks, rust, or pin holes.

c. Installation.

(1) Install six screws (11) and muffler cover (12).

(2) Position muffler (8) and new gasket (10) onto the studs and line up holds in bracket with rear mounting holes on engine.

(3) Secure muffler (8) with two hex head nuts (6) and bracket (7) onto the studs and two hex head screws (9) in the mounting holes on engine.

(4) Install two flat washer (5), two lock washer (4), and two screws (3).

(5) Install spark arrester (2) and clamp (1).

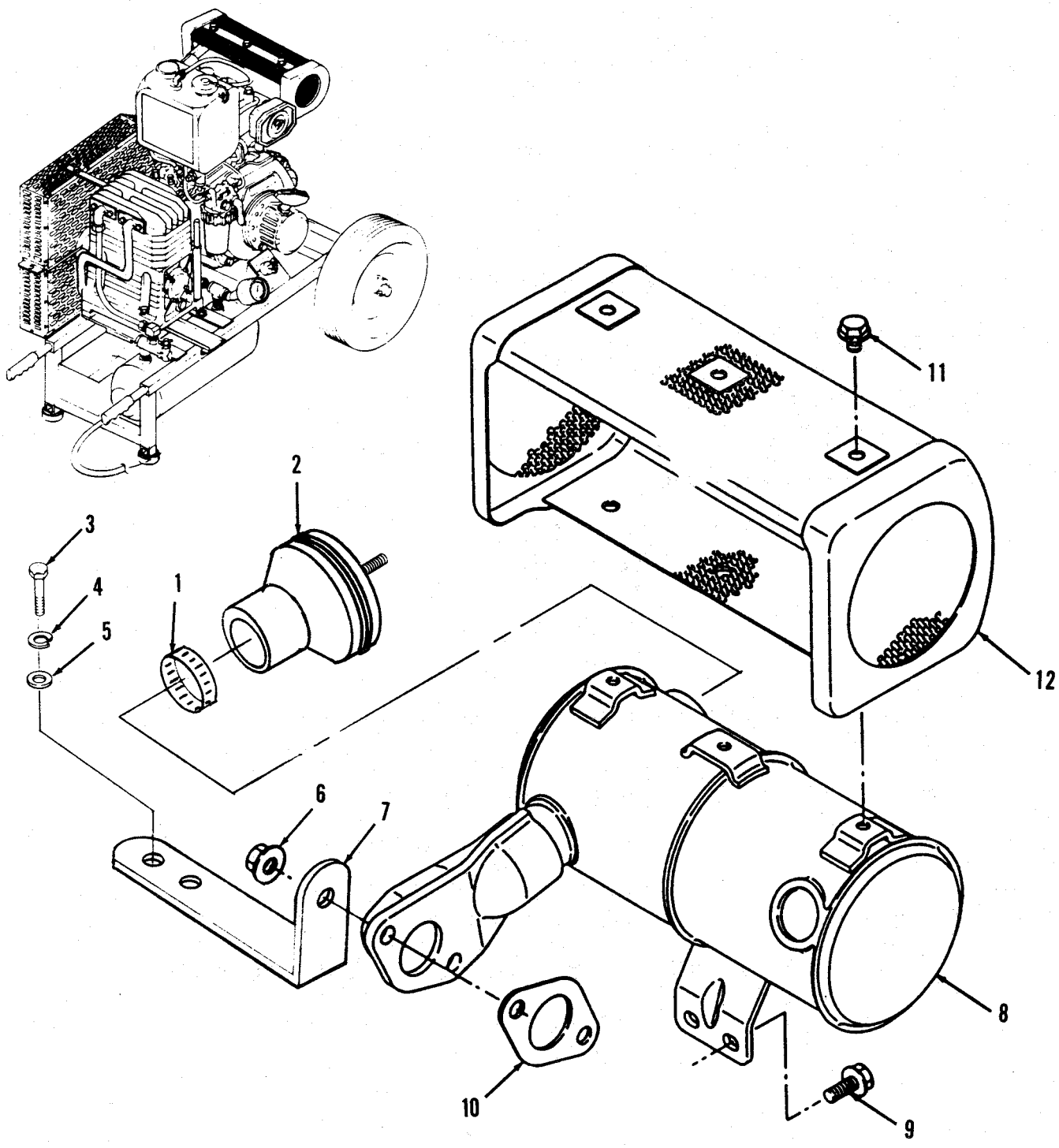


Figure 4-17. Muffler Repair and Replacement.

4-28. RECOIL STARTER AND FLYWHEEL COVER REPAIR AND REPLACEMENT.

This task covers:
a. Removal **b. Inspection** **c. Repair** **d. Installation**

INITIAL SETUP:

Tools Required
Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's/Parts Required
Seal, 114250-45330 (Appendix H, Item 6)

Equipment Condition
Air compressor unit shut down and cool.

a. Removal (Refer to Figure 4-18).

NOTE
Note position of T-handle prior to removal.

(1) Remove four bolts (1).

(2) Remove the recoil starter assembly (2) as a self-contained unit.

(3) Remove four bolts (3), four washers (4), four collars (5), three wire clamps (6), and four rubber cushions (7).

(4) Remove flywheel cover (8) and seal (9). Discard seal.

b. Inspection.

(1) Pull the rope. It should pull easily with no binding.

(2) Observe the drive mechanism. The cam that engages the flywheel cap should extend freely.

(3) Allow the rope to retract. The engaging mechanism should retract.

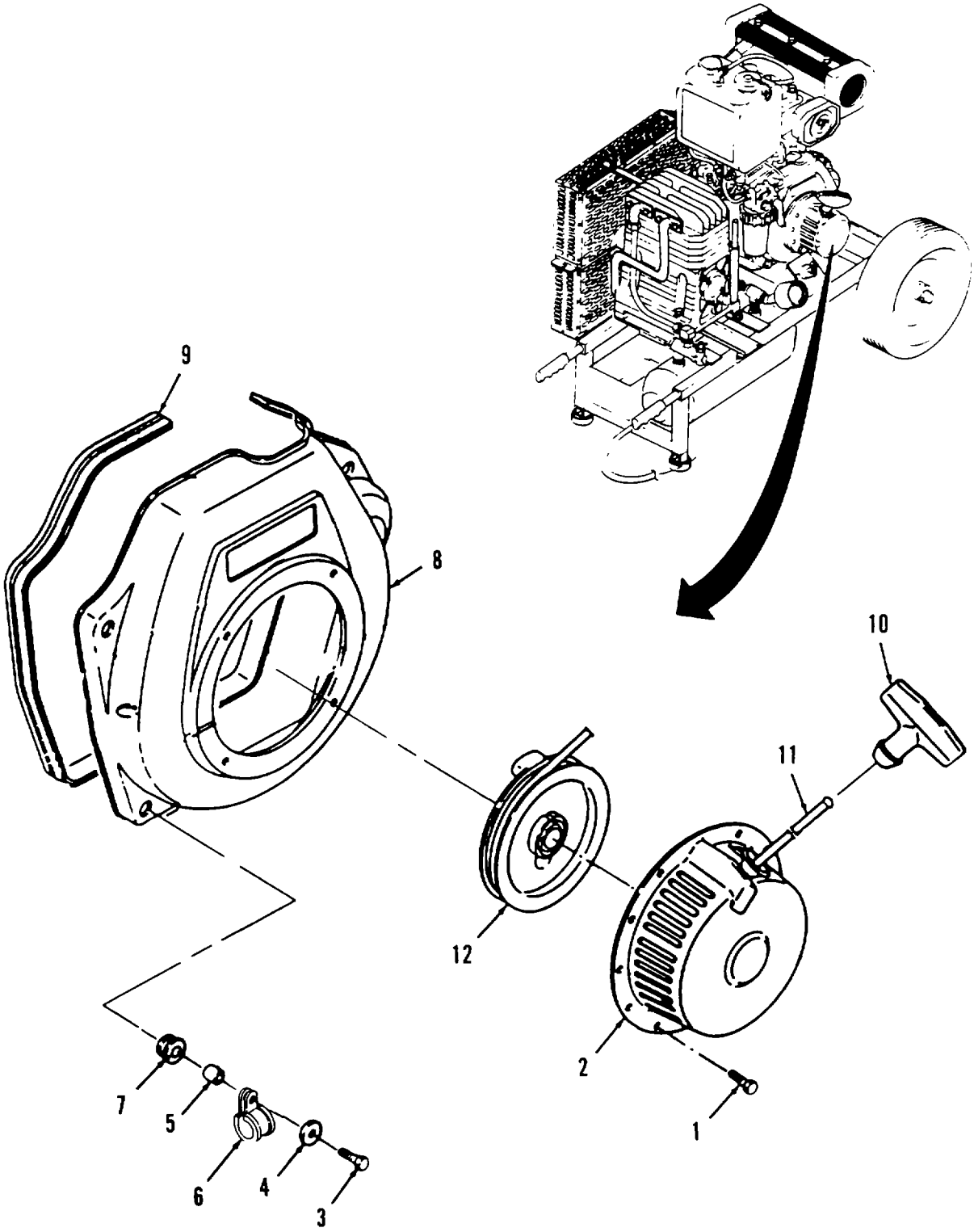


Figure 4-18. Recoil Starter and Flywheel Cover Repair and Replacement.

4-28. RECOIL STARTER AND FLYWHEEL COVER REPAIR AND REPLACEMENT. - Continued.

c. Repair. Repair of recoil starter is limited to replacing starter rope as follows:

NOTE

It is not necessary to disassemble the entire recoil starter mechanism to replace the rope.

(1) Pull the rope T-handle (10) slowly until approximately two feet of pull rope (11) is exposed.

(2) Prevent plastic reel (12) from rewinding by bracing the raised plastic cup on the reel with a screwdriver.

(3) Grasp the rope (11) firmly and pull the knot in the rope about six inches out of the T-handle (10).

NOTE

With knot untied do not allow rope to rewind into the starter assembly.

(4) Untie the knot in rope (11) which was in the T-handle (10).

(5) Pass the rope (11) through the opening in recoil starter (2). Slip the T-handle (10) onto the rope and retie the knot.

(6) Untie or cut the knot in the raised plastic cup on the reel (12) and slide the old rope (11) out.

(7) If the old rope (11) has broken, wind the plastic reel (12) completely, then release one complete turn before installing new rope. This protects the spring from being overwound when the rope is pulled.

(8) Singe both ends of the new nylon rope with a match flame to prevent fraying.

(9) Tie a knot in the new rope (11) and feed through plastic reel (12).

(10) Feed end of rope (11) through the opening in the recoil starter (2).

(11) Feed enough rope (11) through the T-handle (10) to make a knot.

(12) Remove bracing screwdriver and let reel (12) rewind new rope (11) slowly.

d. Installation.

(1) Place new seal (9) and flywheel cover (8) into position on engine.

(2) Install four rubber cushions (7), three wire clamps (6), four collars (5), four washers (4), and four bolts (3).

(3) Check the recoil starter (2) for operation before installing it on the engine.

(4) Position the recoil starter (2) on the flywheel cover (8) as noted at removal. Push the cam back located on the back of plastic reel (12) into the reel if it is extended.

(5) Install four bolts (1).

(6) Check recoil starter (2) for operation on the engine.

4-29. STARTER REPLACEMENT.

This task covers:

a. Removal **b. Inspection** **c. Installation**

INITIAL SETUP:

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)
Tachometer (Appendix B, Item 3)

Material's/Parts Required

None

Equipment Condition

Air compressor unit shut down and cool.

a. Removal. (Refer to Figure 4-19).

(1) Tag and disconnect wires from starter (1).

(2) Remove two screws (2).

(3) Remove starter (1) from engine.

b. Inspection.

Inspect starter assembly for any obvious damage.

c. Installation.

(1) Install starter (1) and two screws (2).

(2) Refer to wire tags and reconnect wires to starter (1). Remove wire tags.

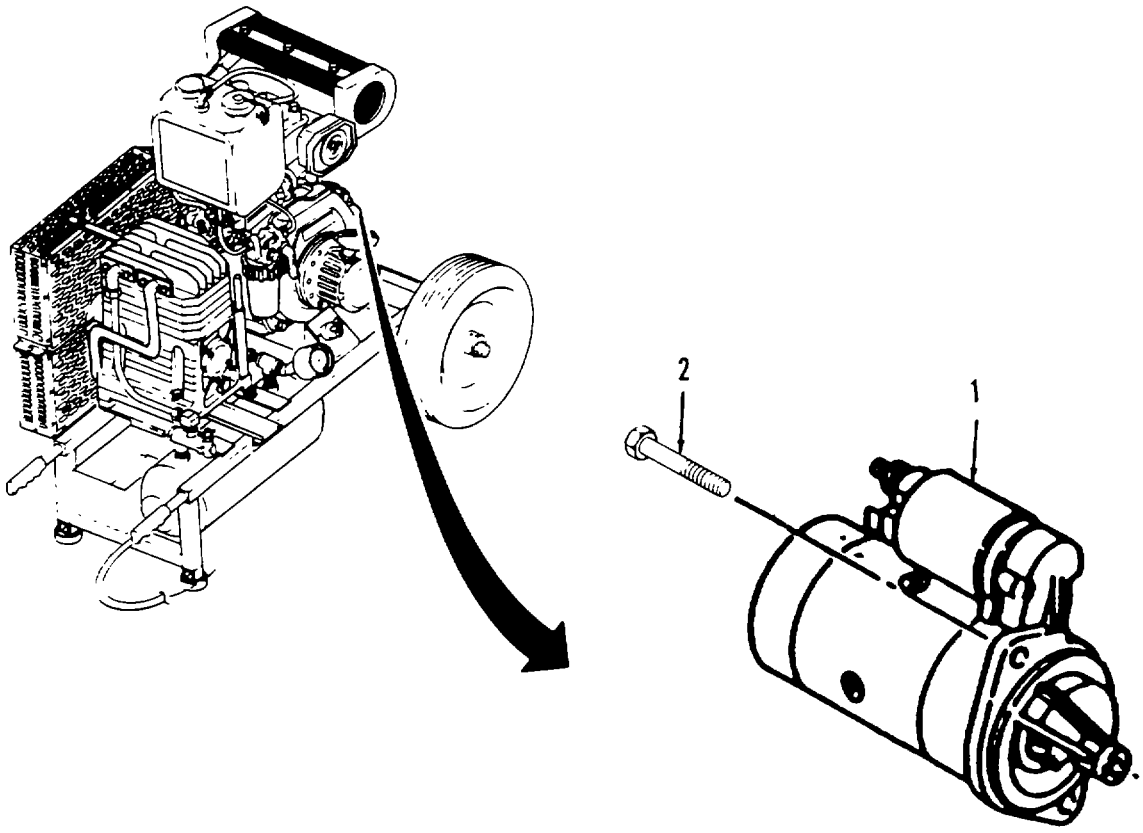


Figure 4-19. Starter Replacement.

4-30. LUBE OIL STRAINER AND OIL CAP/GAUGE REPAIR AND REPLACEMENT.

This task covers:
a. Removal **b. Cleaning** **c. Inspection** **d. Installation**

INITIAL SETUP:

Tools Required
Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's/Parts Required
Diesel Fuel (Appendix E, Item 5)
O-ring, 24341-000224 (Appendix H, Item 7)
O-ring, 24311-000180 (Appendix H, Item 8)

Equipment Condition
Air compressor unit shut down and cool.

a. Removal. (Refer to Figure 4-20).

(1) Drain oil from engine (Refer to LO 9-4310-394-12).

(2) Remove hex head bolt (1) from crankcase (2).

(3) Remove lube oil strainer (3) and O-ring (4). Discard O-ring.

(4) Remove two oil cap/gauges (5) and two O-rings (6). Discard O-ring.

b. Cleaning.

(1) Thoroughly clean lube oil strainer (3) in diesel fuel.

(2) Shake lube oil strainer (3) dry and rinse thoroughly again in clean diesel fuel.

(3) Repeat steps (1) and (2) until all dirt has been removed from lube oil strainer (3).

(4) Dry lube oil strainer (3) thoroughly to remove fuel.

(5) If lube oil strainer (3) cannot be completely cleaned, then it must be replaced.

c. Inspection.

Examine lube oil strainer (3) for damaged mesh, hardened deposits, or other damage.

d. Installation.

(1) Install two new O-rings (6) and two oil cap/gauges (5).

(2) Lubricate new O-ring (4) with engine oil and insert into groove on lube oil strainer (3).

(3) Insert lube oil strainer (3) into hole in crankcase (2).

(4) Install hex head bolt (1) to attach lube oil strainer (3) to crankcase (2).

(5) Fill engine with 0.75 quart of proper engine oil (Refer to LO 9-4310-394-12).

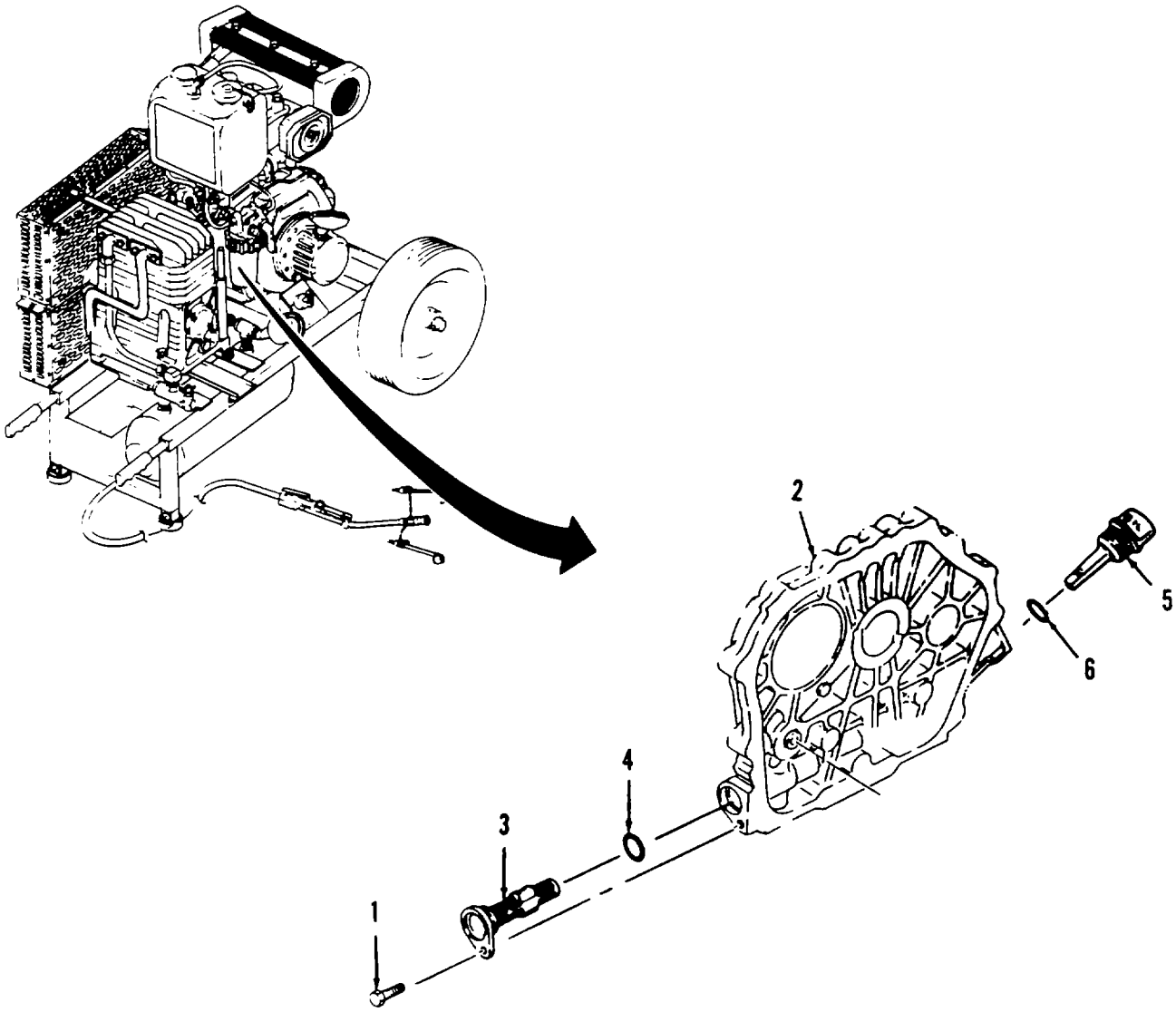


Figure 4-20. Lube Oil Strainer Repair and Replacement.

4-31. FLYWHEEL AND INTERCOOLER TUBE REPAIR AND REPLACEMENT.

This task covers:
a. Removal b. Cleaning c. Inspection d. Repair e. Installation

INITIAL SETUP:

Tools Required
Tool Kit, General Mechanic's (Appendix B, Item 1)
Puller (Appendix H, Item 2)

Material's/Parts Required
Cloth, Lint-Free (Appendix E, Item 1)
Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)

Equipment Condition
Air compressor unit shut down and cool.
V-belt removed (see para 4-16).

a. Removal. (Refer to Figure 4-21).

NOTE
Flywheel mounting screw has left hand threads.

(1) Remove screw (1), lock washer (2), and flat washer (3).

NOTE
Place flat washer between center screw of puller and compressor shaft to prevent thread damage on shaft.

(2) Remove compressor flywheel (4) from unit.

NOTE
Flywheel must be removed before intercooler tube can be removed.

(3) Remove four screws (5), two gaskets (6), and intercooler tube (7).

(4) Remove safety valve (8) from intercooler tube (7).

b. Cleaning.

(1) Remove all build up of dirt, oil, and debris from all surfaces.

WARNING

Serious injury can result in breathing fumes of dry cleaning solvent. Serious injury or death can result from explosion of fumes from solvent. When using this solvent:

- Clean parts in a well ventilated area.
- Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly.
- Do not use near open flame or excessive heat. Flash point of solvent is 100° F to 138° F (38° C to 59° C).
- Wear eye protection when blowing solvent from parts. Air pressure should not exceed 30 psig (2.1 kg/cm^2).

(2) Clean all metallic parts with a clean soft cloth or a medium bristle brush, and cleaning solvent.

(3) Allow parts to dry.

c. Inspection. Inspect all metal parts for cracks, corrosion, or broken fittings.

d. Repair. Repair is limited to replacement of parts found defective during inspection.

e. Installation.

(1) Install safety valve (8) into intercooler tube (7).

(2) Install intercooler tube (7), two gaskets (6), and four screws (5).

(3) Install flywheel (4) onto unit.

(4) Install flat washer (3), lock washer (2), and screw (1). Refer to Appendix G for proper torque values.

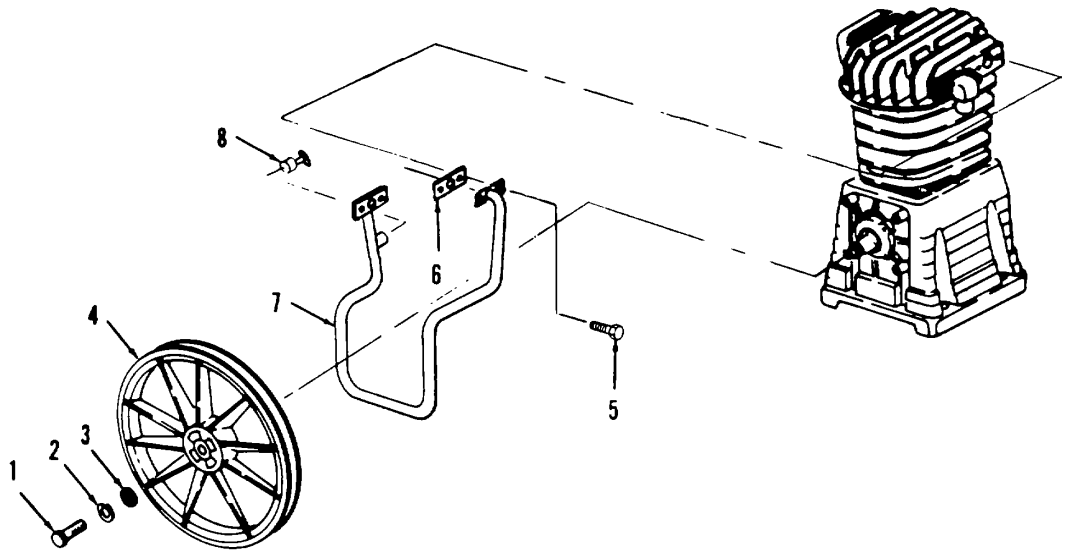


Figure 4-21. Flywheel and Intercooler Tube Repair and Replacement.

4-32. FILTER ASSEMBLY, OIL FILLER/BREATHER, AND SIGHT GLASS REPLACEMENT.

This task covers:
a. Removal **b. Inspection** **c. Installation**

INITIAL SETUP:

Tools Required
Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's/Parts Required
Filter element, 019-0139 (Appendix H, Item 9)

Equipment Condition
Air compressor unit shut down and cool.
Oil drained from compressor (see LO 9-4310-394-12).

a. Removal. (Refer to Figure 4-22).

(1) Remove two screws (1), filter cover (2), filter element (3), and filter holder (4) from compressor (5). Discard filter element.

(2) Remove oil filler/breather (6) and O-ring (7) from compressor (5).

(3) Remove sight glass (8) and gasket (9) from compressor (5).

b. Inspection.

(1) Inspect all metal parts for cracks, corrosion, or broken fittings.

(2) Inspect filter element for debris and clogging.

(3) Check sight glass for cracked plastic.

c. Installation.

(1) Install gasket (9) and sight glass (8) into compressor (5).

(2) Install O-ring (7) and oil filler/breather (6) into compressor (5).

(3) Install filter holder (4), new filter element (3), filter cover (2), and two screws (1).

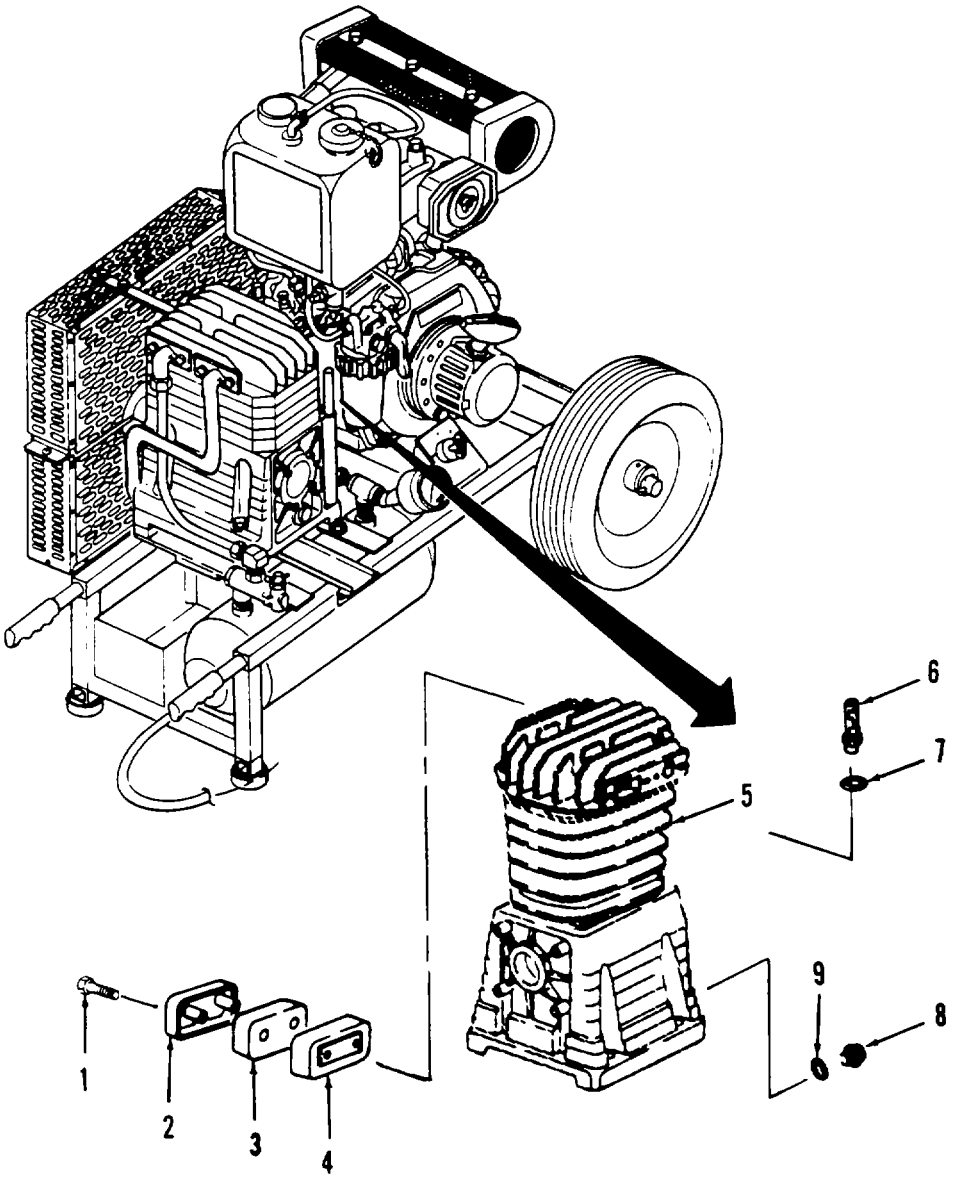


Figure 4-22. Filter Assembly, Oil Filler/Breather, and Sight Glass Replacement.

4-33. HANDLE GRIPS AND TIRE/WHEEL ASSEMBLIES REPLACEMENT.

This task covers:
a. Removal **b. Cleaning** **c. Inspection** **d. Installation**

INITIAL SETUP:

Tools Required
Tool Kit, General Mechanic's (Appendix B, Item 1)

Material's/Parts Required
Cloth, Lint-Free (Appendix E, Item 1)
Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Cotter Pin MS24665-370 (2 Required)(Appendix H, Item 22)

Equipment Condition
Air compressor unit shut down and cool.

a. Removal. (Refer to Figure 4-23).

NOTE
Handle grips can only be removed by cutting them from chassis. Do not remove them unless they are to be replaced.

(1) Remove two handle grips (1) from chassis (2).

(2) Remove two cotter pins (3), two tire / wheel assemblies (4), and two spacers (5). Discard cotter pins.

(3) Remove two screws (6), two lock washers (7), and two vibration mounts (8) from chassis (2).

b. Inspection.

(1) Inspect all metal parts for cracks and dents.

(2) Check vibration mounts for excessive wear.

(3) Check that wheel bearings operate smoothly.

c. Repair. Repair is limited to replacement of parts found defective during inspection.

d. Installation. (Refer to Figure 4-23).

(1) Install two vibration mounts (8), two lock washers (7), and two screws (6) onto chassis (2).

(2) Install two spacers (5), two tire / wheel assemblies (4), and two new cotter pins (3) onto chassis (2).

(3) Install two grips (1) onto chassis (2).

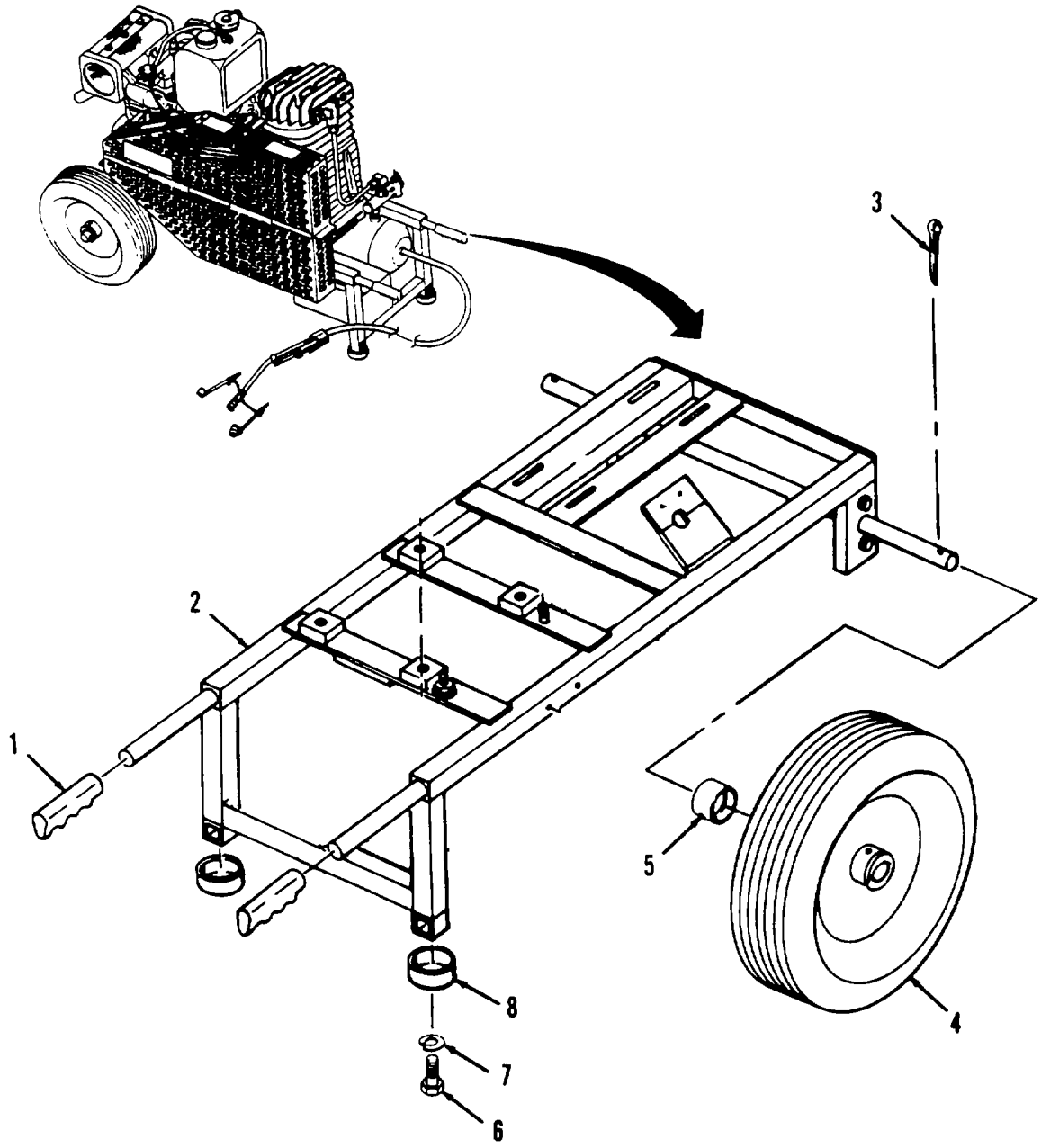


Figure 4-23. Handle Grips and Tire / Wheel Assemblies Replacement.

Section VI. PREPARATION FOR STORAGE OR SHIPMENT

4-34. PREPARATION FOR GENERAL STORAGE OR SHIPMENT. Before storing the air compressor unit, it must be properly prepared. To insure that the unit will operate properly when it is removed from storage or shipment, the following procedures must be performed.

a. Operate engine for about 3 minutes and then stop.

b. Drain the engine lube oil while the engine is still warm.

4-34. PREPARATION FOR GENERAL STORAGE OR SHIPMENT. - Continued.

c. Open drain cock on air receiver, allow water to drain from tank, and then close drain cock.

d. Remove drain plug on fuel tank and allow tank to drain.

e. Replace fuel tank drain plug.

f. Fill engine with new lube oil. Refer to LO 9-4310-394-12 for proper lubrication oil to be used.

g. Remove rubber plug on cylinder head and add about 5 drops of lube oil. Replace rubber plug.

h. Hold decompression lever down and slowly pull recoil starter rope 2 or 3 times (do not start engine).

i. Pull decompression lever up.

j. Pull the recoil starter rope slowly; stop when it feels tight. This closes the intake and exhaust valves and helps to prevent rust from forming.

4-35. ADMINISTRATIVE STORAGE OF EQUIPMENT.

b. General.

(1) Placement of equipment in administrative storage should be for short periods of time when a shortage of maintenance effort exists. Items should be in mission readiness within 24 hours or within the time factors determined by the directing authority. During the storage period appropriate maintenance records will be kept.

(2) Before placing equipment in administrative storage, current maintenance services and Equipment Serviceable Criteria (ESC) evaluations should be completed, shortcomings and deficiencies should be corrected, and all Modification Work Orders (MWO) should be applied.

(3) Storage site selection. Inside storage is preferred for items selected for administrative storage. If inside storage is not available, trucks, vans, conex containers and other containers may be used.

b. Intermediate Storage (46 to 180 days). No special handling is required other than protection from damage and the elements.

c. Long Term or Flyable Storage (Indefinite time).

(1) Place the unit into a plywood crate, preferably the original crate used to ship the unit if it has been preserved.

(2) Wrap the unit with two layers of heavy plastic sheet or barrier paper.

(3) Tape and strap the wrapping in place.

(4) Mark the air compressor unit in accordance with the standard Army procedures contained in TM 740-90-1, Administrative Storage of Equipment.

CHAPTER 5

DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

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

5-1. COMMON TOOLS AND EQUIPMENT. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

5-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT. The special tools required to service the centrifugal pump are listed and illustrated in TM 94310-394-23P, Repair Pars and Special Tools List (RPSTL), and in the Maintenance Allocation Chart (MAC) located in Appendix B of this manual.

5-3. REPAIR PARTS. Repair parts are listed and illustrated in TM 9-4310-394-23P.

Section II. DIRECT SUPPORT TROUBLESHOOTING

5-4. SYMPTOM INDEX. To assist the direct support maintenance of the air compressor unit, the following index of the troubleshooting symptoms contained in this chapter are provided for quick reference.

5-5. INTRODUCTION. This level of troubleshooting contains checks and corrective maintenance actions which will isolate defects to be corrected by specific maintenance procedures. Table 5-1 is a direct support troubleshooting chart. Symptoms listed in this table are accompanied by suggested tests or inspections which, in turn, suggest corrective action and the appropriate maintenance paragraph reference. Corrective action sometimes suggests additional checks to confirm the troubled area or further localize and isolate trouble to a more specific component. Maintenance procedures include removal, cleaning, inspection, repair, replacement, and installation. These maintenance procedures can be found in Section II of this chapter.

5-5. INTRODUCTION. Continued.

Refer to Table 5-1 to locate problematic symptoms, corrective action steps to isolate a faulty component, and references to provide corrective maintenance. The following paragraphs briefly explain the different headings of Table 5-1.

a. Malfunction. This is a sequential listing of problematic symptoms. The malfunction number is used for cross reference purposes and to avoid needless repetition.

b. Test or Inspection. This suggests further test or inspection checks to localize the symptom cause to a more specific area. It allows corrective action flexibility depending on the outcome of these checks.

c. Corrective Action. This lists the corrective action or actions to be taken and the paragraph reference to locate the step-by-step maintenance procedures to fix the fault.

Table 5-1. Direct Support Troubleshooting.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
1. ENGINE WILL NOT START.
Step 1. Check fuel injection pump. Check that fuel injection pump pumps fuel. Align/replace fuel injection pump. (Refer to para 5-8.)
Step 2. Check fuel injection nozzle. Check that fuel injection nozzle is operating properly. Replace fuel injection nozzle. (Refer to para 5-7.)
2. DROP IN ENGINE ROTATION SPEED.
Step 1. Check exhaust smoke color (refer to Table 4-2). Refer to likely cause and perform repairs or adjustment as indicating in Table 4-2.
Step 2. Check for faulty fuel injection valve. Check that injector spray pattern is correct and that fuel injector valve is functioning properly (see paragraph 5-7). If fuel injector valve is defective, replace it.

Table 5-1. Direct Support Troubleshooting.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 3. Fuel injector pump is not operating properly.

Check that fuel injector pump is operating properly (se paragraph 5-8).

If fuel injector pump is faulty, replace it.

3. BLUISH-WHITE EXHAUST SMOKE.

Fuel system is not operating properly.

Refer to MALFUNCTION 8, steps 2 and 3.

4. AIR COMPRESSOR WILL NOT COMPRESS AIR.

Valves and/or valve head are defective.

Replace valves and/or valve head. (Refer to para 5-12.)

Section III. DIRECT SUPPORT MAINTENANCE PROCEDURES

5-6. DIRECT SUPPORT MAINTENANCE PROCEDURES. Maintenance procedures at direct support maintenance level include as necessary: removal, cleaning and inspection, repair or replacement, and installation. Unless the procedure requires special resources or tools, more than one maintenance person or specific equipment conditions, these are not listed for each maintenance procedure. They are listed only for those procedures that require them.

5-7. FUEL INJECTOR VALVE ASSEMBLY REPLACEMENT.

This task covers:

a. Removal **b. Test** **c. Installation**

INITIAL SETUP

Tools Required

Tool Kit, General Mechanic's (Appendix B, item 1)
Test Stand, Injector (Appendix B, Item 3)
Torque Wrench Common 0-175 in-lb (Appendix B, Item 3)

Material's/Parts Required

Cloth, Lint-free (Appendix E, Item 1)
Hex Head Bolt, 3/8 x 4 inch UNC
Gasket, Nozzle, 114250-11460 (Appendix H, Item 10)
Spacer, Nozzle, 114350-11470 (Appendix H, Item 11)

Equipment Condition

Air compressor unit shut down and cool.

a. Removal. (Refer to Figure 5-1).

CAUTION

Do not touch tip of fuel injection nozzle as damage to equipment can occur.

(1) Disconnect fuel return line and fuel injector tube from fuel injector valve assembly.

(2) Remove two hex head nuts (1), terminal lug (2), and retaining plate (3).

NOTE

If the nozzle is tight, gently pry nozzle using a small pry bar. Be careful not to pry on the fuel return hose hub.

(3) Carefully remove fuel injection nozzle (4). Wrap it in clean cloth to protect the nozzle tip. Do not place nozzle tip directly on any dirty surface without protection.

(4) If nozzle gasket (5) and spacer (6) are not attached to nozzle at removal, screw a 3/8 x 4 inch UNC hex head bolt into nozzle gasket, then remove stud bolt. The gasket and spacer should come out and be discarded.

WARNING

Death or serious injury could occur if fuel is not handled properly. Use in a well-ventilated area away from open flame, arcing equipment, ignition sources, heaters, or excessive heat. Always store fuel in properly marked containers. DO NOT SMOKE.

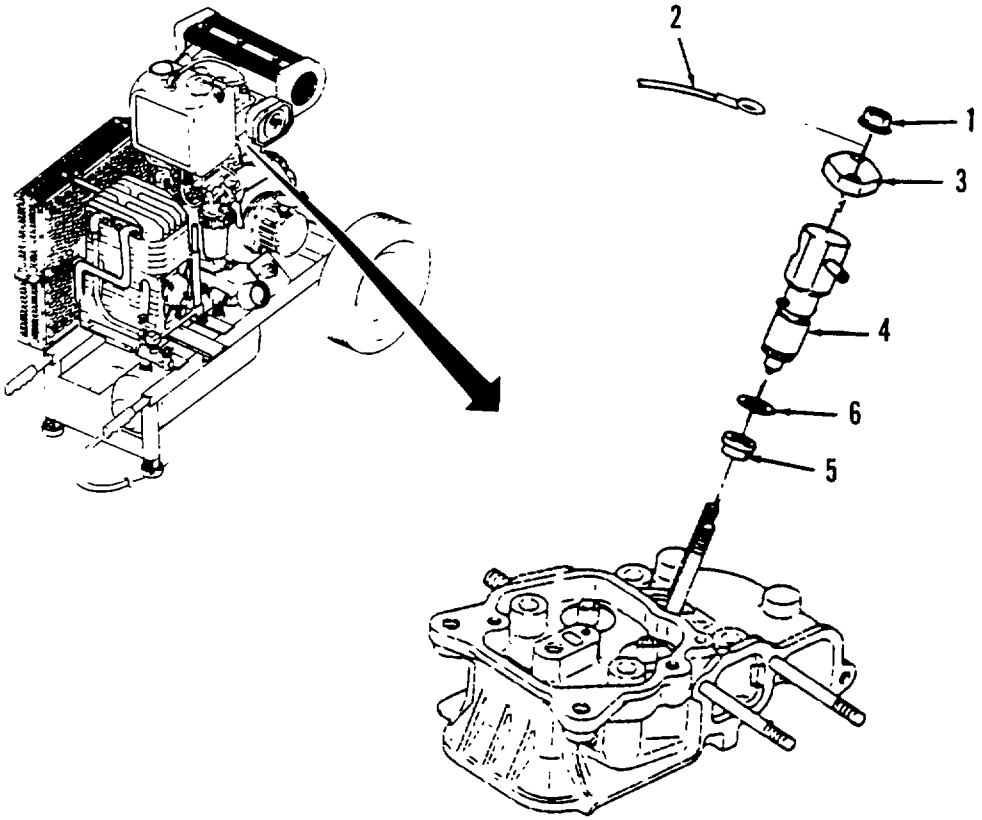


Figure 5-1. Fuel Injector Valve Assembly Replacement.

b. Test. The fuel injector valve is tested by checking the spray pattern ejected from the nozzle of the valve. When fuel is forced through the injector nozzle, it should have the following characteristics.

(1) Spray pattern should be equal with the spray from each of the four nozzle ports coming out at the same angle.

(2) The spray from the nozzle should be a very fine mist.

(3) The spray should be smooth and steady without any pulsing.

c. Installation.

(1) Install new fuel injection nozzle gasket (4) and spacer (5) onto fuel injection nozzle (3) before installing nozzle into cylinder block.

NOTE

Make sure nozzle and sleeve surface is clean. Carbon deposits will build up on nozzle in the form of flowers. Flowering lowers combustion performance significantly.

5-7. FUEL INJECTOR VALVE ASSEMBLY REPLACEMENT. - Continued.

(2) Carefully insert the fuel injection nozzle (4) into the cylinder block. Care must be taken in order to avoid damage to nozzle gasket (5).

(3) Make sure fuel injection nozzle (4) positioning pin slides into the positioning slot.

(4) Install nozzle (4) to engine with two hex head nuts (1), terminal lug (2), and retaining plate (3). Torque to 7 94 in-lb (80-100 cm-kg).

(5) Install fuel return line to injector valve assembly.

5-8. FUEL INJECTOR PUMP AND REPLACEMENT.

This task covers:

a. Removal **b. Inspection** **c. Installation**

INITIAL SETUP

Tools Required

Tool Kit, General Mechanic's (Appendix B, item 1)

Material's/Parts Required

Gasket, 114250-01840 (Appendix H, Item 12)

Equipment Condition

Air compressor unit shut down and cool.
Fuel tank removed (see para. 4-18).

a. Removal. (Refer to Figure 5-2).

(1) Disconnect fuel injector pipe (1), clamp (2), and fuel line (3) from fuel injector pump.

(2) Remove hex nut (4) securing pump viewing access plate (5) and gasket (6). Discard gasket.

(3) Remove two hex nuts (7) securing fuel injection pump (8), and remove pump together with base mounting plate.

NOTE

The engine may be equipped with either one or two shims. Be sure to count the number of shims used on your engine so that the same number of shims are used during installation of the fuel injector pump.

(4) Remove two metal shims (9).

(5) If flat tappet (10) is not removed with fuel injection pump, then remove flat tappet with fingers.

b. Inspection. Check for damaged parts and/or evidence of leakage.

c. Installation.

NOTE

When replacing or installing a new fuel injection pump, it is usually not necessary to test or adjust the injection timing. Run the engine and observe performance and exhaust color (refer to Table 4-2) before adjusting timing.

(1) Insert bottom flat tappet (10) down into engine block, closed end first.

(2) Adjust speed control lever knob until governor yoke (11) is centered in engine block opening.

(3) Refer to Figure 5-3. The access hole on fuel injection pump has an access hole pointer match mark (1). Make sure the pointer (2) of the control lever lines up with the match mark.

(4) Refer to Figure 5-2. Position two metal shims (9) and carefully insert fuel injection pump (8) onto the studs, making sure the speed control lever engages into governor yoke (11).

(5) Secure fuel injection pump onto studs using two nuts (7).

(6) Attach pump viewing access plate (5) and new gasket (6) with one hex nut (4).

(7) Attach fuel line hose (3), clamp (2), and fuel injection pipe (1) to fuel injection pump (8).

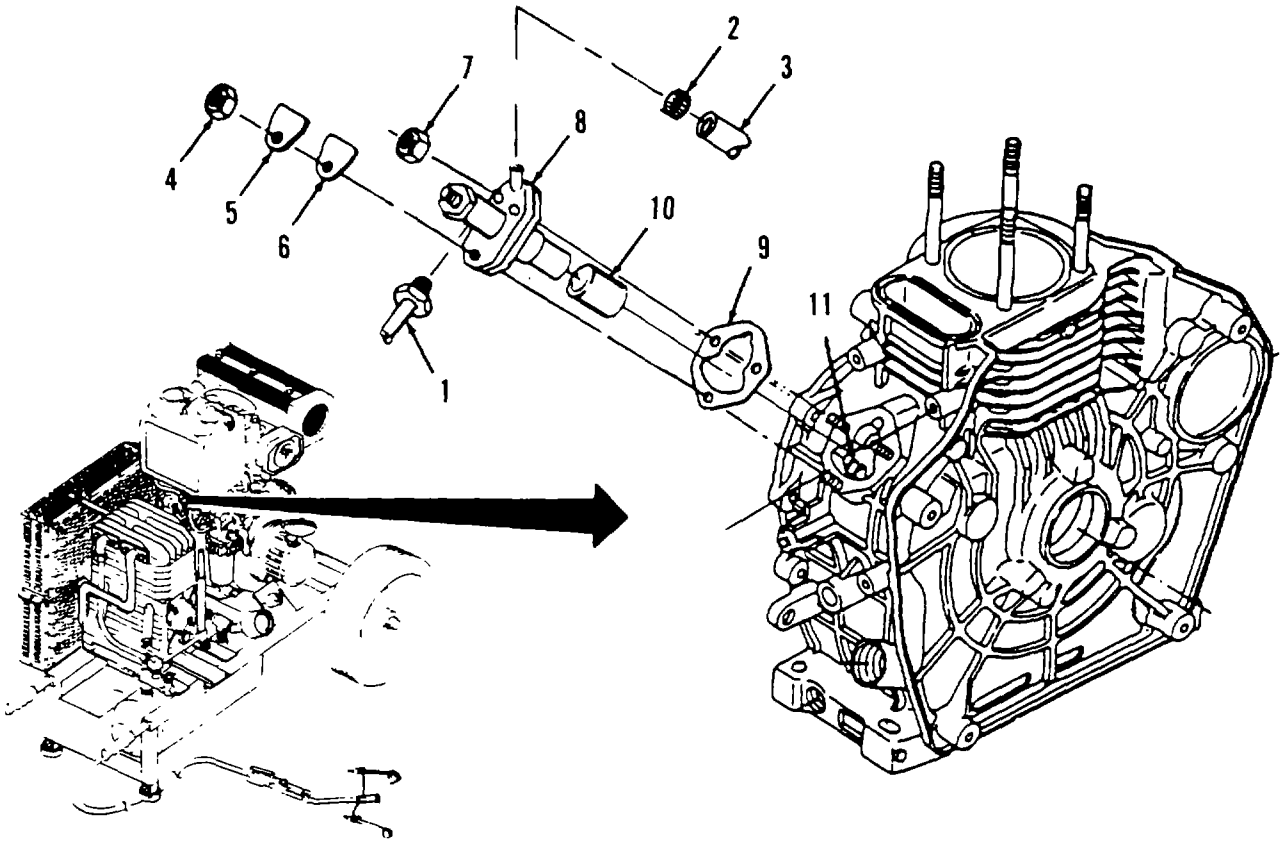


Figure 5-2. Fuel Injector Pump Repair and Replacement.

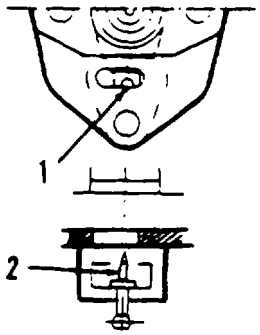


Figure 5-3. Fuel Injector Pump Alignment.

5-9. REGULATOR BRACKET ASSEMBLY REPAIR AND REPLACEMENT.

This task covers:

a. Removal **c. Repair** **e. Adjustment**
b. Inspection **d. Installation**

INITIAL SETUP

Tools Required

Tool Kit, General Mechanic's (Appendix B, Item 1)
Tachometer (Appendix B, Item 3)

Materials/Parts Required

Diesel Fuel (Appendix E, Item 5)

Equipment Condition

Air compressor unit shut down and cool.
Fuel removed (see para. 4-18).

a. Removal. (Refer to Figure 5-4).

(1) Remove mounting bolts (1 and 2).

(2) Remove regulator bracket (3) with regulator lever (4) and springs attached.

(3) Remove regulator spring (5) from the governor lever (6) and regulator lever (4).

(4) Remove return spring (7) from the governor lever (6) and regulator lever (4).

(5) Remove regulator coil spring (8).

(6) Remove regulator lever (4) from regulator bracket (3) by unscrewing lever locking knob (9) and lock nut (10).

(7) Remove adjusting bolt (11) and nut (12).

(8) Remove wire (13), bolt (14), and nut (15).

b. Inspection.

(1) Clean all parts with diesel fuel.

(2) Inspect all components for damage or excessive wear. Replace any components damaged or worn.

c. Repair. Repair is limited to replacement of defective parts.

d. Installation.

(1) Install nut (11) and bolt (12).

(2) Install nut (15) and adjusting bolt (14).

(3) Install regulator coil spring (8).

(4) Mount regulator lever (4) to regulator bracket (3) using the lever locking knob (9). Secure with self-locking nut (10).

(5) Attach return spring (7) to the governor lever (6) and to regulator lever (4).

(6) Attach regulator spring (5) to the second hole from the left on the governor lever (6) and connect spring to second hole from the left on regulator lever (4).

(7) Mount regulator bracket assembly (3) with mounting bolts (2 and 1).

(8) Lubricate all moving parts with lubricating oil.

e. Adjustment.

(1) Check that engine RPM is 3,800 max unloaded or 3,600 max loaded.

(2) Loosen nut (15) and adjust bolt (14) until engine operates at proper RPM.

(3) When engine RPM is correct, tighten nut t (15) to hold adjusting bolt (14) into position and install new wire (13) to seal adjustment.

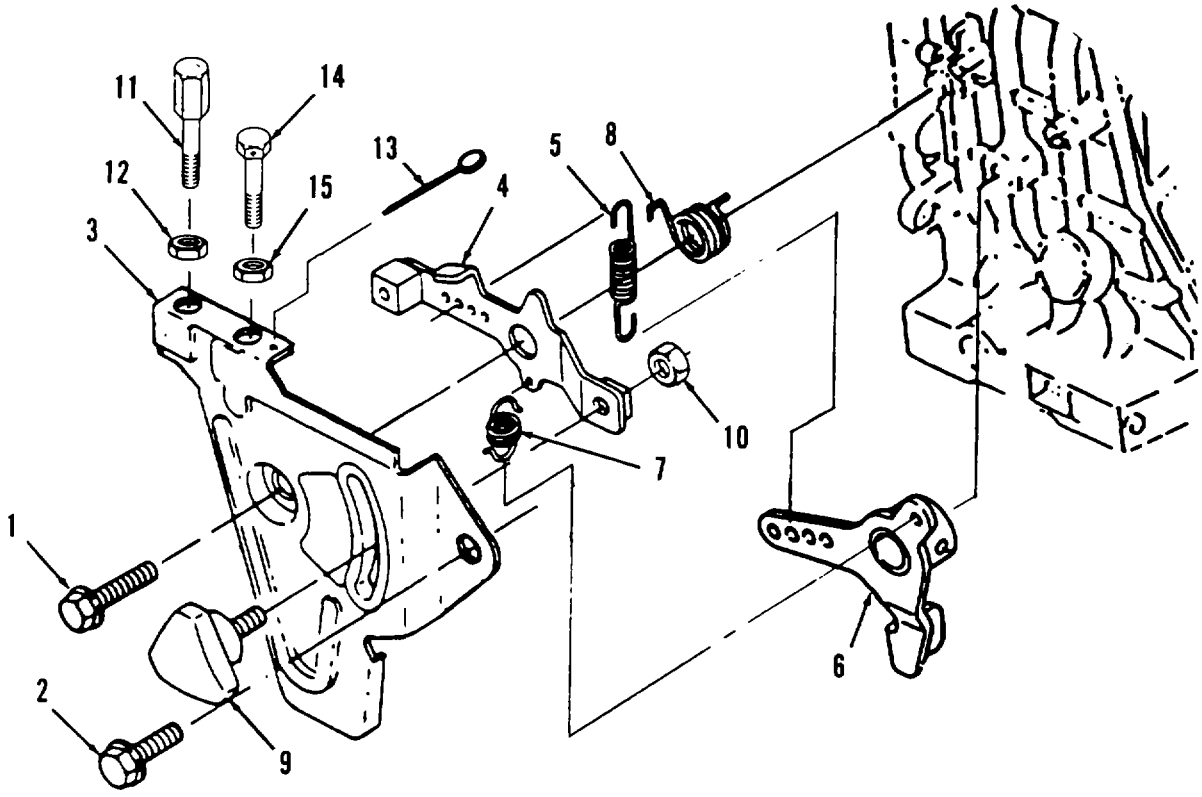


Figure 5-4. Regulator Bracket Assembly Repair and Replacement.

5-10. CYLINDER HEAD ASSEMBLY REPAIR AND REPLACEMENT.

This task covers:

a. Removal **c. Repair** **e. Adjustment**
b. Inspection **d. Installation**

INITIAL SETUP

Tools Required

Tool Kit, General Mechanic's (Appendix B, item 1)
Fitting Tool, Valve Stem Seal (Appendix B, Item 3)
Torque Wrench (Appendix B, Item 3)

Material's/Parts Required

Abrasive Cloth (Appendix E, Item 4)
Diesel Fuel (Appendix E, Item 5)
Lubricating Oil (Appendix E, Item 7)
Gasket, cylinder head, 114250-01340 (Appendix H, Item 13)
O-ring, 114250-01380 (Appendix H, Item 14)
Seal, valve stem, 114250-11340 Appendix H, Item 15)

Equipment Condition

Air compressor unit shut down and cool.
Fuel tank removed (see para. 4-18).
Air cleaner, air inlet heater, and air intake pipe removed (see para. 4-26).
Muffler removed (see para. 4-27).
Fuel injector valve removed (see para. 5-7).

a. Removal (Refer to Figure 5-5).

(1) Remove two screws (1), strap (2), rubber plug (3), cylinder head cover (4), and gasket (5).

(2) Remove two cap nuts (6) and washers (7) from cylinder head studs.

(3) Remove two cylinder head nuts (8) and cylinder head washers (9) from cylinder head studs.

(4) Remove cylinder head assembly (10) by lifting straight up off the four cylinder head studs.

(5) Remove and discard push rod O-ring (11) and cylinder head gasket (12).

CAUTION

Reversing push rods may damage engine. Note and tag push rod arrangement in engine before removing push rod.

(6) Remove two push rods (13).

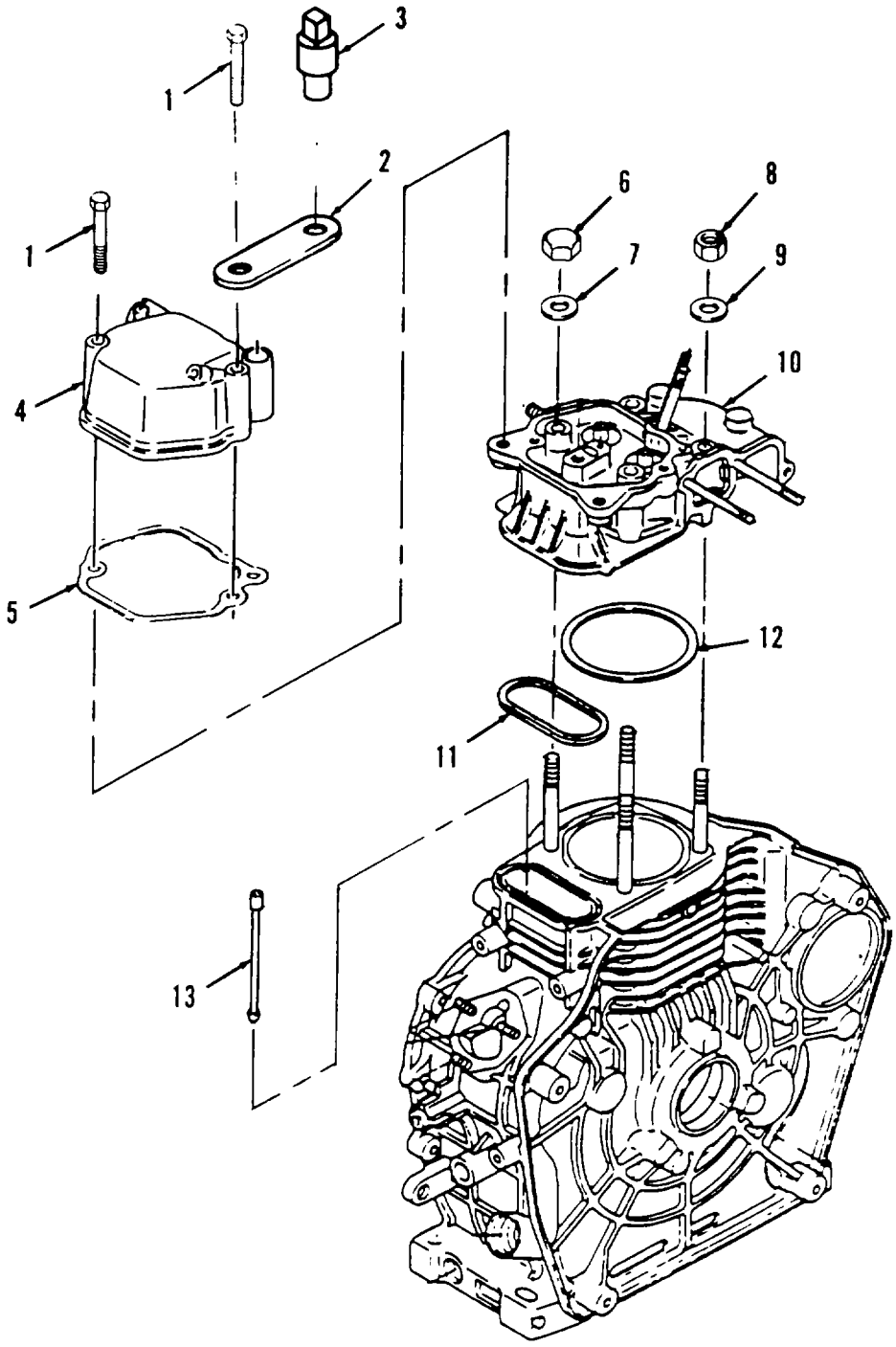


Figure 5-5. Cylinder Head Removal.

5-10. CYLINDER HEAD ASSEMBLY REPAIR AND REPLACEMENT. - Continued.

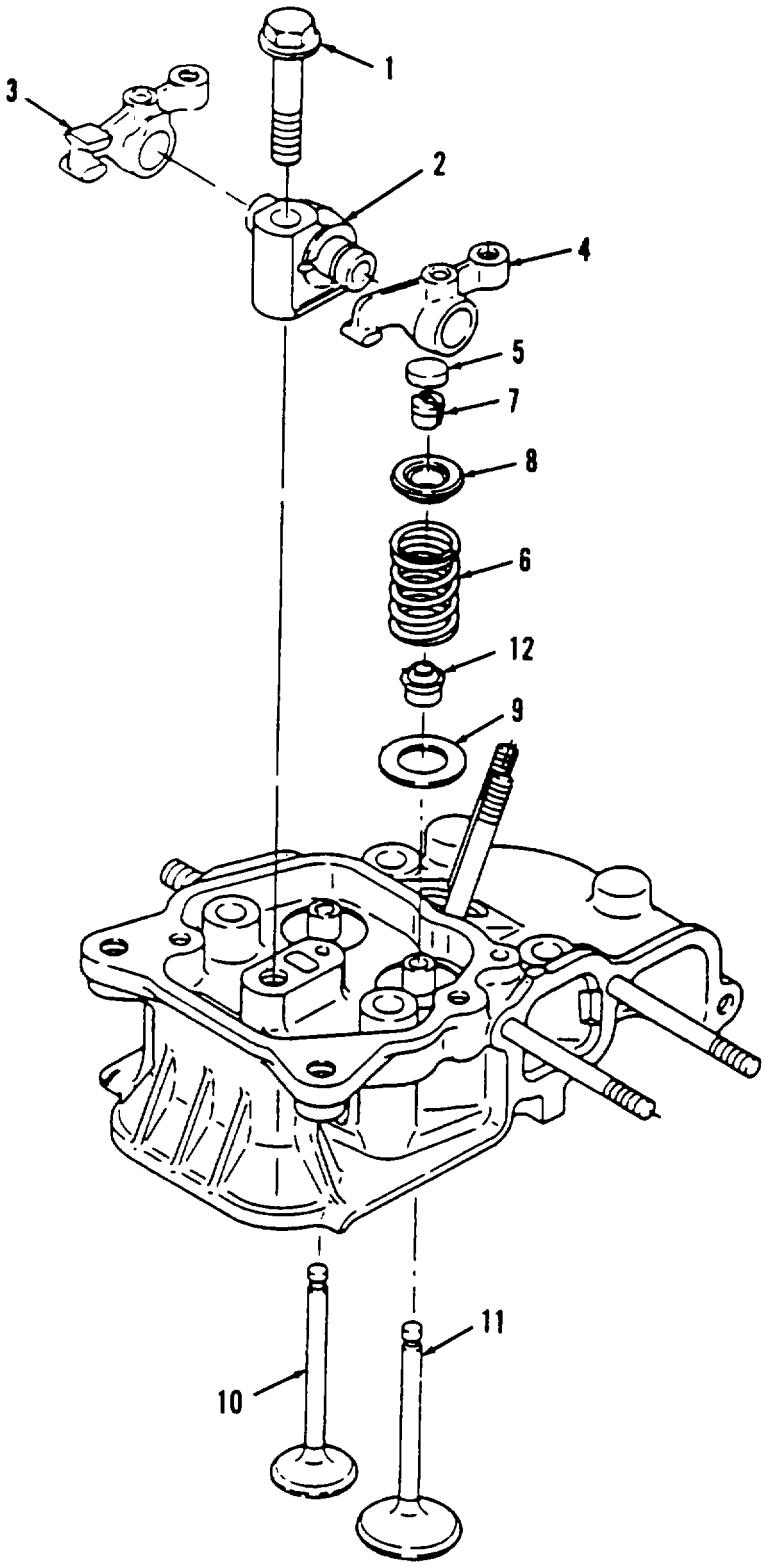


Figure 5-6. Cylinder Head Disassembly.

(7) Refer to Figure 5-6. Remove rocker arm support bolt (1).

(8) Remove rocker arm support (2) with intake and exhaust valve rocker arms (3 and 4) attached.

(9) Remove two valve stem caps (5).

(11) Compress valve spring (6), and remove retainer keeper (7) and retainer (8) from top of valve spring (6).

(12) Remove valve spring (6).

(13) Remove valve spring washer (9).

(14) Remove valves (10 and 11) from cylinder head.

(15) Remove valve stem seals (12) from cylinder head and discard.

b. Inspection.

WARNING

Death or serious injury could occur if compressed air is directed against skin. Do not use compressed air for cleaning or drying unless the pressure is/has been reduced to 30 PSI or less. When working with compressed air, always use eye protection and any other protective equipment.

CAUTION

- **Do not confuse the intake and exhaust valve stems.**
- **The intake/exhaust valve guides are provided with a valve stem seal. Valve stem seals cannot be reused and must be replaced with new ones.**
- **When inserting the intake and exhaust valve stems, apply lube oil to the valve stems.**

(1) Clean cylinder head and valves with a clean cloth dampened with diesel fuel. Use wire brush where necessary and dry with compressed air.

(2) Inspect cylinder head for cracks, corrosion, or excessive heat damage.

(3) Inspect valve heads and valve stems for cracks, pitting, scratches, warpage, or any other damage.

(4) Refer to Figure 5-7. Check that each valve stem diameter is more than 0.2126 inch (5.40 mm).

5-10. CYLINDER HEAD ASSEMBLY REPAIR AND REPLACEMENT. - Continued.

b. Inspection. - Continued**.**

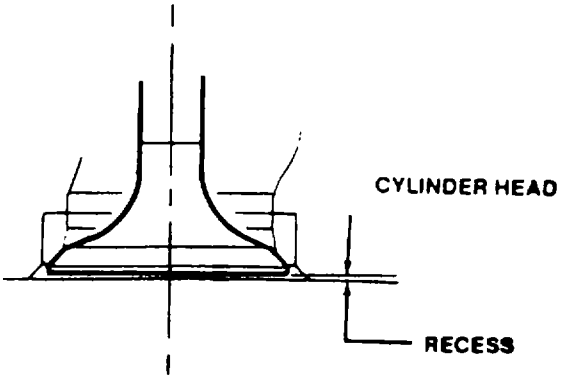


Figure 5-7. Valve Recess.

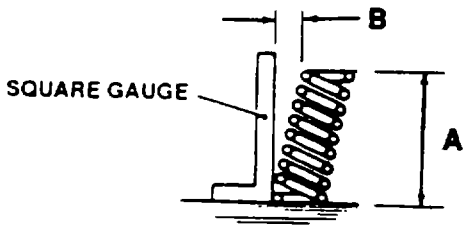


Figure 5-8. Spring Inclination.

(5) Reinsert valves into the cylinder head and check that each valve recess is less than 0.043 inch (1.1 mm).

(6) Check that the inside diameter of each valve guide does not exceed 0.2197 inch (5.58 mm).

(7) Clean off carbon deposits on the valve seats since carbon buildup, excessive wear, and corrosion can cause compression leaks.

(8) Replace cylinder head if any of the following conditions exist: If cylinder block contact surface is roughened or not level; if the valve seats are worn; if the valve rocker arm cover contact surface is rough or damaged; or if there are cracks between the valve seats.

(9) Check the valve spring for flaw or corrosion.

(10) Refer to Figure 5-8. Check that the valve spring free length (dimension A) is more than 1.043 inches (26.5 mm).

(11) Check that the spring inclination (how far spring inclines to the left or right, dimension B) is less than 0.030 inch (0.75 mm).

(12) Check that the OD of the valve rocker arm support shaft is more than 0.4685 inch (11.90 mm).

(13) Check that the ID of the valve rocker arm does not exceed 0.4764 inch (12.1 mm).

(14) Check for bending of the push rods.

(15) Inspect and clean thoroughly the gasket and O-ring areas of cylinder head and crankcase.

c. Repair.

(1) Replace any components that do not meet inspection criteria.

(2) Remove slight scratches or scuff marks with crocus cloth.

d. Installation. (Refer to Figure 5-6).

(1) Insert two new valve stem seals (12) onto valve guide.

(2) Insert valves (10 and 11) into cylinder head.

(3) Install valve spring washer (9).

(4) Install valve springs (6).

(5) Compress valve spring (6) and install retainer (8) and retainer keeper (7).

(6) Install two valve caps (5).

NOTE

Rocker arm with flat head is for the exhaust valve only.

(7) Refer to Figure 5-5. Place new cylinder head gasket (12) and push rod O-ring (11) onto cylinder block.

(8) Install cylinder head (10) onto four studs protruding from cylinder block.

(9) Note tag on push rods (13) and position push rods into cylinder block in the cam followers.

(10) Secure cylinder head (10) to cylinder block using two nuts (8), two washers (9), two nuts (6), and two washers (7).

(11) Tighten nuts using torque wrench to 20-23 ft-lb (280-320 kg-cm).

(12) Refer to Figure 5-6. Install valve stem caps (5).

(13) Install rocker arm support (2) with intake valve rocker arm (3) and exhaust valve rocker arm (4) attached.

(14) Tighten rocker arm support bolt (1) with torque wrench to 14-16 ft-lb (200-220 kg-cm).

5-10. CYLINDER HEAD ASSEMBLY REPAIR AND REPLACEMENT. - Continued.

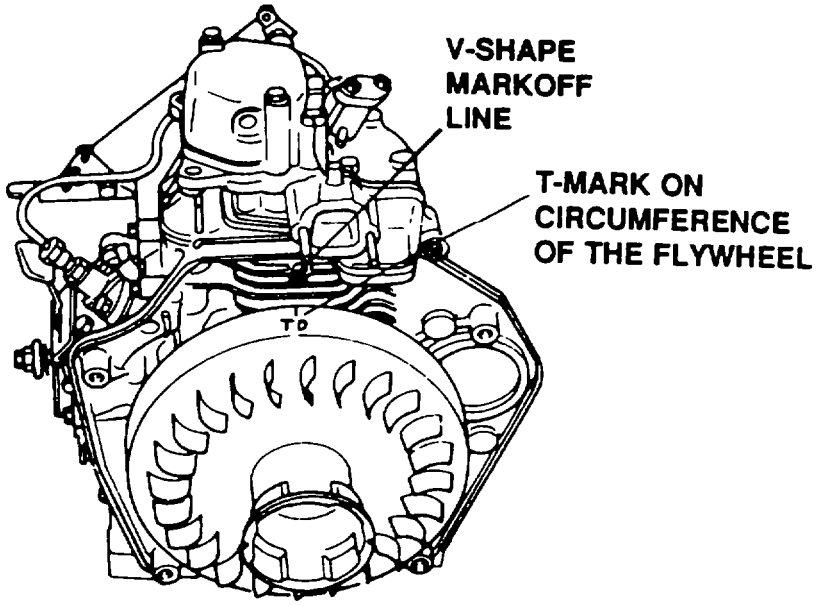


Figure 5-9. Alignment of Flywheel With Cylinder Block.

e. Adjustment. (Refer to Figure 5-9).

NOTE
Valve clearance should be adjusted when engine is cold.

(1) Turn flywheel so "T" mark on flywheel aligns with alignment mark on cylinder block.

(2) Slightly rotate flywheel (approximately 20 degrees in both directions). If valves move up and down, this is the exhaust top dead center. Do not adjust the valve clearance with the flywheel in this position.

(3) Give flywheel another turn until "T" mark on flywheel aligns with alignment mark on cylinder block. Slightly rotate flywheel (approximately 20 degrees in both directions). If valves do not move up and down, the flywheel is in correct position to check valve clearance.

(4) Check that "T" mark and alignment mark are aligned correctly.

(5) Insert screwdriver into adjusting bolt and loosen lock nut. Refer to Figure 5-10.

(6) Turn screwdriver counterclockwise to obtain a clearance. Move valve lever inside for adjustments.

(7) Insert feeler gauge between valve rocker arm and top of the valve spring cap.

(8) While turning the adjusting screw clockwise, slowly slide the feeler gauge back and forth. Stop turning adjusting screw when slight resistance is felt on the feeler gauge.

(9) Remove feeler gauge and tighten lock nut. Keep screwdriver inserted into adjusting screw to.

prevent adjusting screw from turning.

(10) Verify valve clearance of 0.059 inch (0.15 mm) after completion.

(11) Repeat on both intake and exhaust valves.

(12) After securing both lock nuts, check that clearance is still 0.059 inch (0.15 mm).

(13) (Refer to Figure 5-5). Install gasket (5), cylinder head cover (4), rubber plug (3), strap (2), and two screws (1).

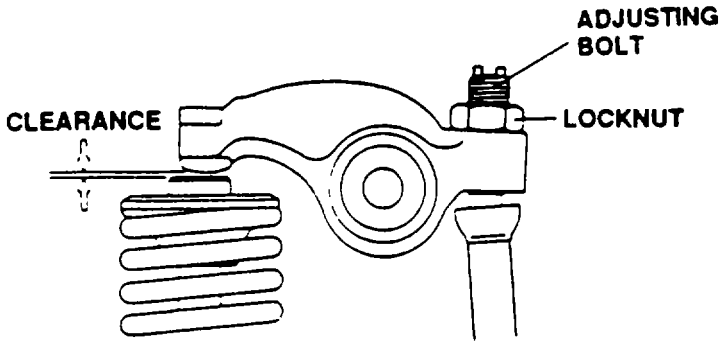


Figure 5-10. Adjusting Valve Clearance

5-11. FLYWHEEL REPLACEMENT.

This task covers:

a. Removal **b. Installation**

INITIAL SETUP

Tools Required

Tool Kit, General Mechanic's (Appendix B, item 1)
Puller (Appendix B, Item 3)
Torque Wrench (Appendix B, Item 3)

Material's/Parts Required

Diesel Fuel (Appendix E, Item 5)

Equipment Condition

Air compressor unit shut down and cool.
Flywheel cover removed (see paragraph 4-28).

a. Removal. (Refer to Figure 5-11).

(1) Remove starter pulley (1) by removing three bolts (2).

(2) Brace the flywheel (5) to prevent the flywheel from turning while loosening the flywheel nut (3) by inserting a pry bar through a hole in the flywheel into the depression in the crankcase.

(3) Remove flywheel end nut (3) and washer (4) from crankshaft (6).

(4) Using a puller, remove flywheel.

CAUTION
Be careful not to damage the taper part of the crankshaft.

(5) Remove flywheel key (7) from crankshaft (6).

b. Installation.

(1) Install flywheel key (7) onto crankshaft (6).

(2) Install flywheel (5) onto crankshaft (6).

(3) Install flywheel end nut (3) and washer (4).

(4) Tighten flywheel end nut (3) by bracing the flywheel by inserting a pry bar through a hole in the flywheel into the depression in the crankcase. Torque flywheel end nut to 73-80 ft-lb (1000-1100 cm-kg).

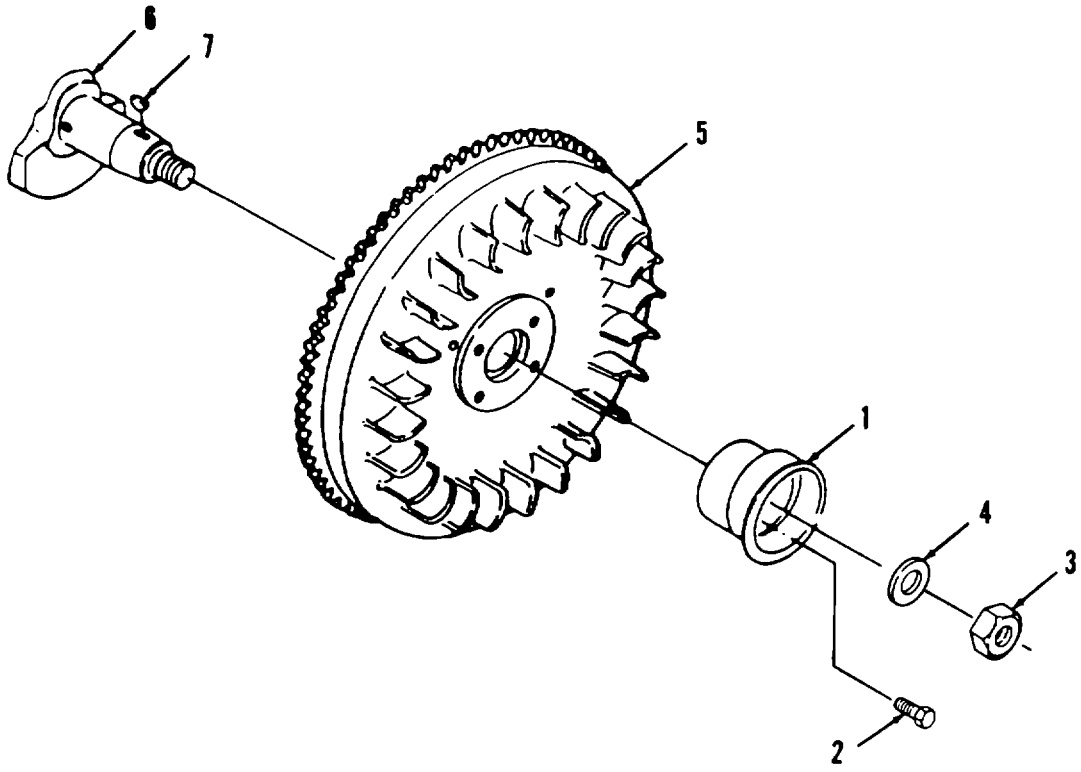


Figure 5-11. Flywheel Replacement.

5-12. VALVE HEAD AND VALVE PLATES REPLACEMENT.

This task covers:

a. Removal b. Cleaning c. Inspection d. Installation

INITIAL SETUP

Tools Required

Tool Kit, General Mechanic's (Appendix B, item 1)

Material's/Parts Required

Cloth, Lint-Free (Appendix E, Item 1)
Brush, Medium Bristle (Appendix E, Item 2)
Solvent, Dry Cleaning (Appendix E, Item 3)
Outlet gasket, 046-0218 (Appendix H, Item 17)
Valve gasket, 046-0215 (Appendix H, Item 18)
Head gasket, 046-0214 (Appendix H, Item 19)

Equipment Condition

Air compressor unit shut down and cool.
Discharge tube disconnected (see para. 4-21).
Intercooler tube disconnected (see para. 4-31).

a. Removal. (Refer to Figure 5-12).

(1) Remove two screws (1), outlet adapter (2), and outlet gasket (3). Discard outlet gasket.

(2) Remove two screws (4), lock washer (5), flat washer (6), screw (7), and bracket (8).

(3) Remove five bolts (9) and head (10).

(4) Remove valve gasket (11), valve plate assembly (12), and head gasket (13). Discard valve gasket and head gasket.

b. Cleaning.

(1) Remove all build up of dirt, oil, and debris from all surfaces.

WARNING

Serious injury can result in breathing fumes of dry cleaning solvent. Serious injury or death can result from explosion of fumes from solvent. When using this solvent:

- **Clean parts in a well ventilated area.**
- **Avoid inhalation of solvent fumes and prolonged exposure of skin to cleaning solvent. Wash exposed skin thoroughly.**
- **Do not use near open flame or excessive heat. Flash point of solvent is 100° F to 138° F (38° C to 590 C).**
- **Wear eye protection when blowing solvent from parts. Air pressure should not exceed 30 psig (2.1 kg/cm2).**

(2) Clean all metallic parts with a clean soft cloth or a medium bristle brush, and cleaning solvent.

(3) Allow parts to dry.

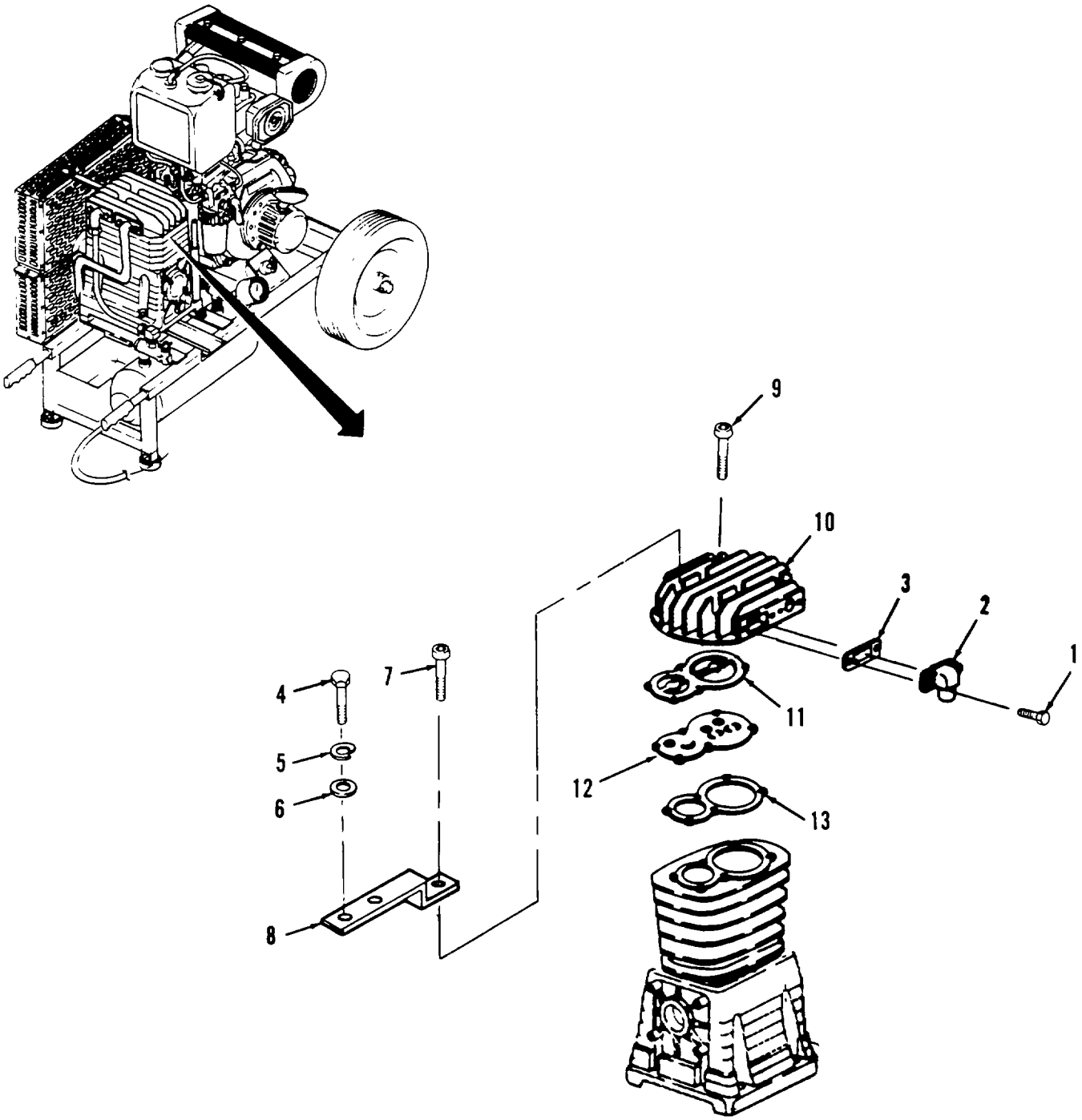


Figure 5-12. Valve Head and Valve Plates Replacement.

5-12. VALVE HEAD AND VALVE PLATES REPLACEMENT. - Continued.

c. Inspection.

(1) Check all gaskets for cuts, tears, and evidence of leakage.

(2) Inspect valve plates for broken metal surfaces.

(3) Inspect valve head for cracks.

(4) Inspect all fasteners for damaged threads.

d. Installation.

(1) Install new head gasket (13), valve plate assembly (12), new valve gasket (11).

(2) Install head (10) and five bolts (9).

(3) Install bracket (8), screw (7), flat washer (6), lock washer (5), and two screws (4).

APPENDIX A

REFERENCES

A-1. SCOPE. This appendix lists all forms, field manuals, technical manuals, and miscellaneous publications referenced in this manual.

A-2. FORMS.

Report of Discrepancy ..... SF 364
Equipment Inspection and Maintenance Worksheet ..... DA Form 2404
Product Quality Deficiency Report ..... SF 368
Recommended Changes to Equipment Technical Publications ..... DA Form 2028-2
Recommended Changes to Publications and Blank Forms ..... DA Form 2028
Packaging Improvement Report ..... DD Form 6

A-3. FIELD MANUALS.

First Aid For Soldiers ..... FM 21-11

A-4. TECHNICAL MANUALS.

Administrative Storage of Equipment ..... TM 740-90-1
Procedures for Destruction of Equipment to Prevent Enemy Use (Mobility Equipment Command) ..... TM 750-244-3
Unit and Direct Support Repair Parts and Special Tools List for Air Compressor, 5 cfm ..... TM 9-4310-394-23P

A-5. MISCELLANEOUS PUBLICATIONS AND STANDARDS.

The Army Maintenance Management System ..... DA PAM 738-750
Abbreviations for Use on Drawings, And Standards, Specifications and Technical Documents MIL-STD-12
Army Medical Department Expendable/Durable Items ..... CTA 8-100
Expendable Items (Except Medical Class V, Repair Parts and Heraldic Items) ..... CTA 50-970
Lubrication Order ..... LO 9-4310-394-12

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. The Army Maintenance System MAC.

a. This introduction (section I) provides a general explanation of all maintenance and repair functions authorized at various maintenance categories under the standard Army Maintenance System concept.

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 levels which are shown on the MAC in column (4) as:

Unit -includes two subcolumns, C (operator/crew) and O (unit Maintenance).

Direct Support - includes and F subcolumn.

General Support - includes an H subcolumn.

Depot - includes a D subcolumn.

c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. Maintenance Functions. Maintenance functions are 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, e.g., 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. Align. 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 assigned maintenance level is shown as the 3rd position code of the SMR code.

i. Repair. The application of maintenance services[1], including fault location/trouble-shooting[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.

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 material 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.

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.)

---

[1] *Services - Inspect, test, service, adjust, align, calibrate, and/or replace.*

[2] *Fault location troubleshooting - 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] *Disassembly/assembly - The step-by-step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i. e., identified as maintenance significant).*

[4] *Actions - Welding, grinding, riveting, straightening, facing, machining, and or resurfacing.*

d. Column 4, Maintenance Level. Column 4 specifies each level of maintenance authorized to perform each function listed in Column 3, by indicating work time required (expressed as man hours in whole hours or decimals)in the appropriate subcolumn. This work-time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work-time figures are to be shown for each level. 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 levels are as follows:

C .....Operator or crew maintenance
O .....Unit maintenance
F .....Direct support maintenance
L .....Specialized Repair Activity (SRA)
H .....General support maintenance
D .....Depot maintenance

e. Column 5, Tools and Test Equipment reference code. Column 5 specifies, by code, those common tools sets (not individual tools), common TMDE, and special tools, special TMDE, and support equipment required to perform the designated function. Codes are keyed to tools and test equipment in section III.

f. Column 6, Remarks. When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks contained in Section IV.

B-4. Explanation of Columns in Tools 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 II, Column 5.

b. Column 2, Maintenance Level. The lowest level 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, model number, or type 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.

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Tools and Equipment	(6) Remarks
00	**COMPRESSOR PORTABLE 5 CFM**								
01	**COMPRESSOR ASSEMBLY**								
0101	Information Plates and Decals	Inspect	0.2						
		Replace		0.5				1, 4	
0102	Air Hose and Inflation Gauge	Inspect	0.2						
		Repair		0.5				1	A
		Replace		0.5				1	
0103	Belt Guard	Inspect	0.1						
		Repair		0.3				1	A
		Replace		0.3				1	
0104	V-Belt and Sheave	Inspect	0.2						
		Replace		0.5				1	
		Adjust		0.3				1	
0105	Fuel Lines and Fuel Valve	Inspect	0.2						
		Repair		0.2				1	A
		Replace		0.4				1	
0106	Fuel Tank	Inspect	0.2						
		Repair		0.3				1, 4	A
		Replace		0.5				1	
0107	Fuel Filter	Inspect	0.2						
		Repair		0.6				1	A
		Replace		0.4				1	
0108	Key Switch	Inspect	0.2						
		Test		0.3				1	
		Replace		0.5				1	

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Tools and Equipment	(6) Remarks
0109	Air Gauge, Relief Valve, Unloader Valve, Muffler, Safety Valve, Discharge Tube, Vibration Mounts, Air Receiver, and Drain Cock	Inspect Replace Test	0.5	 1.3 0.8				 1	
0110	Compressor Oil Trough and Engine Oil Drain	Inspect Replace	0.2	 0.5				 1	 A
0111	Take-Up Screw	Inspect Replace	0.1	 0.4				 1	
0112	Tool Box	Inspect Replace	0.1	 0.2				 1	
0113	Wire Assemblies	Inspect Test Repair Replace	0.1	 0.3 0.4 0.7				 1 1 1	 A
02	**DIESEL ENGINE**								
0201	Air Cleaner, Filter Element, Air Inlet Heater, and Air Intake Pipe	Inspect Repair Replace	0.2	 0.4 1.0				 1 1	 A
0202	Muffler	Inspect Replace	0.1	 0.4				 1	
0203	Recoil Starter and Flywheel Cover	Inspect Repair Replace	0.3	 0.5 0.8				 1, 2 1, 2	 A

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Tools and Equipment	(6) Remarks
0204	Starter	Inspect		0.2					
		Replace		0.4				1, 2	
0205	Fuel Injector	Test			0.5			1, 3	
	Valve	Replace			0.6			1, 3	
0206	Fuel Injector	Inspect			0.1				
	Pump	Replace			0.5			1, 3	
		Test			0.4			1, 3	
		Adjust			0.2			1, 3	
0207	Lube Oil	Inspect	0.2						
	Strainer and	Service		0.2					
	Oil Cap/Gauges	Repair		0.2					A
		Replace		0.3					
0208	Regulator	Inspect		0.3					
	Bracket	Repair			1.0			1	A
		Replace			1.0			1	
0209	Cylinder Head	Inspect			0.2			1, 3	
	Assembly	Repair			1.5			1, 3	A
		Replace			1.0			1, 3	
0210	Flywheel	Inspect			0.1			1	
		Replace			0.4			1	
03	**COMPRESSOR**								
0301	Flywheel and	Inspect		0.2					
	Intercooler	Replace		0.5				1	
	Tube								
0302	Filter Assembly,	Inspect		0.2					
	Oil Filler/	Service		0.3				1	
	Breather, and	Replace		0.5				1	
	Sight Glass								

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Category C	O	F	H	D	(5) Tools and Equipment	(6) Remarks
0303	Valve Head and Valve Plates	Inspect			0.3			1	
		Replace			0.5			1	
04	**CHASSIS ASSEMBLY**								
0401	Handle Grips and Tire/Wheels	Inspect	0.2						
		Replace		0.5				1	

SECTION III TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) REFERENCE TOOL CODE	(2) MAINTENANCE LEVEL	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
		Standard tools and test equipment contained in the following kit are adequate to perform the maintenance functions listed in Section II.		
1	0	Tool Kit, General Mechanic's	5180-00-177-7033	SC 5180-90-CL-N26 (50980)
2	0	Shop Equipment, Automotive Maintenance Repair; Unit Maintenance, Common No. 1	4910-00-754-0654	SC 4910-95-CL-A74 (T9204)
3	F	Shop Equipment, Equipment Repair, Semitrailer Mtd. (19099)	4940-00-914-2576	SC 4940-95-CL-B05
4	0	Riveter, Blind, Hand	5120-00-017-2849	
5	0	Drill Bits		
6	0	Socket Wrench Attachment, Socket Head Screw: Hex. Hd. 3/16 in. size	5120-01-683-8597	
7	0	Socket Wrench Attachment, Socket Head Screw: Hex. Hd. 8 mm size	5120-01-053-4159	

Reference Code	Remarks
A	Repair is limited to the replacement of components found defective during inspection.

APPENDIX C
COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

Section I. INTRODUCTION

C-1. SCOPE. This appendix lists components of end item and basic issue items for the air compressor to help you inventory items required for safe and efficient operation.

C-2. GENERAL. The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. Section II. Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts.

b. Section III. Basic Issue Items (BII). These essential items required to place the air compressor in operation, to operate it, and to do emergency repairs. Although shipped separately packaged, BII must be with the system during operation and whenever it is transferred between property accounts. Listing these items is your authority to request/requisition them for replacement, based on authorization of the end item by TOE/MTOE. Illustrations are furnished to help you find and identify the items.

C-3. EXPLANATION OF COLUMNS. The following provides an explanation of columns found in the tabular listings:

a. Column (1) Illustration Number (Illus. Number). This column indicates the number of the illustration in which the item is shown.

b. Column (2) National Stock Number. Indicates the National stock number of the item to be used for requisitioning purposes.

c. Column (3) Description. Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the CAGEC (Commercial and Government Entity Code) (in parentheses) and the part number.

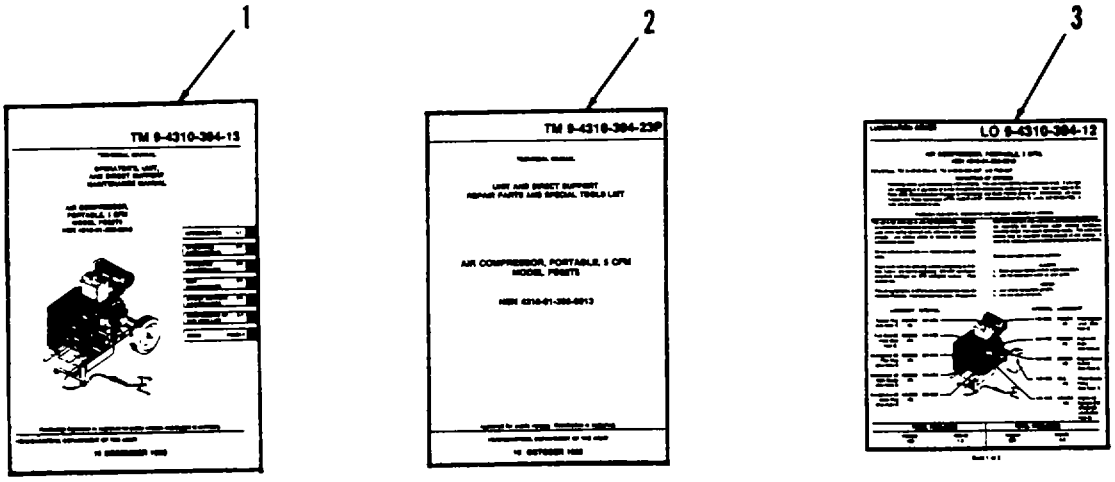
d. Column (4) Unit of Issue (U/I). Indicates how the item is issued for the National Stock Number shown in column two.

e. Column (5) Quantity required (Qty Rqr). Indicates the quantity required.

Section II. COMPONENTS OF END ITEM

(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number	Usable On Code	(4) U/M	(5) Qty Rqr

Section III. BASIC ISSUE ITEMS



(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number	Usable On Code	(4) U/M	(5) Qty Rqr
1	TM 9-4310-394-13	Technical Manual: Operator's, Unit, and Direct Support Maintenance Manual for Air Compressor, Portable, 5 CFM		EA	1
2	TM 9-4310-394-23P	Technical Manual: Unit and Direct Support Repair Parts and Special Tools List for Air Compressor, Portable, 5 CFM		EA	1
3	LO 9-4310-394-12	Lubrication Order, Air Compressor Portable, 5 CFM		EA	1
4		Air Hose, (55921) VR331		EA	1

APPENDIX D
ADDITIONAL AUTHORIZATION LIST

SECTION I. INTRODUCTION

D-1. SCOPE. This appendix lists additional items you are authorized for the support of the air compressor.

D-2. GENERAL. This list identifies items that do not have to accompany the air compressor and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

D-3. EXPLANATION OF LISTING. National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name. If the item you require differs between the serial numbers of the same model, effective serial numbers are shown in the last line of the description. If the item required differs for different models of this equipment, the model number is shown under the "Usable On" heading in the description column.

Section II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION CAGE C & PART NUMBER USABLE ON CODE	(3) U/M	(4) QTY. AUTH
	NO ADDITIONAL AUTHORIZATION ITEMS ARE AUTHORIZED FOR THE 5 CFM AIR COMPRESSOR.		

APPENDIX E
EXPENDABLE / DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

E-1. SCOPE. This appendix lists expendable supplies and materials you will need to operate and maintain the air compressor. This listing is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable Items (except medical, class V, repair parts, and heraldic items) or CTA 8-100, Army Medical Department Expendable/Durable Items.

E-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 cleaning compound, item 5, Appendix E").

b. Column (2) Level. This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew
O - Unit Maintenance
F - Direct Support Maintenance
H - General Support Maintenance

c. Column (3) National Stock Number. This is the National stock number assigned to the item which you can use to requisition it.

d. Column (4) Item Name, Description, Commercial and Government Entity Code (CAGEC), and Part Number. This provides the other information you need to identify the item.

e. Column (5) Unit of Measure (U/M). This code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

Section II. EXPENDABLE / DURABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION CAGEC AND PART NUMBER	(5) U/M
1	0	7920-00-205-1711	Cloth, Lint-Free (58536) A-A-2522	ea
2	0	8020-00-207-6658	Brush, Medium, Oval	ea
3	0	6850-00-274-5421	Dry Cleaning Solvent (81348) P-D-680, Type I	gl
4	F	5350-00-192-5066	Abrasive Cloth, Crocus (81348) P-C-458	ea
5	C	9140-00-221-2233	Fuel, Diesel (81348) W-F-800	gl
6	0	9150-00-153-0207	Oil, Lubricating, Preservative (81349) MIL-L-21260	qt
7	0	9150-00-186-6681	Oil, Lubricating, Internal Combustion Engine, (81349) MIL-L-2104	qt
8	0	8030-00-889-3534	Tape Antisieze, Polytetra-flouroethylene (81349) MIL-T-27730 Size 1.	rl

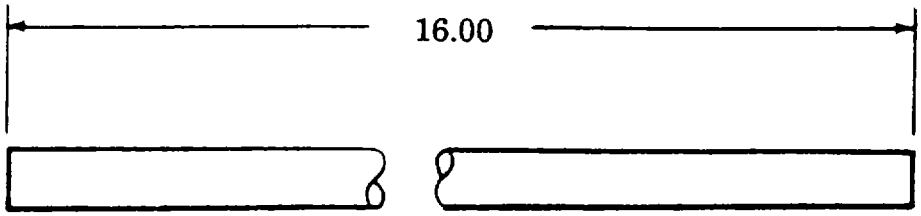
APPENDIX F
ILLUSTRATED LIST OF MANUFACTURED ITEMS

SECTION I. INTRODUCTION

F-1. GENERAL. This appendix includes complete instructions for making items authorized to be manufactured or fabricated at unit or direct support maintenance level. A part number index in alphabetical order is provided for cross-referencing the part number of the item to be manufactured to the figure which covers the fabrication instructions. All bulk materials needed for manufacture of an item are listed by the part number or specification in a tabular list on the illustration.

PART NUMBER INDEX

Part Number to Be Manufactured	Part Name	Manufacturing Figure
VA1220	FUEL LINE HOSE	F-1
VA1221B	FUEL INJECTOR LINE	F-2
VA1221A	FUEL FILTER LINE	F-2
VE1043	WIRE	F-3
VE1038	WIRE	F-4
VE1045	WIRE	F-4

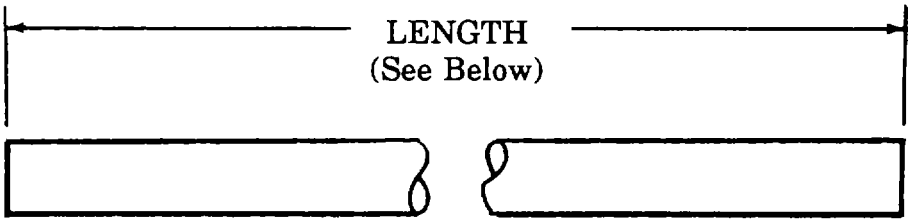


PART NO: VA1220

MATERIAL: Hose, Part Number (79470) H05703
3/16 inch inside diameter.

PROCEDURE: Cut hose to indicated length.

Figure F-1.



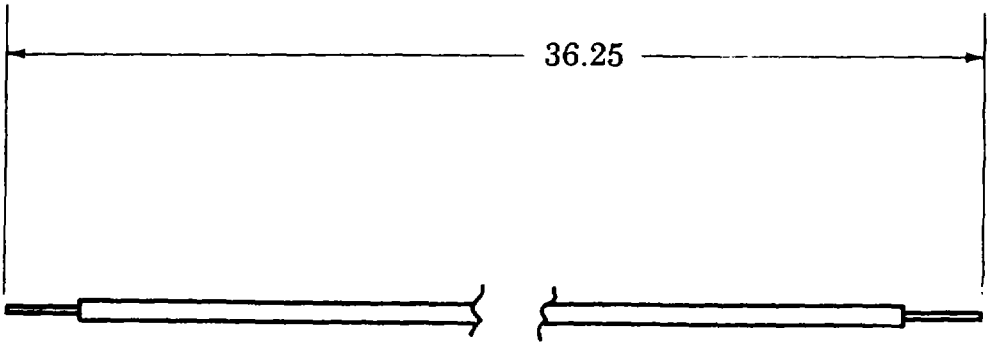
PART NO: VA1221A and VA1221B

MATERIAL: Hose, Part Number (79470) H05705
5/16 inch inside diameter.

PROCEDURE: Cut hose to length as follows:

P/N VA1221A length = 8.00 inches
P/N VA1221B length = 9.00 inches

Figure F-2.

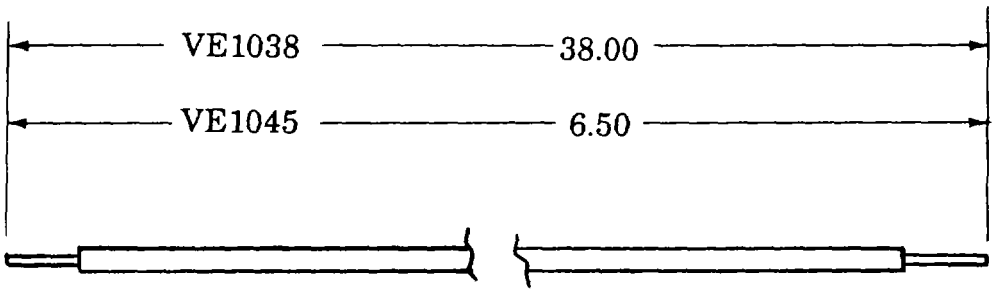


PART NO: VE 1043

MATERIAL: Wire, Part Number (81349) M5086/1-14-9
#14 GA., THHN OR THWN

PROCEDURE: 1. Cut wire to indicated length.
2. Strip .38 inch of insulation from each end of wire.

Figure F-3.



PART NO: VE1038 and VE1045

MATERIAL: Wire, Part Number (81349) M5086/1-10-9
#10 GA., THHN OR THWN

PROCEDURE: 1. Cut wire to indicated length.
2. Strip .38 inch of insulation from each end of wire.

Figure F-2.

APPENDIX G
TORQUE LIMITS

G-1. GENERAL. This appendix provides general torque limits for fasteners. Special torque values are indicated in the maintenance procedures for applicable components. The general torque values given in this appendix shall be used when specific torque values are not indicated in the maintenance procedures.

G-2. TORQUE LIMITS. Torque limits are listed in Table G-1 for fasteners. Dry fasteners are defined as fasteners on which no lubricants are applied to the threads. Wet fasteners are defined as fasteners on which graphite or molydisulphide greases or other extreme pressure lubricants are applied to the threads. Table G-2 lists the minimum breakaway torque values for locknuts.

Table G-1. General Torque Requirements for Dry Fasteners.*

Bolt/Screw Size	Torque Requirement in lb ft (N.m)			
	SAE Grade1 or 2	SAE Grade5	SAE Grade6 or 7	SAE Grade8
1/4-20 UNC	5 (7)	8 (11)	10 (14)	12 (16)
1/4-28 UNF	6 (8)	10 (14)	12 (16)	14 (19)
5/16 18 UNC	11 (15)	17 (23)	19 (26)	24 (33)
5/16-24 UNF	13 (18)	19 (26)	23 (31)	27 (37)
3/8 16 UNC	18 (24)	31 (42)	34 (46)	44 (60)
3/8-24 UNF	20 (27)	35 (47)	42 (57)	49 (66)
7/16-14 UNC	28 (38)	49 (66)	55 (75)	70 (95)
7/16-20 UNF	30 (41)	55 (75)	67 (91)	78 (106)
1/2-13 UNC	39 (53)	75 (102)	85 (115)	105 (142)
1/2-20 UNF	41 (56)	85 (115)	102 (138)	120 (163)
9/16-12 UNC	51 (69)	110 (149)	120 (163)	155 (210)
9/16-18 UNF	55 (75)	120 (163)	145 (197)	170 (231)
5/8-11 UNC	63 (85)	150 (203)	167 (226)	210 (285)
5/8-18 UNF	95 (129)	170 (231)	205 (278)	240 (325)
3/4-10 UNC	105 (142)	270 (366)	280 (380)	375 (509)
3/4-16 UNF	115 (156)	295 (400)	357 (484)	420 (570)
7/8-9 UNC	160 (217)	395 (536)	440 (597)	605 (820)
7/8-14 UNF	175 (237)	435 (590)	555 (753)	675 (915)

Table G-1. General Torque Requirements for Dry Fasteners. - Continued.

Bolt/Screw Size	Torque Requirement in lb ft (N.m)			
	SAE Grade1 or 2	SAE Grade5	SAE Grade6 or 7	SAE Grade8
1-8 UNC	235 (319)	590 (800)	660 (895)	910 (1234)
1-14 UNF	250 (339)	660 (895)	825 (1119)	990 (1342)
1-1/8-7 UNC	350 (475)	800 (1085)	1000 (1356)	1280 (1736)
1-1/8-12 UNF	400 (542)	880 (1193)	1050 (1424)	1440 (1953)
1-1/4-7 UNC	500 (678)	1080 (1464)	1325 (1797)	1820 (2468)
1-1/4-12 UNF	550 (746)	1125 (1526)	1325 (1797)	1820 (2712)
1-3/8-6 UNC	660 (895)	1460 (1980)	1800 (2441)	2380 (3227)
1-3/8-12 UNF	740 (1003)	1680 (2278)	1960 (2658)	2720 (3688)
1-1/2-6 UNC	870 (1180)	1940 (2631)	2913 (3950)	3160 (4285)
1-1/2-12 UNF	980 (1329)	2200 (2983)	3000 (4068)	3560 (4827)

* Torque given is for clean, dry threads. Reduce by 10% when engine oil is used as lubricant.

Table G-2. Locknut Breakaway Torque Values.

NOTE

To determine breakaway torque, thread lock nut onto screw or bolt until at least two threads stick out. Locknut shall not make contact with a mating part. Stop the locknut. Torque necessary to begin turning locknut again is the breakaway torque. Do not reuse locknuts that do not meet minimum breakaway torque.

Thread Size	Minimum Breakaway Torque	
	lb-in.	(N.m)
10-32	2.0	(0.23)
¼-28	3.5	(0.40)
5/16-24	6.5	(0.73)
3/8-24	9.5	(1.07)
7/16-20	14.0	(1.58)
½-20	18.0	(2.03)
9/16-18	24.0	(2.71)
5/8-18	32.0	(3.62)
¾-16	50.0	(5.65)
7/8-14	70.0	(7.97)
1-12	90.0	(10.17)
1-1/8-12	117.0	(13.22)

APPENDIX H

MANDATORY REPLACEMENT PARTS

Section I. INTRODUCTION

H-1. SCOPE. This appendix lists mandatory replacement parts you will need to have when performing maintenance on the air compressor. Any time a maintenance procedure is performed that requires you to remove any of the items shown on this list, you are required to replace that item with a new one. You will know that your procedure requires one of these replacement parts when either specific parts are listed or the statement "(Appendix H, Item X)" appears in the "Materials Required" area of the Initial Setup portion of the maintenance procedures in Chapters 4 or 5.

H-2. EXPLANATION OF COLUMNS. The table shown in Section II identifies the parts which must be replaced during maintenance of the air compressor. An explanation of the columns in each in this table is as follows.

a. Column (1) Item number. This number is assigned to the entry in this listing and is referenced in the narrative instructions to identify the material (e.g., "Rivet (Appendix I, Item 1).

b. Column (2) CAGEC. The Contractor and Government Entity Code (CAGEC) is a 5-digit numeric code which is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

c. Column (3) Part Number. Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

d. Column (4) Nomenclature. This column identifies the common name for the part in accordance with the name given to the part on the applicable engineering drawing or specification.

Section II. MANDATORY REPLACEMENT PARTS LIST.

(1) ITEM NUMBER	(2) CAGEC	(3) PART NUMBER	(4) NOMENCLATURE
1	39428	97517A015	RIVET
2	OAK42	102103-55520	PACKING
3	OAK42	114250-12200	GASKET
4	OAK42	114250-12210	GASKET
5	OAK42	114250-13200	GASKET
6	OAK42	114250-45330	SEAL
7	OAK42	24341-000224	O-RING
8	OAK42	24311-000180	O-RING
9	55921	019-0139	FILTER ELEMENT
10	OAK42	114250-11460	GASKET, NOZZLE
11	OAK42	11350-11470	SPACER, NOZZLE
12	OAK42	114250-01840	GASKET
13	OAK42	114250-01340	GASKET, CYLINDER HEAD
14	OAK42	114250-01380	O-RING
15	OAK42	114250-11340	SEAL, VALVE STEM
16	OAK42	114250-01412	OIL SEAL GASKET
17	55921	046-0218	OUTLET GASKET
18	55921	046-0215	VALVE GASKET
19	55921	046-0214	HEAD GASKET
20	96906	MS51922-17	LOCK NUT
21	OAK42	124550-55700	ELEMENT
22	96906	MS24665-370	COTTER PIN

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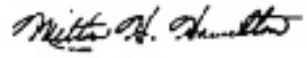
GORDON R. SULLIVAN
General, United States Army
Chief of Staff



MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
06774

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 decagram = 10 grams = .35 ounce
acres
1 hectogram = 10 decagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47

1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C