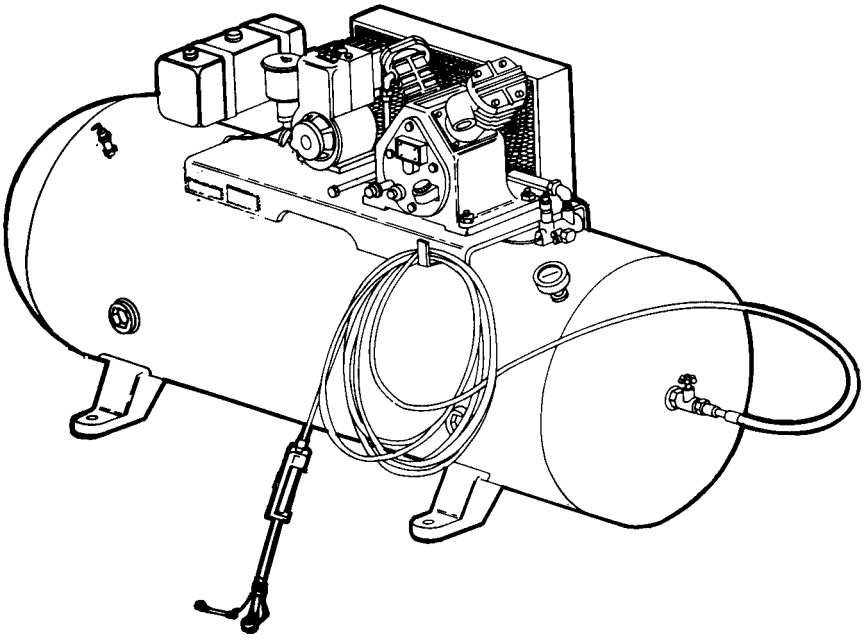
TM 5-4310-376-14

TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL



COMPRESSOR, RECIPROCATING,
GASOLINE ENGINE DRIVEN,
15 CFM, 175 PSI, MODEL 50-6840
(NSN 4310-01-164-5544)

HEADQUARTERS, DEPARTMENT OF THE ARMY

12 JULY 1985

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NO. 6

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Operator's, Organizational, Direct Support and
General Support Maintenance Manual

**COMPRESSOR, RECIPROCATING,
GASOLINE ENGINE DRIVEN,
15 CFM, 175 PSI, MODEL 50-6840
(NSN 4310-01-164-5544)**

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COMPRESSOR, RECIPROCATING, GASOLINE ENGINE DRIVEN,
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Operator's, Organizational, Direct Support
and General Support Maintenance Manual

COMPRESSOR, RECIPROCATING, GASOLINE ENGINE DRIVEN,
15 CFM, 175 PSI, MODEL 50-6840 (NSN 4310-01-164-5544)

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COMPRESSOR, RECIPROCATING, GASOLINE ENGINE DRIVEN,
15 CFM, 175 PSI, MODEL 50-6840 (NSN 4310-01-164-5544)

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Operator's, Organizational, Direct Support
and General Support Maintenance Manual

COMPRESSOR, RECIPROCATING, GASOLINE
ENGINE DRIVEN, 15 CFM, 175 PSI, MODEL 50-6840
(NSN 4310-01-164-5544)

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WARNING

Never attempt to service any of the compressor components until the unit is shut down and relieved of all air pressure.

WARNING

Do not weld the air receiver tank to repair leaks.

WARNING

Do not operate air compressor with belt guard removed.

WARNING

The compressed air supplied by this compressor is not breathable and must not be used to charge cylinders that will be used to supply breathable air.

WARNING

Serious hearing loss or deafness could occur if this equipment is operated without professionally-fitted ear protection for operating and maintaining personnel. The noise level for this equipment exceeds the allowable limits for unprotected personnel. Unprotected/unnecessary personnel must be kept out of the immediate area.

WARNING

Injury to personnel or damage to equipment could occur from improper hoisting. Hoist the load slowly to avoid tearing out lifting eye assemblies, slipping slings or load shift. Do not jerk the load or swing it from side–to-side when hoisting. This places additional stress on hoisting components which can cause failure and loss of load. Be sure hoisting equipment is on solid footing and is suitable for the size of the load. Watch boom angle and overhead clearance when hoisting.

WARNING

Dry cleaning solvent P-D-680 (safety or Stoddard's Solvent) is potentially dangerous. Avoid repeated and prolonged breathing or vapors and skin contact with the liquid. Do not use near open flame, arcing equipment or other ignition sources. Always wear eye protection and protective clothing. The flash point of P-D-680 is 100° to 138°F (30° to 59° C).

WARNING

Before starting air compressor ensure no loose bars, tools or other parts are lying in or on any of the equipment as they could cause serious damage to equipment or bodily injury to personnel.

WARNING

Never wear loose clothing, or hanging appendages from person or clothing, while inspecting running air compressor, moving shafts, or like machinery.

WARNING

Eye protective equipment must be worn when scraping rust or loose paint.

WARNING

Always disconnect the spark plug from the engine assembly before starting any work. The air compressor could start up accidentally and cause serious injury to maintenance personnel.

WARNING

Death or serious injury could occur if gasoline is not handled carefully. Use in a w en-ventilated area away from open flame, arcing equipment, ignition sources, heaters or excessive heat. Engines must be turned off and cool before refueling. Use proper refueling procedures and equipment to avoid spillage. Do not run engines near open gasoline containers. Always store gasoline in proper, marked containers. Do not use gasoline as a cleaning solvent. DO NOT SMOKE.

TECHNICAL MANUAL
No. 5-4310-376-14

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 12 July 1985

Operator's, Organizational, Direct Support and General Support Maintenance Manual
COMPRESSOR, RECIPROCATING, GASOLINE ENGINE DRIVEN, 15 CFM, 175 PSI, MODEL 50-6840
(NSN 4310-01-164-5544)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual, If you find any mistake 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 Troop Support Command, ATTN: AMSTR-MCTS, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. A reply will be furnished directly to you.

TABLE OF CONTENTS (Continued)

CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE

TYPE OF MANUAL:	Operator's, Organizational, Direct Support and General Support Maintenance Manual.
MODEL NUMBER AND EQUIPMENT NAME:	Compressor, Reciprocating, Gasoline Engine Driven, 15 CFM, 175 PSI, Model 50-6840.
PURPOSE OF EQUIPMENT:	Stationary compressor used as a source of compressed air in normal operations at motor pools and vehicle maintenance shops.

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).

1-3. DELETED.

1-4. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Destruction of Army materiel to prevent enemy use is described in TM 750-244-3.

1-5. PREPARATION FOR STORAGE OR SHIPMENT

Preparation will be performed in accordance with Chapter 4, Section VI of this manual.

1-6. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your compressor 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

1-6. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS - Continued

like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at Commander, US Army Troop Support Command, ATTN: AMSTR-QX, 4300 Goodfellow Boulevard, St. Louis, MO) 63120-1798. A reply will be furnished to you.

1-7. NOMENCLATURE CROSS-REFERENCE LIST

Official nomenclature must be used when filling out report forms or looking up technical manuals.

Common Name	Official Nomenclature
Compressor	Compressor, Reciprocating, Gasoline Engine Driven 15 CFM, 175 PSI
Engine	Engine, Gasoline

Section II EQUIPMENT DESCRIPTION

1-8. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

Purpose of Compressor

Used as a source of compressed air in the normal operations conducted at motor pools or vehicle maintenance shops.

Capabilities and Features

Continuous operation at a rated capacity of 15 cubic feet per minute (CFM) at a discharge pressure of 175 pound-force per square inch (PSI). Automatically regulated.

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

COMPRESSOR DRIVE (1). Matched V-belts and a grooved pulley on the gasoline engine. A belt guard assembly totally encloses front, back, top and sides, for protection of personnel.

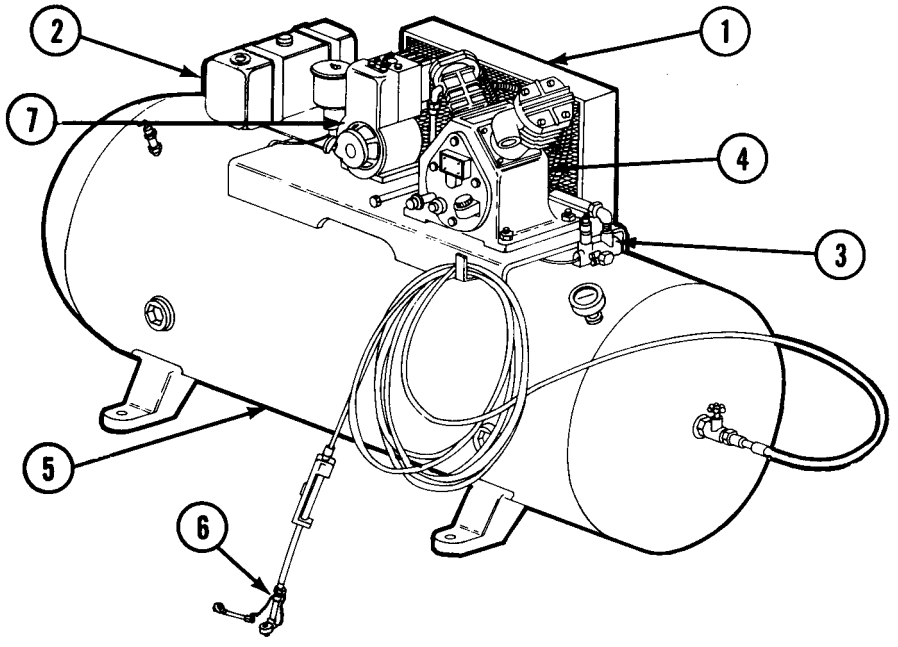
FUEL SYSTEM (2). Consists of a fuel tank equipped with a fuel level indicator and a fuel shutoff valve. Provides up to four hours of continuous operation.

UNLOADING CONTROL VALVE (3). Prevents air in receiver tank from flowing back into the compressor. It also vents air into atmosphere when rated pressure is reached and provides engine throttle control (manual and automatic unloading).

COMPRESSOR ASSEMBLY (4). A 2-cylinder, 2-stage, air-cooled, reciprocating type compressor.

AIR RECEIVER SYSTEM (5). Consists of an 80 gallon air tank, with a safety valve to provide overloading protection and a drain cock to provide condensation drain. Has a rated working pressure of 200 psi at -25°F (-31.7°C) to 120°F (49°C).

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS - Continued



LEGEND

1. COMPRESSOR DRIVE
2. FUEL SYSTEM
3. UNLOADING CONTROL VALVE
4. COMPRESSOR ASSEMBLY
5. AIR RECEIVER SYSTEM
6. AIR DISCHARGE SYSTEM
7. GASOLINE ENGINE

AIR DISCHARGE SYSTEM (6). Globe valve and air hose assembly with inflator gage for simultaneous reading and use of pressurized air.

GASOLINE ENGINE (7). A single cylinder, 4 cycle, L-head, air-cooled, gasoline-driven engine. Manually started.

1-10. DIFFERENCES BETWEEN MODELS

Model 50-6840 is the only model compressor covered in this manual.

1-11. EQUIPMENT DATA

WEIGHTS AND DIMENSIONS

Weight	408 lbs (185 kg)
Length	63 inches (160 cm)
Width	22 inches (59 cm)
Height	45 inches (114 cm)

PERFORMANCE

Gasoline Engine

Displacement	22 cu. in. (362 cc)
Bore	3.4 in. (87.3 mm)
Stroke	2.4 in. (60.3 mm)
Horsepower	10 max. @ 3600 RPM
Speed Set-No Load	2800 RPM
Fuel consumption	0.78 Gallons per hour

1-11. EQUIPMENT DATA - Continued

Compressor Assembly

Capacity, CFM (cubic feet per minute)	15
Pressure, PSI (pounds per square inch)	175
Working Pressure, PSI	
First Stage	35-40
Second Stage	195
Safety Valve Pressure Setting, PSI	
Compressor, First Stage	60
Air Receiver Tank	200

Unloading Capacity Control Valve

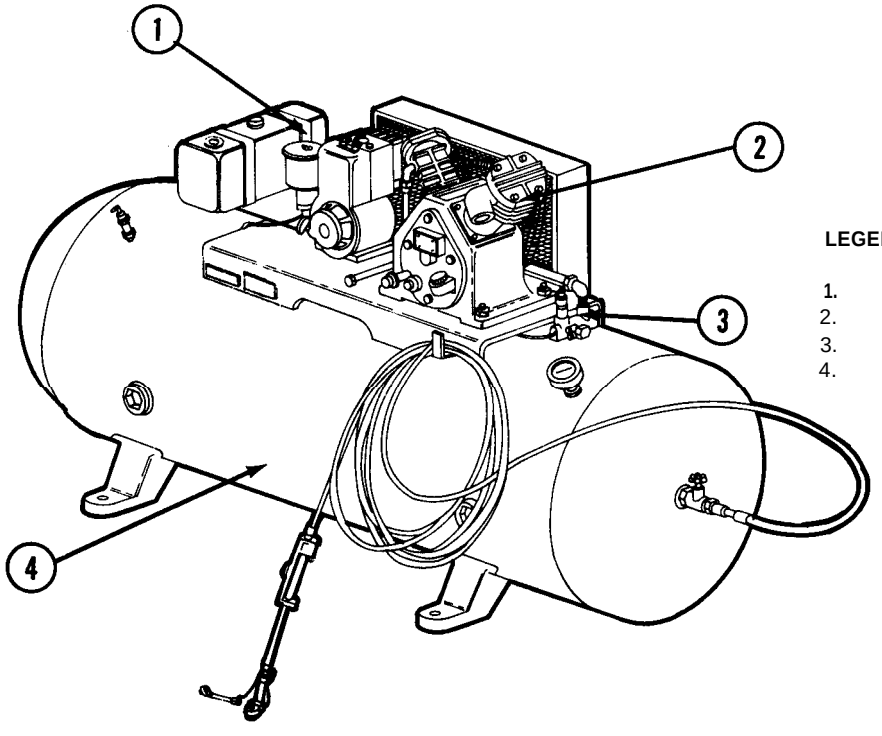
Control Range	On at 175 ±10 PSI Off at 200 +0, -10 PSI

ENVIRONMENTAL

Operating Temperature	-25°F ±5°F (-31.7°C ±2.8°C) to 120°F ±5°F (48.8°C ±2.8°C)

Section III. TECHNICAL PRINCIPLES OF OPERATION

1-12. FUNCTIONAL OVERVIEW



LEGEND

1. GASOLINE ENGINE
2. COMPRESSOR PUMP
3. UNLOADING CONTROL VALVE
4. AIR TANK

1–12. FUNCTIONAL OVERVIEW - Continued

Gasoline Engine (l). Drives the compressor. The engine will run continuously until fuel is exhausted or you shut down the system.

Compressor Pump (2). compresses air by means of two pistons. Operates similar to the gasoline engine, except power to drive the pistons is supplied by the engine.

Unloading Control Valve (3). Loads and unloads the compressor discharge while the compressor continues to run. Controls operation according to rise and fall of air tank pressure.

Air Tank (4). Acts as reservoir for the compressed air and dampens pressure fluctuations which you would get if you took the compressed air directly from the compressor.

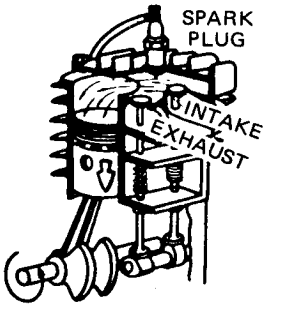
1-13. COMPONENT DESCRIPTIONS

This paragraph describes operation of individual components.

GASOLINE ENGINE

Intake Stroke

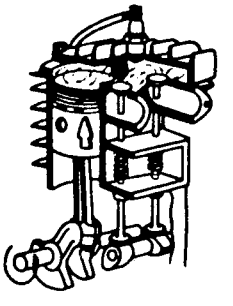
With exhaust valve closed and intake valve open, the piston moves downward, creating a vacuum in the cylinder which draws the air-fuel mixture into the cylinder through the open intake valve into the space above the piston.



INTAKE STROKE

Compression Stroke

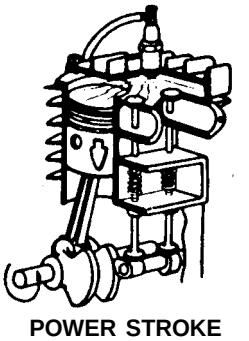
Then, the intake valve closes, and the piston moves upward on the compression stroke. The air-fuel mixture becomes highly compressed in the space left between the top of the piston and cylinder head.



COMPRESSION STROKE

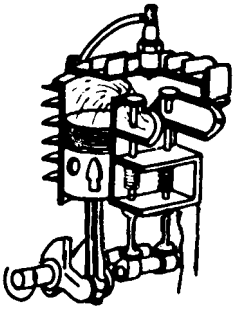
Power Stroke

The magneto sends hign tension current to the spark plug, the spark occurs, igniting the mixture, and the force of the expanding gases drives the piston down. This is a power stroke.



POWER STROKE

1-13. COMPONENT DESCRIPTIONS - Continued

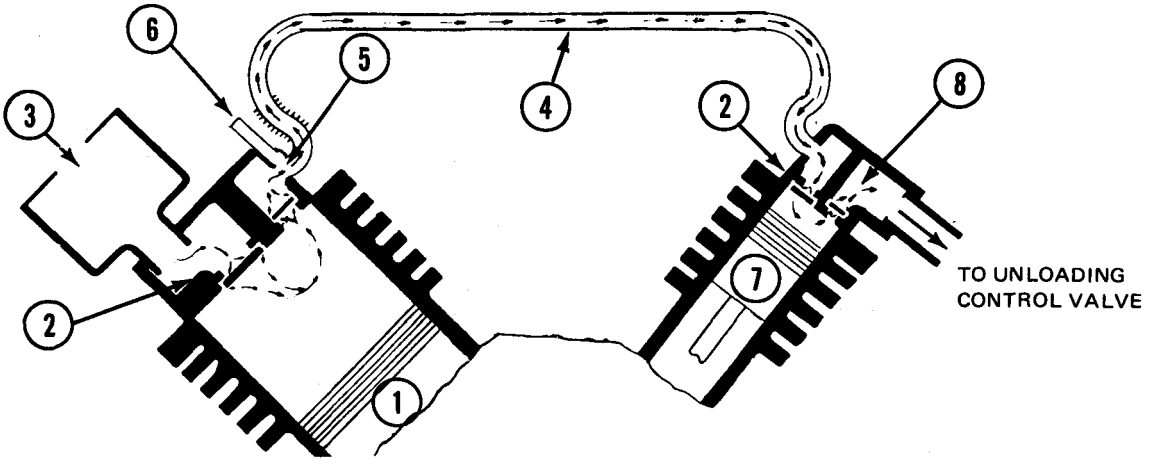


EXHAUST STROKE

Exhaust Stroke

The exhaust valve opens and the upward stroke of the piston forces out all of the burnt gases.
The exhaust valve closes, the intake valve opens, and the engine is ready to repeat the cycle just described.

COMPRESSOR PUMP



1.	LOW PRESSURE PISTON	5.	EXHAUST VALVE
2.	INLET VALVE	6.	INTERSTAGE RELIEF VALVE
3.	AIR INLET	7.	HIGH PRESSURE PISTON
4.	INTERCOOLER	8.	EXHAUST VALVE

The cycle starts with the low pressure piston (1) at the top of its stroke. When the piston moves down (suction stroke), the inlet valve (2) opens and air is drawn through the air inlet (3) into the cylinder.

On the upstroke (compression stroke), the inlet valve (2) closes and the piston pushes air out into the intercooler tube (4) through the exhaust valve (5).

The interstage relief valve (6) is a safety valve to protect the first-stage against damage from over pressure. It is set to release at approximately 60 psi.

The compression stroke of the high pressure piston (7) (second stage) compresses the air to the final discharge pressure and forces it through the exhaust valve (8) into the unloading control valve.

If there is an excessive pressure buildup due to a stuck valve or other air blockage, the air tank safety valve opens to prevent damage to the compressor.

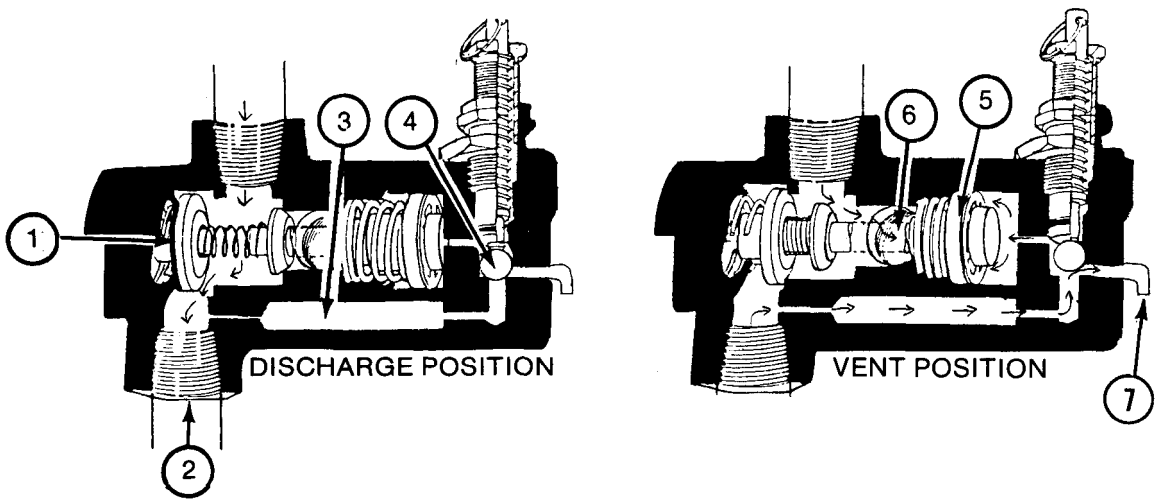
UNLOADING CONTROL VALVE

When the compressor starts, air is delivered through air inlet tube through check valve (1), and exits from air outlet (2) to the air tank.

1-13. COMPONENT DESCRIPTIONS - Continued

When air tank reaches a predetermined value (200 +0 -10 psi), pressure is sensed through sensing port (3) which forces ball (4) from its seat. Air from the air tank advances the vent piston valve (5), closing check valve (1) and compressor discharge is vented to the atmosphere through air vent (6). Air from the air tank also flows through the governor control tube (7) and reduces engine speed.

The unloading control valve continues to vent air to the atmosphere until some air has been used from the air tank. When air tank pressure reaches load pressure, ball (4) will reseat, vent piston valve (5) returns to the closed position and seals off air vent (6), allowing check valve (2) to open and pass air directly to the air tank.



CHAPTER 2

OPERATING INSTRUCTIONS

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

2-1. CONTROLS AND INDICATORS

Controls and indicators used by the operator are shown in figure 2-1.

Key	Control or Indicator	Function
1	Rewind starter	Starts engine.
2	Extended oil fill	Indicates by level, oil in engine crankcase.
3	Stop switch	Stops engine.
4	Choke	Alter fuel/air mixture for starting.
5	Drain cock	Drains condensation build-up from air receiver tank.
6	Globe valve	Turns air flow on and off to inflator gage.
7	Inflator gage	Controls and indicates amount of air being discharged.
8	Safety valve	Prevents overpressure in case of unloading control valve malfunction.
9	Pressure gage	Indicates amount of air pressure in air receiver tank.
10	Unloading control valve	Prevents air from air receiver tank returning to compressor pump. Vents air over 200 +0, -10 psi.
11	Fuel shutoff valve	Turns fuel flow on and off to gasoline engine.
12	Fuel indicator	Indicates by gage, fuel in fuel tank.

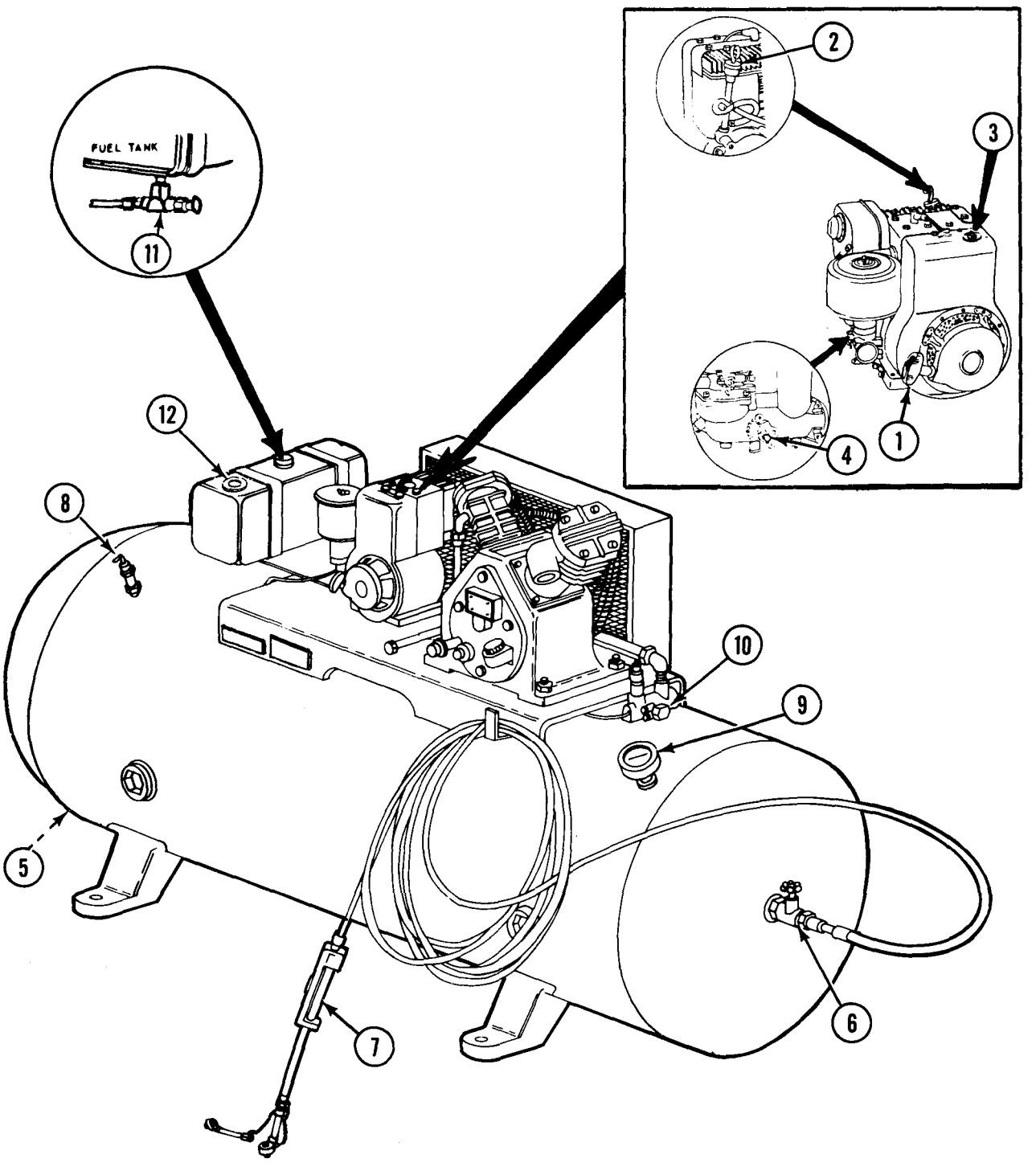


Figure 2-1. Operator's Controls and Indicators

Section II. OPERATOR'S PREVENTIVE MAITENANCE CHECKS AND SERVICES (PMCS)

2-2. GENERAL

Operator's Preventive Maintenance Checks and Services (PMCS) are required inspections and care of your equipment necessary to keep it in good operating condition.

2-3. PREVENTIVE MAINTENANCE CHECKS AND SERVICES PROCEDURE

a. Routine checks like equipment inventory, cleaning, dusting, washing, stowing items not in use, and checking for loose nuts and bolts are not listed as PMCS checks. They are things that you should do anytime you see they must be done. If you find a routine check like one of those listed in your PMCS, it was listed because other operators reported problems with this item.

b. Explanation of **INTERVAL** column of PMCS chart.

NOTE

Always keep in mind all CAUTIONS and WARNINGS when PMCS are performed.

BEFORE YOU OPERATE	Perform your Before (B) PMCS to be sure the compressor is ready to use.
WHILE YOU OPERATE	Perform your During (D) PMCS while you operate your compressor to help spot small problems before they become big problems.
AFTER YOU OPERATE	Be sure to perform your After (A) PMCS to be sure the compressor is ready for the next operator.

In general, Monthly (M) PMCS and Quarterly (Q) PMCS are important Preventive maintenance checks and services you make at those intervals to keep serious problems from suddenly happening.

c. Explanation of EQUIPMENT IS NOT READY/AVAILABLE IF: column of PMCS chart. This column tells why your equipment cannot be used. An entry in this column will:

(1) Identify conditions that make the equipment not ready/available for readiness reporting purposes.

(2) Deny use of the equipment until corrective maintenance has been performed.

d. You should perform W-PMCS as well as B-PMCS if:

(1) You are the assigned operator and have not operated the compressor since the last W-PMCS.

(2) You are operating the compressor for the first time.

2-3. PREVENTIVE MAINTENANCE CHECKS AND SERVICES PROCEDURE - Continued

NOTE

The procedures column in your PMCS chart tells you how to perform the required checks and services. Carefully follow these instructions. If tools are needed, or chart instructions tell you, get organizational maintenance to do the necessary work.

e. Use your PMCS TABLE to get the number for the TM ITEM NO. Column of DA Form 2404 (Equipment Inspection and Maintenance Worksheet).

NOTE

Report any malfunctions or failures on the proper Form DA-2404, or refer to DA PAM 738-750.

Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS)

B - Before Operation D - During Operation A - After Operation

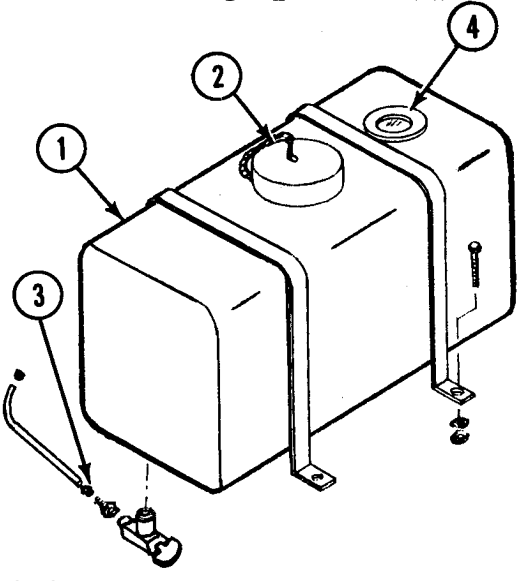
Item No.	Interval B	Interval D	Interval A	ITEM TO BE INSPECTED PROCEDURE	Equipment is not Ready/Available If:
1				**COMPRESSOR DRIVE**	
	•			Belt Guard - Inspect for dents, cracks, breaks, loose or missing screws and other damage (para 3-7a(1)).	Missing hardware.
	•			Belt Set - Inspect for cracks, fraying, and excessive wear (para 3-7a(2)).	Belt set defective.
	•			Belt Tension - Check tension.	Loose belts.
	•			Pulley and Hub - Inspect for cracks, chips, loose screws, or other damage (para 3-7a(3)).	Engine drive pulley loose. Screws missing.
					
2				**FUEL SYSTEM**	
	•			Fuel Tank (1) - Inspect for cracks, dents or other damage. Inspect tank cap and gasket (2) for wear and deterioration (para 3-7b).	Fuel tank leaks.
	•			Fuel Lines (3) - Inspect fittings and clamps.	Fuel line leaks.
	•			Fuel Level (4) - Check fuel level and add fuel if required.	Tank empty.

Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS) - Continued

B - Before Operation D - During Operation A - After Operation

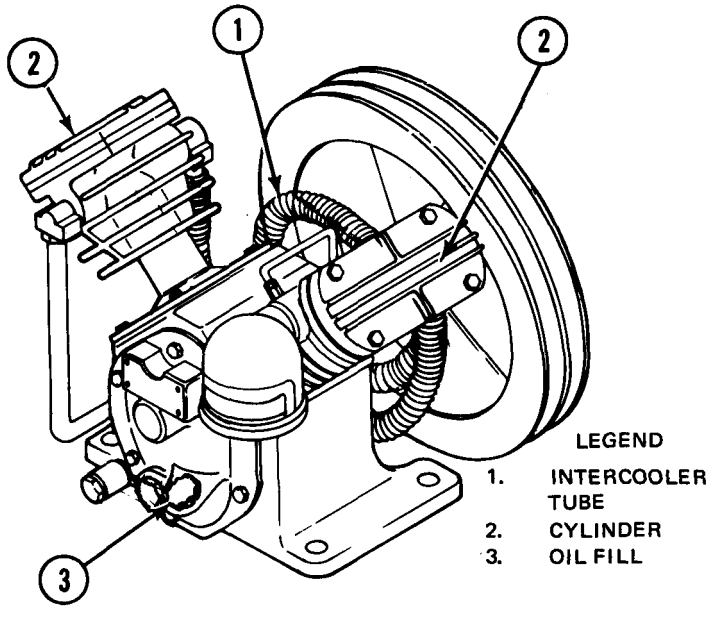
Item No.	Interval B	Interval D	Interval A	ITEM TO BE INSPECTED PROCEDURE	Equipment is not Ready/Available If:
3				**CAPACITY CONTROL**	
		Ž		Unloading Control Valve - Check for proper operation. Observe pressure gage. When reading reaches 200 +0, -10 PSI, unloading control valve vents air. Pull safety valve ring. When pressure drops below 175 PSI, unloading control valve fills tank (para 3-7c).	Will not reseat and/or leaks.
	•			Lines and Fittings - Inspect for leaks and tightness.	Loose fittings.
	Ž			Pneumatic Cylinder - Inspect for damage.	
4				**COMPRESSOR ASSEMBLY**	
					
	•			Cylinders (2) - Inspect for bent or broken cooling fins, cracks, or other damage (para 3-7d).	
	•			Oil Level (3) - Check oil level. Fill to bottom of threads if necessary (para 3-6a(1) and (2)).	Low in oil.
	•		•	Safety Valve - Inspect for missing ring, corrosion. Operate and observe that air pressure is relieved.	Does not reseat and/or valve leaks.

Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS) - Continued

B - Before Operation D - During Operation A - After Operation

Item No.	Interval B	Interval D	Interval A	ITEM TO BE INSPECTED PROCEDURE	Equipment is not Ready/Available If:
4				**COMPRESSOR ASSEMBLY** - Continued	
	Ž			Air Cleaner - Remove filtering element, inspect, and clean pads if necessary (para. 3-6b).	Pads dirty.
	Ž			Flywheel - Inspect for cracks, wear, distortion, wear in grooves or keyway and other damage.	Flywheel loose.
	•			Intercooler Tube (1) - Inspect for bent or broken fins, dents, holes, cracks, or other damage.	Air leaks.
5				**ENGINE ASSEMBLY**	
				Inspect all parts for cracks, breaks, and other damage (para 3-7e).	
	•			Fuel Filter - Inspect filter for dirt. Replace if necessary.	Clogged filter.
	•			Air Cleaner (1) - Service after every 25 hours of operation (para 3-6c).	
	•			Paper Cartridge - Service after every 100 hours of operation (para 3-6c).	Cartridge is dirty.
	•			Lubrication system - Check oil level before each start. Change oil after every 100 hours of operation (para 4-7b).	Oil level low.
6				**AIR DISCHARGE SYSTEM**	
		•		Inflator Gage - Inspect for breaks, defective fittings or other damage.	Loose fittings.
		Ž		Air Hose - Inspect for cracks, breaks, cuts, or damaged fittings.	Defective hose.
	•			Globe Valve - Inspect for cracks, breaks, worn threads, corrosion, or other damage.	Valve leaks.

Table 2-1. Operator Preventive Maintenance Checks and Services (PMCS) - Continued

B - Before Operation D - During Operation A - After Operation

Item No.	Interval B	Interval D	Interval A	ITEM TO BE INSPECTED PROCEDURE	Equipment is not Ready/Available If:
7				**AIR RECEIVER SYSTEM**	
	Ž			Pressure Gage - Inspect for cracks, rust, broken glass or other damage.	
	•			Safety Valve - Inspect for missing ring, damaged threads or corrosion.	Ring missing, does not reseat.
	Ž			Air Tank - Inspect for cracks, broken welds, and corrosion.	

Section III. OPERATION UNDER USUAL CONDITIONS

2-4. INITIAL ADJUSTMENTS AND DAILY CHECKS

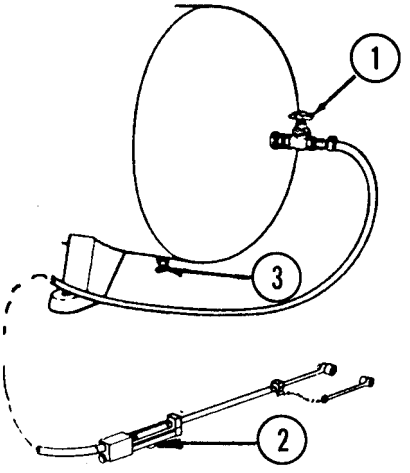
Perform preventive maintenance checks and services listed in table 2-1.

2-5. OPERATING PROCEDURE

a. Preliminary Procedures

(1) Release air pressure by turning globe valve (1) to open position, and then depressing inflator gage handle (2). Close globe valve (1).

(2) Drain air receiver of water by opening drain cock (3). When water has drained out, close drain cock.

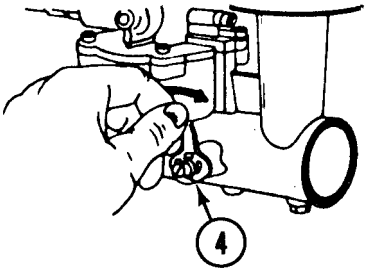


b. Starting Gasoline Engine

(1) Open fuel valve (underfuel tank).

NOTE

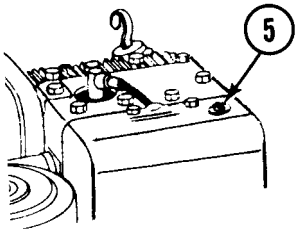
A warm engine requires less choking than a cold engine.



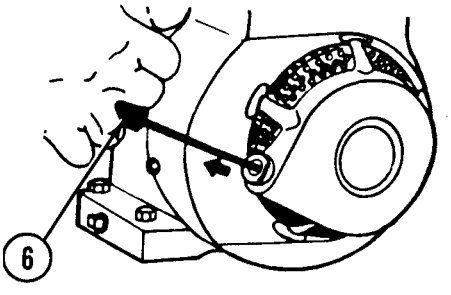
(2) Manually close choke (4).

NOTE

If fuel drips out of carburetor while trying to start engine, engine is overcooked. Open choke and pull starter several times.

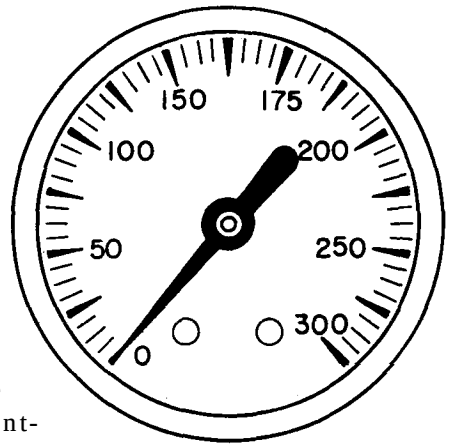


(3) Be sure ON-OFF switch (5) is "ON". Grasp starter grip (6) and pull out rapidly to overcome compression and prevent kickback. Repeat if necessary with choke opened slightly. When engine starts, open choke gradually.



2-5. OPERATING PROCEDURE - Continued

c. Operational Checks



CAUTION

In case of malfunction, immediately shut off compressor by stopping gasoline engine and notify organizational maintenance personnel.

(1) As compressor operates, air pressure gage will indicate amount of air in the receiver tank. Check gage frequently.

NOTE

When air pressure reaches 200 psi, the unloading control valve opens and remains open until pressure in the air tank falls below 175 psi.

(2) As air pressure increases, check for air leaks. Air leaks can be found by listening for hissing sound which is the air escaping from a loose connection.

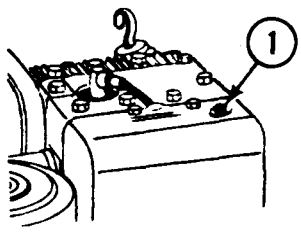
(3) Engine will operate normally for about four hours on a full tank of gasoline. Stop engine and add fuel after about four hours of operation.

d. Operating Instructions on Decals (See figure 2-2).

2-6. STOPPING OPERATION

WARNING

DO NOT TOUCH hot muffler, cylinders or fins as contact may cause burns.



(1) Operate ON-OFF switch (1) to OFF position.

(2) Release air pressure from receiver.

(3) Perform AFTER PMCS listed in table 2-1.

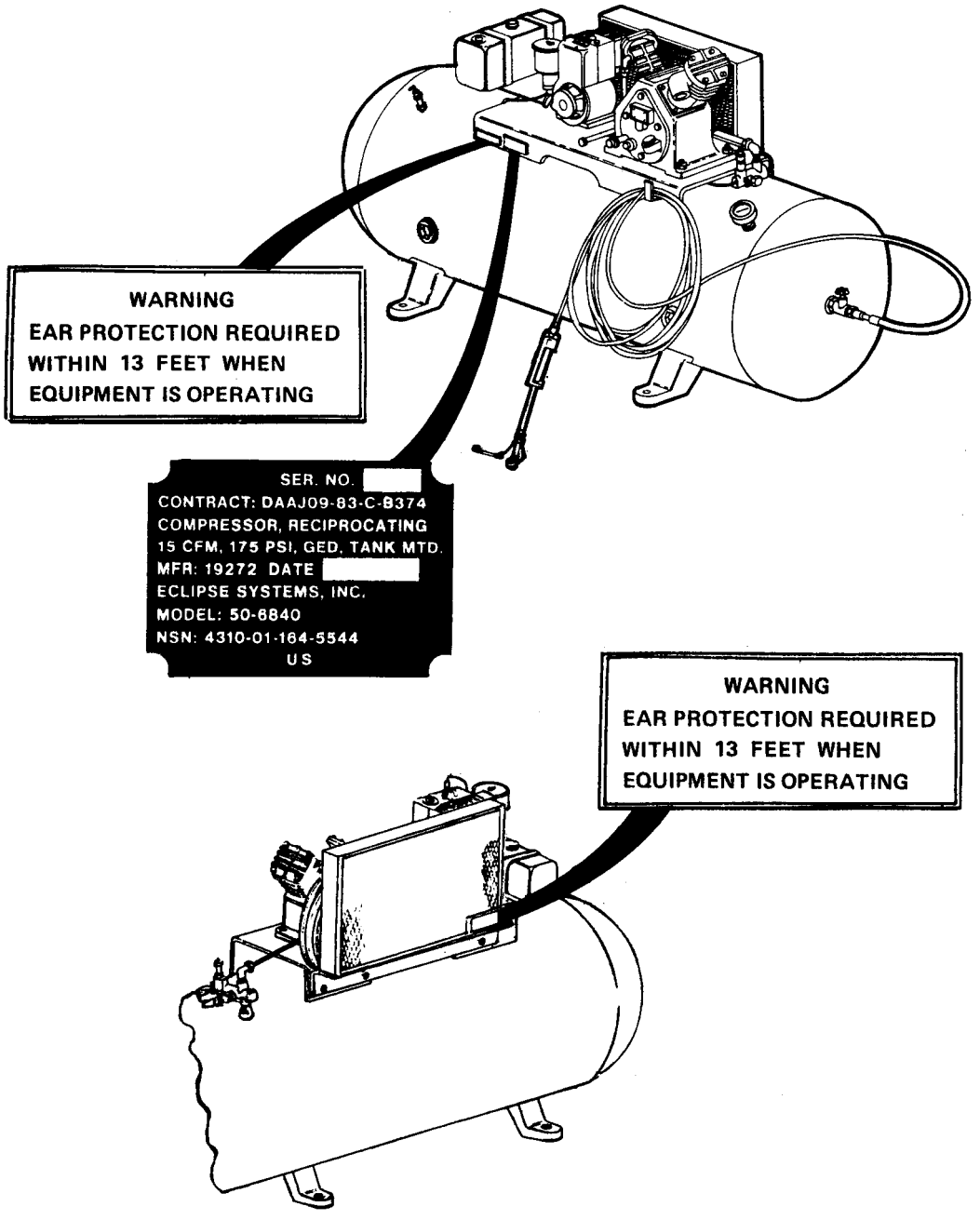


Figure 2-2. Compressor Decals

2-7. PREPARATION FOR MOVEMENT

Organizational maintenance personnel will prepare the compressor for movement.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-8. GENERAL

Operation of the air compressor under unusual conditions presents problems that demand special precautions and care in servicing the equipment.

2-9. OPERATION IN UNUSUAL WEATHER

a. Extreme Cold

(1) FUEL SYSTEM - Condensation will cause formation of ice crystals in partially filled tanks. These crystals will clog fuel lines and carburetor jets unless the following precautions are taken.

(a) Immediate area should be heated, since condensation will cause water to accumulate around compressor valves, which will freeze, locking and damaging the valves.

(b) When equipment is not in operation, provide protection from direct exposure to weather.

(c) Before attempting to start engine, set choke at part-choke position. A slightly richer fuel mixture, obtained by turning carburetor needle valve 1/8 turn counterclockwise, will usually improve cold starting.

(d) Remove ice from fuel tank filler cap and dispensing equipment before filling tank.

(e) Use filter paper, chamois, or any comparable strainer when filling tank.

WARNING

Provide metal-to-metal contact between fuel tank and fuel container to avoid possibility of a static spark igniting the fuel.

(f) Fill tank frequently to keep it full. This helps prevent moisture from forming in tank.

(2) LUBRICATION - Lubricate in accordance with cold weather instructions contained in Lubrication Chart in Chapter 3, Section I.

(3) AIR DISCHARGE SYSTEM - At low temperatures, air hose will become brittle. Avoid excessive handling and kinking.

(4) AIR RECEIVER SYSTEM - Drain condensation from air receiver tank before shutdown while compressor is still warm.

(5) COMPRESSOR PUMP AND ENGINE - Be sure that the consistency of oil in crankcase is thin enough to furnish proper lubrication.

2-9. OPERATION IN UNUSUAL WEATHER - Continued

b. Extreme Heat

(1) VENTILATION - Provide sufficient room around air compressor to allow proper air circulation. In addition to consuming large quantities of air this unit is air-cooled. Insufficient air circulation will cause overheating and lower performance.

(2) LUBRICATION - Lubricate in accordance with Lubrication Chart in Chapter 3, Section I.

(3) COMPRESSOR PUMP AND ENGINE - Keep outside of engine and compressor clean. Dirt acts as an insulator which prevents heat from escaping into the air.

(a) Inspect engine blower housing for foreign matter that may restrict the flow of air.

(b) Check belt tension frequently, loose belts can cause overheating.

(c) Check oil level frequently. Fill if necessary.

2-10. OPERATION UNDER OTHER CONDITIONS

a. Dusty or Sandy Areas

(1) PROTECTION - Take advantage of natural barriers that will afford protection against blowing dust or sand. Use a tarpaulin to construct a screen or shelter for the unit. Cover unit when not operating.

(2) FUEL SYSTEM - Prevent sand from entering fuel tank. Service fuel filter frequently to keep it free from dirt and grit.

(3) LUBRICATION - When adding or changing oil, remove dirt from around openings. Keep oil containers covered.

(4) COMPRESSOR PUMP AND ENGINE - Check air cleaners frequently; service or replace as required.

b. Rainy or Humid Conditions

(1) PROTECTION - High humidity or rainy weather conditions can cause deterioration of exposed metal parts. Apply an approved preservative to all exposed metal parts.

(2) SERVICE - Drain air receiver tank frequently of all condensation.

If operation is intermittent duty, check compressor pump oil frequently. Rusting, oil sludging and rapid wear of running parts will result under these conditions.

2-10. OPERATION UNDER OTHER CONDITIONS - Continued

c. **Salt Water Areas.** Deterioration and corrosion of exposed metal is greatly accelerated. All parts of the unit should be wiped dry whenever the unit is shut down. Apply an approved perservative to all exposed metal parts. Keep unit covered when inoperative.

d. **High Altitudes.** Compressor efficiency may be reduced as much as 20 percent. This is a normal condition which cannot be prevented, but maximum performance can be maintained by taking the following precautions.

WARNING

Death or serious injury could occur if gasoline is not handled carefully. Use in a well-ventilated area away from open flame, arcing equipment, ignition sources, heaters or excessive heat. Engines must be turned off and cool before refueling. Use proper refueling procedures and equipment to avoid spillage. Do not run engines near open gasoline containers. Always store gasoline in proper, marked containers. Do not use gasoline as a cleaning solvent. DO NOT SMOKE.

(1) Fill fuel tank at the end of each day to prevent condensation buildup in the tank.

(2) Since the amount of air available to the carburetor will be reduced, adjust carburetor idle adjustment needle-valve for a higher fuel-air mixture.

2-11. EMERGENCY CONDITIONS

CAUTION

Operating unit in sandy or dusty area without air cleaners can cause damage to the engine or compressor.

a. **Compressor Pump.** If compressor pump fails to build up pressure due to a clogged air cleaner, remove air cleaner pads and securely fasten a suitable section of clean, fine, meshed screen, if available, over air cleaner housing.

b. **Engine.** If engine fails to start or stops suddenly due to a clogged air cleaner, remove air cleaner filter and securely fasten a suitable section of clean, fine, meshed screen, if available, over air cleaner housing.

CHAPTER 3

OPERATOR'S MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

WARNING

Relieve air tank and compressor of pressure, before attempting to service equipment, to avoid personal injury.

3-1. GENERAL

NOTE

Lubrication is mandatory. No separate lubrication order has been prepared.

a. Care of Lubricants. Keep all lubricants in sealed containers and store in a clean, dry area away from heat. Do not allow foreign materials to come in contact with lubricants. Keep all lubrication equipment clean and ready for use.

b. Points of Application Follow lubrication instructions given below. Apply only those lubricants specified.

LUBRICATION CHART

Components	Capacity (Pints)	Expected Temperature			Interval (Hours)
		Above +32°F (0°C)	+40°F (4°C) to to -10°F (-12°C)	0°F(18°C) to -25°F (-4°C)	
Engine	2-1/2	OE/HDO 30	OE/HDO 10	OEA	100
Compressor	3-1/2	OE/HDO 30	OE/HDO 10	OEA	100

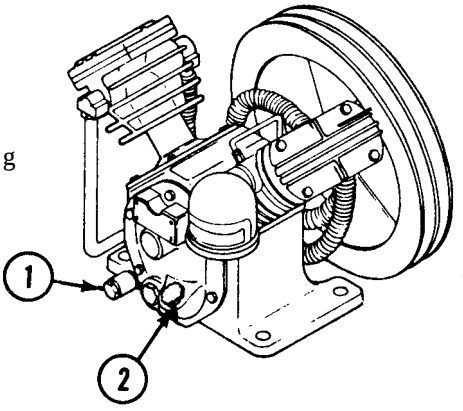
NOTE

For operation in protracted cold temperatures, below -10°F (-23.3°C), remove lubricants prescribed in the chart for temperatures above -10°F (-23.3°C) and relubricate with those specified for temperature below -10°F (-23.3°C).

3-2. COMPRESSOR PUMP LUBRICATION

NOTE

Drain crankcase when warm. Fill and check level.



a. **Compressor Crankcase Drain Plug**

(1) Remove drain plug (1). Oil is drained when it stops running out.

(2) Replace drain plug and tighten.

b. **Compressor Crankcase Fill Plug**

(1) Remove fill plug (2).

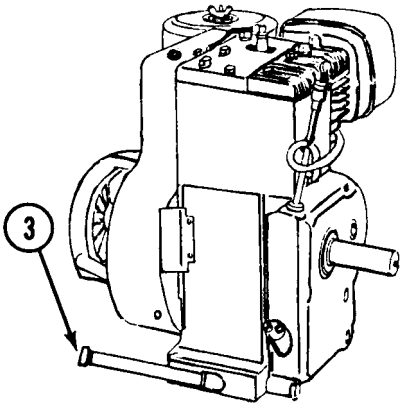
(2) Fill crankcase to proper level (bottom thread of oil filler opening).

(3) Replace oil fill plug. FINGER TIGHT ONLY.

3-3. GASOLINE ENGINE LUBRICATION

NOTE

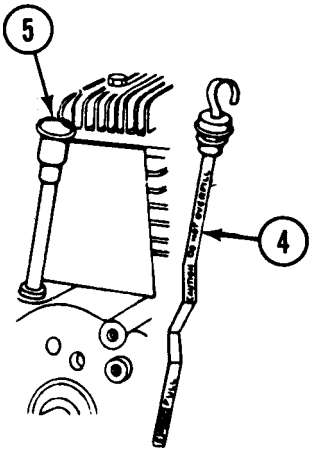
Drain oil while engine is warm. Fill and check level.



a. **Oil Drain Cap**

(1) Remove oil drain cap (3). Oil is drained when it stops running out.

(2) Replace drain cap and tighten.



b. **Extended Oil Fill**

CAUTION

Do Not Overfill

(1) Remove cap and dipstick (4).

(2) Fill to FULL MARK on dipstick; POUR SLOWLY into oil fill (5).

3-3. GASOLINE ENGINE LUBRICATION - Continued

(3) When checking oil level push dipstick firmly but slowly until cap bottoms on tube.

(4) Dipstick must be securely assembled into tube at all times when engine is operating.

Section II. OPERATOR TROUBLESHOOTING

3-4. GENERAL

Operator troubleshooting of the air compressor consists of checking that the equipment operates properly. To check air compressor operation, perform the PMCS in Section II of Chapter 2 of this manual. Report any indication of a malfunction to organizational maintenance.

3-5. TROUBLESHOOTING CHART

a. Table 3-1 lists the common malfunctions which you may find during the operation of the air compressor or its components. You should perform the tests/inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

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

Table 3-1. Operator Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
1. ENGINE IS HARD TO START OR FAILS TO START
Step 1. Check that stop switch is not in OFF position.
Place stop switch in ON position.
Step 2. Check for fuel in fuel tank.
Fill fuel tank if necessary.
Step 3. Check that fuel shutoff valve is open.
Open fuel shutoff valve.

Table 3-1. Operator Troubleshooting - Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
2. ENGINE MISSES OR RUNS ERRATICALLY
Step 1. Check that choke is not partially closed.
Open choke fully.
Step 2. Check air cleaner for restrictions.
Service air cleaner (para 3-6b(3)).
3. ENGINE KNOCKS
Check oil level.
Fill to proper oil level.
4. ENGINE EXHAUST SMOKE EXCESSIVE
Step 1. Check oil level.
If overfilled, remove excess oil.
Step 2. Check air cleaner.
Service air cleaner (para 3-6b(3)).
5. ENGINE OVERHEATS
Step 1. Check air cleaner for restrictions.
Service air cleaner (para 3-6b(3)).
Step 2. Check oil level.
Fill to proper oil level.
Step 3. Check cooling fins and blower screen for dirt and/or restrictions.
Clean cooling fins.
6. ENGINE BACKFIRES OR LACKS POWER
Step 1. Check fuel for dirt or water.
Drain fuel tank and refill with fuel.
Step 2. Check air cleaner for restrictions.
Service air cleaner (para 3-6b(3)).

Table 3-1. Operator Troubleshooting - Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

7. ENGINE STOPS SUDDENLY

Step 1. Check fuel tank.

Refill fuel tank if necessary.

Step 2. Check fuel tank cap air vent hole.

Remove restriction plugging cap.

Step 3. Check air cleaner for restrictions.

Service air cleaner (para 3-6b(3)).

8. COMPRESSOR PUMPS TOO SLOWLY OR FAILS TO BUILD UP PRESSURE

Step 1. Check air cleaner for clog.

Service air cleaner (para 3-6b(3)).

Step 2. Check oil level.

Add oil if necessary (para 3-6a(1)).

Step 3. Check for leaks.

Tighten fittings or replace.

9. COMPRESSOR OVERHEATS

Step 1. Check cylinder fins and intercooler fins for dirt.

Clean fins.

Step 2. Check air cleaner for restrictions.

Service air cleaner (para 3-6b(3)).

Step 3. Check oil level, oil viscosity and type of oil.

Add oil (of correct viscosity), if necessary (para 3-6a(1)). Do not use detergent oil.

Table 3-1. Operator Troubleshooting - Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
10. ENGINE DOES NOT STOP WHEN STOP SWITCH IS TURNED OFF
Check wire connection to switch.
Reconnect wire or replace switch.
11. CAPACITY CONTROL DEVICE DOES NOT OPERATE
Check fittings for leaks.
Tighten fittings.
12. INSUFFICIENT COMPRESSOR OUTPUT
Check belt tension.
Tighten belts.

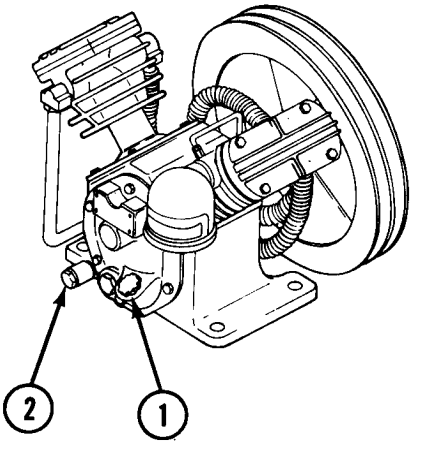
Section III. OPERATOR'S MAINTENANCE PROCEDURES

3-6. SERVICING

a. Compressor Pump

(1) Oil Fill

Fill crankcase toproper level (bottom thread of oil filler hole (1)). Refer to lubrication chart. Viscosity should be selected for temperature immediately surrounding unit when it is in operation.



(2) Oil Change

Oil changes should be made every 500 hours of operation or every 90 days, whichever occurs first.

3-6. SERVICING - Continued

NOTE

For maximum removal of impurities, drain only when frame oil is warm.

(a) Remove oil drain plug (2).

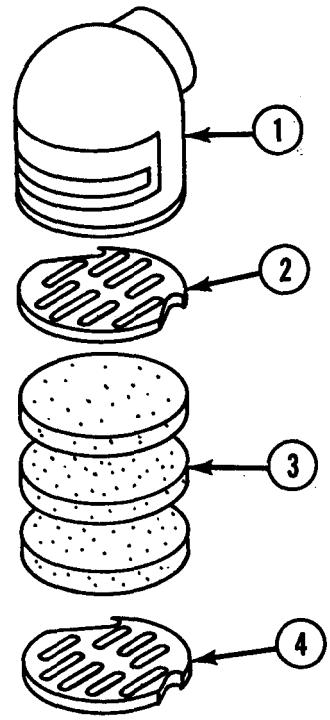
(b) Oil is drained when it stops running out.

(c) Replace oil drain plug and tighten.

(d) See lubrication chart for proper grade of oil.

(e) Replace oil filler plug (1). FINGER TIGHT ONLY.

b. Compressor Air Cleaner



(a) Wipe off outside and mouth of body (1).

(b) Remove disc (2) by turning counter clockwise.

(c) Remove three pads (3).

(d) Remove remaining disc (4).

WARNING

Dry cleaning solvent P-D-680 (safety or Stoddard's Solvent) is potentially dangerous. Avoid repeated and prolonged breathing of vapors and skin contact with the liquid. Do not use near open flame, arcing equipment or other ignition sources. Always wear eye protection and protective clothing. The flash point of P-D-680 is 100° to 138°F (30° to 59°C).

(e) Wash inside of filter body and wipe dry.

(f) Inspect pads for excessive wear or loss of capacity to retain dust or dirt.

(g) Wash pads and disc and blow dry with low compressed air.

(h) Position one disc in body.

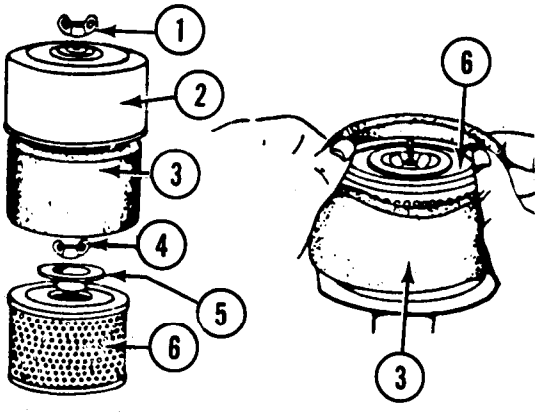
(i) Stack three pads in body.

(j) Secure pads in body with remaining disc.

3-6. SERVICING - Continued

c. Engine Air Cleaner

(1) Air cleaner foam pre-cleaner should be serviced every 25 hours of operation.



NOTE

Service more often if necessary.

(a) Remove wing nut (1) and cover (2).

(b) Remove foam pre-cleaner (3) by sliding it off of paper cartridge.

WARNING

Dry cleaning solvent P-D-680 (safety or Stoddard's Solvent) is potentially dangerous. Avoid repeated and prolonged breathing of vapors and skin contact with the liquid. Do not use near open flame, arcing equipment or other ignition sources. Always wear eye protection and protective clothing. The flash point of P-D-680 is 100° to 138°F (30° to 59°C).

(c) Wash foam pre-cleaner in solvent or liquid detergent and water.

(d) Saturate foam pre-cleaner with engine oil and squeeze to remove excess oil.

(e) Install foam pre-cleaner and cover. Install with wing nut.

(2) Air cleaner cartridge should be cleaned every 100 hours.

(a) Remove wing nut (1) and cover (2).

(b) Remove foam pre-cleaner (3).

(c) Remove wing nut. (4) and cup (5).

(d) Clean cartridge (6) by tapping (top and bottom gently on flat surface).

(e) If very dirty, replace cartridge, or wash in low or non-sudsing detergent and warm water solution. Rinse thoroughly with flowing water from inside out until water is clear. Cartridge must be allowed to stand and air dry thoroughly before using.

3-6. SERVICING - Continued

d. **Daily Draining of Air Receiver Tank**

WARNING

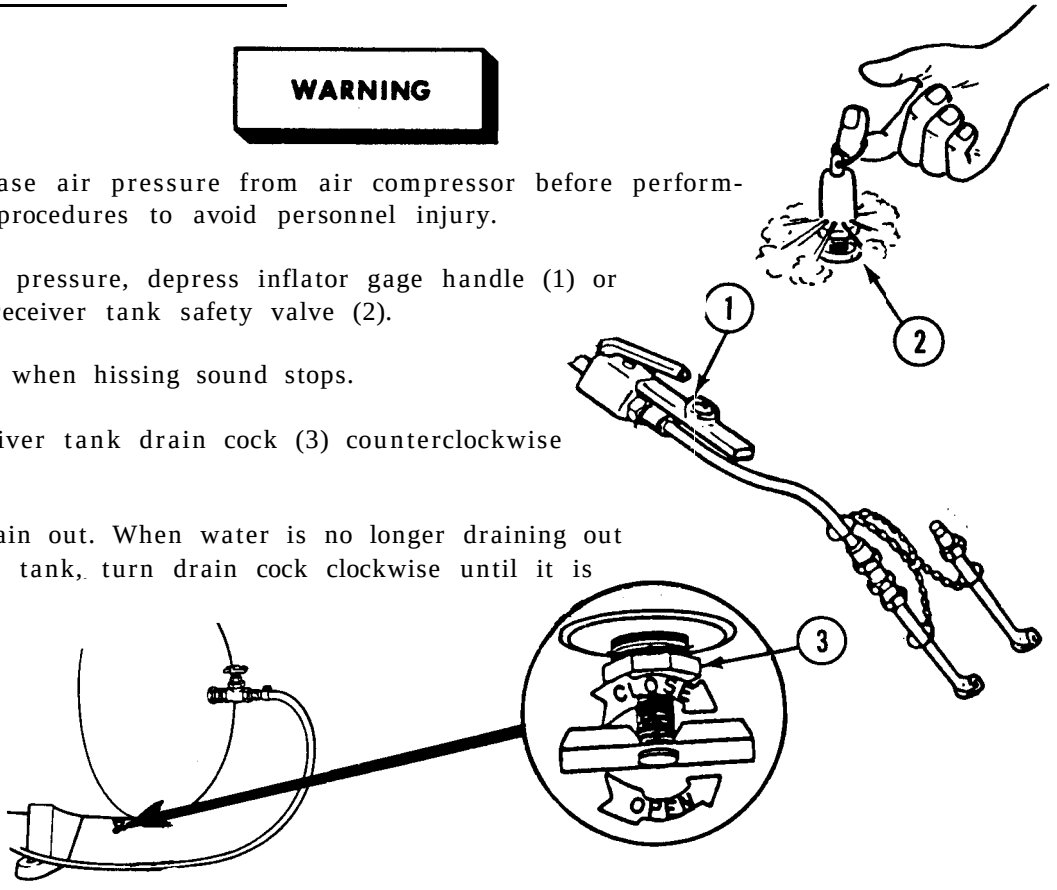
Release air pressure from air compressor before performing procedures to avoid personnel injury.

(1) To release air pressure, depress inflator gage handle (1) or pull ring on receiver tank safety valve (2).

(2) Air is drained when hissing sound stops.

(3) Turn air receiver tank drain cock (3) counterclockwise until it stops.

(4) Water will drain out. When water is no longer draining out of air receiver tank, turn drain cock clockwise until it is tight.



3-7. CLEANING AND INSPECTION

a. Compressor Drive

(1) Belt Guard

(a) Inspect for damage to screen, bends, dents, missing hardware and other damage.

(b) Check for accumulation of grease, soaked dust, dirt or other foreign matter.

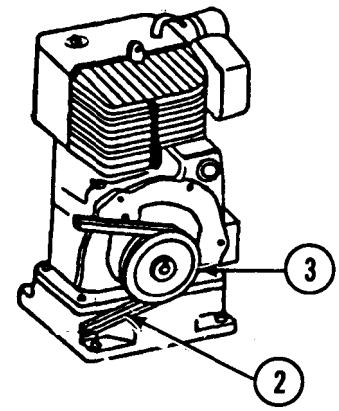
WARNING

Dry cleaning solvent P-D-680 (safety or Stoddard's solvent) is potentially dangerous. Avoid repeated and prolonged breathing of vapors and skin contact with the liquid. Do not use near open flame, arcing equipment or other ignition sources. Always wear eye protection and protective clothing. The flash point of P-D-680 is 100° to 138°F (30° to 59°C).

(c) Clean with a cloth dipped in cleaning solvent (item 1, Appendix E), then wipe dry.

3-7. CLEANING AND INSPECTION - Continued

(2) V-Belts (2)



(a) Inspect for cracks, fraying, and excessive wear.

(b) Clean with a clean, dry cloth. Do not use solvent to clean belt set. If dirt or grease persists, scrub with soap and water and allow to dry thoroughly.

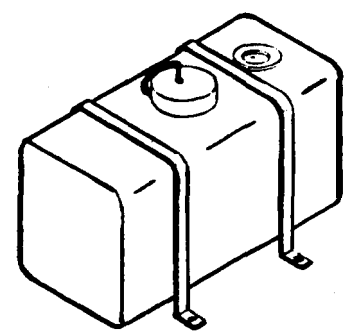
NOTE

A quick check for proper adjustment is to observe belts while compressor is in operation. If top of belt seems to droop slightly below line from pulley, belts are in adjustment.

b. **Fuel System**

(1) Fuel Tank

Inspect for gum, dirt, or foreign material.



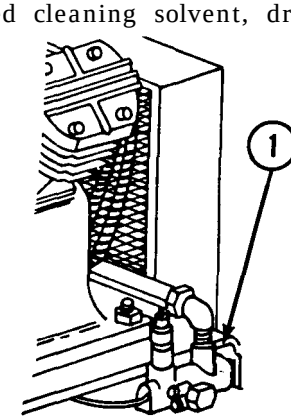
(2) Cleaning

WARNING

Dry cleaning solvent P-D-680 (safety or Stoddard's Solvent) is potentially dangerous. Avoid repeated and prolonged breathing of vapors and skin contact with the liquid. Do not use near open flame, arcing equipment or other ignition sources. Always wear eye protection and protective clothing. The flash point of P-D-680 is 100° to 138°F (30° to 59°C).

Clean inside and outside and all applicable parts with an approved cleaning solvent, dry thoroughly.

c. Capacity Control (1)



(1) Tubing

Inspect for leaks and loose connections.

(2) Valve

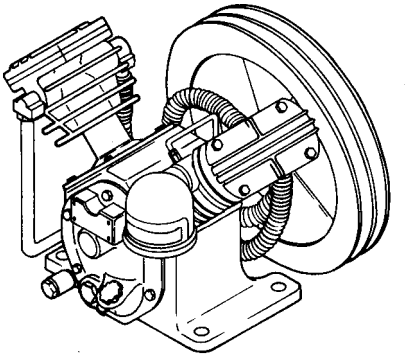
Check for proper operation. When air pressure reaches 200 +0, -10 psi, valve opens and air is vented to atmosphere.

3-7. CLEANING AND INSPECTION - Continued

Valve will remain open until air pressure in air tank falls below 175 ±10 psi.

d. Compressor Pump

Kept clean and lubricated, pump should be relatively free of maintenance.



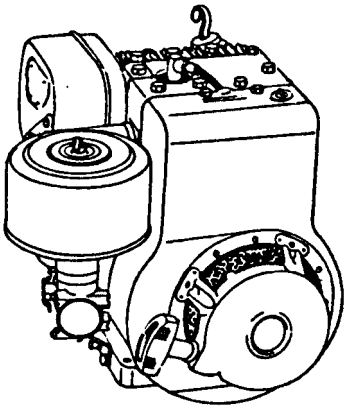
(1) Inspection

During operation listen carefully for a knock or rattle that might signify internal damage. Inspect for excessive accumulation of dust, dirt, or oil film.

(2) Cleaning

Wipe off all oil spots, then dry. Use compressed air to blow dust or dirt off.

e. Engine Assembly



(1) Inspection

Inspect for cracks, breaks, leaky fuel filter, loose spark plug, missing hardware, or other damage.

(2) Cleaning

WARNING

Dry cleaning solvent P-D-680 (safety or Stoddard's Solvent) is potentially dangerous. Avoid repeated and prolonged breathing of vapors and skin contact with the liquid. Do not use near open flame, arcing equipment or other ignition sources. Always wear eye protection and protective clothing. The flash point of P-D-680 is 100° to 138°F (30° to 59°C).

Clean with approved cleaning solvent and dry thoroughly. Use compressed air to blow dust or dirt off. Clean cooling fins and entire engine.

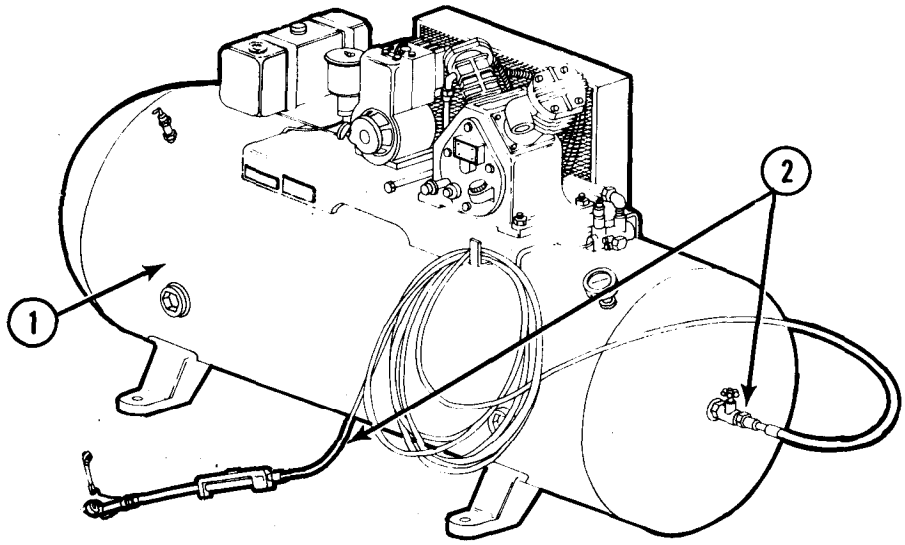
f. Air Receiver (1) and Discharge Systems (2)

(1) Inspection

Inspect for excessive accumulation of dust, or leaking or spilled oil. Check pressure gage safety valve, globe valve, drain cock, air hose, and inflator gage for leaks.

(2) Cleaning

3-7. CLEANING AND INSPECTION - Continued



Use compressed air to blow dust or dirt off all components. Clean with approved cleaning solvent, if necessary.

WARNING

Dry cleaning solvent P-D-680 (safety or Stoddard's Solvent) is potentially dangerous. Avoid repeated and prolonged breathing of vapors and skin contact with the liquid. Do not use near open flame, arcing equipment or other ignition sources. Always wear eye protection and protective clothing. The flash point of P-D-680 is 100° to 138°F (30° to 59°C).

CHAPTER 4

ORGANIZATIONAL 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.

Key	Nomenclature	National/NATO Stock Number
T1	Tool Kit, General Mechanic, Automotive	5180-00-177-7033
T2	Shop Set, Automotive Repair, Field Maintenance, Basic	4910-00-754-0705
T3	Shop Set, Machine, Field Maintenance Heavy	3470-00-754-0738
T4	Shop Equipment, Automotive Maintenance and Repair; Organizational, Common No. 1	4910-00-745-0654

4-2. SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT; AND SUPPORT EQUIPMENT. No special tools; test, measurement, and diagnostic equipment; or support equipment are required for the repair of this Section at the Organizational level of maintenance. For test, measurement, and diagnostic equipment, refer to TM 5-4310-376-24P. Individual equipment requirements are covered in the specific equipment chapters.

4-3. REPAIR PARTS. Repair parts for this equipment are listed in TM 5-4310-376-24P, Repair Parts and Special Tools List (RPSTL), covering Organizational, Direct Support, and General Support Maintenance for this equipment.

Section II. SERVICE UPON RECEIPT

4-4. UNLOADING AND UNPACKING

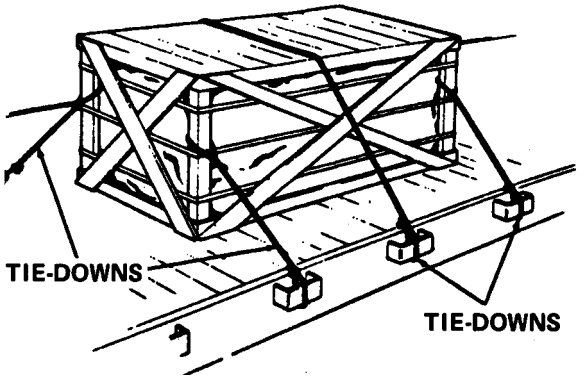
a. Inspect the shipping crate for damage that may have been caused during shipment. Report any damage on DD Form 6, Packaging Improvement Report.

b. Remove all tiedowns or blocking that secure the compressor to the carrier.

c. A forklift truck, or other suitable hoist must be used when removing the crated compressor from the carrier.

WARNING

Injury to personnel or damage to equipment could occur from improper hoisting. Hoist the load slowly to avoid tearing out lifting eye assemblies, slipping slings or load shift. Do not jerk the load or swing it from side-to-side when hoisting. This places additional stress on hoisting components which can cause failure and loss of load. Be sure hoisting equipment is on solid footing and is suitable for the size of the load. Watch boom angle and overhead clearance when hoisting.



d. Place the air compressor as close to the point of installation as possible.

e. Remove the crate from the base, being careful not to damage the air compressor.

f. Remove box banded to the bottom of the crate. Check contents of the box against the packing list. If packing list is not available, check contents against components of End Item List (COEIL) in Appendix C of this manual.

g. Remove the four nuts and lockwashers that secure the air compressor to the bottom of the crate. Using a forklift truck, remove the air compressor.

4-5. CHECKING UNPACKED EQUIPMENT

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

b. Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of TM 38-750.

c. Check to see whether the equipment has been modified. Modification Work Order (MWOs) numbers will appear ONLY if the unit(s) has been used or reconditioned.

4-6. INSTALLATION INSTRUCTIONS

Organizational maintenance will install air compressor.

a. Tools and Equipment. Tools and equipment required for installation are available in the Army supply system.

b. Assembly of Equipment. Remove components from box removed in paragraph 4-4. Assemble as follows:

(1) Globe Valve (1)

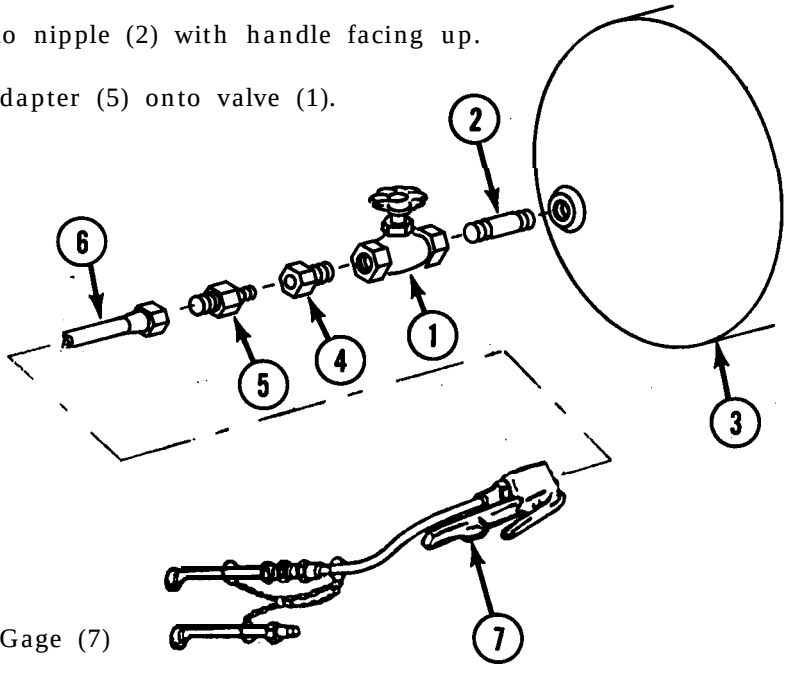
(a) Install nipple (2) into air receiver tank (3).

(b) Install globe valve (1) into nipple (2) with handle facing up.

(c) Install reducer (4) and adapter (5) onto valve (1).

LEGEND

1. GLOBE VALVE
2. NIPPLE
3. AIR TANK
4. REDUCER
5. ADAPTER
6. AIR HOSE
7. INFLATOR GAGE



(2) Air Hose (6) and Inflator Gage (7)

(a) Connect inflator gage (7) to air hose (6).

(b) Connect air hose (6) to globe valve adapter (5).

4-6. INSTALLATION INSTRUCTIONS - Continued

(3) Belt Guard and Belt Set

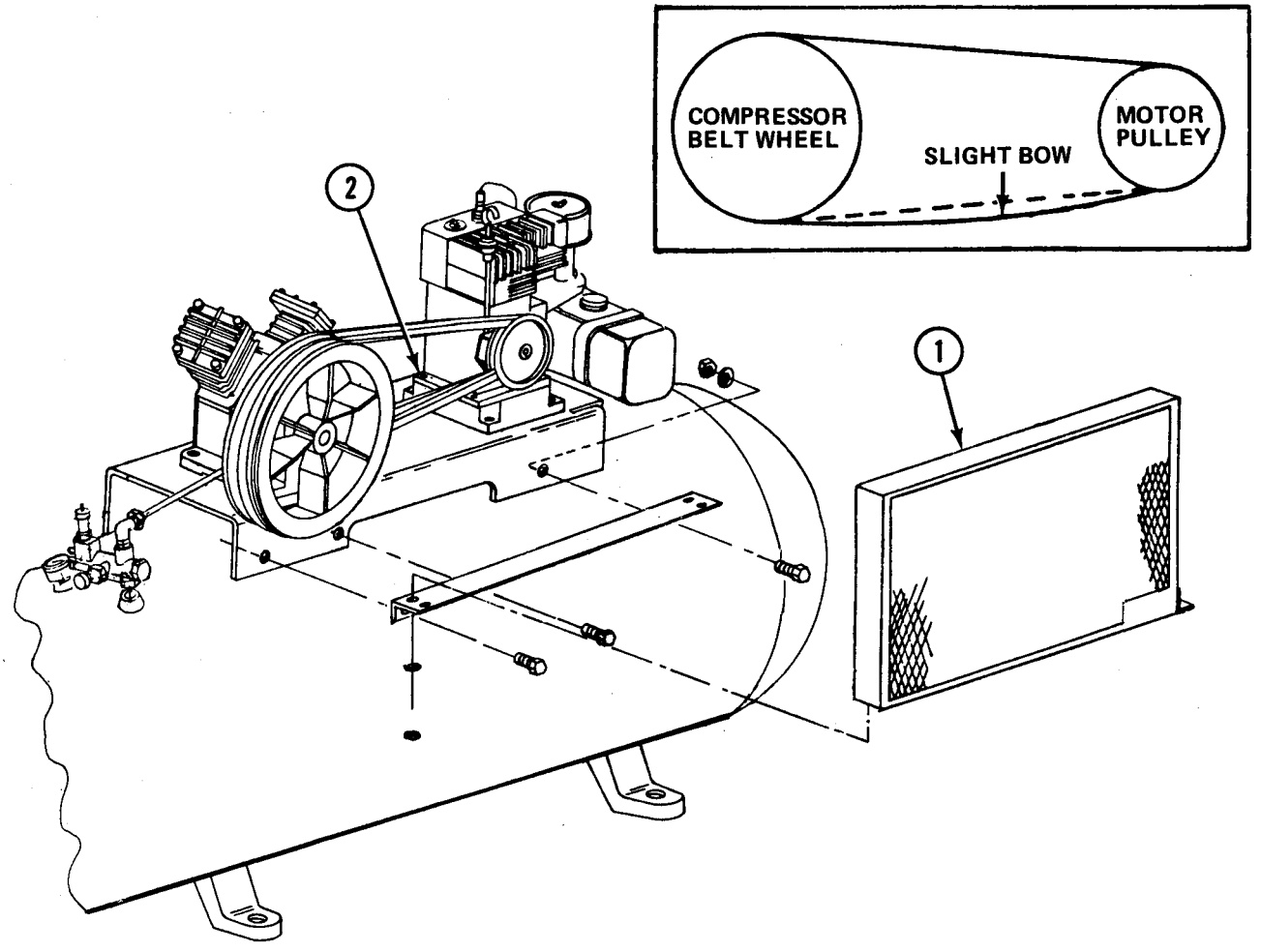
(a) Remove belt guard (1) (para 4-13).

(b) Loosen engine mounting bolts (2).

(c) slide engine away from compressor until there is tension on belt set. (Proper tension is a deflection of 3/4 inches, resulting from pressing down at a midway point between engine pulley and compressor flywheel).

(d) Tighten engine mounting bolts.

(e) Replace belt guard (para 4-13).



4-6. INSTALLATION INSTRUCTIONS - Continued

c. Siting

Unit may be bolted to any substantial, relatively level floor or base.

(1) CLEARANCE FOR ACCESS - A clearance of at least 15 inches should be provided to allow for maintenance and service.

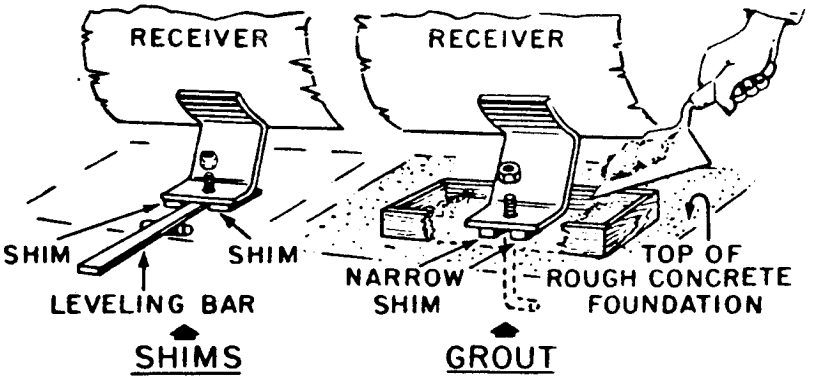
(2) MOUNTING - should a concrete base be necessary, make certain foundation bolts are positioned correctly to accept receiver feet. Bolts must project at least 1-3/4 inches above surface of foundation.

(3) LEVELING - to prevent vibration and ensure proper operation, it is important that the unit be level. Tighten evenly, and to a moderate torque, nuts of any three of the four receiver feet. Check unit for level. If not level, insert metal shims under one or two of the feet to obtain level.

(4) Note distance unanchored foot is elevated above base and insert metal shim of necessary thickness to provide support.

(5) After all shims are inserted and unit is level, pull up nuts on all receiver feet to moderate (not excessively tight) torque. (Refer to Appendix F).

(6) Check for stress by loosening nuts (one at a time) and note any upward movement of mounting foot.



4-7. PREOPERATIONAL CHECKS AND SERVICES

a. Compressor Lubrication - Fill crankcase to proper level (Bottom thread of oil fill' plug). Refer to lubrication chart.

(1) Remove oil filler plug.

(2) Fill crankcase.

(3) Tighten oil filler plug, FINGER TIGHTEN ONLY.

4-7. PREOPERATIONAL CHECKS AND SERVICES - Continued

b. Engine Lubrication - Fill crankcase to proper level. Refer to lubrication chart for proper viscosity.

CAUTION

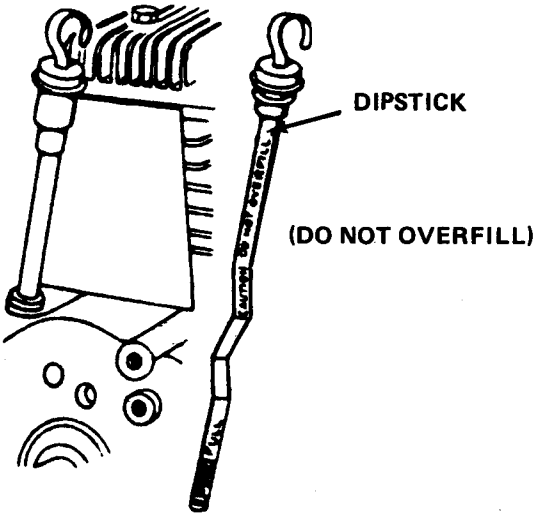
Dipstick is marked "DO NOT OVERFILL" Excessive oil will cause a smoking condition, as engine will attempt to discharge surplus oil.

(1) Remove dipstick.

(2) pour oil slowly.

(3) Fill to FULL mark on dipstick.

(4) Secure dipstick by pushing SLOWLY until cap bottoms on tube.



CAUTION

This is a 4-cycle engine. Damage will result if oil is mixed with gas.

c. Fuel - Use clean, fresh, regular grade leaded, low-lead, or lead-free gasoline.

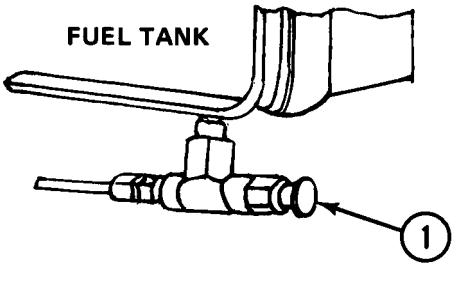
d. Air Tank - Close globe valve and open drain cock.

e. Starting Engine

NOTE

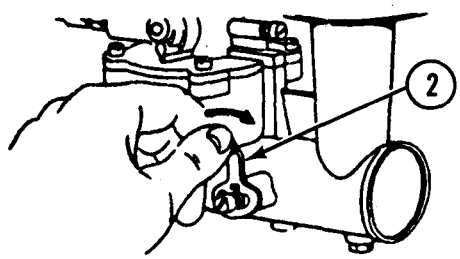
Refer to BEFORE PMCS Chapter 2, table 2-1.

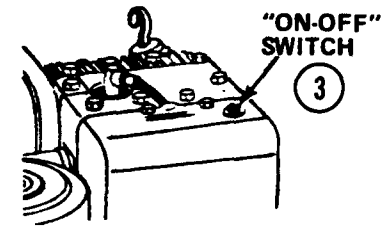
(1) Open fuel shutoff valve (1).



4-7. PREOPERATIONAL CHECKS AND SERVICES - Continued

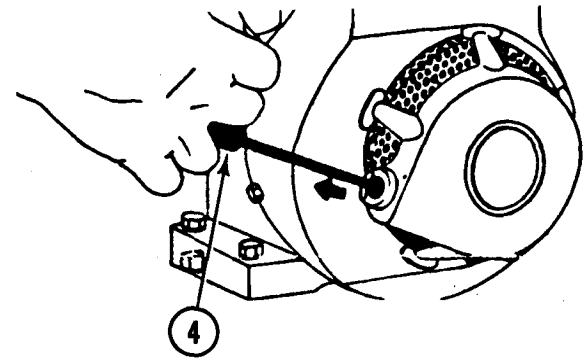
(2) Move choke level (2) to choked position.





(3) Be sure ON-OFF switch (3) is "ON".

(4) Grasp starter handle (4) and pull out rapidly to overcome compression and prevent kick-back.



(5) Repeat, if necessary, with choke open slightly.

(6) When engine starts, open choke gradually.

f. Check Operation

(1) Close air tank drain cock; allow air tank to build pressure up.

(2) Observe air compressor for any excess vibration or unusual noise.

(3) Observe pressure gage. When pressure builds up to 200 +0, -10 psi, observe that unloading control valve vents air to atmosphere.

(4) Open air tank drain cock to let pressure drop.

(5) Note pressure at which compressor reloads, (Unloading control valve), discharge vent stops venting air at 175 ±10 psi).

(6) Close air tank drain cock.

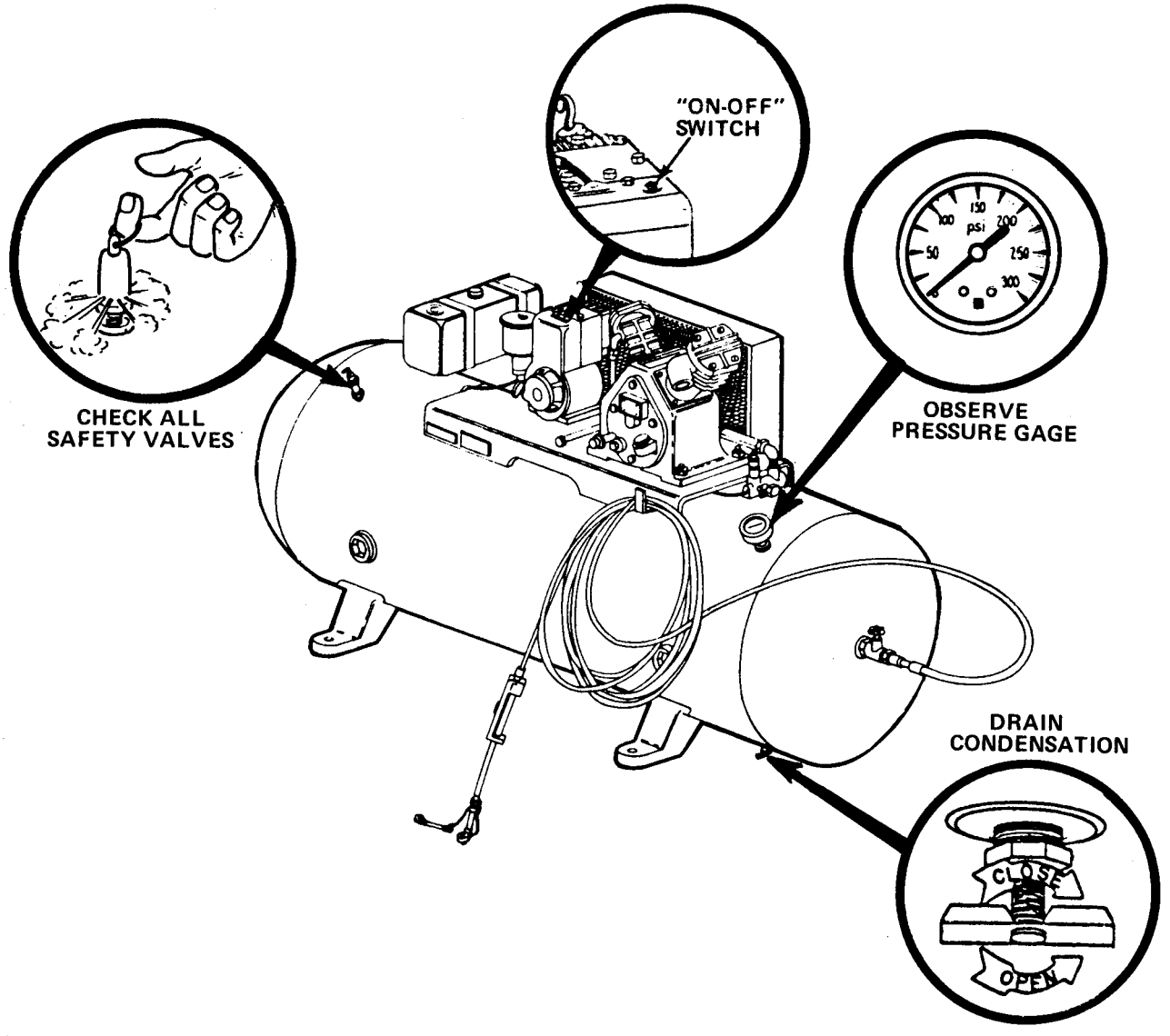
(7) Pull ring on all safety valves to be sure they relieve and reseat. Do this several times.

(8) Check tightness of all lines and fittings. Leaks are easily located by squirting or brushing soap and water solution around all joints and watching for bubbles.

(9) Check tightness of all mounting feet bolts.

(10) Turn ON-OFF switch to OFF.

(11) Close fuel shutoff valve.



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

4-8. GENERAL

The purpose of scheduled preventive maintenance checks and services (PMCS) is to prevent trouble, reduce downtime, and assure that the compressor remains in serviceable condition.

4-9. RECORDS AND REPORTS

Records and reports of preventive maintenance checks and services must be made in accordance with requirements set forth in DAPAM 738-750, The Army Maintenance Management System (TAMMS). Use your PMCS Table Item No. column to get the number of the TM ITEM NO. column of DA Form 2404, Equipment Inspection and Maintenance Worksheet.

4-10. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) TABLE

Table 4-1 contains organization PMCS requirements for the compressor.

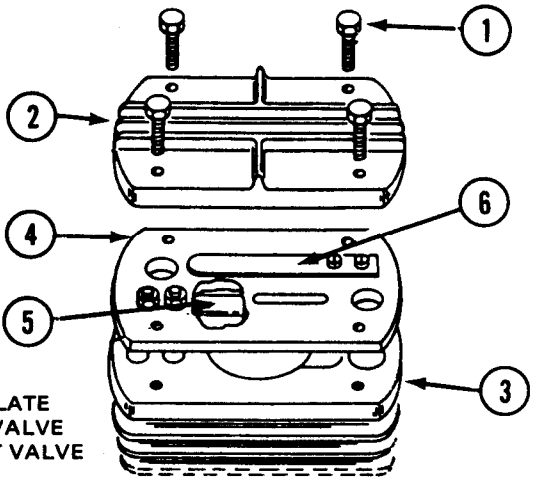
NOTE

If the equipment MUST be in operation all the time, check and service those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment CAN be shut down.

Table 4-1. Organizational Preventive Maintenance Checks and Services

M - Monthly **Q - Quarterly** **S - Semi-Annually**

Item No.	Interval M	Q	S	ITEM TO BE INSPECTED	PROCEDURE
1				**COMPRESSOR DRIVE**	
	Ž			Belts	Check belt tension, adjust if necessary.
2				**FUEL SYSTEM**	
	Ž			Tank, Lines and Fittings	Check tank and lines for leaks. Check fittings, tighten, if necessary.
3	•			**COMPRESSOR ASSEMBLY**	
				WARNING Dry cleaning solvent P-D-680 (safety or Stoddard's Solvent) is potentially dangerous. Avoid repeated and prolonged breathing of vapors and skin contact with the liquid. Do not use near open flame, arcing equipment or other ignition sources. Always wear eye protection and protective clothing. The flash point of P-D-680 is 100° to 138°F (30° to 59°C).	
	Ž			Cylinders, Heads, and Gaskets	Inspect cylinders and cylinder heads for cracks, breaks, dirt, and loose or missing mounting bolts. Inspect for leaks at the gasket. Clear the cylinders and cylinder heads of dirt and oil. Tighten loose mounting bolts, replace missing hardware, and replace defective gasket.
			Ž	Cylinder Heads	Remove cap screws (1) from head (2). Remove head from cylinder (3) and remove valve plate (4). Clean by brushing with a stiff bristle brush (not wire).
			Ž	Intake and Exhaust Valves	Inspect and clean intake valve (5) and exhaust valve (6).



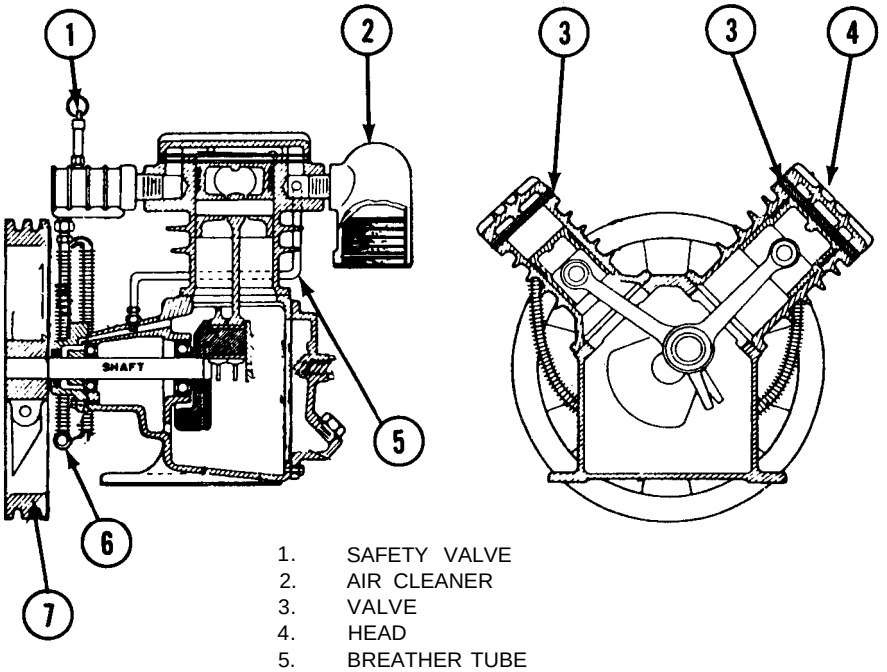
LEGEND

1. CAP SCREW
2. HEAD
3. CYLINDER
4. VALVE PLATE
5. INTAKE VALVE
6. EXHAUST VALVE

Table 4-1. Organizational Preventive Maintenance Ckecks and Services - Continued

M- Monthly Q - Quarterly S - Semi-Annually

Item No.	Interval M	Q	S	ITEM TO BE INSPECTED	PROCEDURE
				COMPRESSOR ASSEMBLY - Continued	
					If necessary, clean compressor parts using cleaning solvent (item 1, Appendix E). Install new gaskets. Replace cap screws and tighten to recommended torque values (see Appendix G).



1. SAFETY VALVE
2. AIR CLEANER
3. VALVE
4. HEAD
5. BREATHER TUBE
6. INTERCOOLER
7. BELT WHEEL

4				**ENGINE ASSEMBLY**	
		•		Fuel Filter	Replace fuel filter.
		•		Air Cleaner	Remove and check for proper servicing (clean, pads not damaged). Check gaskets and element for damage, replace if necessary.

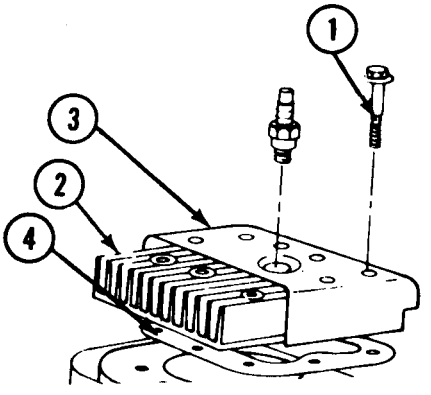
Table 4-1. Organizational Preventive Maintenance Checks and Services - Continued

M - Monthly Q- Quarterly S - Semi-Annually

Item No.	Interval M	Q	S	ITEM TO BE INSPECTED	PROCEDURE
				ENGINE ASSEMBLY - Continued	
	•			Cylinder Head and Muffler	Inspect cylinder head, muffler and muffler bracket for leeks, cracks, breaks and loose bolts. Tighten any loose cylinder head bolts and muffler bolts. Replace defective cylinder head gasket, muffler gasket, muffler or any missing hardware.
		•		Cylinder Head	Remove spark plug wire, spark plug and head bolts (1). Remove head (2) and shield (3). Clean head with a bristle brush (not wire). Inspect gasket (4).

NOTE

PMCS interval is Quarterly or after every 250-300 hours of operation.



WARNING

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If necessary, clean engine parts using cleaning solvent (item 1, Appendix E).

Install new gasket.

Replace head bolts and tighten to recommended torque value (Appendix G).

Table 4-1. Organizational Preventive Maintenance Checks and Services - Continued

M - Monthly **Q - Quarterly** **S - Semi-Annually**

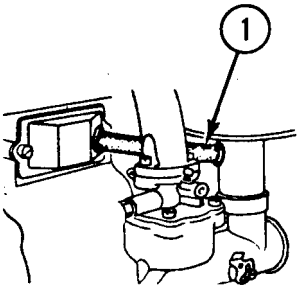
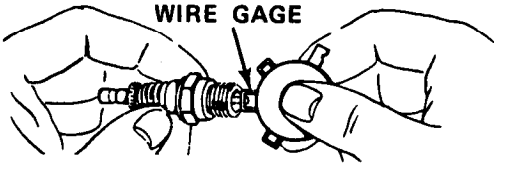
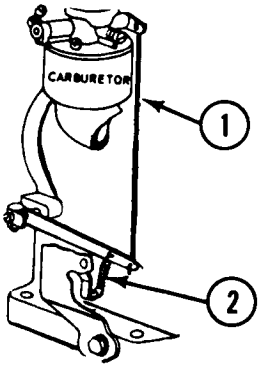
Item No.	Interval M	Q	S	ITEM TO BE INSPECTED	PROCEDURE
				ENGINE ASSEMBLY - Continued	
		•		Fuel Pump,Lines and Fittings	Check fuel lines and fittings for leaks. Tighten if necessary.
	Ž			Carburetor	**WARNING** Dry cleaning solvent P-D-680 (safety or Stoddard's Solvent) is potentially dangerous. Avoid repeated and prolonged breathing of vapors and skin contact with the liquid. Do not use near open flame, arcing equipment or other ignition sources. Always wear eye protection and protective clothing. The flash point of P-D-680 is 100° to 138°F(30° to 59°C). Clean with approved cleaning compound. Check that venting tube (1) is not damaged and seals properly. 
		•		Exhaust System	Check muffler for corrosion, loose bolts, or defective gasket.
		•		Starter and Clutch	Remove housing. Inspect rope and rewind starter.
	Ž			Ignition System	
				Ignition Cable:	Inspect insulation and shielding for cracks, breaks or other damage.
				Magneto:	Inspect housing and shielding for cracks, breaks, or other damage.

Table 4-1. Organizational Preventive Maintenance Checks and Services - Continued

M - Monthly **Q - Quarterly** **S - Semi-Annually**

Item No.	Interval M	Q	S	ITEM TO BE INSPECTED	PROCEDURE
				ENGINE ASSEMBLY - Continued	
				Spark Plug:	Clean and reset gap to 0.030 in. (0.75mm). 
				Flywheel:	Check compression. Spin counterclockwise against compression stroke. A sharp rebound indicates a satisfactory condition.
		•		Governor	Inspect linkage (1) and spring (2) for damage or wear. Check adjustment. 
5				**AIR RECEIVER SYSTEM**	
	•			Drain Cock	Inspect drain cock for proper operation (opening, closing and sealing).

Section IV. ORGANIZATIONAL TROUBLESHOOTING

4-11. GENERAL

Troubleshooting at the organizational maintenance level requires you to locate any trouble as quickly as possible. Once trouble is located, repair or replace the part if you are authorized to do so or determine if a higher category of maintenance is required. Repairs by organizational maintenance are limited by tools, test equipment and replacement parts allocated to that level.

NOTE

Before using the troubleshooting table (table 4-2), check your work order and talk to the operator, if possible, for a description of symptoms if trouble occurred while equipment was in operation.

4-12. TROUBLESHOOTING TABLE

Table 4-2 lists common problems that may occur during operation or maintenance of the air compressor.

Follow these steps to use table 4-2:

(1) Find the problem under MALFUNCTION.

(2) Check for possible causes of the problem under TEST OR INSPECTION.

(3) Use the procedures under CORRECTIVE ACTION to correct the problem.

This manual cannot list all troubles that may occur, nor everything to check, nor all possible procedures to correct troubles listed. If trouble is not listed in table 4-2 or is not corrected by procedures under CORRECTIVE ACTION, notify direct support maintenance.

Table 4-2. Organizational Troubleshooting.

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

1. ENGINE IS HARD TO START OR FAILS TO START.

Step 1. Check that engine does not have a heavy starting load. Operate compressor interstage safety valve; hissing will indicate compressor pump under load.

Replace unloading control valve (para 4-18).

Step 2. Check compression. Spin flywheel clockwise (flywheel side) against compression stroke. A sharp rebound indicates satisfactory compression. Slight or no rebound indicates poor compression. If compression is poor, look for:

a. Loose spark plug.

Tighten.

b. Loose cylinder head bolts.

Tighten (para 4-33).

c. Blown or leaking cylinder head gasket.

Replace (para 4-33).

Step 3. Check ignition - try a new spark plug. If engine dews not start look for:

a. Incorrect armature air gap (blower housing removed) (para 4-31).

check air gap. Set gap if necessary.

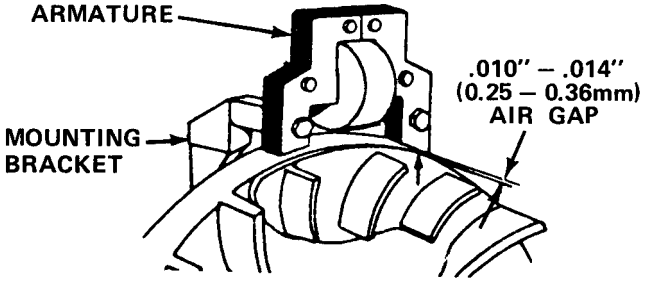


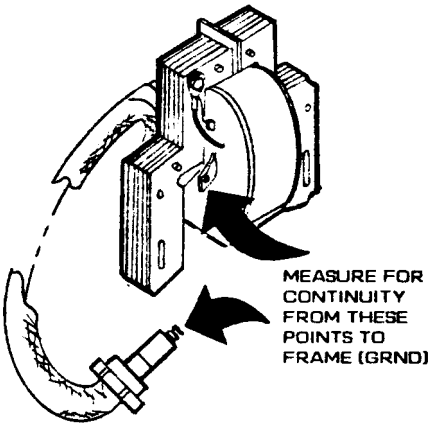
Table 4-2. Organizational Troubleshooting - Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

b. Defective stop switch.

Replace stop switch (para 4-31).

c. Sheared flywheel key (flywheel removed) (para 4-31). Worn bearing and/or shaft on flywheel side. Keyway in both flywheel and crankshaft should not be distorted.



NOTE

Use only soft metal key as originally supplied.

Replace key/replace flywheel if keyway is distorted. Notify direct support maintenance if crankshaft keyway is distorted.

d. Armature failure. With ignition cable off of spark plug, use an ohmmeter and measure for continuity (zero ohms) at points shown to frame. If no continuity, armature is defective.

Replace armature (para 4-31).

Step 4. Check carburetion. With adequate clean fuel in tank, remove fuel pump from carburetor, vacuum line attached, place in jar and pull starter; fuel should flow freely.

Clean fuel line and carburetor with carburetor cleaner. Replace in-line fuel filter (para 4-24).

a. Remove and inspect spark plug, if plug is wet, look for:

(1) Water in fuel.

Drain and refill fuel tank. Clean lines and carburetor with carburetor cleaner.

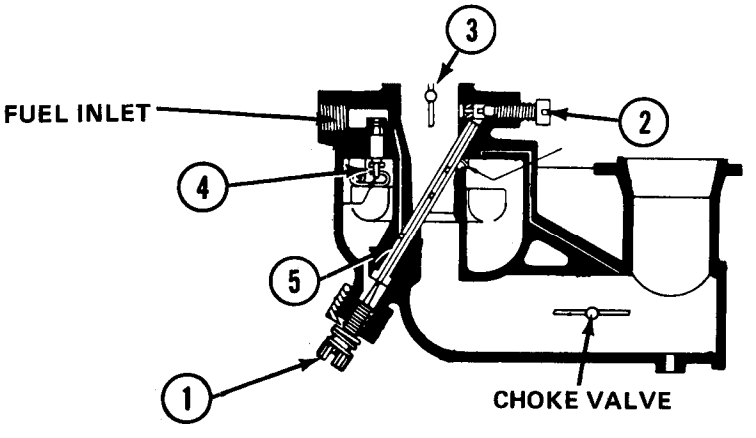
(2) Overcooking. Remove air cleaner; manually operate choke lever to see if it is binding.

Sticking choke due to dirt, etc.; clean. Defective choke; replace carburetor (para 4-28).

(3) Excessively rich mixture.

Table 4-2. Organizational Troubleshooting - Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
(a) Remove and inspect needle valve (1) on carburetor. Replace if defective.
(b) Remove and inspect idle valve (2) on carburetor. Replace if defective.
CAUTION Excessive force may damage needle or idle valves.
Screw in needle valve and idle valve until they just seat. Back off needle valve 1-1/2 turns. Back off idle valve 3/4 turn. Make final adjustment when engine is running.
(d) Rotate throttle (3) counterclockwise and hold against stop; inspect speed adjusting screw. Replace if defective.
(d) Fuel inlet valve (4) stuck open. Replace carburetor (para 4-28).



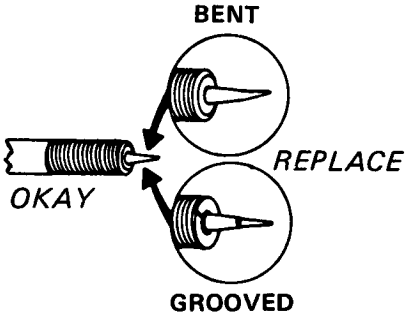
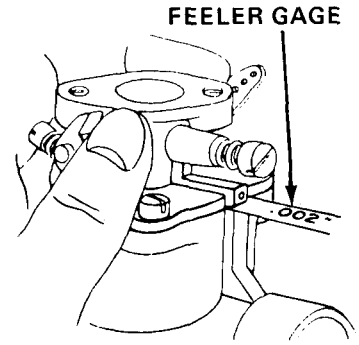


Table 4-2. Organizational Troubleshooting - Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

b. If spark plug is dry, pour a small amount of gasoline through spark plug hole and replace spark plug. Pull starter. If engine fires a few times and then quits, look for:

(1) Leaking carburetor. If a .002" feeler gage can be inserted between upper and lower bodies at the air vent boss, just below idle valve, upper body is warped or gasket is damaged.



Replace carburetor (para 4-28).

(2) Inlet valve (4) stuck shut.

Replace carburetor (para 4-28).

(3) Fuel pump defective.

Replace fuel pump (para 4-27).

2. ENGINE MISSES OR RUNS ERRATICALLY.

Step 1. In-line fuel filter clogged.

Replace in-line fuel filter (para 4-24).

Step 2. Check that ignition cable firmly seats on spark plug.

Tighten or replace armature (para 4-31).

Step 3. Check spark plug in accordance with table 4-1.

Clean, adjust, or replace spark plug.

Step 4. Check to see engine is not overloaded by unloading control valve. With engine running, pull up on unloading control valve safety valve. Observe if engine performance improves.

Check air inlet tube for obstructions. Replace air inlet tube (para 4-19). Replace unloading control valve (para 4-18).

Step 5. Check engine acceleration, place governor speed control in "fast" position.

If engine will not accelerate properly, adjust carburetor.

Step 6. Check ignition timing (armature adjustment) in accordance with MALFUNCTION 1, step 3a.

Adjust armature as instructed.

Table 4-2. Organizational Troubleshooting - Continued

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

Step 7. Check nozzle (5) for looseness. If loose, tighten, being sure tip of nozzle seats in aperture in throat of carburetor.

3. ENGINE KNOCKS OR LACKS POWER

Step 1. Be sure that gas is clean and fresh. If not, drain tank and lines and refill tank with fresh gas.

Step 2. Check engine acceleration in accordance with MALFUNCTION 2, step 5.

Adjust carburetor (para 4-28). If engine operates under heavy load, adjust for slightly higher mixture.

Step 3. Check ignition timing (armature adjustment) in accordance with MALFUNCTION 1, step 3a.

Adjust armature as instructed.

4. ENGINE OVERHEATS

Step 1. Check carburetor for too lean a mixture.

Adjust carburetor for slightly richer mixture (para 4-28).

Step 2. Inspect muffler for rust, leaks, or other damage which may cause exhaust restriction (with engine running).

WARNING

Do not touch hot muffler, cylinder head, or fins as contact may cause severe burns. Allow sufficient time to cool.

Replace muffler (para 4-29).

5. ENGINE EXHAUST SMOKE EXCESSIVE

Step 1. Check carburetor adjustment.

Adjust/replace carburetor (para 4-28).

Step 2. Check for a leak at the seal between oil filler tube and crankcase cover, or at upper end of dipstick.

Replace dipstick.

Table 4-2. Organizational Troubleshooting - Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 3. Check oil fill.

Dipstick is marked "DO NOT OVERFILL". Drain excess oil.

6. ENGINE STOPS SUDDENLY

Step 1. Remove spark plug, pour a small amount of gas in spark plug hole; replace plug. Pull starter. If engine fires a few times and quits, carburetor is defective.
Replace carburetor (para 4-28)

Step 2. If engine does not fire after priming, armature and coil are defective.
Replace armature and coil (para 4-31)

7. ENGINE DOES NOT IDLE WHEN UNLOADING CONTROL VALVE DISCHARGE VENT OPENS.

Step 1. Check control tube for kinks, bends, or other damage which may cause air to be blocked to air cylinder.

Replace control tube (para 4-20).

Step 2. Check governor linkages, control arm, and slowdown rod for binding.

Replace defective part(s). Check adjustment (para 4-32).

8. UNLOADING CONTROL VALVE DOES NOT DISCHARGE, AIR RECEIVER TANK SAFETY VALVE DISCHARGES.

Manually operate unloading control valve safety valve several times to clear.

Replace unloading control valve (para 4-18).

9. SAFETY VALVE RELEASES AIR BELOW WORKING PRESSURE OF 200 PSI.

Step 1. Check to see that safety valve is mounted correctly with no air leaks around fittings.

Tighten all connections.

Step 2. Check for malfunction, unload air from air tank, let pressure build up and observe pressure reading when safety valve releases. Do this several times to verify malfunction.

Replace safety valve (para 4-35).

Table 4-2. Organizational Troubleshooting - Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

10. NO PRESSURE IN AIR RECEIVER TANK.

Step 1. Be sure that the drain cock and globe valve are closed. Check all fittings and connections to air tank for leaks with engine running. Hissing or loud noise will indicate air escaping.

Tighten connections or fittings.

Step 2. Loosen air inlet tube to unloading control valve. Listen for air escaping. If air is heard, unloading control valve is defective; no air heard, compressor pump defective.

Replace/repair defective component.

11. COMPRESSOR PUMP FAILS TO BUILD UP TO PRESSURE, PUMPS SLOWLY, OR OVERHEATS.

Step 1. Check belt tension. Observe slack side of belts for a slight bow when unit is operating.

Tighten belts if necessary.

Step 2. Check for leaks in air receiver system.

Step 3. Remove air cleaner and check for proper servicing. Check for foreign material that may restrict air flow.

Instruct operator on air cleaner service procedures. Replace air cleaner.

Step 4. Remove air head (para 4-22). Check for broken, carbonized or loose valves or restricted air passages.

Remove valves from valve plate and clean both valve and seat by brushing with a stiff bristle brush (not wire). If necessary, use non- flammable safety solvent to loosen dirt, oil, or carbon deposits. Replace defective valves (para 4-22).

12. COMPRESSOR PUMP OR ENGINE NOISY OR VIBRATES EXCESSIVELY.

Step 1. Check pump and engine mounting bolts for tightness.

Tighten mounting bolts.

Step 2. Check engine drive pulley and compressor flywheel alignment.

Loosen mounting bolts, remove belts, and align pulleys. Reinstall belts (para 4-14), and tighten mounting bolts.

Table 4-2. Organizational Troubleshooting - Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 3. Check belt tension.

Adjust belt tension (para 4-14).

Step 4. Inspect mounting and foundation.

Tighten mounting bolts; strengthen foundation or relocate onto solid base.

13. EXCESSIVE OIL CONSUMPTION, COMPRESSOR PUMP OR ENGINE.

Step 1. Check oil for proper weight and viscosity.

Use correct oil for operating conditions (para 3-1).

Step 2. Check for external leaks.

Tighten connection where oil is leaking.

Step 3. Check for loose oil filler caps.

Tighten.

14. NO AIR COMING OUT OF INFLATOR GAGE.

Step 1. Close globe valve and disconnect air hose; open globe valve and listen for air. If air escapes, go to step 2; no air escaping, globe valve defective and/or air tank defective.

Replace globe valve (para 4-34).
Replace air tank (para 4-36).

Step 2. Close globe valve, disconnect inflator gage from air hose and open globe valve. If air is felt air hose is good; no air felt, air hose defective.

Air comes out of air hose, replace inflator gage (para 4-34). No air comes out of air hose, replace air hose (para 4-34).

Section V. ORGANIZATIONAL MAINTENANCE PROCEDURES

This section contains organizational maintenance instructions for the following air compressor systems:

SYSTEM	PARA REF
Compressor Drive	4-13, 4-15
Fuel	4-16, 4-17
Capacity Control	4-18 to 4-20
Compressor Assembly	4-21, 4-22
Engine	4-24 to 4-33
Air Discharge	4-34
Air Receiver	4-35

TASK SUMMARY FOR: Compressor Drive

ITEM	TASK	PARA REF
Guard Assembly, Belt	Removing, repairing and replacing	4-13
Belts	Adjusting, removing and replacing	4-14
Pulley and Hub	Removing and replacing	4-15

4-13. GUARD ASSEMBLY, BELT

This task covers:

Removing, repairing and replacing belt guard assembly.

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, NSN 5180-00-177-7033

Equipment Condition

Compressor not running.

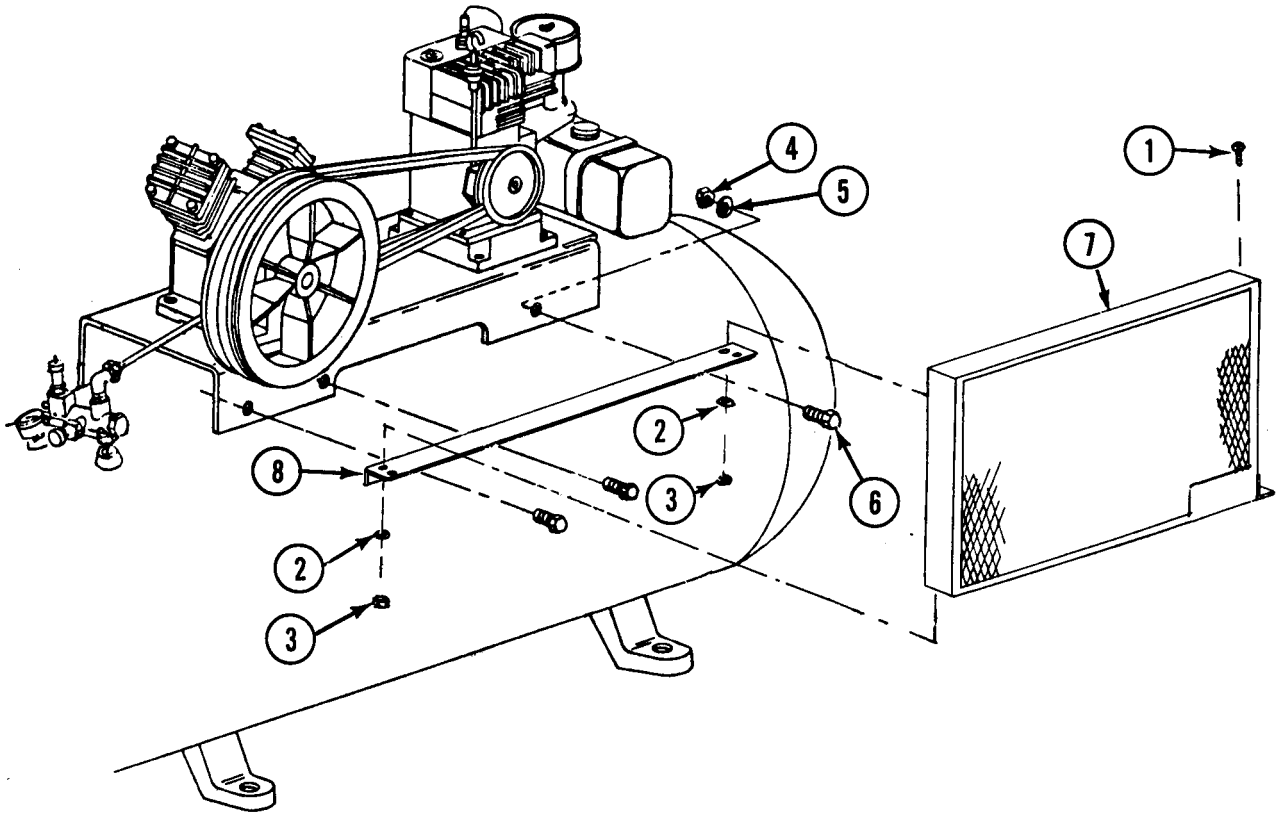
Parts

Belt guard P/N 20-6334

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
1. Belt guard	a. Remove 2 capscrews (1), lockwashers (2) and nuts (3) from one side of belt guard to mounting bracket (8).	
	b. Remove 2 nuts (3) and lockwashers (2) from studs on other side of mounting bracket.	
REPAIR	Remove belt guard	Repair as necessary.
REPLACING	a. Position belt guard on mounting bracket.	
	b. Secure belt guard to mounting bracket with 2 capscrews (1), lockwashers (2) and nuts (3) on one side; and 2 nuts (3) and lockwashers (2) for studs on other side of belt guard.	

4-13. GUARD ASSEMBLY, BELT - Continued

LOCATION/ITEM	ACTION	REMARKS



LEGEND

1. CAPSCREW	5. LOCKWASHER
2. LOCKWASHER	6. BOLT
3. NUT	7. BELT GUARD
4. NUT	8. MTG BRACKET

NOTE

Mounting bracket (8) is attached to frame with bolts (6), lockwashers (5), and nuts (4).

4-14. BELTS

This task covers:

Adjusting, removing and replacing belts.

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, NSN 5180-00177-7033

Equipment Condition

Compressor not running.
Belt Guard removed.

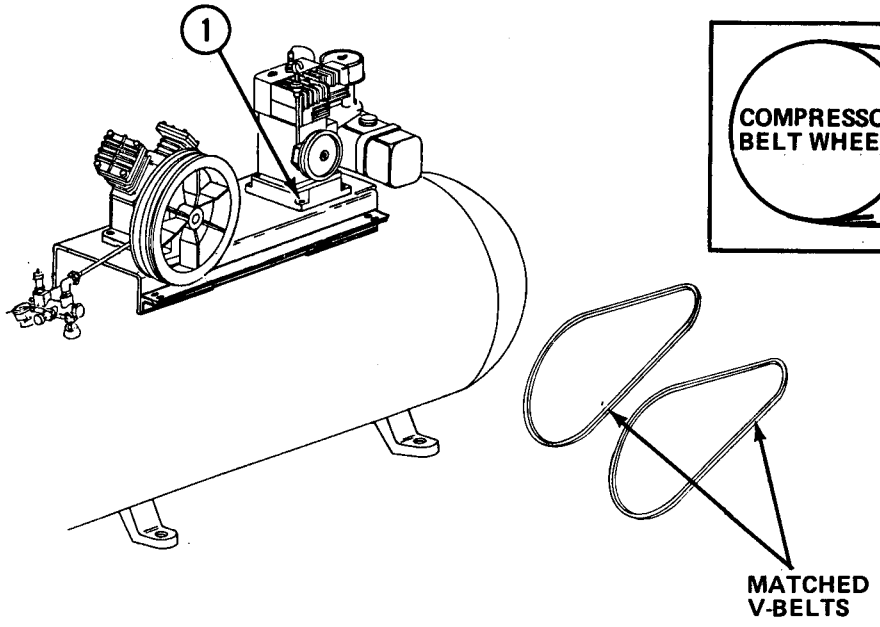
Parts

Belt Set P/N 11-6307

LOCATION/ITEM	ACTION	REMARKS
ADJUSTING		
1. Belt Set	a. Check belt tension for a deflection of 3/4 in. when pressing down midway between pulley and flywheel.	If deflection is not approximately 3/4 in., adjust belts.
	b. To adjust, loosen 4 nuts (1) and slide engine toward compressor to loosen belts and away from compressor to tighten belts.	
REMOVAL		
1. Belt Set	a. Loosen 4 nuts (1) and slide engine toward compressor to remove tension on belts.	
	b. Remove belt set from pulley and flywheel	

4-14. BELTS - Continued

LOCATION/ITEM	ACTION	REMARKS



REPLACING

1. Belt Set	a. Install belt set on flywheel and pulley	When replacing belts, replace both belts as a matched set.
	b. Slide engine away from compressor until there is tension on belt set.	Adjust for proper tension.
2. Belt Guard	c. Install belt guard (para 4-13).	

4-15. PULLEY AND HUB

This task covers:

Removing and replacing pulley and hub.

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, NSN 5180-00-177-7033

Equipment Condition

Compressor not running.

Parts

Pulley P/N 2B56Q
Bushing P/N H-1
Ket P/N 83-1085

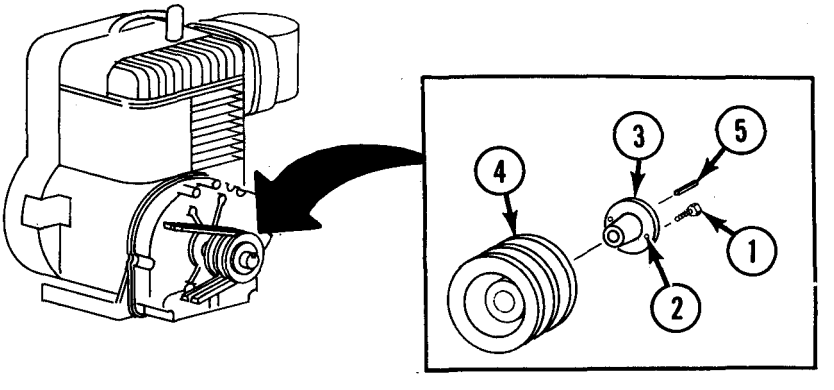
LOCATION/ITEM	ACTION	REMARKS

REMOVAL

1. Hub
   a. Remove 2 capscrews (1).
   b. Thread these screws int o jacking holes (2) of hub (3).
   c. Tighten evenly until hub comes out of pulley (4).
2. Pulley
   a. Lay hub aside.
   b. Remove pulley.

LEGEND

1. CAPSCREW
2. JACKING HOLES
3. HUB
4. PULLEY
5. KEY



4-15. PULLEY AND HUB - Continued

LOCATION/ITEM	ACTION	REMARKS
REPLACING		
1. Pulley	a. Replace pulley on engine shaft with key (5) attached.	
	b. Line up unthreaded holes in hub (3) to threaded holes in pulley.	
2. Hub	a. Press hub (3) into pulley (4) only far enough for capscrews (1) to thread.	
	b. Thread capscrews (1) into pulley.	
	c. Tighten capscrews evenly until hub is seated and pulley is secure.	

TASK SUMMARY FOR: Fuel System

ITEM	TASK	PARA REF
Fuel lines and fittings	Servicing, repair, removal and replacement	4-16
Fuel tank	Removal and replacement	4-17

4-16. FUEL TANK LINES AND FITTINGS

This task covers:

Servicing, repair, removal and replacement of fuel tank lines and fittings.

INITIAL SETUP

Tools

Tool Kit, General Mechanic Automotive, 5180-00-177-7033

Parts

Fuel line P/N 20-6354
Clamp P/N 93053
Adapter P/N 230318
Shutoff valve P/N 390303

Equipment Condition

Compressor not running.

LOCATION/ITEM	ACTION	REMARKS

WARNING

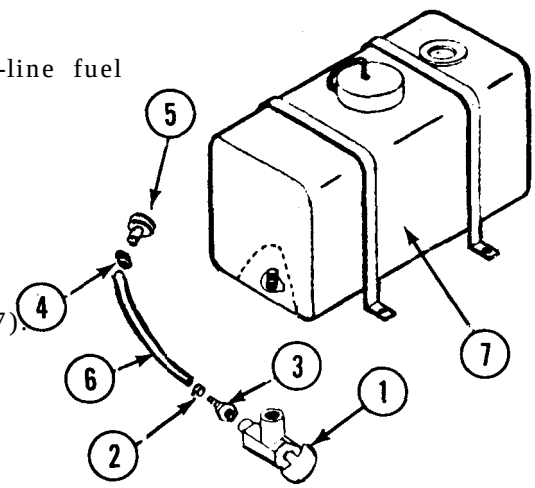
Gas in fuel lines. Drain completely before performing any servicing or repair.

WARNING

Death or serious injury could occur if gasoline is not handled carefully. Use in a well-ventilated area away from open flame, arcing equipment, ignition sources, heaters or excessive heat. Engines must be turned off and cool before refueling. Use proper refueling procedures and equipment to avoid spillage. Do not run engines near open gasoline containers. Always store gasoline in proper, marked containers. Do not use gasoline as a cleaning solvent. DO NOT SMOKE.

4-16. FUEL TANK LINES AND FITTINGS - Continued

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
1. Fuel line	a. Turn fuel shutoff valve (1) to closed position (clockwise).	
	b. Remove clamp (2) from fuel shutoff valve adapter (3).	
	c. Remove clamp (4) from in-line fuel filter (5).	
	d. Remove fuel line (6).	
2. Shutoff valve	a. Using a suitable container, open fuel shutoff valve (counterclockwise) and drain fuel from tank (7).	
	b. Remove fuel shutoff valve (2) with adapter (3).	
SERVICE	Replace in-line fuel filter in accordance with preventive maintenance schedule in table 2-1, item 5.	
REPAIR		
1. Fuel tank	Repair as necessary to remove corrosion, dents, or other damage. Replace tank cap gasket if necessary.	
REPLACING		
1. Shutoff valve	Install adapter (3) and shutoff valve (1) onto fuel tank (7) nipple.	
2. Fuel line	a. Place fuel line (6) in position.	
	b. Install clamps (2) and (4) between in-line fuel filter.	
	c. Fill tank with clean fresh gasoline.	**CAUTION** This is a 4-cycle engine, do not mix oil in gas.



LEGEND

1. SHUTOFF VALVE
2. CLAMP
3. ADAPTER
4. CLAMP
5. FUEL FILTER
6. FUEL LINE
7. TANK

4-17. FUEL TANK

This task covers:

Removal and replacement of fuel tank.

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, 5180-00-177-7033

Equipment Condition

Compressor not running.
Fuel line and fittings removed (para 4-16)

Parts

Tank P/N 11-6320
Cap P/N 6325
Fuel gage P/N 6326
Strap P/N 11-6342

LOCATION/ITEM	ACTION	REMARKS

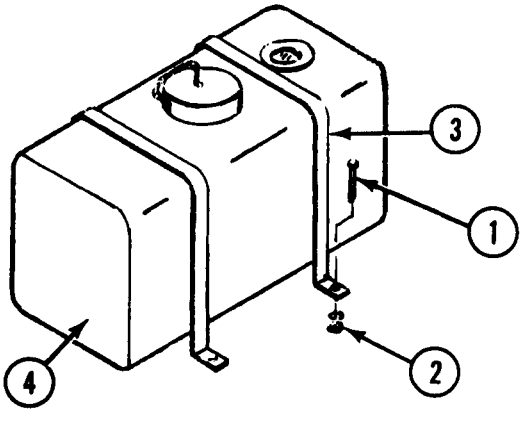
REMOVAL

Fuel tank

a. Remove 2 screws (1) and 2 nuts (2).

b. Open straps (3) enough to slide tank (4).

c. Remove tank.



LEGEND

1. SCREW
2. NUT
3. STRAP
4. TANK

REPLACING

Fuel tank

a. Position tank (4) into straps (3).

4-17. FUEL TANK - Continued

LOCATION/ITEM	ACTION	REMARKS
Fuel tank (cont'd)	b. Secure straps with 2 screws (1) and 2 nuts (2).	
	c. Install fuel shutoff valve on fuel tank.	Ref. para 4-16.
	d. Install fuel line between in-line fuel filter and shutoff valve.	Ref. para 4-16.

4-17.1. UNLOADER ASSEMBLY

This task covers:

Adjustment of unloader assembly.

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, 5780-00-177-7033

Equipment Condition

Compressor running.

Parts

Unloader Assembly P/N LGM-20T

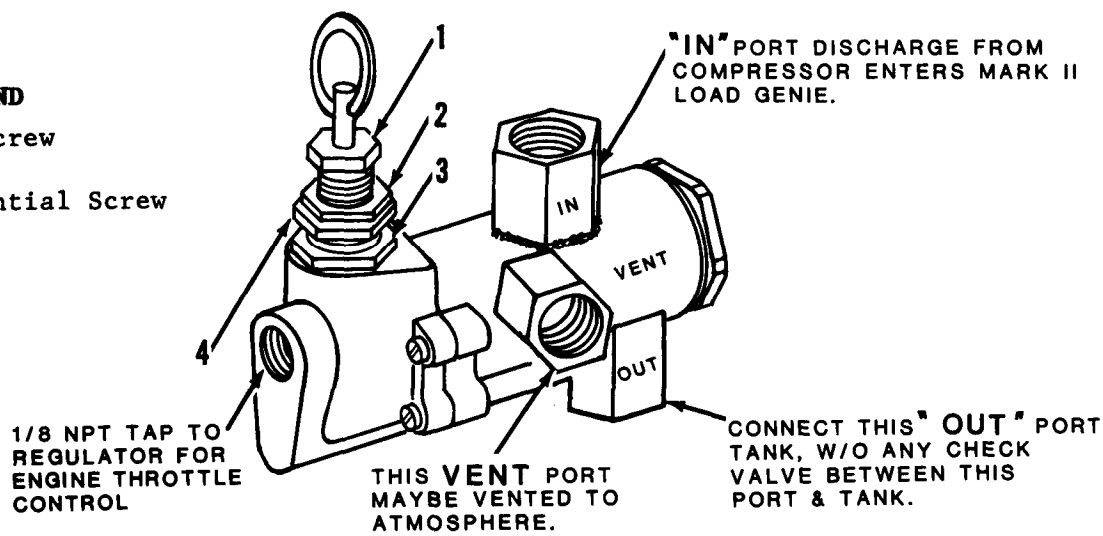
LOCATION/ITEM	ACTION	REMARKS
ADJUSTMENT		
Unloader assembly	a. Loosen Jam nuts (2) & (4)	
	b. The unloading pressure can be adjusted by screw (1). Turn clockwise to increase and counterclockwise to decrease pressure.	Adjust screw (1) so that compressor goes to idle speed at 195 PSI. (At this stage compressor runs at idle speed and vents the air through "vent".)

4-17(A) UNLOADER ASSEMBLY (Cont.)

LOCATION/ITEM	ACTION	REMARKS
	c. The differential (difference between cut-in and cut-out pressure) is obtained by adjusting screw (3). Turning clockwise will widen the differential and counter-clockwise will narrow the differential.	Adjust screw (3) so that compressor comes on to compression at 175 PSI (At this stage compressor starts pumping air into receiver.)

LEGEND

1. Range Screw
2. Jam Nut
3. Differential Screw
4. Jam Nut



	d. Repeat items 1 & 2 until desired settings are obtained. It is not advisable to have a differential of less than 10% of the maximum cut-out pressure.	Cut-off pressure should be 195 PSI and cut-in pressure should be 175 PSI.
	e. After adjustments are made, tighten jam nuts (2) & (4)	Hold nut (1) while tightening (2) and nut (3) while tightening (4) to have the correct adjustment.

NOTE

If you cannot get proper adjustment (cut-off pressure = 195 PSI and cut-in pressure = 175 PSI) then refer to Para. 4-18.

*U.S. GOVERNMENT PRINTING OFFICE: 1987–754-030/60054

TASK SUMMARY FOR: Capacity control

ITEM	TASK	PARA REF
Unloader Assembly	Removal, replacement and adjustment	4-18
Lines and Fittings	Removal and replacement	4-19
Pneumatic Cylinder	Removal and replacement	4-20

4-18. UNLOADER ASSEMBLY

This task covers:

Removal and replacement of unloader assembly.

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, 5780-00-177-7033

Equipment Condition

Compressor not running.

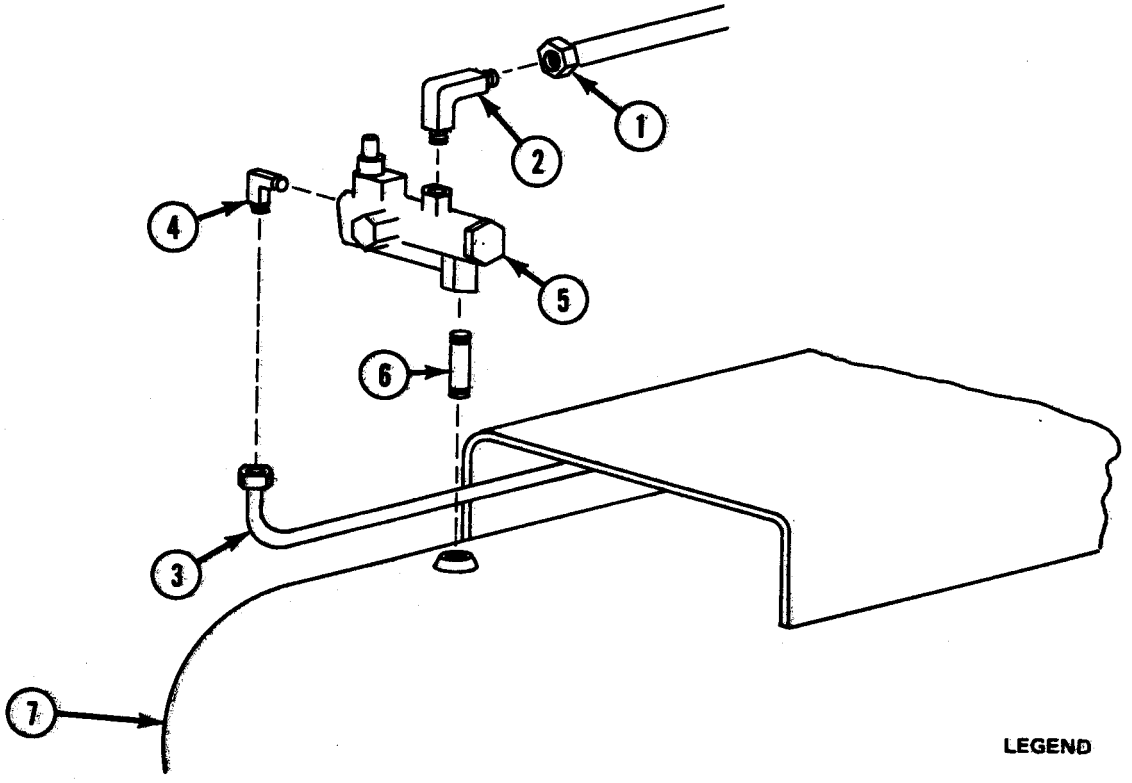
Parts

Unloader Assembly P/N LGM-20T
Nipple P/N 5-00-409-8

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
Unloader assembly	a. Remove inlet air tube (1) with adapter (2).	
	b. Remove control tube (3) with adapter (4).	
	c. Remove unloader valve (5) by turning counterclockwise.	Nipple (6) may be removed from tank (7) at this time, if necessary.

4-18. UNLOADER ASSEMBLY - Continued

LOCATION/ITEM	ACTION	REMARKS



LEGEND

1. Air Inlet Tube
2. Adapter
3. Control Tube
4. Adapter
5. Unloader Valve
6. Nipple

REPLACING

Unloader assembly

a. Install unloader valve (5) on nipple (6). Tighten by turning clockwise. Line up control tube adapter (2) to face forward and adapter (4) downward.

b. Install control tube (3) on adapter (4).

c. Install air inlet tube (1).

4-18. UNLOADER ASSEMBLY - Continued

LOCATION/ITEM	ACTION	REMARKS

ADJUSTMENT

WARNING

To avoid serious injury, use extreme caution when working around operating machinery. Wear eye protection and take care that loose-fitting clothing does not become entangled in the moving parts.

a. Start Compressor.

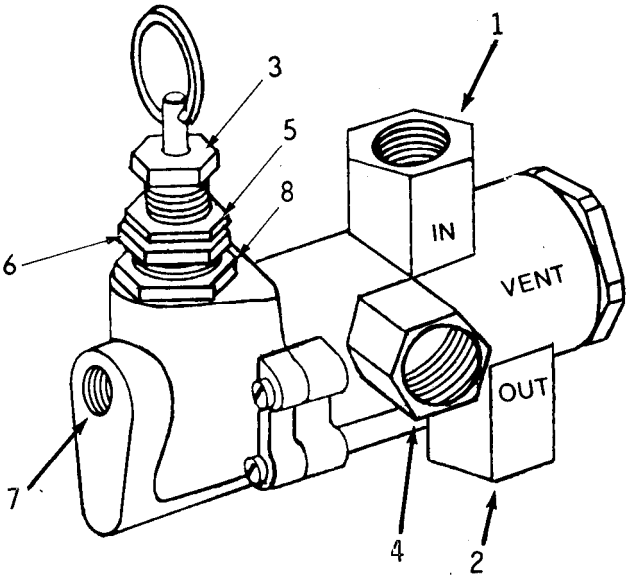
b. Loosen jam nuts (5) and (8).

c. Adjust range screws (3) so that compressor goes to idle speed at 195 psi. Turn screw clockwise to increase pressure and counterclockwise to decrease pressure.

d. Adjust screw (6) so that compressor begins compressing air at 175 psi. Screw (6) sets the differential pressure between cut-in and cut-out. Turning the screw clockwise will widen the differential and turning it counterclockwise will narrow the differential.

LEGEND

1. "IN Port-Discharge from compressor unloader valve.
2. "OUT" Port-Discharge to the air tank.
3. Range Screw
4. "VENT" Port-Air vented to outside.
5. Jam Nut
6. Differential Screw
7. Tap for engine throttle control
8. Jam Nut



4-18. UNLOADER ASSEMBLY - Continued

LOCATION/ITEM	ACTION	REMARKS
	d. Repeat Steps a & b until desired settings are obtained. If correctly adjusted, the cut-off pressure should be 195 PSI and the cut-in pressure should be 175 PSI. NOTE The differential pressure should be at least 10% of the maximum cut-out pressure. e. After the adjustments are made, tighten jam nuts (5) and (8). NOTE To avoid pressure slipping out of adjustment, hold jam nut (3) while tightening jam nut (5), and hold jam nut (6) while tightening jam nut (8).	

4-19. LINES AND FITTINGS, COMPRESSOR

This task covers:

Removal and replacement of capacity control lines and fittings.

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, NSN 5180-00-177-7033

Shop Equipment, Automotive Maintenance and Repair: Organization, Common No. 1, NSN 4910-00-754-0654

Equipment condition

Compressor not running.

Parts

Adapter P/N 20-6352
Tube P/N 50-6844

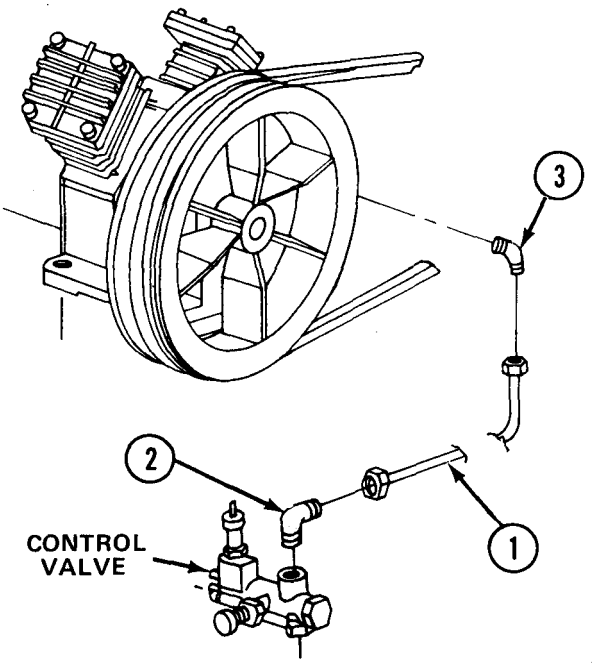
LOCATION/ITEM	ACTION	REMARKS

REMOVAL

1. Inlet air tube

a. Disconnect tube (1) from adapter (2) and (3).

b. Remove tube.

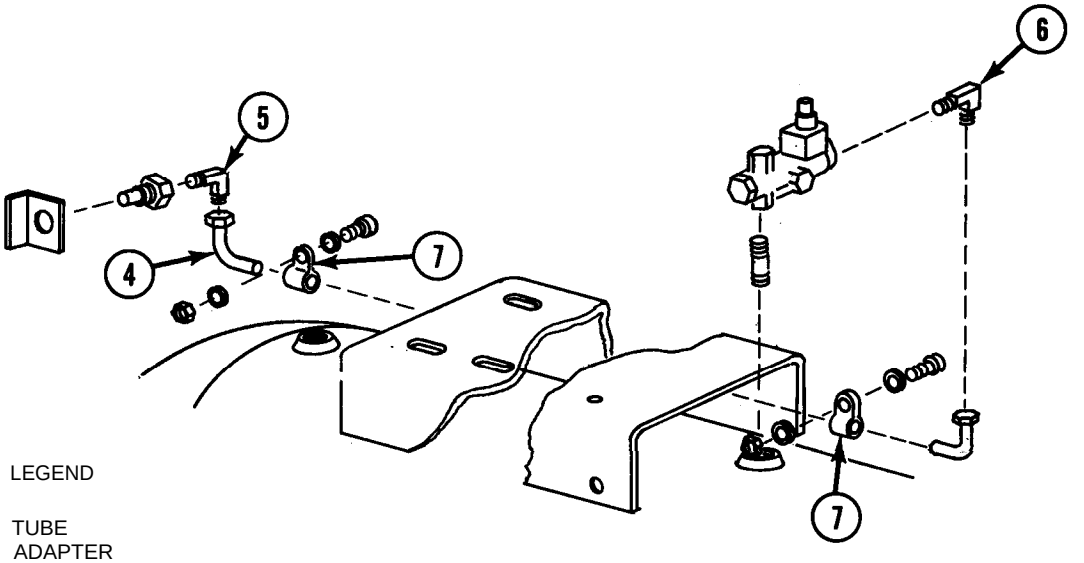


LEGEND

1. TUBE
2. ADAPTER
3. ADAPTER

4-19. LINES AND FITTINGS, COMPRESSOR - Continued

LOCATION/ITEM	ACTION	REMARKS
2. Control tube	a. Disconnect tube (4) from adapters (5) and (6). b. Remove 2 clamps (7) and remove control tube.	



LEGEND

4. TUBE
5. ADAPTER
6. ADAPTER
7. CLAMP

REPLACING

1. Inlet air tube	a. Install an adapter (3) on compressor high pressure head and one (2) on the capacity control valve inlet. b. Connect tube (1) to adapters.	
2. Control tube	a. Install control tube (4) and clamps (7). b. Connect tube to adapters (5) and (6).	

4-20. PNEUMATIC CYLINDER (AIR CYLINDER)

This task covers:

Removal and replacement of the pneumatic cylinder (air cylinder).

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, NSN 5180-00-177-7033

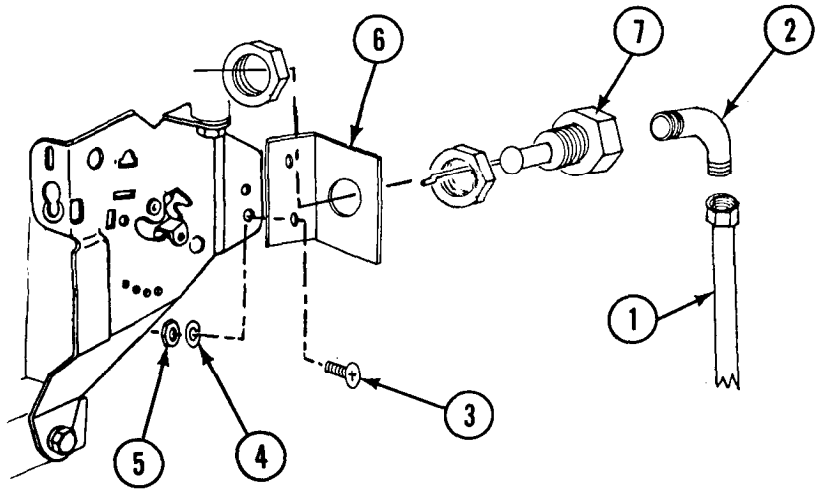
Equipment Condition

Compressor not running.

Parts

Air cylinder P/N 11-6303

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
Pneumatic Cylinder	a. Disconnect control tube (1) from adapter (2).	
	b. Remove 2 screws (3) lockwashers (4) and nuts (5) securing bracket (6) to engine frame.	Tilt bracket (6) to remove linkage.
	c. Remove cylinder (7) from bracket.	



LEGEND

1. CONTROL TUBE
2. ADAPTER
3. SCREW
4. LOCKWASHER
5. NUT
6. BRACKET
7. CYLINDER

4–20. PNEUMATIC CYLINDER (AIR CYLINDER) - Continued

LOCATION/ITEM	ACTION	REMARKS
REPLACING		
Pneumatic Cylinder	a. Assemble new cylinder (7) to bracket. (6).	
	b. Place linkage into governor control lever.	
	c. Attach bracket (6) to engine frame with 2 screws (3) lockwashers (4) and nuts (5).	
	d. Connect control tube (1) to adapter (2).	

TASK SUMMARY FOR: Compressor Assembly

ITEM	TASK	PARA REF
Compressor assembly	Remove and replace	4-21
Cylinder heads	Remove and replace	4-22

4-21. COMPRESSOR ASSEMBLY

This task covers:

Removal and replacement of compressor assembly.

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, NSN 5180-00-177-7033

Equipment Condition

Compressor not running.
Belt set removed.

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
Compressor assembly	a. Relieve air pressure by lifting ring on safety valve.	
	b. Remove air inlet tube (5) from adapter (6) on compressor.	
	c. Remove 4 nuts (1), lockwashers (2), flat washer (3) and screws (4).	

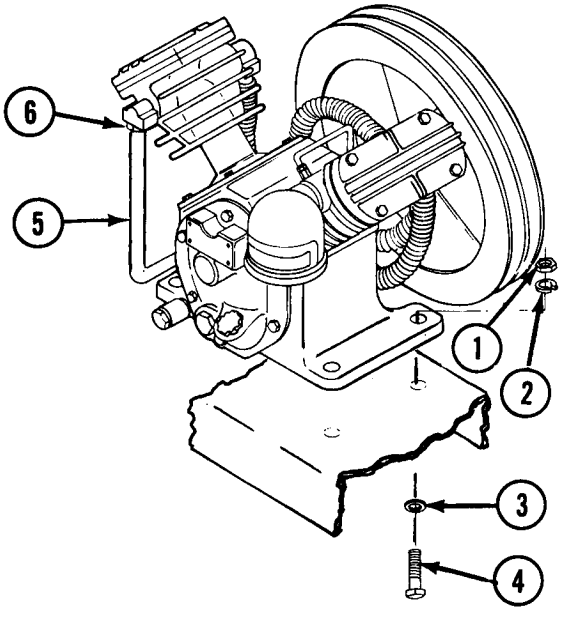
4-21. COMPRESSOR ASSEMBLY - Continued

LOCATION/ITEM	ACTION	REMARKS

WARNING

Serious injury could occur if heavy equipment is moved/ lifted without sufficient personnel to do the job. Use proper physical lifting procedures or use a suitable lifting device or dolly. Wear safety shoes, gloves, and other suitable protective clothing.

d. Lift compressor off air receiver frame.



LEGEND

1. NUT
2. LOCKWASHER
3. FLAT WASHER
4. SCREW
5. AIR INLET TUBE
6. ADAPTER

REPLACING

Compressor assembly	a. Position compressor on air receiver frame.	See WARNING above.
	b. Install 4 screws (4), flat washers (3), lock washers (2) and nuts (1).	
	c. Reattach air inlet tube (5) onto adapter (6).	
	d. Install belt set and belt guard (para 4-13, 4-14).	Belt tension must be adjusted (para 4-14).

4-22. COMPRESSOR CYLINDER HEADS

This task covers:

Removal and replacement of cylinder heads including intake and exhaust valves.

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, NSN 518-00-177-7033

Equipment

Compressor not running.

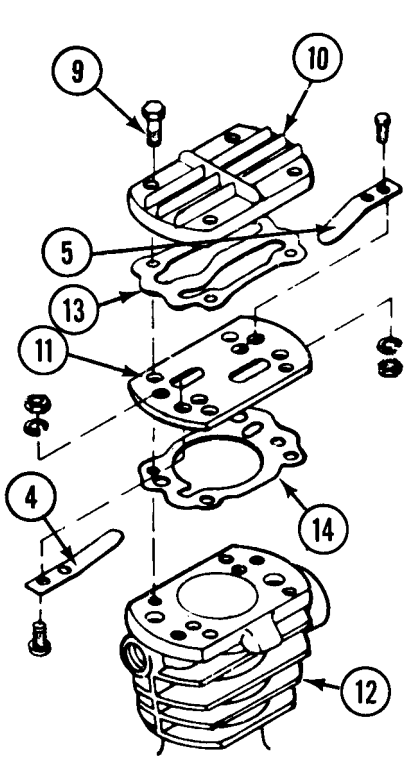
Parts

Gasket (6) P/N 30279038
Gasket (7) P/N 30280515
Gasket (13) P/N 30280507
Gasket (14) P/N 30280374
Head P/N 37127354
Valve plate P/N 37127248

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
1. Low pressure head	a. Remove 4 capscrews (1).	
	b. Remove head (2) and valve plate (3) from cylinder (8).	If gasket sticks, use a thin blade to scrape gasket loose.
	c. Clean head thoroughly. Brush or scrape lightly to remove any accumulated deposit. Make sure gasket surfaces are completely clean of gasket particles.	
2. Valves (low pressure and high pressure)	a. Intake valves (4) have 2 screws, lockwashers and nuts.	
	b. Exhaust valves (5) also have 2 screws, lockwashers and nuts.	
3. High pressure head	a. Remove capscrews (9).	
	b. Remove head (10) and valve plate (11) from cylinder (12).	If gasket sticks, use a thin blade to scrape gasket loose.

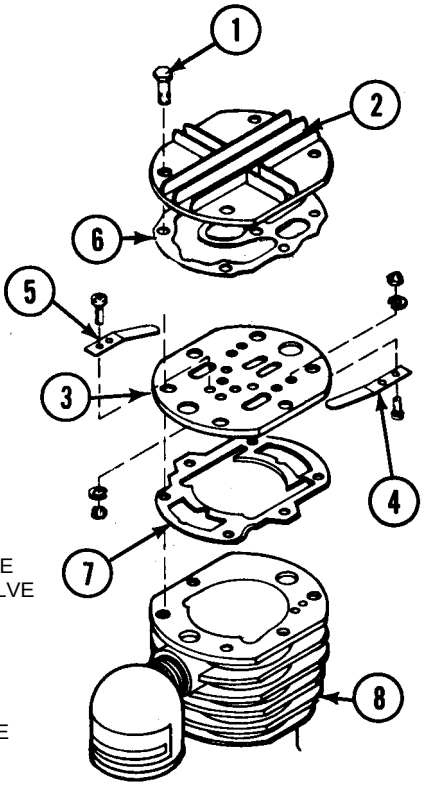
4-22. COMPRESSOR CYLINDER HEADS - Continued

LOCATION/ITEM	ACTION	REMARKS
3. High pressure head (cont'd)	c. Clean head thoroughly. Brush or scrape lightly to remove any accumulated deposit. Make sure gasket surfaces are free of gasket particles.	



LEGEND

1. CAPSCREW
2. HEAD
3. VALVE PLATE
4. INTAKE VALVE
5. EXHAUST VALVE
6. GASKET
7. GASKET
8. CYLINDER
9. CAPSCREW
10. HEAD
11. VALVE PLATE
12. CYLINDER
13. GASKET
14. GASKET



LOW PRESSURE HEAD

HIGH PRESSURE HEAD

REPLACING

NOTE

1. Valves (low pressure and high pressure)

Handle valves (4) and (5) with care. Do not nick or scratch them. Be sure valve lies flat against seating surface surrounding port hole, otherwise valve will leak air, resulting in reduced compressor output.

4-22. COMPRESSOR CYLINDER HEADS - Continued

LOCATION/ITEM	ACTION	REMARKS
2. Low pressure head and high pressure head	a. Use new gaskets, position head on cylinder and install 4 cap-screws. b. Tighten to recommended torque values (Appendix G).	

TASK SUMMARY FOR: Engine Assembly

ITEM	TASK	PARA REF
Engine Assembly	Servicing, removing and replacing	4-23
Fuel filter	Removing and replacing	4-24
Air cleaner	Repair	4-25
Lubrication system, filler tube	Removing and replacing	4-26
Fuel pump, lines and fittings	Removing and replacing	4-27
Carburetor	Adjustment, removal, repair and replacement	4-28
Exhaust system	Removing and replacing	4-29
Starter/Blower Housing	Removal and replacement	4-30
Magneto with spark plug cable, stop switch and flywheel.	Test, adjustment, removal and replacement	4-31
Governor	Adjustment, removal and replacement	4-32
Cylinder head	Removal and replacement	4-33

WARNING

To avoid personal injury, remove spark plug wire from spark plug to prevent accidental starting during maintenance.

4-23. ENGINE ASSEMBLY

This task covers:

Servicing, removing and replacing the engine assembly.

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, NSN 5180-00-177-7033

Equipment Condition

Compressor not running.
Belt set removed.

Parts

Engine assembly P/N 221432

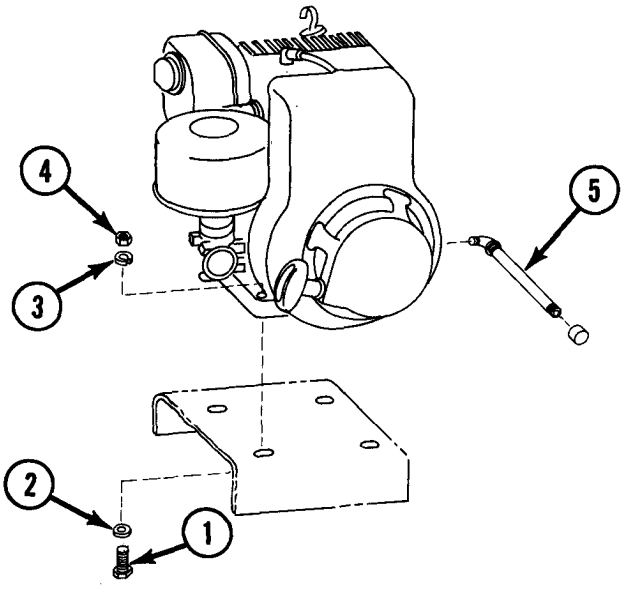
LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
	NOTE Fuel in fuel line.	
1. Pneumatic cylinder	Remove cylinder (para 4-20)	
2. Fuel line	Disconnect fuel line from in-line fuel filter.	Be sure to close the fuel shutoff valve.
3. Engine	a. Remove 4 capscrews (1), flat washers (2), lockwashers (3), and nuts (4).	
	b. Remove oil drain tube (5).	

WARNING

Serious injury could occur if heavy equipment is moved/lifted without sufficient personnel to do the job. Use proper physical lifting procedures or use a suitable lifting device or dolly. Wear safety shoes, gloves and other suitable protective clothing.

4-23. ENGINE ASSEMBLY - Continued

LOCATION/ITEM	ACTION	REMARKS



LEGEND

1. CAPSCREW
2. FLAT WASHER
3. LOCKWASHER
4. NUT
5. OIL DRAIN TUBE

3. Engine (cont'd)

c. Lift engine off of air receiver tank frame.

SERVICING

Engine

WARNING

Dry solvent P-D-680 (safety or Stodard's Solvent) is potentially dangerous. Avoid repeated and prolonged breathing of vapors and skin contact with the liquid. Do not use near open flame, arcing equipment or other ignition sources. Always wear eye protection and protective clothing. The flash point of P-D-680 is 100° to 138°F (30° to 59°C).

Clean engine with approved cleaning fluid.

REPLACING

1. Engine

a. Install oil drain tube (5) on engine.

b. Position engine on air receiver tank frame.

See WARNING above.

4-23. ENGINE ASSEMBLY - Continued

LOCATION/ITEM	ACTION	REMARKS
1. Engine (cont'd)	c. Install 4 capscrews (1), flat washers (2), lock washers (3) and nuts (4).	
2. Pneumatic cylinder	Install pneumatic cylinder (para 4-20).	
3. Fuel line	Connect fuel line to in-line fuel filter.	
4. Belt set	Install belt set (para 4-14).	Adjust belts (para 4-14)
5. Belt guard	Install belt guard (para 4-13).	

4-24. FUEL FILTER

This task covers:

Removing and replacing the in-line fuel filter.

INITIAL SETUP

Tools

Pliers

Equipment Condition

Compressor not running.
Fuel shutoff valve closed

Parts

In-line fuel filter P/N 394358

LOCATION/ITEM	ACTION	REMARKS

REMOVAL

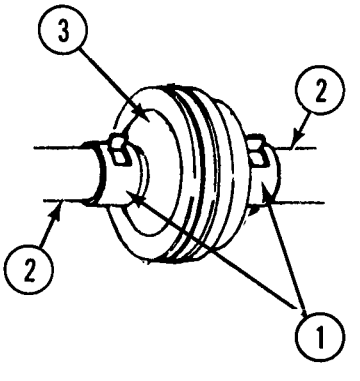
Fuel filter

CAUTION

Fuel in fuel lines.

a. Using pliers, slide clamps (1) and fuel lines (2) off of both ends of the fuel filter (3).

b. Remove filter.



LEGEND

1. CLAMP
2. FUEL LINE
3. FUEL FILTER

4–24. FUEL FILTER - Continued

LOCATION/ITEM	ACTION	REMARKS
REPLACING		
Fuel filter	a. Make sure clamps (1) are on fuel lines (2). b. Insert new filter. c. Using pliers, move clamps (1) next to filter body.	

4-25. AIR CLEANER

This task covers:

Repair of the engine air cleaner.

INITIAL SETUP

Tools

None required

Equipment Condition

Compressor not running.

Parts

Paper cartridge P/N 390930
Wing nut P/N 93453
Foam pre-cleaner P/N 270782

LOCATION/ITEM	ACTION	REMARKS

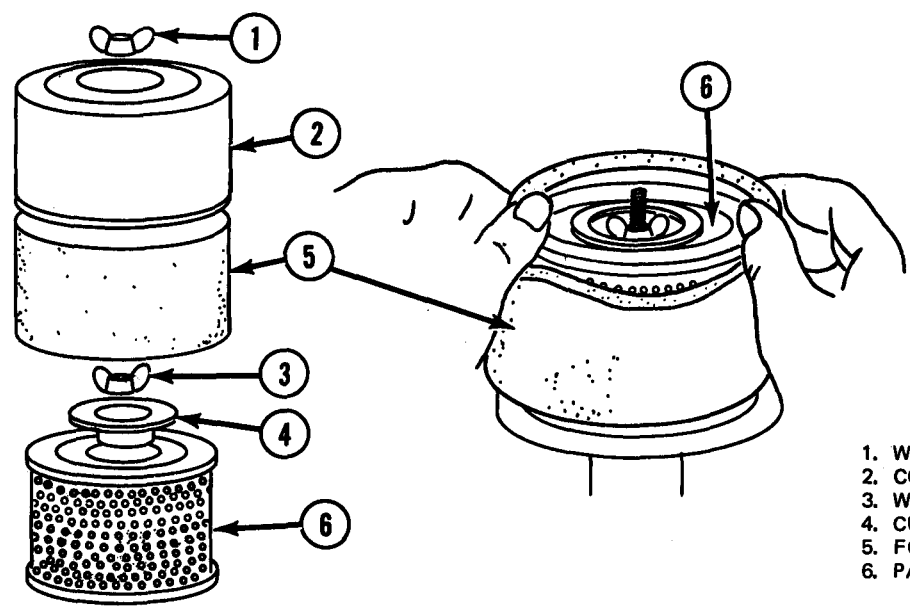
REMOVAL

Cartridge

a. Remove wing nut (1) and cover (2).

b. Remove other wing nut (3) and cup (4).

c. Remove foam pre-cleaner (5) and paper cartridge (6).



LEGEND
1. WING NUT
2. COVER
3. WING NUT
4. CUP
5. FOAM PRE-CLEANER
6. PAPER CARTRIDGE

4-25. AIR CLEANER - Continued

LOCATION/ITEM	ACTION	REMARKS
REPAIR		
Air cleaner	a. Inspect air cleaner stud and base plate for damage, replace damaged parts.	
	b. Install new cartridge (6) on base plate.	
	c. Install clean foam pre-cleaner (5) over paper cartridge.	
REPLACING		
Cartridge	a. Install cup (4) and wing nut (3).	
	b. Install cover (2) and secure with wing nut (1).	

4-26. FILLER TUBE, LUBRICATION SYSTEM

This task covers:

Removing and replacing the oil filler tube.

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, NSN 5180-00-177-7033

Equipment Condition

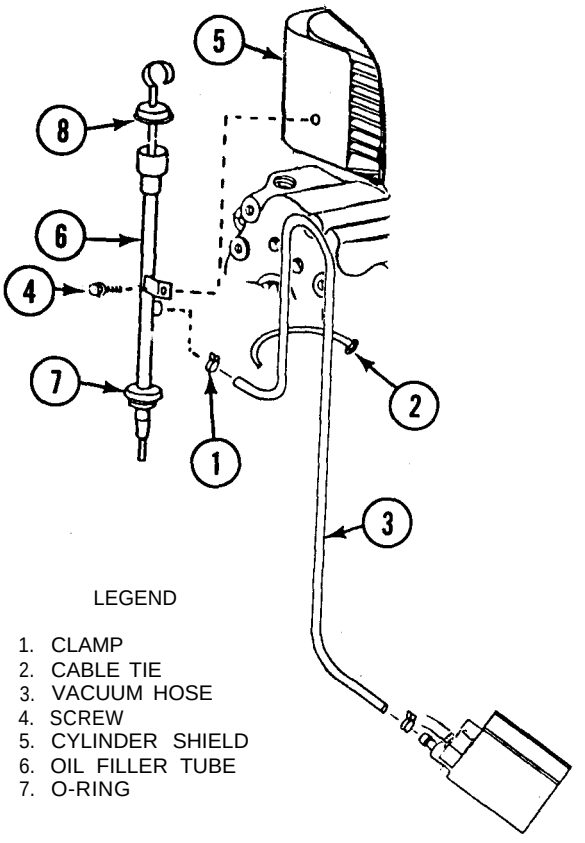
Compressor not running.

Parts

Cable tie P/N 11-5307
Seal O-ring P/N 68838
Hose P/N 7-248
Cap and dipstick P/N 392295
Tube P/N 392655

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
Oil filler tube	a. Remove clamp (1) and cable tie (2) securing vacuum hose (3).	
	b. Remove mounting screw (4) from cylinder shield (5).	
	c. Remove oil filler tube (6).	
	NOTE A leak at the seal between tube and crankcase cover, or at seal at the upper end of dipstick can result in a loss of crankcase vacuum, and a discharge of smoke through the muffler.	
REPLACING		
Oil filler tube	a. Install so that new O-ring (7) seal is firmly compressed.	Be sure dipstick (8) seats properly.
	b. Install mounting screw (4) into cylinder shield (5) and tighten.	

4-26. FILLER TUBE, LUBRICATION SYSTEM - Continued

LOCATION/ITEM	ACTION	REMARKS
	 LEGEND 1. CLAMP 2. CABLE TIE 3. VACUUM HOSE 4. SCREW 5. CYLINDER SHIELD 6. OIL FILLER TUBE 7. O-RING	
Oil filler tube (cont'd)	c. Install new vacuum hose (3) and secure with clamp (1) and new cable tie (2).	

4-27. FUEL PUMP, LINES AND FITTINGS

This task covers:

Removing and replacing the fuel pump, fuel lines and fittings.

INITIAL SETUP

Tools

Pliers

Equipment Condition

Compressor not running.
Fuel shutoff valve closed.

Parts

Clamp P/N 93053
Hose P/N 7-248 (vacuum), P/N 7-249 (fuel)
Locknut P/N 231001
Pump P/N 390765
Elbow connector P/N 92780

LOCATION/ITEM	ACTION	REMARKS

CAUTION

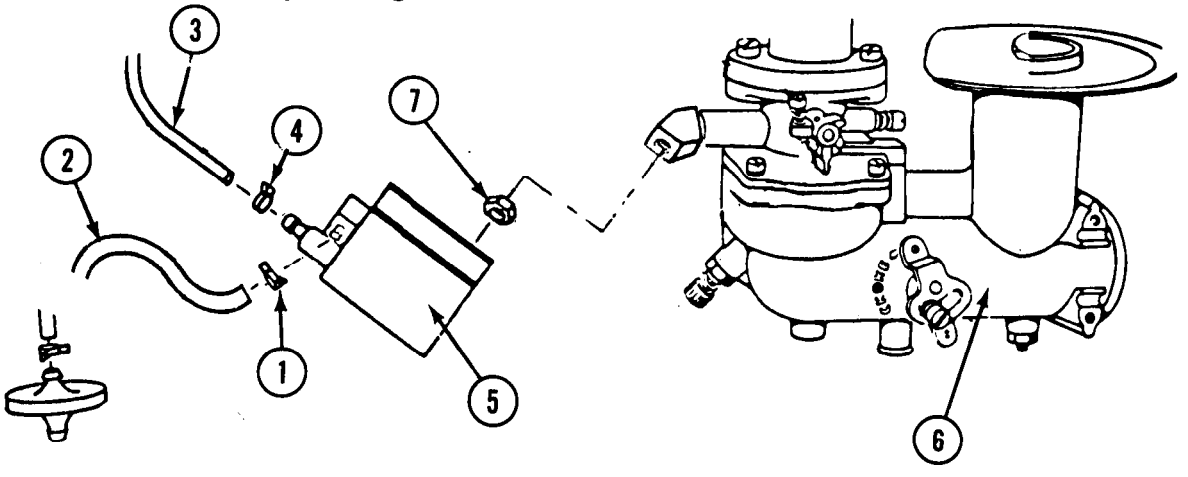
Fuel in fuel line.

REMOVAL

1. Fuel line	a. Using pliers, slide clamp (1) off of fuel line (2) at pump inlet.	
2. Vacuum line	Remove vacuum line (3). Using pliers, slide clamp (4) and vacuum line (3) off inlet.	
3. Fuel pump	Remove fuel pump (5) from carburetor (6) by turning counterclockwise.	

LEGEND

1. CLAMP
2. FUEL LINE
3. VACUUM LINE
4. CLAMP
5. FUEL PUMP
6. CARBURETOR
7. LOCKNUT



4–27. FUEL PUMP, LINES AND FITTINGS - Continued

LOCATION/ITEM	ACTION	REMARKS
REPLACING		
1. Fuel pump	Install fuel pump (5) into carburetor (6) inlet. Install new locknut (7) and elbow connect or (8), if necessary. Tighten in clockwise direction.	
2. Fuel line	Place clamp (1) on fuel line (2). Install fuel line (2) to fuel pump (5) fuel inlet. Install clamp (1).	
3. Vacuum line	Place clamp (4) on vacuum line (3). Connect vacuum line (3) to vacuum inlet. Install clamp (4).	
	NOTE	
	Adjust carburetor, if necessary (para 4-28).	

4-28. CARBURETOR

This task covers:

Removal, repair, adjustment and replacement of carburetor.

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, NSN 5180-00-177-7033

Equipment Condition

Compressor not running and air cleaner off except when adjusting carburetor.

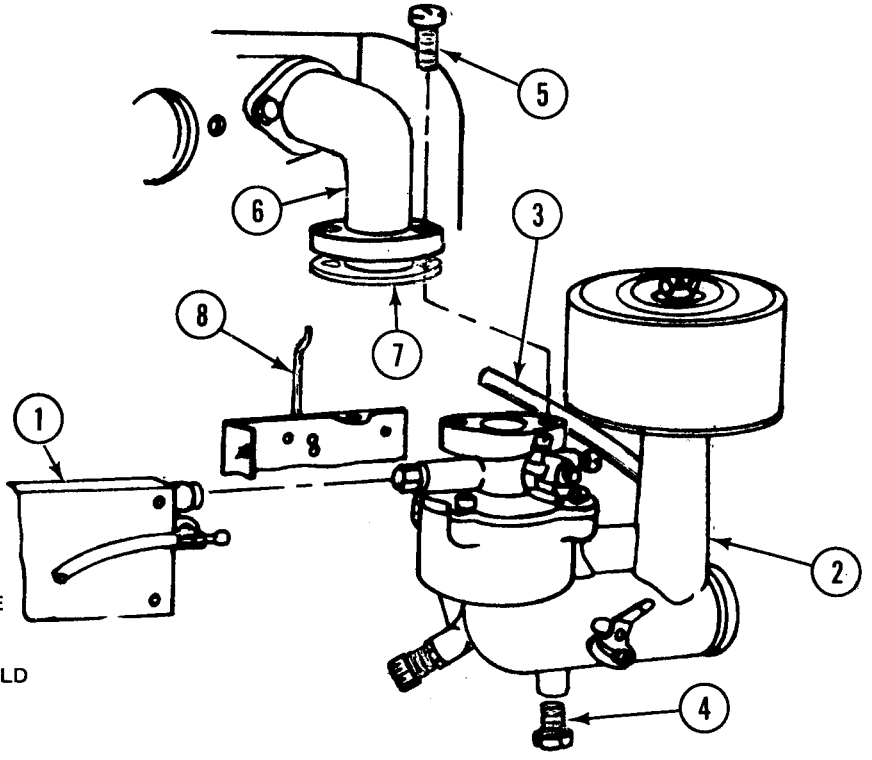
Parts

Gasket P/N 270267
Carburetor P/N 392587

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
1. Fuel pump	Remove fuel pump (1) from carburetor (2).	Para 4-27.
2. Breather tube	Remove breather tube (3) from carburetor	
3. Carburetor	a. Remove bolts (4) attaching carburetor to governor bracket.	
	b. Remove two bolts (5) that attach carburetor to intake manifold (6).	
	c. Remove carburetor and gasket (7). Tilt carburetor and remove governor rod (8).	Gasket may have to be scraped off.
REPLACING		
1. Governor rod	Tilt carburetor and install governor rod (8).	
2. Carburetor	Position carburetor, with new gasket (7), on intake manifold (6) and secure with two screws (5).	
3. Fuel pump	Connect fuel pump.	Para 4-27.

4-28. CARBURETOR - Continued

LOCATION/ITEM	ACTION	REMARKS

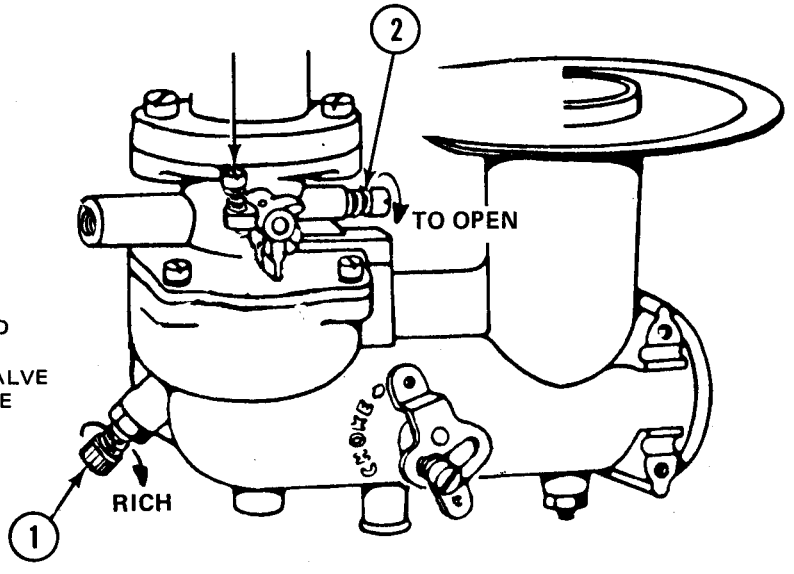


LEGEND

1. FUEL PUMP
2. CARBURETOR
3. BREATHER TUBE
4. BOLT
5. BOLT
6. INTAKE MANIFOLD
7. GASKET
8. GOVERNOR ROD

4. Air cleaner	Install air cleaner.	
5. Breather tube	Connect breather tube (3) to carburetor.	

ADJUSTMENT



LEGEND

1. NEEDLE VALVE
2. IDLE VALVE

4-28. CARBURETOR - Continued

LOCATION/ITEM	ACTION	REMARKS

CAUTION

Do not overtighten idle or needle valves.

1. Carburetor

a. Turn needle valve (1) and idle valve (2) clockwise until they are just seated.

NOTE

Air cleaner must be installed when running engine. The use of lead-free gasoline produces fewer combustion deposits, but may shorten valve life if adjustment is too lean.

b. Open needle valve (1) 1-1/2 turns counterclockwise.

c. Open idle valve (2) 1 turn counterclockwise.

d. Start engine and allow to warm up.

e. Adjust idle valve (2) in 1/8-turn increments until maximum speed of engine is obtained, then 1/8-turn counterclockwise.

NOTE

Idle adjustment is covered under governor controls, para 4-32.

4-29. EXHAUST SYSTEM

This task covers:

Removing and replacing the muffler in the exhaust system.

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, NSN 5180-00-177-7033

Equipment Condition

Compressor not running.

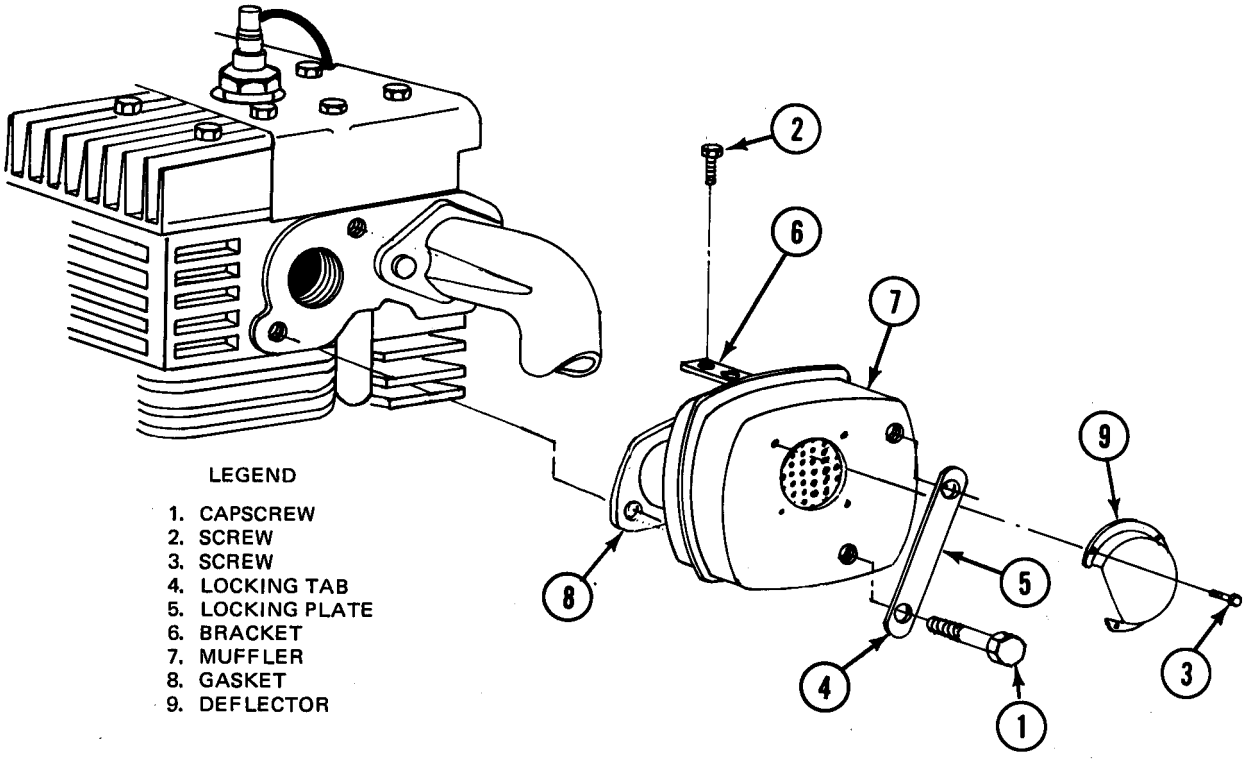
Parts

Gasket, exhaust P/N 270917
Deflector P/N 393761
Muffler P/N 394170

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
Muffler	a. Bend locking tab (4) away from cap-screw (1) heads.	
	b. Remove 2 screws (1) from locking plate (5).	
	c. Remove screw (2) holding muffler bracket (6) to engine head.	
	d. Remove muffler (7) and gasket (8).	Gasket may have to be scraped off.
	e. Remove exhaust deflector (9) by removing screws (3).	
REPLACING		
Muffler	a. Install new gasket (8) and place muffler (7) into position.	
	b. Secure muffler with locking plate (5) and 2 screws (1).	
	c. Bend locking tab (4) over screws (1).	

4-29. EXHAUST SYSTEM - Continued

LOCATION/ITEM	ACTION	REMARKS



Muffler (cont'd)

d. Install screw (2) holding muffler to engine head.

e. Install exhaust deflector (9) with screws (3).

4-30. STARTER, CLUTCH, AND BLOWER HOUSING.

This task covers:

a. Removal b. Cleaning c. Inspection d. Installation

INITIAL SETUP

Tools Required
Tool Kit, General Mechanic's
Flywheel Holder
Starter Clutch Wrench

Equipment Condition

Engine shut down and cool.

Materials Required

Brush, Medium Bristle (item 8, Appendix E)
Solvent, Dry Cleaning (item 1, Appendix E)
Cloth, Lint-Free (item 2, Appendix E)

LOCATION/ITEM	ACTION	REMARKS

REMOVAL

Housing (1) Remove four screws (11) attaching starter housing (10) to blower housing (3).

(2) Remove starter housing (10) from blower housing (3) and from clutch (6) by pulling starter (10) straight out from housing.

(3) Remove four screws (1) and pull blower housing (3) away from engine (4) being careful not to damage wires attached to switch (2).

(4) Tag and disconnect wire attached to switch (2) and remove blower housing (3) from engine (4).

(5) Remove four screws (9), pulley (8), and screen (7) from clutch (6).

CAUTION

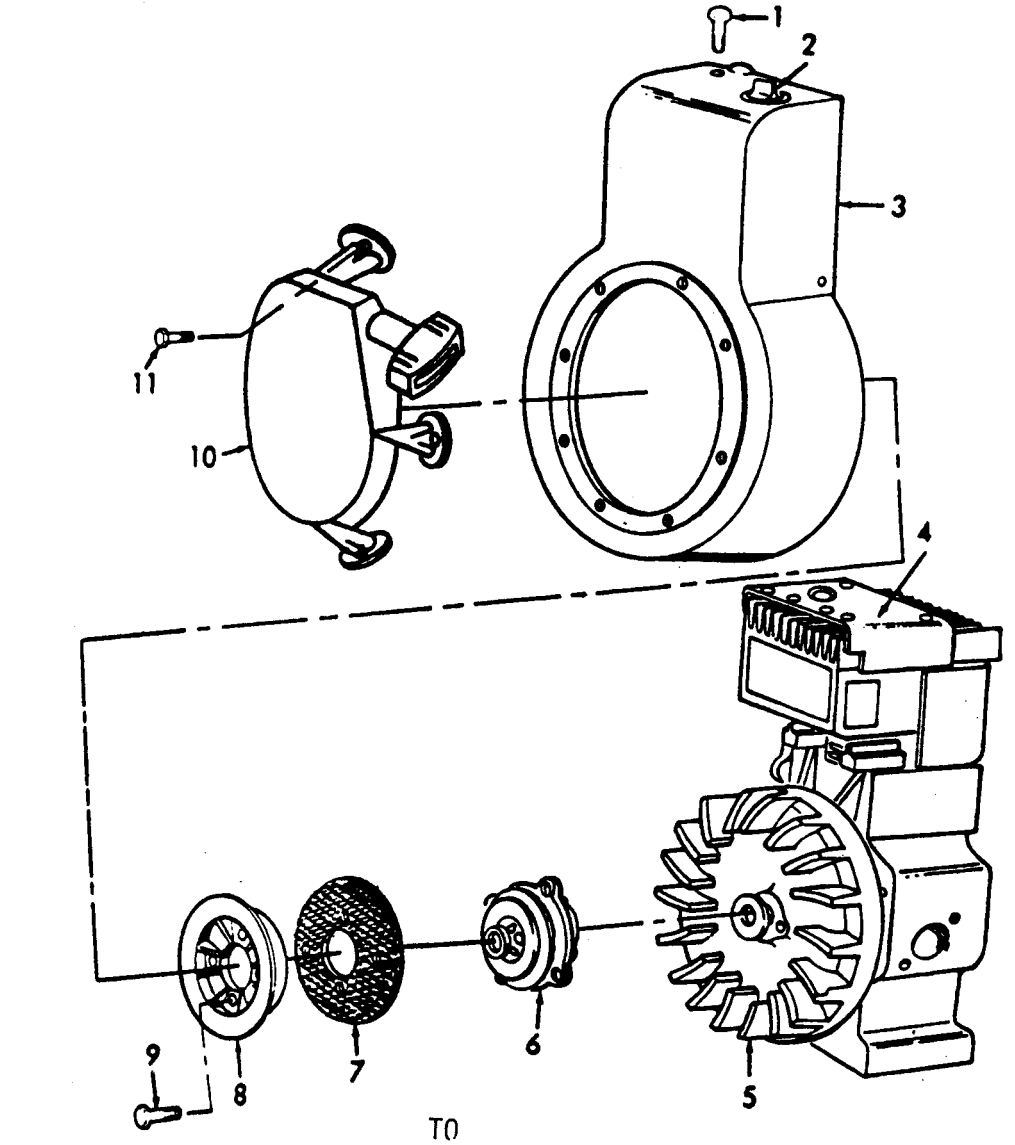
Use care when removing clutch as clutch can come apart easily and ball bearings inside may be lost.

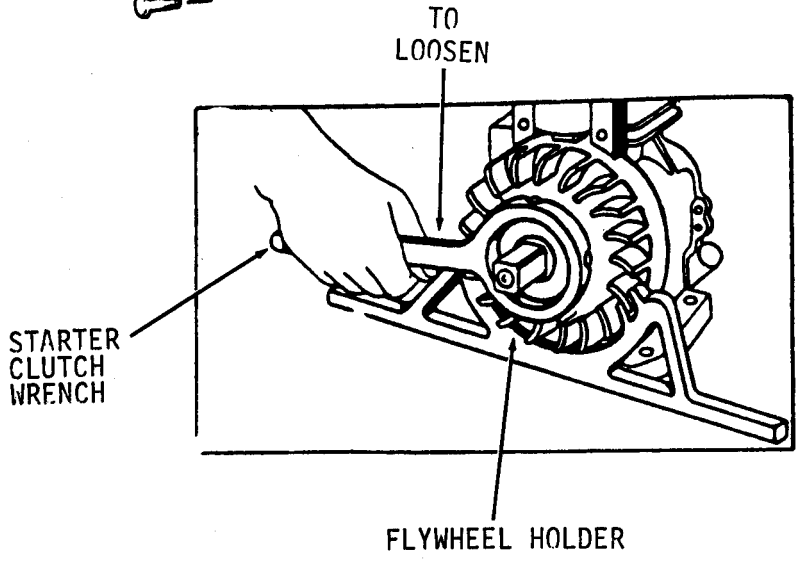
NOTE

Clutch housing has a left hand thread.

(6) Brace flywheel (5) with flywheel holder and remove clutch (6) with starter clutch wrench by rotating clutch (6) clockwise.

4-30. STARTER, CLUTCH, AND BLOWER HOUSING - Continued





4-30. STARTER, CLUTCH, AND BLOWER HOUSING - Continued

b. Cleaning

(1) Remove all build up of dirt or debris from all parts.

WARNING

DO NOT breathe cleaning solvent vapors for long periods of time or use solvent near open flames. To avoid illness, explosion, or fire, only use solvent in well ventilated areas away from open flames.

(2) Clean all accessible metal surfaces of parts using a clean, soft cloth (item 2, Appendix E) or a medium bristle brush (item 8, Appendix E) and cleaning solvent (item 1, Appendix E).

(3) Allow parts to dry.

c. Inspection.

(1) Starter

a) Pull starter rope out and allow it to retract into starter a few times. If operating is not smooth or consistent, replace starter.

b) Inspect starter housing for dents. Replace if housing is dented.

(2) Clutch

Inspect clutch shaft for rounding of corners or nicks and cracks on shaft.

(3) Blower Housing

a) Inspect housing for dents. Repair dents to housing.

b) Check housing for cracks or damaged mounting holes and threaded holes. Replace housing if mounting holes or threads are damaged.

d. Installation.

(1) Install clutch (6) by placing clutch onto engine shaft, bracing flywheel (5) with flywheel holder and rotating clutch (6) counterclockwise with a starter clutch wrench.

(2) Install screen (7), pulley (8), and four screws (9).

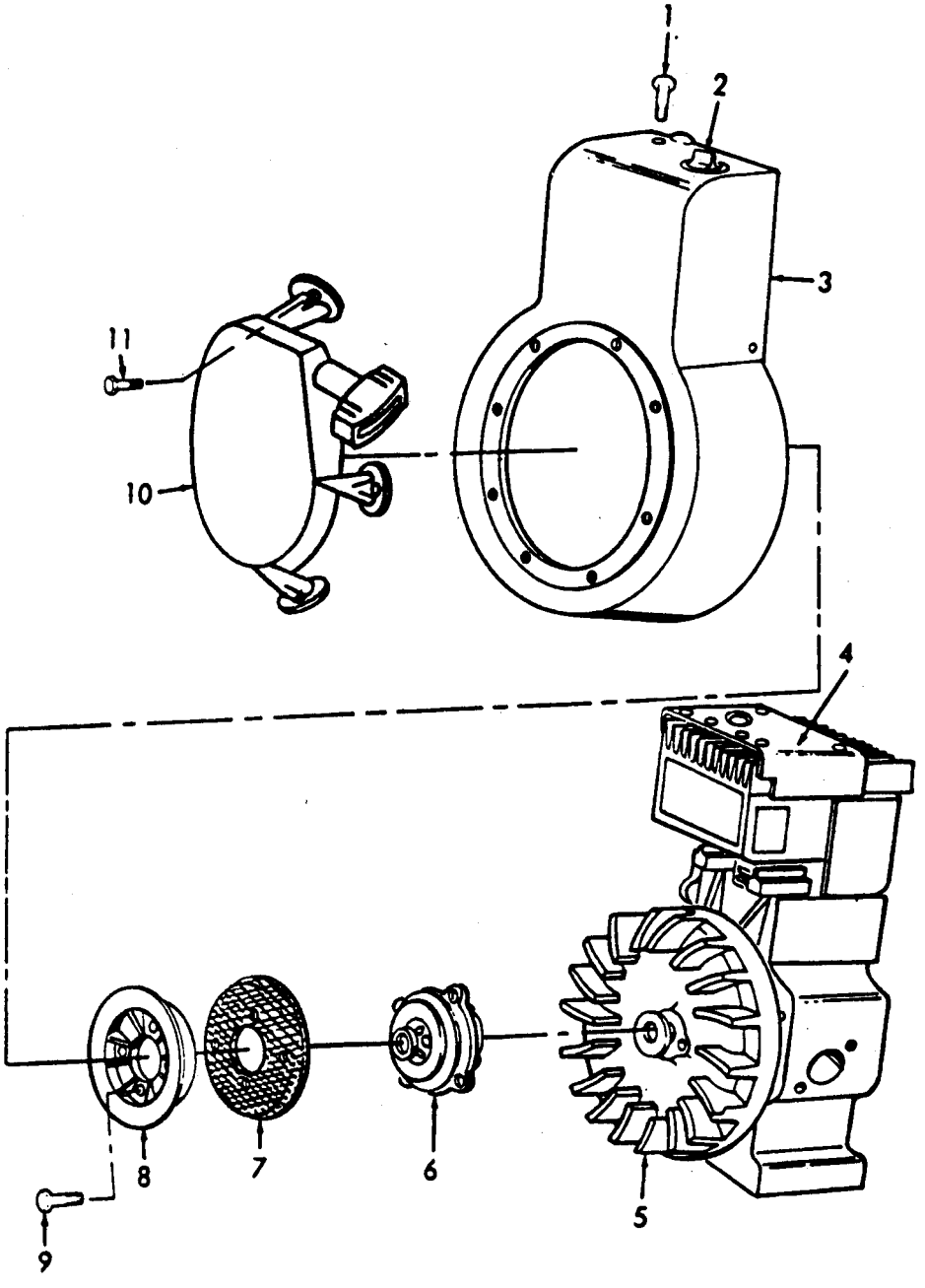
(3) Attach wire to switch (2) as tagged.

(4) Install blower housing (3) and four screws (1).

4-30. STARTER, CLUTCH, AND BLOWER HOUSING - Continued

(5) Place starter (10) onto blower housing (3) being sure to engage starter with shaft on clutch (6).

(6) Install four screws (11).



4-31. MAGNETO AND STOP SWITCH

This task covers:

Removal, adjustment and replacement of the magneto (armature assembly); and the removal and replacement of the stop switch and flywheel. For sparkplug adjustment, see table 4-1 item 4. For removal and replacement of flywheel, see para 5-3.

INITIAL SETUP

Tools
Tool Kit, General Mechanic, Automotive, NSN 5180-00-177-7033
Gage, 0.010 - 0.014" (0.25 - 0.36mm)

Parts
Key P/N 222698
Clutch P/N 394558

Equipment Condition
Compressor not running.
Starter/Blower housing removed (para 4-31).

LOCATION/ITEM	ACTION	REMARKS

REMOVAL

NOTE

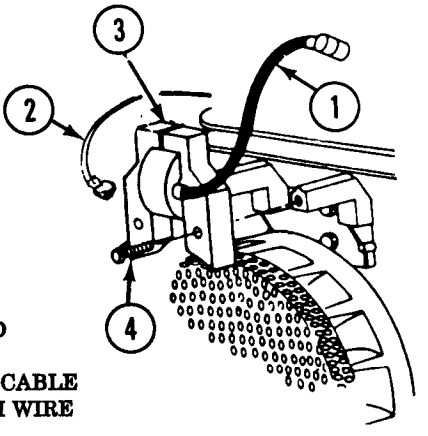
Removal of flywheel is not required to remove magnatron armatures, except to inspect flywheel key and keyway on crankshaft and flywheel.

Armature

a. Disconnect spark plug cable (1) from spark plug, and stop switch wire (2) from armature (3).

b. Remove two screws (4).

c. Lift off armature (3).



LEGEND
1. SPARK PLUG CABLE
2. STOP SWITCH WIRE
3. ARMATURE
4. SCREW

REPLACING

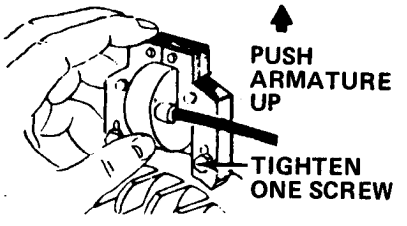
Armature

a. Turn flywheel so magnets are as far away from armature as possible.

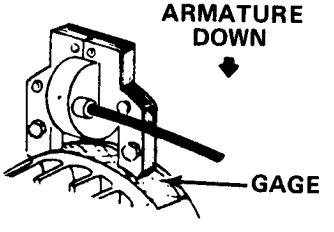
b. Install armature (3) with spark plug cable (1) facing away from engine.

4-31. MAGNETO AND STOP SWITCH - Continued

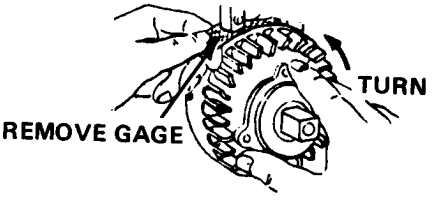
LOCATION/ITEM	ACTION	REMARKS
Armature (cont'd)	c. Install two screws (4), do not tighten	Adjust armature.
	d. Connect stop switch wire (2) and connect spark plug cable (1) to spark plug.	Do not install Starter/ Blower housing until after adjustments are made.
ADJUSTMENT		
Armature	a. Position armature up as far as possible and tighten <u>one</u> screw.	



b. Slip thickness gage between armature and flywheel. Turn flywheel until magnets are directly below armature. Loosen the one mounting screw, magnet should pull armature down firmly against thickness gage. Tighten <u>both</u> armature mounting screws.



c. Remove thickness gage by rotating the flywheel.



REMOVAL

Stop switch

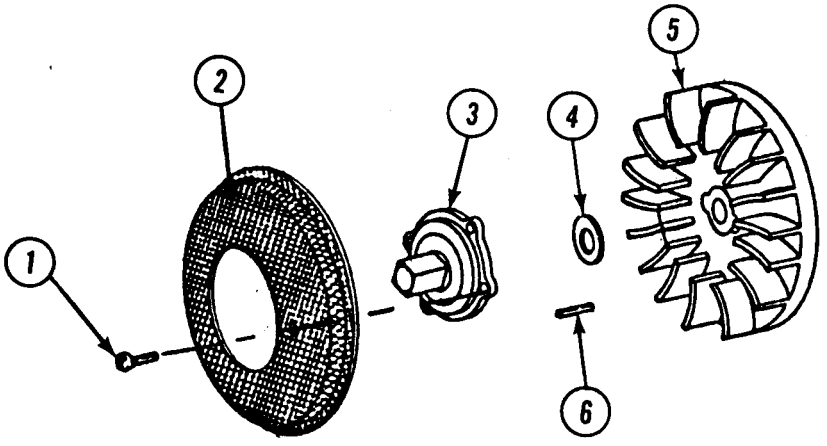
a. Remove stop switch terminal (1) from armature (2).

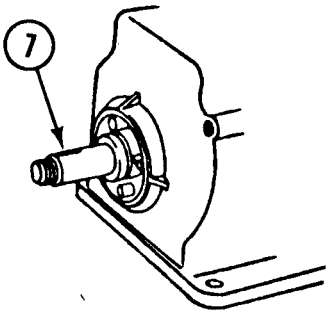
b. Squeeze sides of switch (3) as shown and lift from housing (4).

c. Remove terminal from switch, remove switch.

4-31. MAGNETO AND STOP SWITCH - Continued

LOCATION/ITEM	ACTION	REMARKS





LEGEND

1. SCREW
2. SCREW
3. STARTER CLUTCH
4. WASHER
5. FLYWHEEL
6. KEY
7. CRANKSHAFT
8. PULLEY, REWIND STARTER

Flywheel (cont'd)

c. Install washer (4) and starter clutch (3) by turning counterclockwise. See Appendix G for torque value.

d. Install screen (2) and pulley (8) and secure with 4 screws (1).

e. Recheck armature gap, if necessary.

f. Install blower housing. — Refer to para 4-30.

4-32. GOVERNOR

This task covers:

Adjustment, removal and replacement of the governor control and linkages.

INITIAL SETUP

Tools
Tool Kit, General Mechanic, Automotive, NSN 5108-00-177-7033

Parts
Control plate P/N 391633
Link P/N 261236
Spring P/N 260695
Lever P/N 391732
Gear P/N 391737

Equipment Condition
Compressor not running.
Pneumatic cylinder removed (para 4-20).
Crankcase cover removed (para 5-6).

LOCATION/ITEM	ACTION	REMARKS

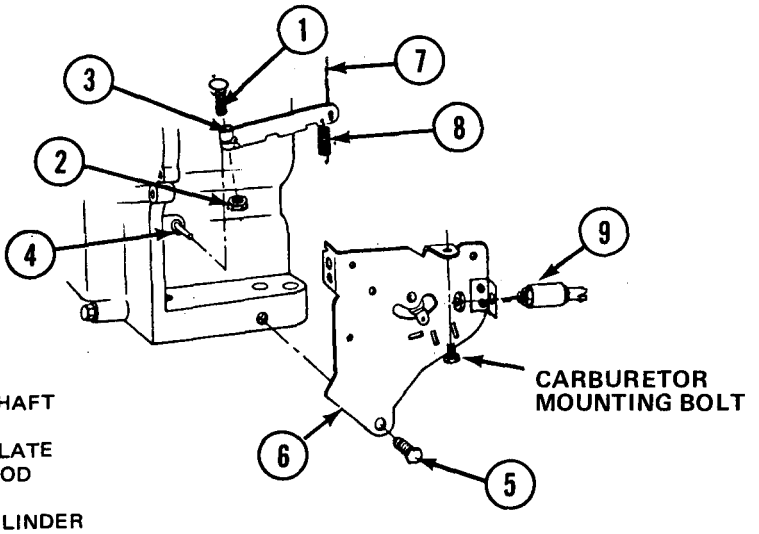
REMOVAL

1. Governor

a. Remove bolt (1) and nut (2) securing lever (3) to governor shaft (4).

b. Remove 2 bolts (5) securing governor plate (6) to engine housing.

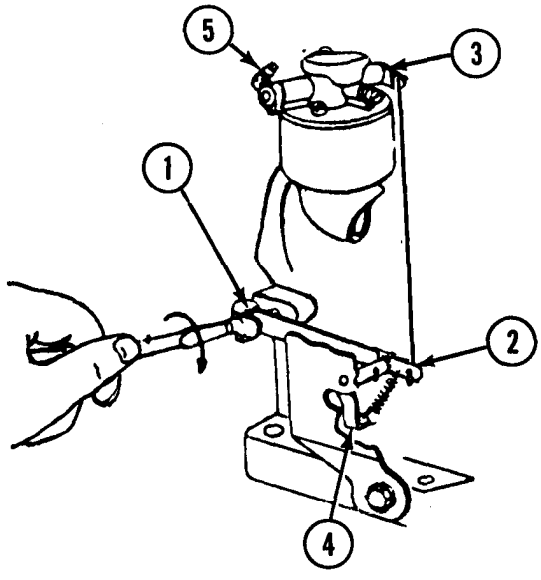
c. Tilt governor plate to remove governor rod (7).



LEGEND
1. BOLT
2. NUT
3. LEVER
4. GOVERNOR SHAFT
5. BOLT
6. GOVERNOR PLATE
7. GOVERNOR ROD
8. SPRING
9. PEUMATIC CYLINDER

4-32. GOVERNOR - Continued

LOCATION/ITEM	ACTION	REMARKS
1. Governor (cont'd)	d. Remove spring (8) from anchor tab.	
2. Governor gear	Remove governor gear (para 5-26).	
ADJUSTMENT		
Governor	a. Loosen bolt (1) holding lever (2) on shaft.	
	b. Place throttle (3) in high speed position; and hold in this position.	
	c. Using screwdriver, turn governor shaft clockwise as shown as far as it will go.	
	d. Tighten bolt (1) to 35-45 inch-pounds. (0.4 to 0.52 mkp or 4 to 5 Nm)	
	e. Before starting engine, move governor linkage to check for binding.	



LEGEND

1. BOLT
2. LEVER
3. THROTTLE
4. TAB

Top No Load Speed

a. Set lever (2) to maximum speed position.

b. Bend spring anchor tab (4) to get desired top speed.

4-32. GOVERNOR - Continued

LOCATION/ITEM	ACTION	REMARKS
Idle	a. Make final carburetor mixture adjustments.	Para 4-28.
	b. Place lever (2) in idle position.	
	c. Hold throttle shaft in closed position, adjust idle speed screw (5) to 1550 RPM and release throttle.	
	d. Set control lever (2) to 1750 RPM. Turn screw (1) until it contacts control lever (2).	
REPLACING		
1. Governor	a. Tilt governor plate (6) to install governor rod (7).	
	b. Install 2 bolts (5) to secure governor plate (6) to engine housing.	
	c. Install governor lever (3) on governor shaft (4).	
	d. Install pneumatic cylinder (para 4-20).	
2. Governor gear	a. Replace governor gear (para 5-26).	
	b. Install crankcase cover (para 5-6).	

4-33. CYLINDER HEAD (ENGINE)

This task covers:

Removal and replacement of the engine cylinder head.

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, NSN 5180-00-177-7033

Equipment Condition

Compressor not running.
Starter/Blower housing removed, para 4-30.

Parts

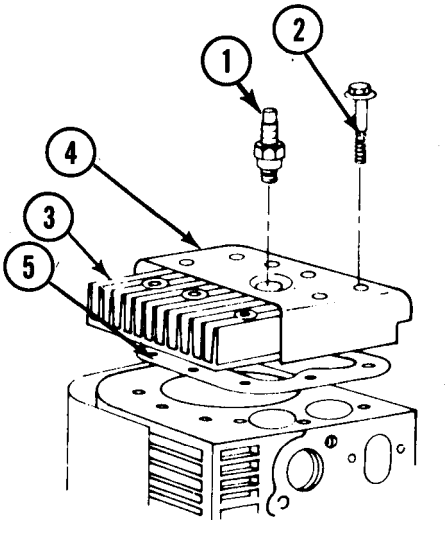
Cylinder head gasket P/N 271075
Grease (item 3 Appendix E)

LOCATION/ITEM	ACTION	REMARKS

REMOVAL

CAUTION

Note position of cylinder head bolts so that they will be properly reassembled. If a bolt is used in the wrong position, it may be too short and not engage enough threads or it may be too long and bottom on a fin, either breaking the fin or leaving the cylinder head loose.



LEGEND
1. SPARK PLUG
2. BOLT
3. HEAD
4. COVER
5. GASKET

4-33. CYLINDER HEAD (ENGINE) - Continued

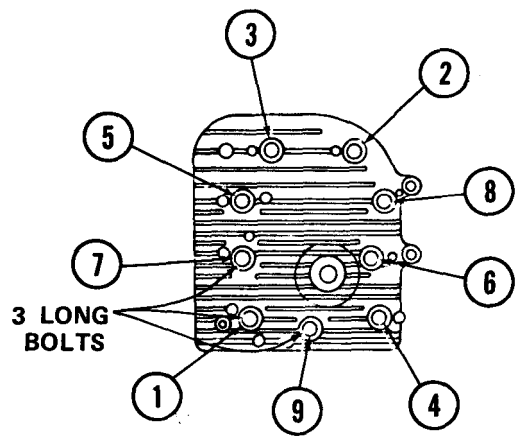
LOCATION/ITEM	ACTION	REMARKS
Cylinder head	a. Remove spark plug (1).	
	b. Remove 9 bolts (2).	
	c. Remove cylinder head (3) with cover (4) and gasket (5).	
	d. Clean carbon from head, inspect valves for proper seating. Scrape and brush head, top of piston and around valves.	

REPLACING

CAUTION

Do not tighten one bolt completely before the others, as it may cause a warped cylinder head.

Cylinder head	a. Assemble cylinder head (2) with a new head gasket (4), shield (3) and bolts (1) in their proper position.	
	b. Grease head bolts (2).	
	c. Tighten bolts evenly by hand.	
	d. Using a torque wrench, tighten bolts as shown in sequence 1,2,3 etc, to specified torque.	See Appendix G for torque values.
	e. Replace spark plug.	
	f. Install Starter/Blower housing.	Para 4-30.



TASK SUMMARY FOR: Air Discharge System

ITEM	TASK	PARA REF
Inflator gage, air hose and globe valve	Removing and Replacing	4-34

4-34. INFLATOR GAGE, AIR HOSE AND GLOBE VALVE

This task covers:

Removing and replacing the inflator gage, air hose and globe valve.

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, NSN 5180-00-177-7033

Equipment Condition

Compressor not running.

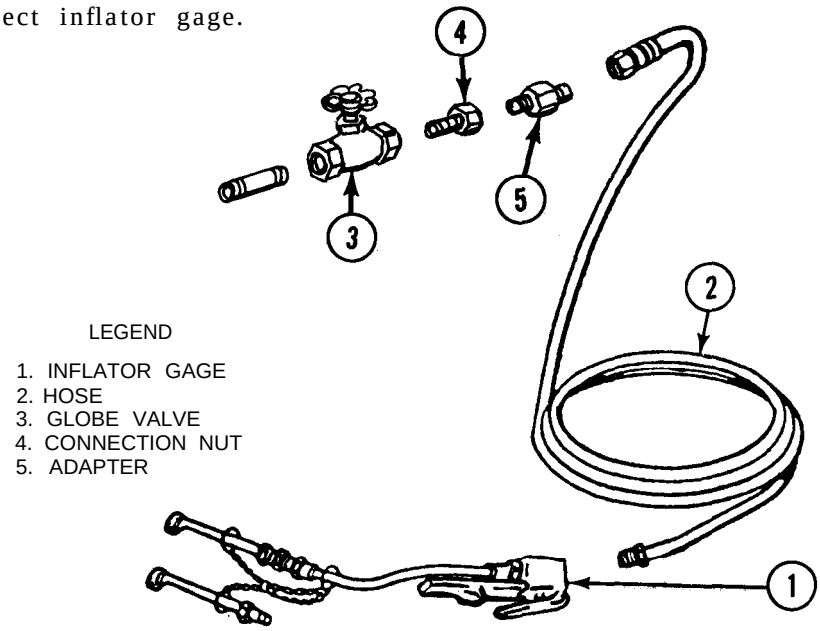
Parts

Inflator gage P/N 61J2-1506
Hose P/N 50-6741
Adapter P/N 20-4400-4
Reducer P/N 5-08-24-8
Globe valve P/N 11-6319
Nipple P/N MS51953-73

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
1. Inflator gage	Disconnect inflator gage (1) from hose (2) by turning counterclockwise.	
2. Air hose	a. Disconnect inflator gage (1).	
	b. Disconnect hose (2) from globe valve (3) by turning hose connection nut (4) counterclockwise.	

4-34. INFLATOR GAGE, AIR HOSE AND GLOBE VALVE - Continued

LOCATION/ITEM	ACTION	REMARKS
2. Air Hose - Continued	c. Remove hose.	
3. Globe valve	a. Remove adapter (5) and reducer (4).	
	b. Remove globe valve (3) by turning it counterclockwise.	
REPLACING		
1. Inflator gage	Connect to hose by turning clockwise until tight.	
2. Air hose	a. Reconnect to globe valve (3) by turning hose connection nut (4) clockwise until tight.	
	b. Reconnect inflator gage.	
3. Globe valve	a. position globe valve (3) with nipple (6) attached, on air tank.	
	b. Turn clockwise to tighten.	
	c. Be sure globe valve is tight with handle facing up.	
	d. Install reducer (4), adapter (5) and air hose (2).	



LEGEND

1. INFLATOR GAGE
2. HOSE
3. GLOBE VALVE
4. CONNECTION NUT
5. ADAPTER

TASK SUMMARY FOR: Air Receiver System

ITEM	TASK	PARA REF
Pressure gage, safety valve, and drain cock	Removing and Replacing	4-35
Air tank	Removing and replacing	4-36

4-35. PRESSURE GAGE, SAFETY VALVE AND DRAIN COCK

This task covers:

Removing and replacing the pressure gage, safety valve and drain cock on the air receiver tank.

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, NSN 5180-00-177-7033

Equipment Condition

Compressor not running.
Air tank pressure relieved.

Parts

Pressure gage P/N 050755
Safety valve P/N SV-25
Drain cock P/N 321-E

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
1. Pressure gage	Remove pressure gage from air tank by turning counterclockwise.	
2. Safety valve	Remove safety valve from air tank by turning counterclockwise.	
3. Drain cock	Remove drain cock from air tank by turning hex head counterclockwise.	

4-35. PRESSURE GAGE, SAFETY VALVE AND DRAIN COCK - Continued

LOCATION/ITEM	ACTION	REMARKS
REPLACING		
1. Pressure gage	Install pressure gage in air tank, tighten by turning clockwise.	
2. Safety valve	Install safety valve in air tank, tighten by turning clockwise.	
3. Drain cock	Install drain cock in air tank by turning hex head clockwise.	

4-36. AIR TANK

This task covers:

Removing and replacing air receiver tank.

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, NSN 5180-00-177-7033

Equipment Condition

Compressor not running.
Air tank pressure relieved.

Parts

Tank P/N 50-6842
Nipple P/N MS51953-80

LOCATION/ITEM	ACTION	REMARKS

WARNING

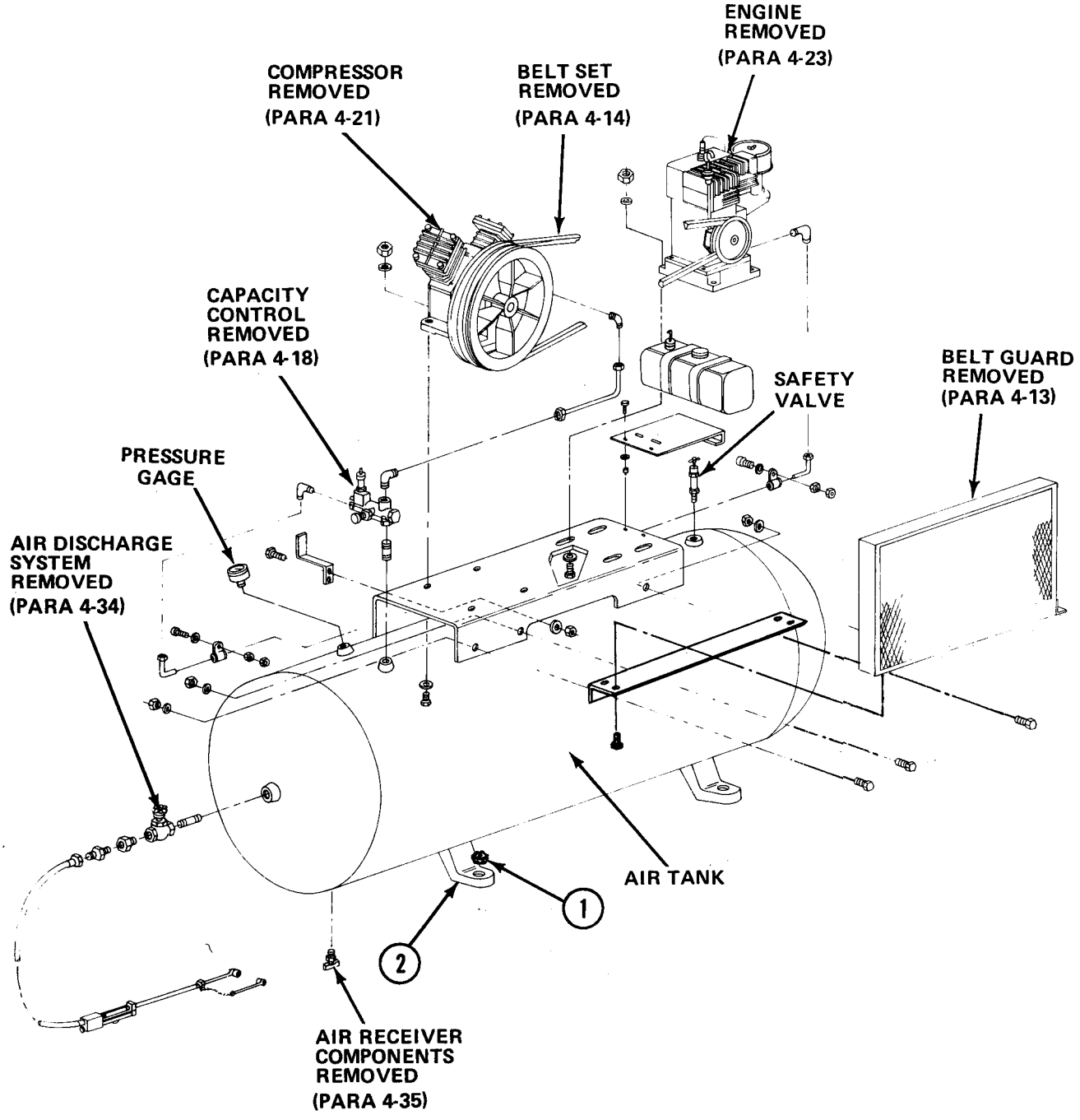
Serious injury could occur if heavy equipment is moved/ lifted without sufficient personnel to do the job. Use proper physical lifting procedures or use a suitable lifting device or dolly. Wear safety shoes, gloves and other suitable protective clothing.

REMOVAL

1. Belt guard	a. Remove belt guard	Para 4-13.
2. Engine	b. Remove engine	Para 4-23.
3. Belt set	c. Remove belt set	Para 4-14.
4. Compressor pump	d. Remove compressor pump	Para 4-21.
5. Capacity control	e. Remove capacity control	Para 4-18.
6. Air receiver components	f. Remove air receiver components	Para 4-35

4-36. AIR TANK - Continued

LOCATION/ITEM	ACTION	REMARKS
7. Air discharge components	g. Remove air discharge components	Para 4-34.
8. Air tank	a. Remove 4 nuts (1) from mounting feet (2).	
	b. Remove air tank using a forklift or other suitable hoist.	



4-36. AIR TANK - Continued

LOCATION/ITEM	ACTION	REMARKS
REPLACING		
1. Air tank	Secure air tank in place with 4 nuts (1).	See WARNING on lifting.
2. Air discharge components	Install air discharge components.	Para 4-34.
3. Air receiver components	Install air receiver components.	Para 4-35.
4. Capacity control	Install capacity control.	Para 4-18.
5. Compressor pump	Install compressor pump.	Para 4-21.
6. Engine	Install engina	Para 4-23.
7. Belt set	Install belt set.	Para 4-14.
8. Belt guard	Install belt guard.	Para 4-13.

CAUTION

Before operating compressor be sure all components and fittings are secure and tight; and tools and other objects are clear.

BE CAREFUL - Avoid hazards.

Section VI. PREPARATION FOR STORAGE OR SHIPMENT

4-37. PREPARATION FOR EXTENDED SHUTDOWN

Use the procedures below when placing the air compressor in storage or moving it to a different location.

a. Compressor Pump Preparation

(1) All interior surfaces of the unit shall be protected against rust by draining frame oil and refilling it with a rust inhibiting oil. Operate unit for fifteen minutes. Oil should be fogged into unit's intake, allowing all internal surfaces to be coated.

CAUTION

When putting unit back into service, replace rust inhibiting oil with conventional lubricating oil.

(2) When unit is shut down, drain air receiver tank of all moisture. Open drain cock counterclockwise, allow all moisture to drain and close drain cock.

(3) Tape all openings shut to prevent moisture from entering unit.

b. Engine Assembly Preparation

(1) Run engine until it stops from lack of fuel.

(2) While engine is still warm, drain oil from crankcase. Refill with fresh oil.

(3) While engine is still warm, remove spark plug, pour approximately one ounce (30cc) of engine oil into cylinder and crank slowly to distribute oil. Replace spark plug.

(4) Clean dirt and chaff from cylinder, cylinder head fins, blower housing, rotating screen and muffler areas.

c. Entire Unit Preparation

(1) Clean exterior of the unit thoroughly.

(2) Coat all exposed metal surfaces with a film of oil or grease.

(3) Correct all deficiencies or report them to direct support maintenance.

4-38. DISMANTLING FOR SHIPMENT

a. Remove air hose and globe valve, repack in original container or equivalent.

b. Remove mounting hardware that secures air compressor to mounting base.

WARNING

Injury to personnel or damage to equipment could occur from improper hoisting. Hoist the load slowly to avoid tearing out lifting eye assemblies, slipping slings or load shift. Do not jerk the load or swing it from side-to-side when hoisting. This places additional stress on hoisting components which can cause failure and loss of load. Be sure hoisting equipment is on solid footing and is suitable for the size of the load. Watch boom angle and overhead clearance when hoisting.

c. Lift air compressor with a lifting device of at least 600-pound capacity, move onto carrier and secure.

4-39. TYPES OF STORAGE

a. Short Term (administrative) 1 to 45 days - All equipment in administrative storage must be able to be made ready within 24 hours for use on a mission. Before placing any item in administrative storage, perform the next scheduled PMCS and correct or repair any deficiencies you find. The administrative storage site should provide required protection from extreme weather conditions and allow you to reach the equipment for visual inspections or exercises when applicable.

b. Intermediate - 46 to 180 days.

c. Long term or flyable - No time limit.

CHAPTER 5

DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

Section I. DIRECT SUPPORT TROUBLESHOOTING

5-1. GENERAL

Measurements performed by direct support maintenance personnel are prescribed in the trouble-shooting procedures and should be performed in conjunction with those procedures. Where applicable, the procedures reference paragraphs and charts which contain the necessary measurement requirements.

To make inspection of parts simple and accurate, only the sizes at which they should be rejected are shown. This eliminates the necsssity for figuring allowances for wear, etc. If a part is worn larger (inside dimension such as connecting rod bearing) or smaller (such as crankshaft journal surfaces) than the given sizes, they should be rejected and replaced with new parts.

Always use gages whenever possible to eliminate doubt and possible mistakes.

Refer to table 5-2 for component specifications.

5-2. TROUBLESHOOTING TABLE

This table provides information useful in diagnosing and correcting unsatisfactory operation or failure of the compressor pump or gasoline engine. Each MALFUNCTION is followed by a list of TEST OR INSPECTIONS for which CORRECTIVE ACTION are given.

The terms “Inspect”, “Check”, “Test”, and “Replace” are used as follows:

INSPECT - Visual inspection, look for signs of wear, scoring, cracks, stripped threads, etc.

CHECK and TEST - Measure by means of gages, micrometer, scale, etc.

REPLACE - If part does not meet inspection requirements take off old part and replace with a new one; otherwise, if part is O.K., re-install it.

INSTALL - Putting a serviceable component or assembly back in place after it has been removed to allow access to some other component or assembly.

Table 5-1. Direct Support Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

1. ENGINE IS HARD TO START OR FAILS TO START.

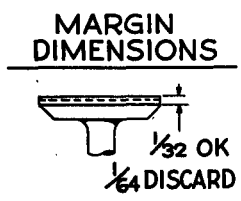
Step 1. Remove cylinder head (para 4-33). Scrape and wire brush combustion deposits from cylinder, cylinder head, top of piston and around valves. Use a soft brush to remove deposits. Make the following checks:

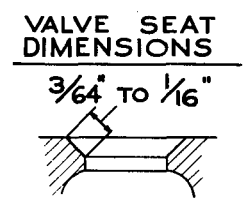
a. Check cylinder head for warpage - Place a straight edge across gasket surface of head. Using feeler gage, ensure distance is the same across entire surface. Check gasket for leaks and/or damage.

Replace cylinder head (para 4-33).

NOTE

Following check must be made with piston at top dead center at end of compression stroke to be sure that both valves are closed.





b. Inspect valves for seating dimensions as shown - valve margin should be 1/32" (.8mm) maximum.

Replace valves (para 5-11), and/or seat(s).

c. Move piston to bottom of its stroke; inspect cylinder bore for roughness, scoring or scruffing.

If evident, cylinder bore must be bored or honed oversize to eliminate imperfections; smallest oversize piston must be used.

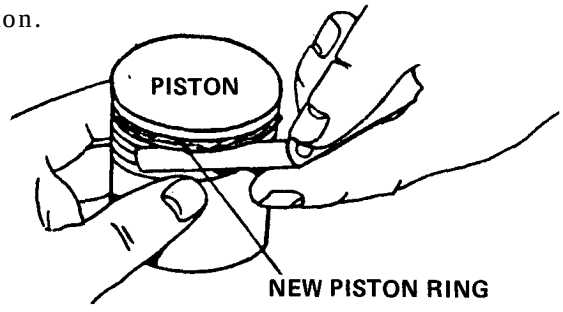
d. Remove crankcase cover (para 5-14). Remove piston and connecting rod (para 5-12) and remove piston rings. Make the following checks:

Table 5-1. Direct Support Troubleshooting - Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

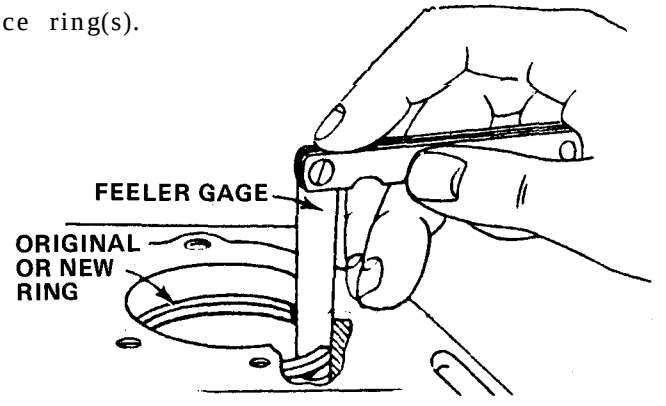
(1) Check piston - clean carbon from top ring groove, place a new ring in the groove, check remaining space with a feeler gage. If a .007" (0.18mm) feeler can be inserted, piston is worn.

Replace piston.



(2) Check rings - Clean carbon from ends of rings and from cylinder bore. Insert original rings, one at a time, one inch down into cylinder. Check gap with feeler gage. If ring gap is greater than .035“ (0.80 mm) for compression ring, and .045" (.14mm) for oil ring, ring is not usable for replacement.

Replace ring(s).



(3) Check connecting rod - If crankpin bearing in rod is scored, rod must be replaced. Rejection size of crankpin bearing hole is 1.252" (31.80mm). Do not attempt to “file” or “fit” rod.

Replace connecting rod.

(4) Check piston pin - Rejection size of piston pin bearing hole is .802" (20.37mm). If piston pin is worn .0005" (.01mm), out of round, or below .799 (20.29 mm) pin is reject.

Piston pins .005" (0.13mm) oversize are available in case connecting rod and piston are worn at piston pin bearing. Replace piston pin.

Table 5-1. Direct Support Troubleshooting - Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 2. Remove flywheel (para 4-31), inspect for seal leakage, on both flywheel and power take off (PTO) sides. Check for worn bearing and/or shaft on flywheel side.

Replace defective part(s).

2. ENGINE STOPS SUDDENLY

Drain oil from crankcase and examine for presence of metal particles. If found, inspect for possible damage to cylinder bore, piston and connecting rod.

Replace defective part(s).

3. ENGINE LACKS POWER, MISSES OR RUNS ERRATICALLY

Step 1. Remove crankcase breather (para 5-10) and cylinder head (para 4-33).

a. Inspect for burned, warped, or broken valves, check seating.

Grind or replace valves (para 5-11).

b. Inspect cylinder bore for signs of wear. Remove piston and connecting rod, (para 5-12), inspect for wear.

Replace defective part(s).

Step 2. Remove crankcase cover, inspect governor gear and lever for wear.

Replace defective part(s) (para 4-32).

4. ENGINE NOISY

Inspect for worn piston, piston rings, or connecting rod.

Replace defective part(s) (para 5-12).

5. COMPRESSOR NOISY, KNOCKS, OR RATTLES

Step 1. Inspect for loose, misaligned, or warped flywheel.

Align and tighten, replace flywheel (para 5-3).

Step 2. Remove access cover (para 5-6) and noisy cylinder (para 5-5), make following checks:

Table 5-1. Direct Support Troubleshooting - Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
a. Inspect cylinder bore for any signs of scoring and scruffing, as indicated by visible ridging at the end of the ring travel. Replace cylinder (para 5-5).
b. Inspect piston for signs of scoring or any indication of cracked or broken lands. Check ring grooves for sign of excessive wear. Replace piston (para 5-6).
c. Inspect for worn or scored connecting rod, piston pin, or crankpin bushing. Replace defective part(s) (para 5-6, 5-8).
d. Inspect for worn crankshaft. Replace crankshaft (para 5-8).
6. COMPRESSOR FAILS TO BUILD UP PRESSURE, OR OIL IN DISCHARGE AIR
Remove cylinder (para 5-10); inspect cylinder bore and piston for damage. Inspect piston rings for defects; broken or not seated in, end gaps not staggered, stuck in grooves, rough, scratched or excessive end gap over .020" worn (.508mm), or side clearance over .006" (.152mm). Replace cylinder or piston if defective. If any piston ring defective, install complete new set (para 5-7).

Section II. DIRECT SUPPORT MAINTENANCE PROCEDURES

This section contains direct support maintenance instructions for the following air compressor systems:

SYSTEM	PARA REF
Compressor Pump	5-3 to 5-8
Gasoline Engine	5-9 to 5-14

TASK SUMMARY FOR: Compressor Pump

ITEM	TASK	PARA REF
Flywheel		5-3
Intercooler tube		5-4
Cylinders		5-5
Breather tube		5-5
Connecting rod		5-6
Piston		5-6
Crankcase		5-6
Piston rings		5-7
Crankshaft		5-8
Oil seals		5-8
Bushing		5-8

5-3. FLYWHEEL, COMPRESSOR

This task covers:

Removing and replacing the compressor flywheel.

INITIAL SETUP

Tools

Tool Kit, General Mechanic, Automotive, NSN 5180-00-177-7033
Gear puller

Parts

Key P/N 222698
Flywheel P/N 30212922

Equipment Conditions

Compressor not running.
Compressor drive removed.
(Belt guard, belts, and pulley and hub)(para 4-13, 4-14, 4-15).

LOCATION/ITEM	ACTION	REMARKS

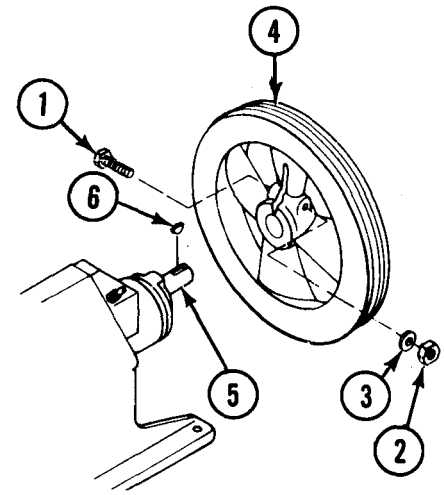
REMOVAL

Flywheel

a. Remove bolt (1), nut (2) and washer (3) that lock flywheel (4) on crankshaft (5).

b. Using gear puller, remove flywheel from crankshaft.

c. Remove key (6) and discard.



LEGEND

1. BOLT
2. NUT
3. WASHER
4. FLYWHEEL
5. CRANKSHAFT
6. KEY

5-3. FLYWHEEL, COMPRESSOR - Continued

LOCATION/ITEM	ACTION	REMARKS
REPLACING		
Flywheel	a. Install new key (6) in keyway on crankshaft. b. Install flywheel on crankshaft - be sure to line up key with keyway on flywheel. c. Make sure flywheel is even with end of crankshaft. d. Lock in place with bolt (1), washer (3) and nut (2).	

5-4. INTERCOOLER TUBE

This task covers:

Removing and replacing the intercooler tube, safety valve and manifold.

INITIAL SETUP

Tools
Shop Set, Automotive Repair Field Maintenance, Basic
NSN 4910-00-754-0705

Parts
Intercooler tube P/N 30334392
Safety valve P/N FIG948-1/4-60
Manifold P/N 83-1049
Flare fitting P/N 95083275
Bushing P/N 95056073

Equipment Condition
Compressor not running.
Flywheel removed (para 5-3).

LOCATION/ITEM	ACTION	REMARKS

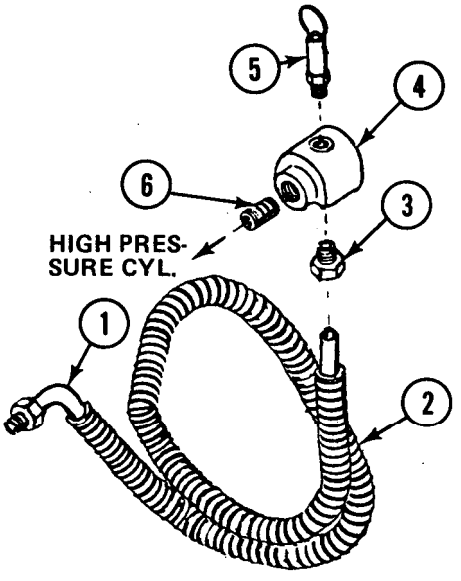
REMOVAL

1. Intercooler tube

a. Loosen nut (1) securing intercooler tube (2) to high pressure cylinder.

b. Loosen flare fitting (3) that secures intercooler tube (2) to manifold (4) on low pressure cylinder.

c. Remove intercooler tube (2).



LEGEND
1. NUT
2. INTERCOOLER TUBE
3. FLARE FITTING
4. MANIFOLD
5. SAFETY VALVE
6. BUSHING

5-4. INTERCOOLER TUBE - Continued

LOCATION/ITEM	ACTION	REMARKS
2. Safety valve	Unscrew safety valve (5) from manifold (4).	
3. Manifold	a. With intercooler tube (2) removed, unscrew manifold (4) by turning counterclockwise.	
	b. Unscrew bushing (6) from low pressure cylinder by turning counterclockwise.	
REPLACING		
1. Intercooler tube	a. Position intercooler tube (2) on manifold (4). Tighten flare fitting (3).	
	b. Position intercooler tube (2) on high pressure cylinder manifold (not shown). Tighten nut (1).	
2. Manifold	a. Position manifold (4) on bushing (6) by turning clockwise.	
	b. Install bushing (6) into low pressure cylinder by turning clockwise.	
3. Safety valve	Screw safety valve (5) into manifold (4).	

5-5. COMPRESSOR CYLINDERS, BREATHER TUBE AND PISTONS

This task covers:

Removing and replacing compressor cylinders (low and high pressure), breather tube, and pistons.

INITIAL SETUP

Tools
Shop Set, Automotive Repair
Field Maintenance, Basic
NSN 4910-00-754-0705

Materials/Parts
Lubricating oil (item 4, Appendix E)
Gaskets (2) P/N 30289870
Breather tube P/N 32108042
Connector P/N 95082475
Cylinder LP P/N 37128535
Cylinder HP P/N 37128634

Equipment Condition
Compressor not running.

Low pressure and high pressure heads removed, (para 4-22).

LOCATION/ITEM	ACTION	REMARKS

REMOVAL

1. Breather tube — Disconnect breather tube (3) from cylinder (4) and intercooler tube (10) from cylinder (8).

2. Low pressure cylinder
   a. Remove 4 capscrews (1) and washers (2).
   b. Carefully remove cylinder (4) by twisting and lifting over piston (5).

3. High pressure cylinder
   a. Remove 4 capscrews (6) and washers (7).
   b. Carefully remove cylinder (8) by twisting slightly and lifting over piston (9).

REPLACING

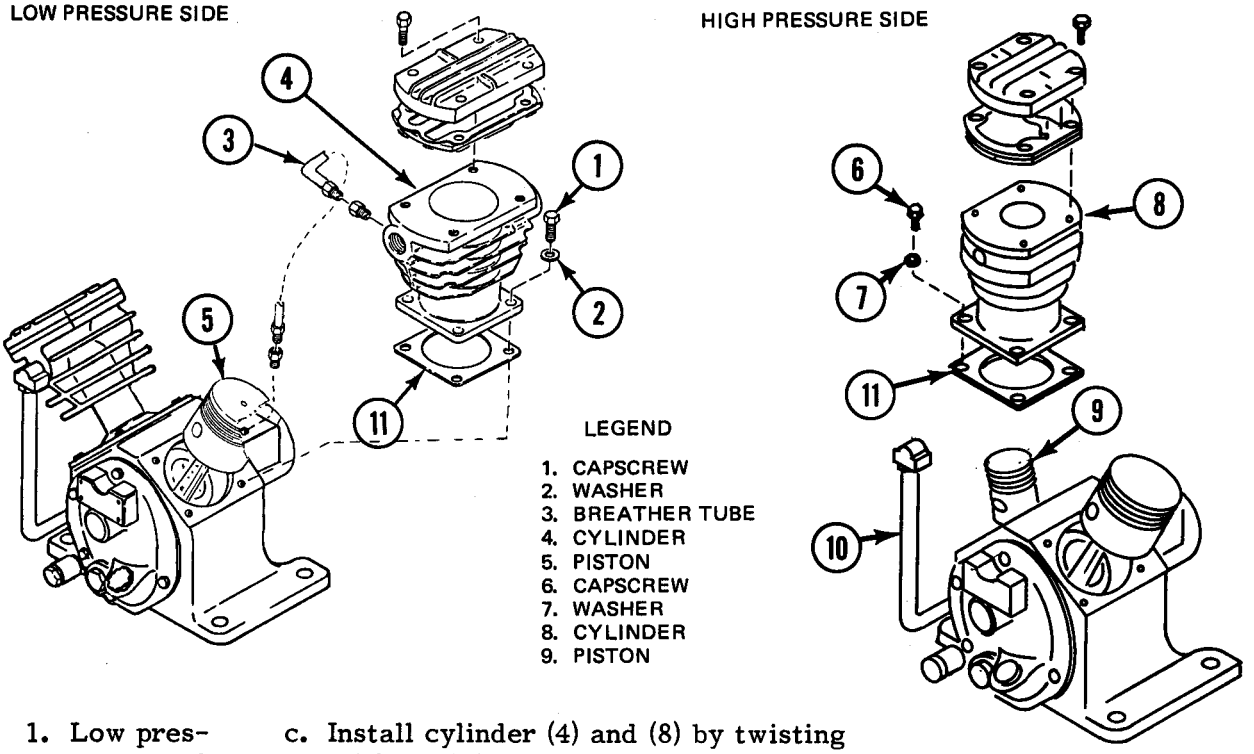
1. Low pressure and high pressure cylinders
   a. Apply lubricating oil to cylinder bore.
   b. Install new gaskets (11) between cylinders and frame.

CAUTION

Extreme care must be taken when replacing cylinders over piston rings to avoid breaking rings. Use a ring compressor.

5-5. COMPRESSOR CYLINDERS, BREATHER TUBE AND PISTONS - Continued

LOCATION/ITEM	ACTION	REMARKS



1. Low pressure and high pressure cylinders (cont'd)

c. Install cylinder (4) and (8) by twisting with a slight downward pressure.

d. Install washers (2) and (7) and capscrews (1) and (6). Hand tighten.

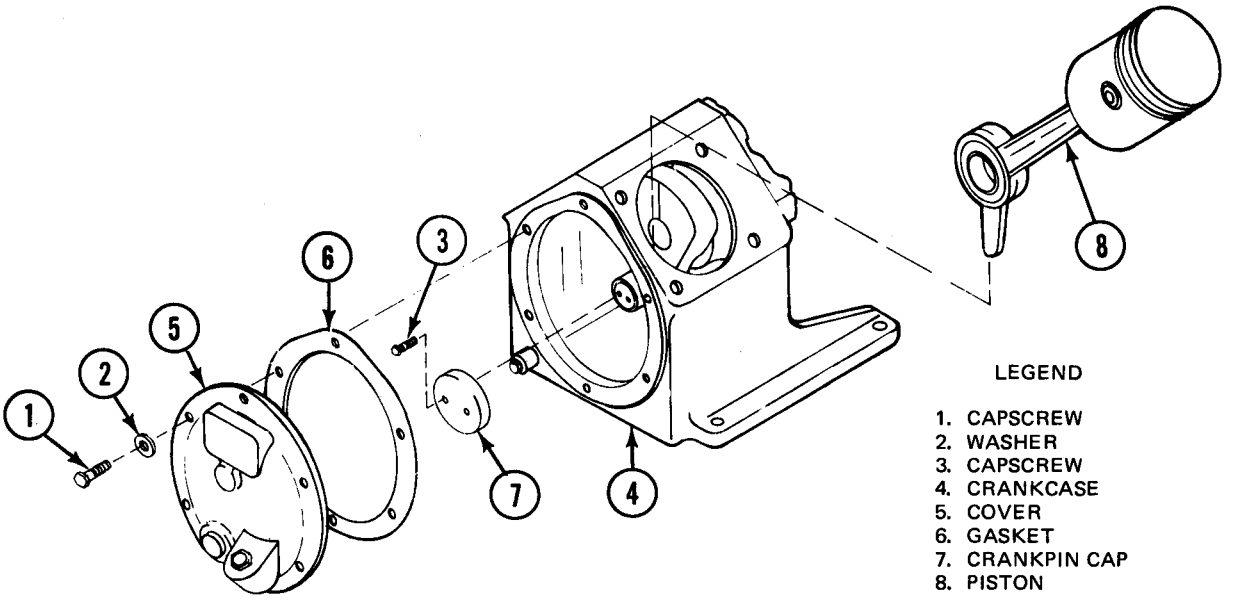
e. Liberally apply lubricating oil to cylinder bore. Install heads (para 4-22).

f. Tighten head bolts and cylinder bolts (1) and (6) to recommended torque values (Appendix G).

g. Connect breather tube (3) and intercooler tube (10).

5-6. COMPRESSOR CONNECTING RODS, PISTONS AND CRANKCASE - Continued

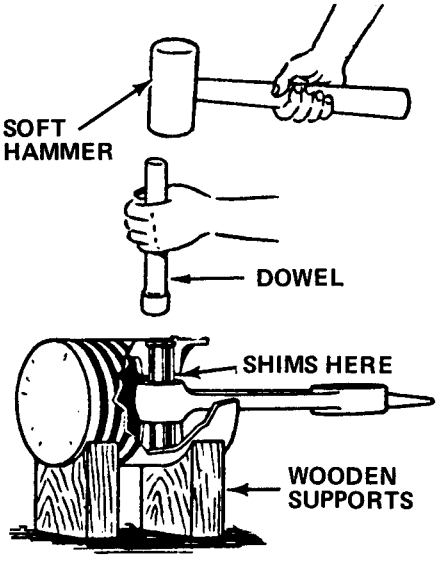
LOCATION/ITEM	ACTION	REMARKS



LEGEND

1. CAPSCREW
2. WASHER
3. CAPSCREW
4. CRANKCASE
5. COVER
6. GASKET
7. CRANKPIN CAP
8. PISTON

b. Using a dowel of approximate size and a soft hammer, drive out piston pin.



REPLACING

1. Installing piston on connecting rod

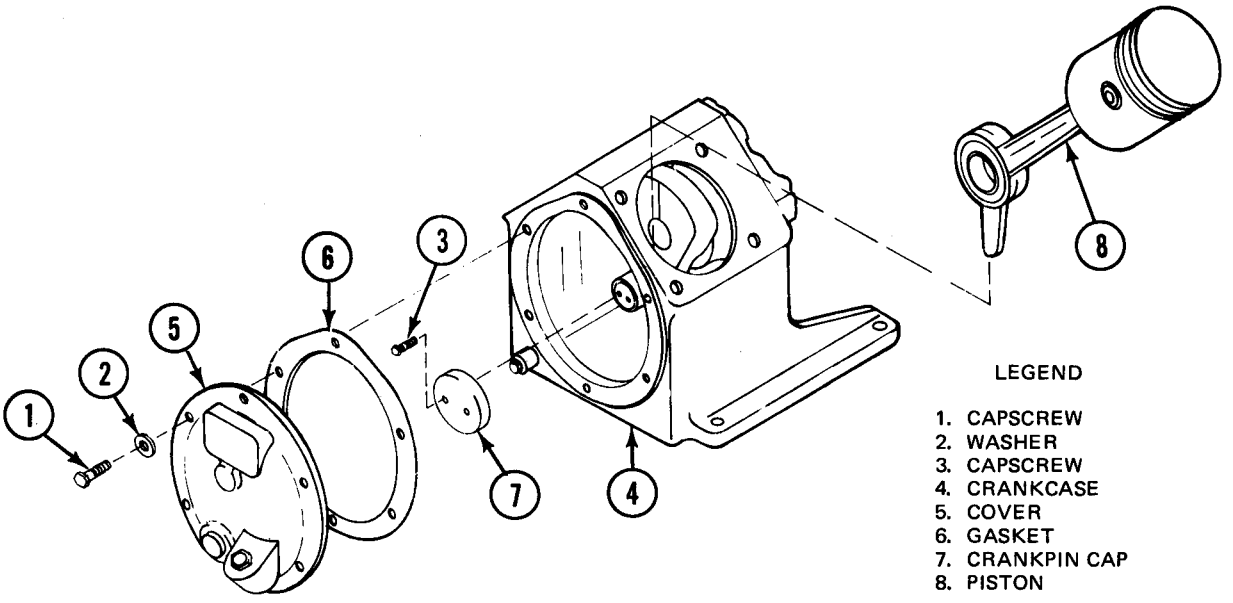
a. Oil piston pin.

b. Align connecting rod in piston and drive in new pin, using dowel and soft hammer.

c. Secure piston pins by putting lock rings in their grooves.

5-6. COMPRESSOR CONNECTING RODS, PISTONS AND CRANKCASE - Continued

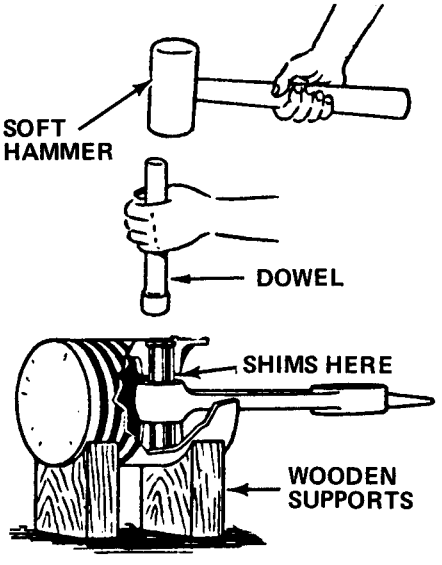
LOCATION/ITEM	ACTION	REMARKS



LEGEND

1. CAPSCREW
2. WASHER
3. CAPSCREW
4. CRANKCASE
5. COVER
6. GASKET
7. CRANKPIN CAP
8. PISTON

b. Using a dowel of approximate size and a soft hammer, drive out piston pin.



REPLACING

1. Installing piston on connecting rod

a. Oil piston pin.

b. Align connecting rod in piston and drive in new pin, using dowel and soft hammer.

c. Secure piston pins by putting lock rings in their grooves.

5-6. COMPRESSOR CONNECTING RODS, PISTONS AND CRANKCASE - Continued

LOCATION/ITEM	ACTION	REMARKS
2. Connecting rod with piston	Position connecting rod with piston into crankcase, placing connecting rod bearing on crankpin bushing.	Do not install crankpin cap (7) at this time.
3. Access cover	a. Place new gasket (6) over access cover (5) and position on crankcase (4).	
	b. Install 6 washers (2) and capscrews,	

5-7. COMPRESSOR PISTON RINGS

This task covers:

Removing and replacing compressor piston rings.

INITIAL SETUP

Tools
Shop Set, Automotive Repair
Field Maintenance, Basic
NSN 4910-00-754-0705

Parts
Piston ring set, LP P/N 32015166
Piston ring set, HP P/N 37138211.
Lubricating oil (item 4, Appendix E)

Equipment Condition
Compressor removed (para 4-21) and on work bench.

Cylinders removed (para 5-5).

Connecting rods with pistons removed (para 5-6).

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
Rings	Remove old rings.	
REPLACING		
Rings	a. Apply lubricating oil to piston ring grooves.	

NOTE

If original cylinder is to be re-used, cylinder bore must be deglazed before installation.

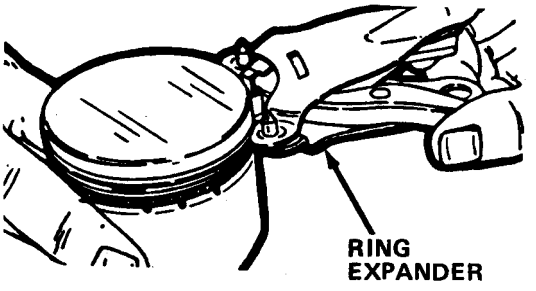
CAUTION

Use a piston ring expander, never pass one ring over another.

b. "H" type ring is always installed in the bottom ring groove. Make sure bevel is toward the head and the undercut groove is toward the bottom of the piston.

5-7. COMPRESSOR PISTON RINGS - Continued

LOCATION/ITEM	ACTION	REMARKS



c. Install "M" type ring by first placing the expander in the ring groove with the free ends toward you. Push the ends of the expander to the inside of the ring groove, butting the ends together. Make sure the ends of the expander do not overlap.

CAUTION

Do not clip or cut the ends of the expander or the tension will be destroyed.

d. Thread one of the two steel rails over the expander and into the bottom side of the ring groove. This rail will hold the expander in position. Thread the second steel rail around the expander and into the remaining clearance at the top of the ring groove. Be certain ends of the expander are butted together and are not overlapping. End gap for rails should be 1800 apart.

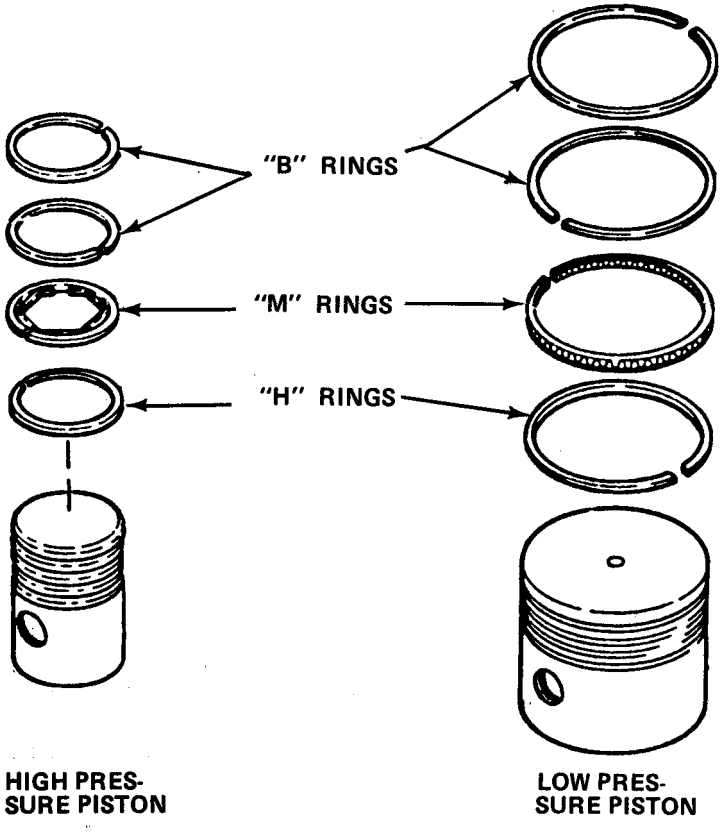
e. Install "B" type compression rings into its groove(s). Each ring is identified, usually with a word "top", the "T", a dash, a dot, or a paint mark. Mark must face top of head or piston.

f. Stagger all ring gaps.

g. Install cylinder head (para 4-22).

5-7. COMPRESSOR PISTON RINGS - Continued

LOCATION/ITEM	ACTION	REMARKS



5-8. COMPRESSOR CRANKSHAFT, BUSHING AND OIL SEAL

This task covers:

Removal and replacing compressor crankshaft, bushing and oil seal.

INITIAL SETUP

Tools
Shop Set, Automotive Repair
Field Maintenance, Basic
NSN 4910-00-754-0705

Parts
Oil seal P/N 37007622
Gasket P/N 30294995
Bushing P/N 30210199
Crankshaft P/N 32024168
End cover P/N 37127677

Equipment Condition
Compressor removed (para 4-21 and on workbench.

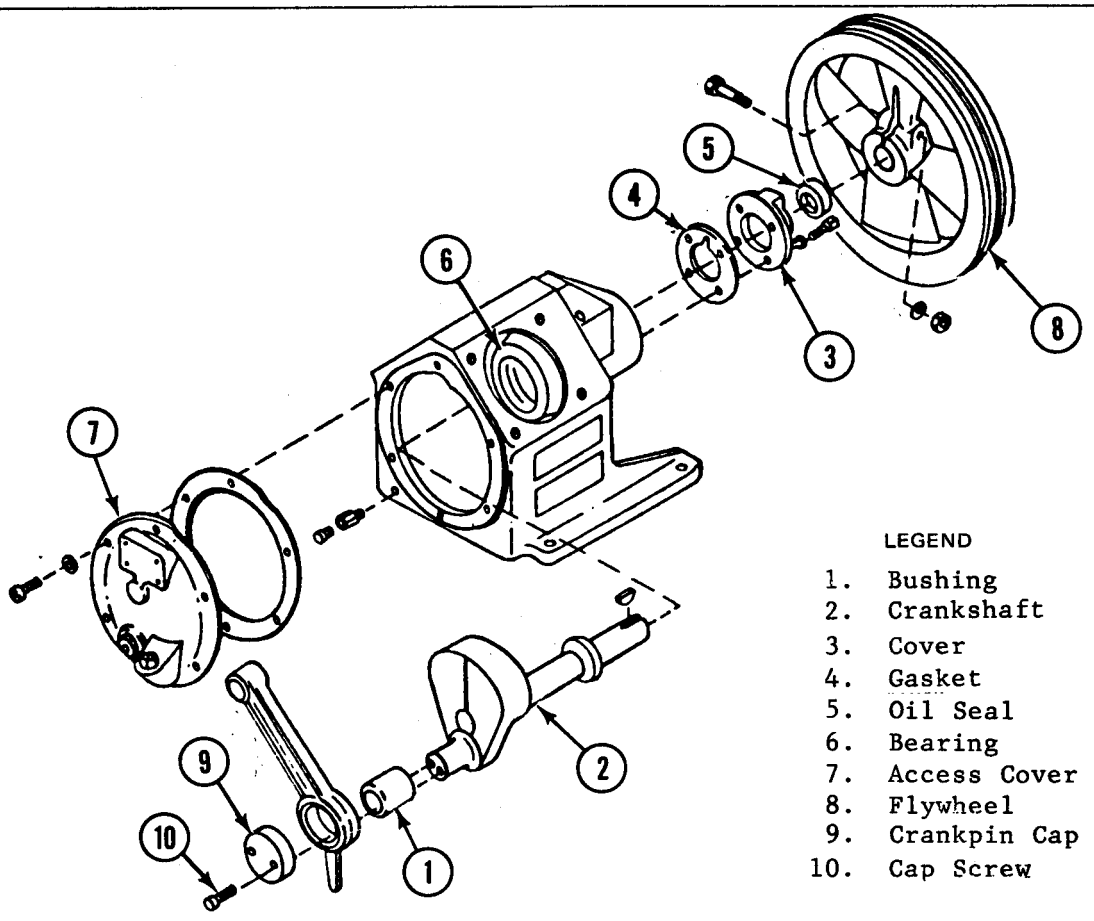
Access plate, connecting rod and piston removed (para 5-6).

Flywheel removed (para 5-3).

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
1. Bushing	Remove bushing (1) from crankshaft (2).	
2. End cover	Remove crankshaft end cover (3) and gasket (4).	
3. Crankshaft	Crankshaft assembly is a moderate press fit in crankcase; force out by tapping flywheel end of crankshaft with a lead hammer.	
4. Oil Seal and bearing	a. Remove oil seal (5) from crankshaft end cover (3) by prying under the inside lip with a pinch bar, or drive it out with a metal rod.	
	b. Remove bearing (6).	
REPLACING		
1. Crankshaft bushing and oil seal	a. Remove snap ring from outer bearing by grasping it near the end and springing it from the groove.	
	b. Insert bearing (6) into crankcase from access cover (7) side.	

5-8. COMPRESSOR CRANKSHAFT, BUSHING AND OIL SEAL - Continued

LOCATION/ITEM	ACTION	REMARKS



1. Crankshaft, bushing and oil seal (cont'd)

c. Force into position by tapping it (be careful to strike center of shaft since an off center blow may spring it) with a lead hammer.

d. Drive in assembly until snap ring groove in outer bearing clears the end of the frame about 1/16 inch (1.59mm).

e. Install snap ring by putting one end in the groove and springing the ring into place.

f. Tap crankshaft back until snap ring is tight against frame.

g. Inspect flywheel end of crankshaft; make certain that there are no burrs and that edges of the keyway are smooth and slightly rounded to prevent damage to the oil seal (5).

h. Install new oil seal(s) with the sealing lip facing toward the inside of the crankshaft; coat

5-8. COMPRESSOR CRANKSHAFT, BUSHING AND OIL SEAL - Continued

LOCATION/ITEM	ACTION	REMARKS
1. Crankshaft, bushing and oil seal (cont'd)	h. Continued - outside diameter of oil seal with shellac or pipe compound.	
	i. Press oil seal into crankshaft end cover (3) with a vise or press. (If vise is used, protect parts from damage by padding vise jaws.)	
	CAUTION	
	Protect lip of oil seal (5) from cutting on crankshaft by wrapping a sheet of 0.003 inch brass shim stock around shaft.	
	J Install new bushing (1) on crankshaft (2).	
	k. Install crankpin cap (9) with capscrews (10). Safety wire capscrews (10).	
	l. Install shaft end cover (3) and new gasket (4).	
	m. Install access cover (7).	
	n. Install flywheel (8).	

TASK SUMMARY FOR: Engine Assembly

ITEM	TASK	PARA REF
Starter, manual	Removal and replacing	5-9
Breather and intake manifold	Removal and replacing	5-10
Valves and springs	Removal, installation and adjustment	5-11
Piston and rod assembly	Repair	5-12
Crankshaft, Camshaft and tappets	Removal and replacement	5-13
Crankcase and oil seals	Removal and replacement	5-14

5-9. STARTER, MANUAL - deleted

All data on page 5-24 deleted.

5-10. BREATHER AND INTAKE MANIFOLD

This task covers:

Removal and replacing of the engine breather tube and the intake manifold.

INITIAL SETUP

Tools
Shop Set, Automotive Repair
Field Maintenance, Basic
NSN 4910-00-754-0705

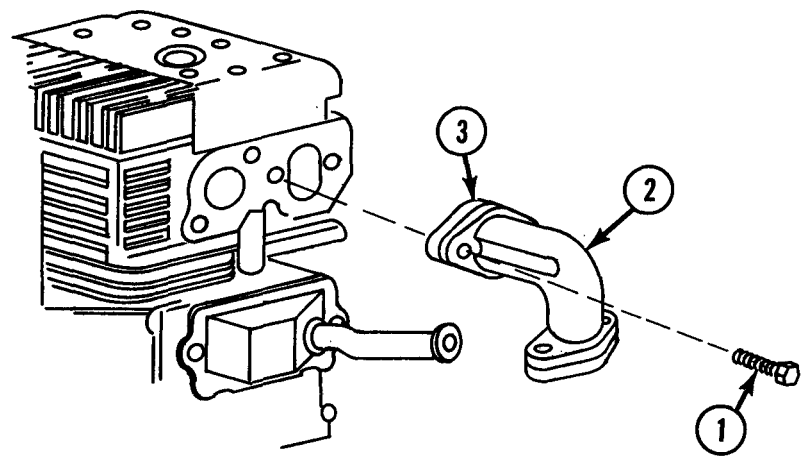
Equipment Condition
Compressor not running.
Carburetor removed (para 4-28).

Parts
Gasket kit P/N 391834
Intake elbow P/N 212301
Breather tube P/N 280112
Breather assembly P/N 391 575

LOCATION/ITEM	ACTION	REMARKS

REMOVAL

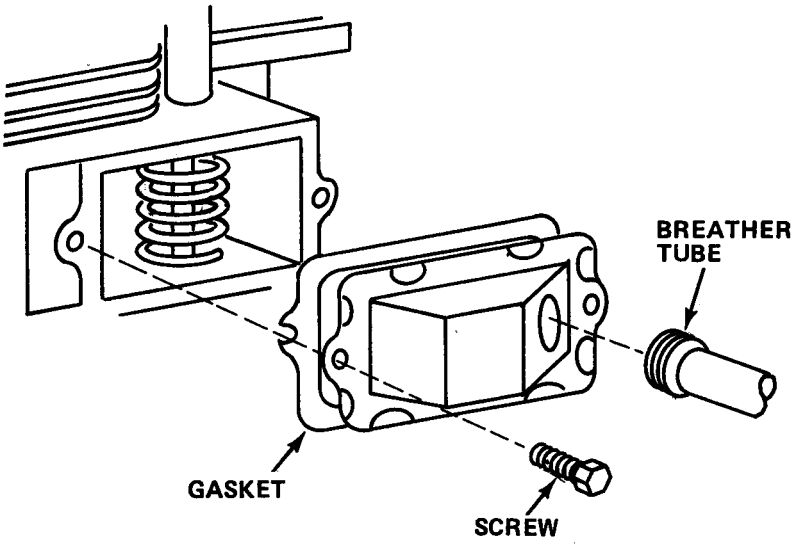
1. Intake manifold — Remove 2 screws (1), intake elbow (2) and gasket (3).



2. Breather assembly — Remove 2 screws (4), breather (5), breather tube (6), and gasket (7).

5-10. BREATHER AND INTAKE MANIFOLD - Continued

LOCATION/ITEM	ACTION	REMARKS



REPLACING

1. Breather manifold
   a. Position new gasket (3) and intake elbow (2) on engine.
   b. Secure with 2 screws (1).
2. Breather assembly
   a. Position new gasket (7) and breather (5) on engine. Secure with 2 screws (4). Connect breather tube (6) to breather assembly (5).
   b. Install carburetor (para 4-28).

5-11. VALVES AND SPRINGS

This task covers:

Removal and installation of engine valves and springs and adjustment of valves.

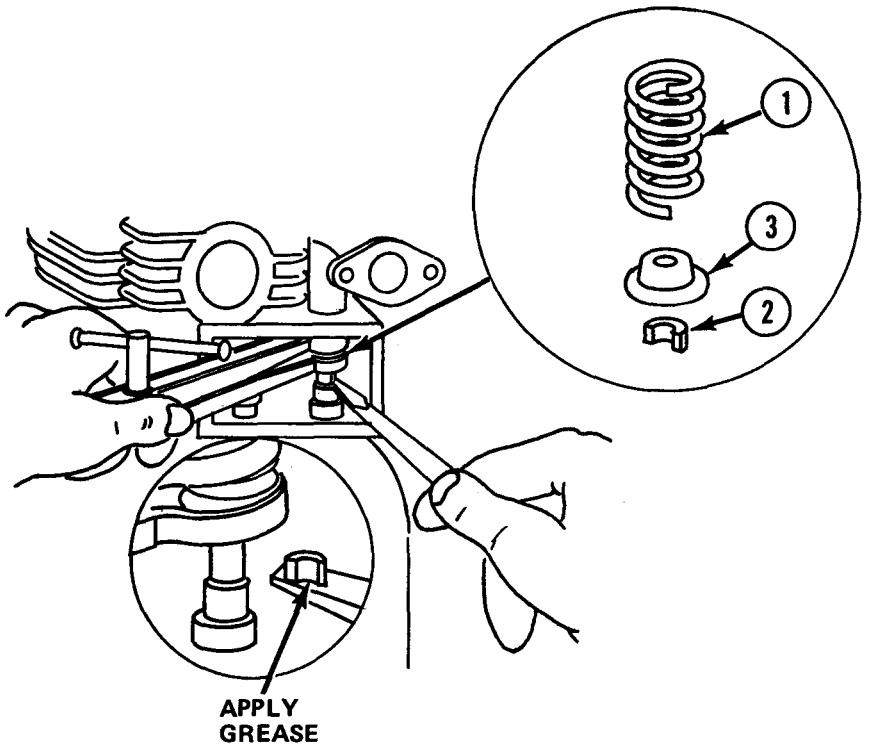
INITIAL SETUP

Tools
Shop Set, Automotive Repair
Field Maintenance, Basic
NSN 4910-00-754-0705

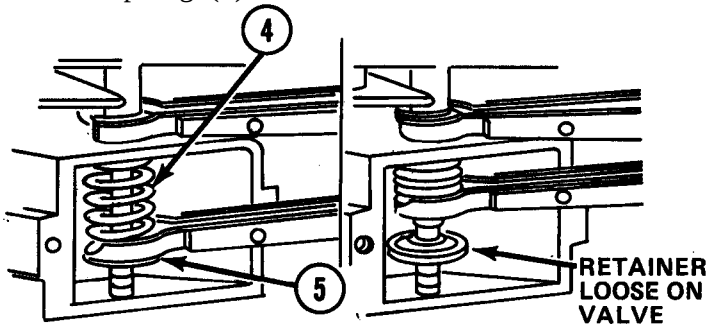
Equipment Condition
Compressor not running.
Cylinder head removed (para 4-33).
Breather assembly removed (para 5-10).

Materials and Parts
Intake: Retainer P/N 221596
Valve P/N 261462
Spring P/N 65906
Exhaust: Retainer P/N 93630
Valve P/N 261185
Rotator P/N 292260
Grease (item 3, Appendix E)

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
1. Exhaust valve	a. Using a valve spring compressor tool, compress spring (1).	Adjust jaws until they just touch top and bottom of valve chamber. This will keep upper jaw from slipping into coils of spring. Push compressor in until upper jaw slips over upper end of spring. Tighten jaws to compress spring.

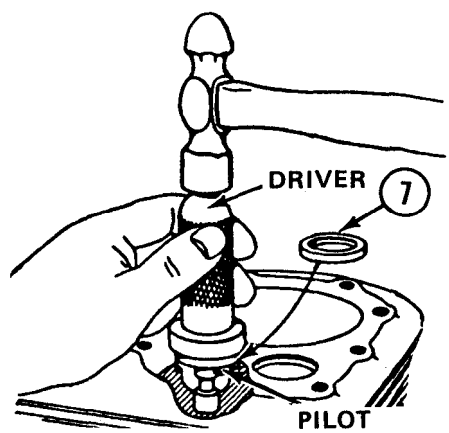


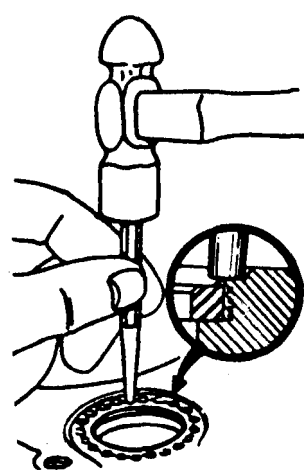
5-11. VALVES AND SPRINGS - Continued

LOCATION/ITEM	ACTION	REMARKS
REMOVAL (Cont'd)		
1. Exhaust valve (cont'd)	b. Remove retainers (2) and lift out valve (3) through top of engine.	
	c. Pull out compressor and spring (1).	
2. Intake valve	a. Using a valve compressor tool, compress spring (4). 	Slip upper jaw over top of valve chamber and lower jaw between spring and retainer (5). Tighten jaws to compress spring (4).
	b. Remove retainer (5) and lift out valve through top of engine.	
	c. Pull out compressor and spring.	
3. Valve seats	Using a valve seat insert removing tool, remove valve seat insert.	
INSTALLATION		
	NOTE Apply lubricant to valve stems and guides before installing. Be sure that no lubricant is on ends of valve stems or tappets.	
1. Exhaust valve	a. Position spring (1) and rotator (6) in valve chamber.	
	b. Install valve in its respective guide in cylinder.	
	c. Using valve spring compressor tool positioned under valve rotator (6), compress valve spring (1) until valve stem end is through valve rotator far enough that the retainers (2) can be installed.	
	d. Apply a small amount of grease to inside of retainers (2) so that they will stick in	

5-11. VALVES AND SPRINGS - continued

LOCATION/ITEM	ACTION	REMARKS
INSTALLATION (Cont'd)		
1. Exhaust valve (cont'd)	position on valve stem. Install retainers in recess at end of valve stem.	
	e. Slowly release valve spring compressor tool and remove it from valve chamber.	Be sure retainers (2) are in place.
2. Intake valve	a. Compress spring (4) and retainer (5) using valve spring compressor tool.	Large diameter of retainer (5) should face toward front of valve chamber.
	b. Insert compressed spring and retainer into valve chamber, drop valve stem through large area of retainer slot.	
	c. Move compressor tool so as to center small area of retainer slot onto valve stem shoulder.	
	d. Release spring tension and remove compressor tool from valve chamber.	
3. Valve Seats	a. Position chamfered side of seat insert (7) down into cylinder.	
	b. Insert pilot into valve guide.	
	c. Use old insert as a spacer between driver and new insert.	
	d. Drive new insert until it bottoms, top of insert will be slightly below cylinder head gasket surface.	
	e. Peen around insert.	
ADJUSTMENT	Check clearances cold.	
	a. Piston must be at top dead center at end of compression stroke to assure both valves being closed.	
	b. Insert both valves in their respective position in cylinder.	
	c. Check clearances (see table 5-2).	
	d. Grind off end of valve stem if necessary, to obtain proper clearance.	





5-11. VALVES AND SPRINGS - Continued

LOCATION/ITEM	ACTION	REMARKS
ADJUSTMENT (cont'd)	e. Install cylinder head (para 4-33). f. Install breather assembly (para (5-10).	

5-12. PISTON AND ROD ASSEMBLY

This task covers:

Removal, repair and installation of pistons, piston rings and connecting rods.

INITIAL SETUP

Tools
Shop Set, Automotive Repair
Field Maintenance, Basic
NSN 4910-00-754-0705

Equipment Condition
Engine removed (para 4-23) and on workbench.
Cylinder head removed (para 4-33).
Crankcase cover removed (para 5-15).

Materials and Parts
Piston (w/locks) P/N 394661
Connecting rod P/N 393860
Piston pin (w/lock) P/N 299691
Connecting rod screw P/N 92909
Screw lock P/N 222299
Dipper P/N 222329
Ring set P/N 394665
Lubricating oil (item 4, Appendix E)

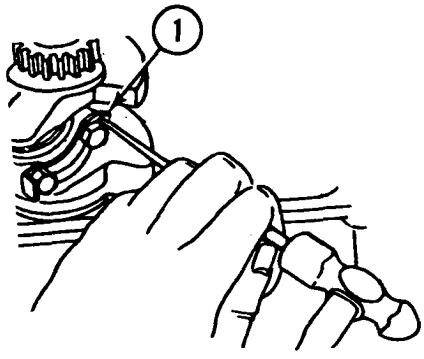
LOCATION/ITEM	ACTION	REMARKS

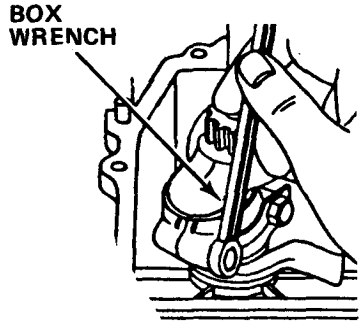
REMOVAL

NOTE

Before removing piston and connecting rod assembly, remove any carbon d eposits and/or wear ridge from upper end of cylinder bore. This will prevent breaking piston rings.

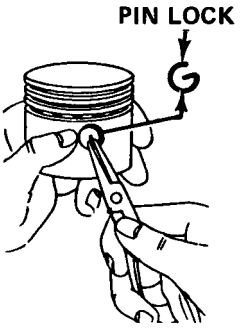
1. Piston/Connecting rod	a. Turn crankshaft until piston reaches lowest position of travel in cylinder bore.	Remove any carbon or ridge at top of cylinder.
	b. Using a punch and hammer, bend down connecting rod lock tab (1).	
	c. Use box wrench to remove 2 screws.	
	d. Push piston and rod out through top of cylinder.	

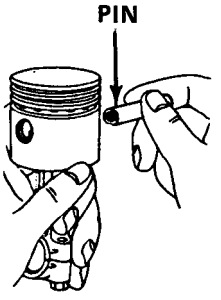


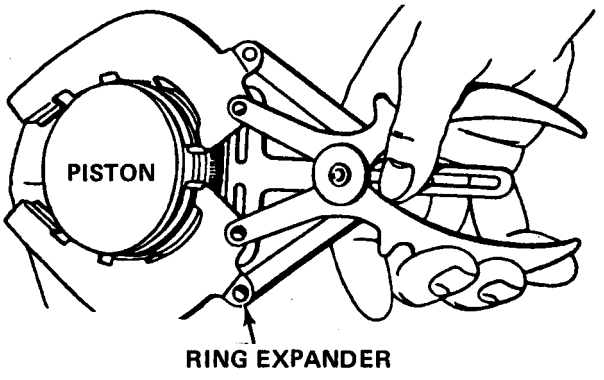


5-12. PISTON AND ROD ASSEMBLY - Continued

LOCATION/ITEM	ACTION	REMARKS
2. Piston	a. Use needle nose pliers and remove piston pin locks.	
	b. Push piston pin out.	
3. Piston rings	Use a piston ring expander and remove rings one at a time, slipping them over ring lands.	

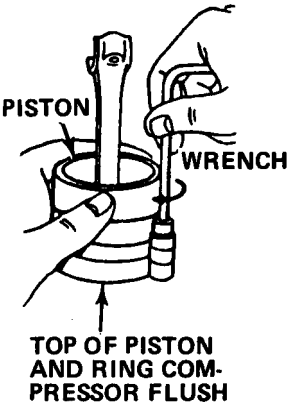






INSTALLATION

1. Piston rings	a. Oil rings and piston skirt.	
	b. Using ring expander tool, install new piston rings in proper sequence on piston.	Install oil ring first, compression and scrape ring, then the top compression ring.
	c. Stagger ring gaps so they are not in direct line with one another or piston pin ends.	
	d. Use ring compressor, turn compressor tool and piston upside down on bench and push downward, so piston head (top) and edge of compressor tool band are even, tighten compressor tool.	
	e. Draw compressor tool tightly to fully compress rings, then loosen very slightly.	



5-12. PISTON AND ROD ASSEMBLY - Continued

LOCATION/ITEM	ACTION	REMARKS

INSTALLATION (Cont'd)

2. Piston/Connecting rod

a. Place a pin lock in groove on one side of piston.

b. Position connecting rod from opposite side of piston, insert piston pin until it stops against the pin lock.

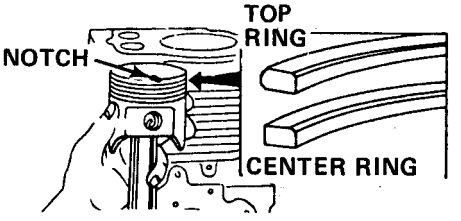
c. Use needle nose pliers and install pin lock in recessed groove of piston.

d. Be sure locks are firmly set in grooves.

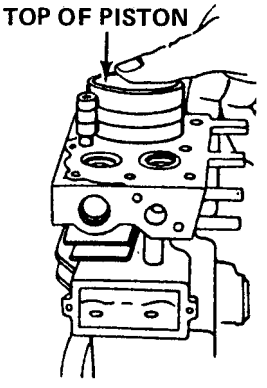
3. Piston

NOTE

The piston has a notch in the head. Notch must face flywheel side when installed. Do not attempt to install piston and rod without ring compressor.



a. Install a piston ring compressor on piston and push piston and connecting rod into cylinder bore until piston head leaves piston ring compressor and reaches a point slightly below top of cylinder bore.



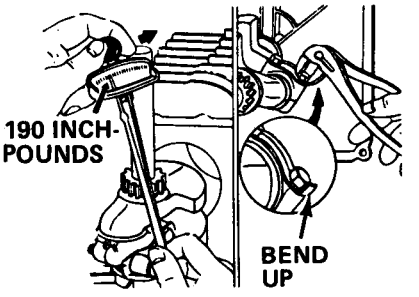
CAUTION

Be sure to guide connecting rod down through cylinder bore to avoid damaging crankpin journal.

b. Oil crankshaft journal, turn crankshaft to bottom of its stroke, then push piston all the way down until connecting rod bearing surface seats on crankshaft journal.

c. Assemble rod cap, capscrews, lock plate, and oil dipper. Rod cap will fit only in one position. Use care to insure proper installation.

5-12. PISTON AND ROD ASSEMBLY - Continued

LOCATION/ITEM	ACTION	REMARKS
INSTALLATION (Cont'd) 3. Piston (cont'd)	d. Install rod cap on connecting rod and secure with two capscrews. Torque capscrews to 190 inch-pounds. Tighten rod screws securely. After tightening, rod should be able to move sideways on journal. e. Rotate crankshaft two revolutions to be sure rod is correctly installed. If rod strikes, installation is wrong, or cam gear timing is out. f. Bend screw locks against screw heads. g. Install crankcase cover (para 5-15). h. Install cylinder head (para 4-33).	

5-13. CAMSHAFT AND TAPPETS

This task covers:

Removal and replacing of engine crankshaft/camshaft and valve tappets.

INITIAL SETUP

Tools
Shop Set, Automotive Repair
Field Maintenance, Basic
NSN 4910-00-754-0705

Parts
Cam gear P/N 212296
Valve tappet P/N 261183
Ball bearing P/N 291667
Crankshaft P/N 261706
Oil seal (flywheel) P/N 391086

Equipment Condition
Engine removed (para 4-23) and on workbench.
Piston and connecting rod removed (para 5-12).
Engine drive pulley removed (para 4-15).

Parts
Oil seal (crankcase) P/N 291675
Grease (item 3, Appendix E)

LOCATION/ITEM	ACTION	REMARKS

REMOVAL

1. Crankshaft/ camshaft

NOTE

Crankshaft and cam gear must be removed and installed together. Valve tappets will fall out.

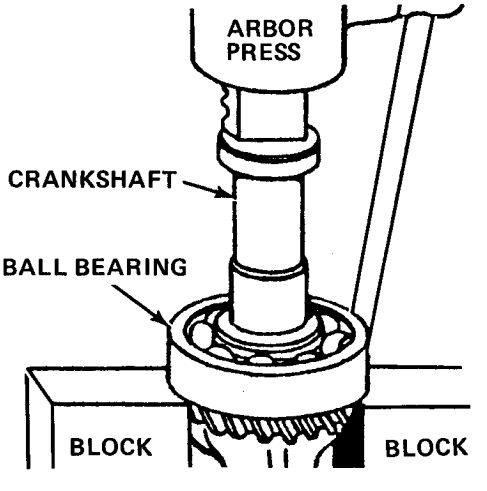
Lift out crankshaft and cam gear together. Remove valve tappets.

2. Ball bearings

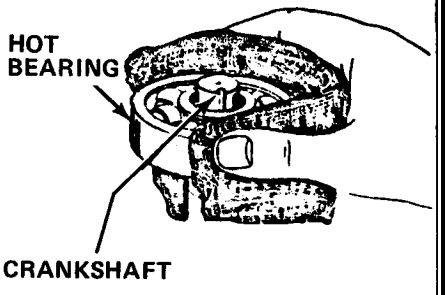
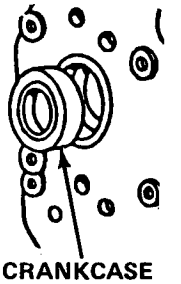
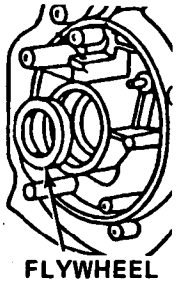
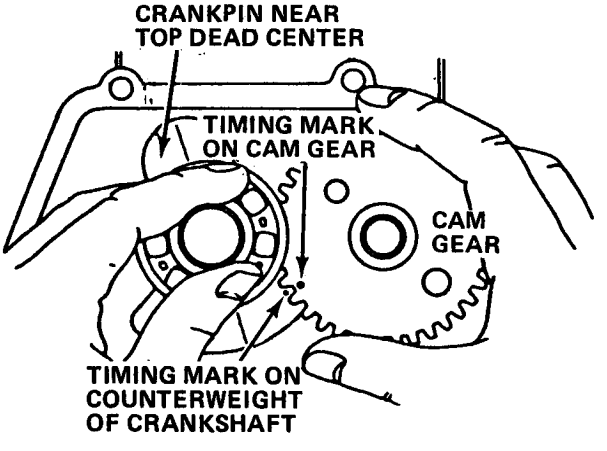
NOTE

Ball bearings should not be re-used if removed from crank-shaft.

Ball bearings are a press fit on crank-shaft. Remove in an arbor press.



5-13. CAMSHAFT AND TAPPETS - Continued

LOCATION/ITEM	ACTION	REMARKS
REPLACING		
1. Ball bearing	a. Heat new bearing in hot oil, 250°F (120°C).	
	b. Place crankshaft in a vise with bearing side up.	
	c. Grasp bearing with shield down (bearing shield faces crankshaft crankpin) and slide it on the crankshaft.	When bearing is hot, it will be a slip fit.
	NOTE Bearing will tighten while cooling.	
2. Oil seals	a. Apply grease to the inside diameter of oil seals before installation.	
	b. Install new oil seals with sharp edge of rubber toward inside of engine.	
	c. Press in oil seals flush with hub.	
3. Crankshaft, cam gear and tappets	a. Align timing marks as shown.	
	b. Install tappets.	
	c. Install crankshaft and cam gears together, making sure timing-marks are aligned.	

5-13. CAMSHAFT AND TAPPETS - Continued

LOCATION/ITEM	ACTION	REMARKS
3. Crankshaft, cam gear and tappets (cont'd)	d. Install piston and connecting rod (para 5-12). e. Install crankcase cover (para 5-14). f. Install engine drive pulley (para 4-15).	

5-14. CRANKCASE AND OIL SEALS

This task covers:

Removal and replacement of engine crankcase cover.

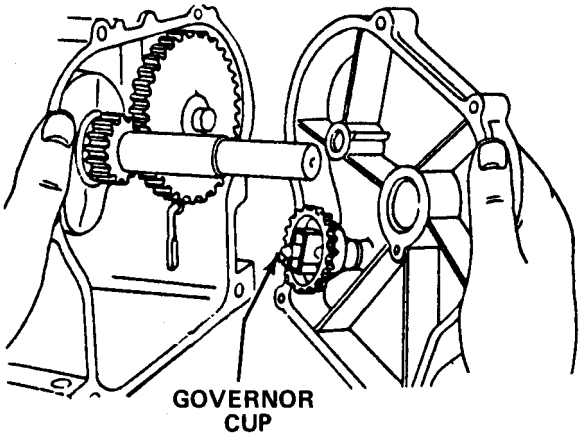
INITIAL SETUP

Tools
Shop Set, Automotive Repair
Field Maintenance, Basic
NSN 4910-00-754-0705

Parts
Gasket kit P/N 391834

Equipment Condition
Engine removed (para 4-23) and on workbench.

LOCATION/ITEM	ACTION	REMARKS
REMOVAL		
	a. Remove 6 screws from crankcase cover.	Note position of 1 big screw.
	b. If cover sticks, tap lightly with soft hammer.	
	c. Remove crankcase cover.	
REPLACING		



5-14. CRANKCASE AND OIL SEALS - Continued

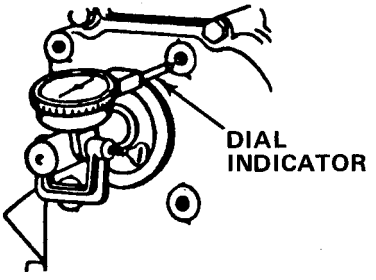
LOCATION/ITEM	ACTION	REMARKS
	a. Press governor gear against crankcase cam to seat shaft.	
	b. Be sure governor shaft hangs straight down parallel to cylinder axis.	
	NOTE New gasket sets include three crankcase cover gaskets- .0005" (.13mm), .009" (.23mm) and 0.15" (.38mm) - used to obtain correct end play if necessary. Never use less than .0 15" gasket.	
	c. Check end play. End play should be .002" - .006" (.05mm - .20mm) with one gasket in place, additional gaskets may be required (included in kit). End play is checked by assembling a dial indicator on crankshaft with pointer against the crankcase. Move crankshaft in and out; indicator will show end play.	
	d. Install new gaskets as required, and cover.	
	e. Install 6 screws on crankcase cover.	Replace big screw in proper location.

Table 5-2. Direct Support Maintenance Specifications

TOLERANCES	INCHES		MILLIMETERS	
	Maximum	Minimum	Maximum	Minimum
Compressor ASSEMBLY				
Piston to Cylinder Clearance				
First Stage	0.007	0.0045	0.18	0.114
Second Stage	0.005	0.0025	0.13	0.063
Crankpin Bushing to Connecting Rod Clearance	0.002	0.001	0.05	0.025
Piston Pin to Connecting Rod Clearance	0.0009	0.0003	0.02	0.008
ENGINE ASSEMBLY				
Valve Tappet Clearance				
Intake	0.007	0.005	0.18	0.13
Exhaust	0.011	0.009	0.28	0.23
Cylinder Bore	3.4375	3.4365	87.31	87.29

GASOLINE ENGINE REJECTION SIZES	INCHES	MILLIMETERS
Piston Ring Gap		
Oil Ring	0.045	1.14
Compression Ring	0.035	0.80
Connecting Rod		
Crankpin Bearing	1.252	31.80
Piston Pin Bearing	0.802	20.37
Piston Pin	0.799	20.29
Piston Bore	0.801	20.35
Cam		
Gear Journal	0.498	12.65
Lobe	1.184	30.07
Crankshaft		
PTO Journal	1.376	34.95
Magneto Journal	1.376	34.95
Crankpin Journal	1.247	31.67

CHAPTER 6

GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

Section I. GENERAL SUPPORT TROUBLESHOOTING

6-1. GENERAL INSTRUCTIONS

General support troubleshooting procedures in this manual supplement those of organizational and direct support maintenance for the compressor. The systematic troubleshooting procedures include organizational and direct support specification checks of the complete unit and removal and replacement of components.

6-2. TROUBLESHOOTING

All deficiencies or troubles encountered during overhaul will be corrected by following the instructions in troubleshooting tables 5-1, 5-2, and paragraph 6-3.

Section II. GENERAL SUPPORT MAINTENANCE PROCEDURES

6-3. MAINTENANCE FUNCTIONS

General support maintenance will be concerned with overhaul and performance testing of repaired equipment.

6-4. ENGINE ASSEMBLY

This task covers:

Engine assembly overhaul.

INITIAL SETUP

Tools

Shop Set, Automotive Repair Field Maintenance, Basic
NSN 49100-00-754-0705

Shop equipment, Automotive Maintenance and Repair: Organization, Common No. 1
NSN 4910-00-754-0654

Equipment Condition

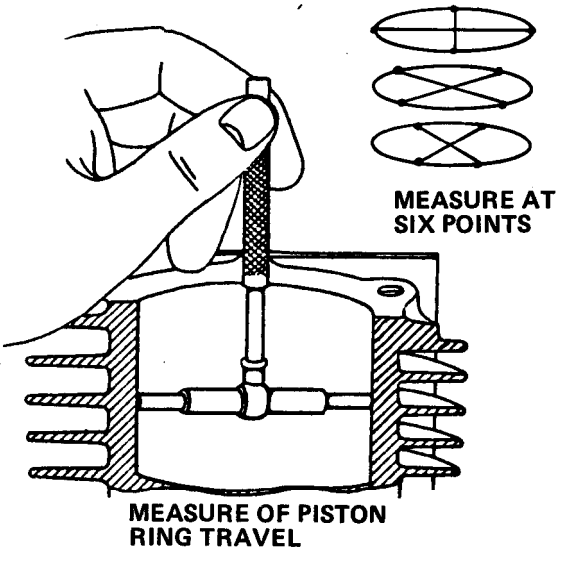
Engine removed (para 4-23) and on workbench.

Crankcase removed (para 5-6).

Materials

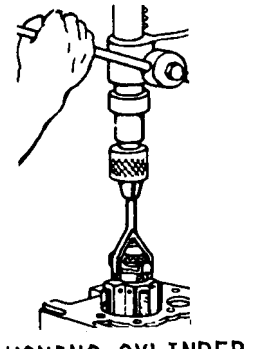
Dry cleaning solvent (item 1 Appendix E)

LOCATION/ITEM	ACTION	REMARKS
INSPECTION		
1. Cylinder	a. Use a telescoping gage and dial indicator or inside micrometer to determine size of cylinder bore.	Direct support maintenance inspection verifies need for cylinder overhaul
	b. Measure at right angles.	

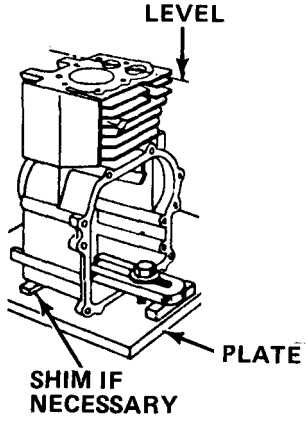


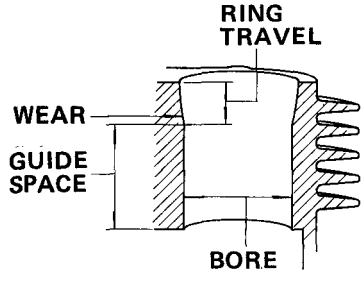
6-4. ENGINE ASSEMBLY - Continued

LOCATION/ITEM	ACTION	REMARKS
INSPECTION - Continued		
1. Cylinder (Cont'd)	c. If cylinder bore is more than 0.0025 (.06mm) out of round, it must be re-sized.	
OVERHAUL	a. Always resize (bore) to exactly: 0.010" (0.25mm) or, 0.020" (0.51mm) or, 0.030" (0.76mm) Over standard size (3.4375 to 3.4365," 87.31 to 87.29mm), to ensure that stock oversize rings and pistons will fit, and proper clearances will be maintained.	Cylinder is not worn at the bottom but is round so it will guide the hone to straighten cylinder bore.

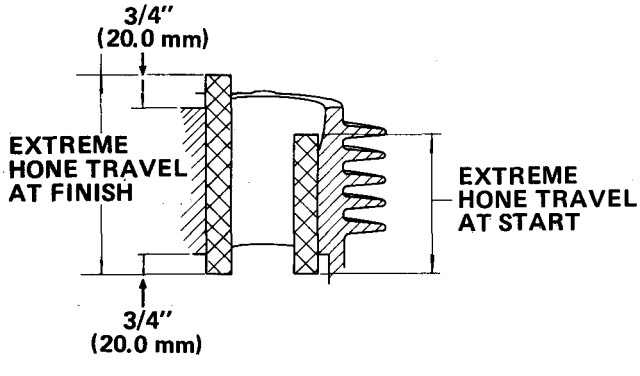


HONING CYLINDER WITH DRILL PRESS





	b. As the bottom of the cylinder increases diameter, gradually increase strokes until hone travels full length of bore.	Do not exceed hone more than 3/4" (20mm) to 1" (25mm) at either end of cylinder bore.



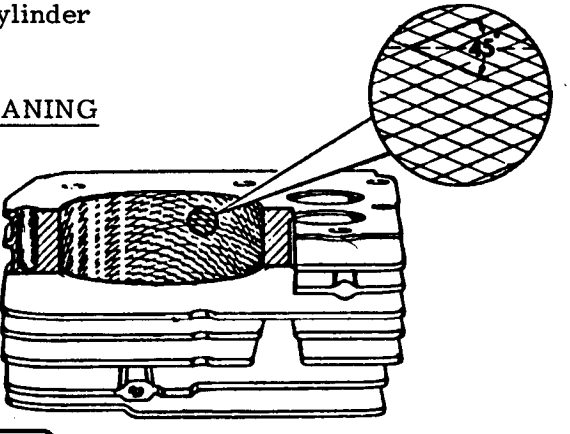
6-4. ENGINE ASSEMBLY - Continued

LOCATION/ITEM	ACTION	REMARKS

OVERHAUL - Continued

1. Cylinder (Cont'd)

c. Hone about 0.0005" (0.01mm) more to allow for shrinkabe when cylinder cools. Check frequently.



FINISH AND CLEANING

Finish of resized cylinder should have cross-hatch appearance. Proper stones, lubrication and spindle speed along with rapid movement of hone within the cylinder during the last few strokes, will produce this finish. Cross-hatching will allow proper lubrication and ring break-in.

WARNING

Dry cleaning solvent P-D-680 (safety or Stoddard's Sovvent) is potentially dangerous. Avoid repeated and prolonged breathing of vapors and skin contact with the liquid. Do not use near open flame, arcing equipment or other ignition sources. Always wear eye protection and protective clothing. The flash point of P-D-680 is 100° to 138°F (30° to 59°C).

NOTE

It is most important that the entire cylinder be thoroughly cleaned after honing. Wash in solvent, bore should then be cleaned with a brush, soap, and hot water.

2. Components — For complete engine overhaul, the following components must be inspected and repaired as required:

COMPONENT	REF. PARA.
a. Fuel filter	4-24
b. Air cleaner	4-25
c. Lubrication system	4-26

6-4. ENGINE ASSEMBLY - Continued

LOCATION/ITEM	ACTION	REMARKS
OVERHAUL - Continued		
2. Components (Cont'd)	COMPONENT	REF. PARA.
	d. Carburetor and fuel system	4-28
	e. Exhaust system	4-29
	f. Starter/Blower housing	4-30
	g. Ignition system	4-31
	h. Governor	4-32
	i. Cylinder head, crankcase and cylinder	4-33, 5-5, 5-6

6-5. COMPRESSOR ASSEMBLY

This task covers:

Compressor assembly overhaul.

INITIAL SETUP

Tools	Equipment Condition
Shop set, Automotive Repair, Field Maintenance, Basic NSN 4910-00-754-0705 Shop Equipment, Automotive Maintenance and Repair: Organization, Common No. 1 NSN 4910-00-754-0654	Compressor removed (para 4-21) and on workbench.

LOCATION/ITEM	ACTION	REMARKS

OVERHAUL

Components — For complete overhaul of the compressor assembly, the following components must be inspected, repaired and replaced, as required:

COMPONENT	REF. PARA.
a. Cylinder heads, intake and exhaust valves	4-22, 5-5
b. Flywheel	5-3
c. Intercooler	5-4
d. Pistons, breather tube and cylinders	5-5, 5-6, 5-7
e. Crankshaft, connecting rods, oil seals, bushing and crankcase	5-6, 5-8

6-6. AIR COMPRESSOR ASSEMBLY OVERHAUL

LOCATION/ITEM	ACTION	REMARKS
	For complete air compressor assembly overhaul, the following systems must be inspected, repaired and replaced, as required:	
	SYSTEM — REF. PARA.	
	a. Compressor drive — 4-13, 4-15	
	b. Fuel system — 4-16, 4-17	
	c. Capacity control — 4-18 to 4-20	
	d. Compressor assembly — 4-21, 4-22	
	e. Engine assembly — 4-24 to 4-33	
	f. Air discharge system — 4-34	
	g. Air receiver system — 4-35	

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

Equipment Inspection and Maintenance Worksheet	**DA Form 2404**
Discrepancy in Shipment Report (DISREP)	**SF 361**
Report of Discrepancy (ROD)	**SF 364**
Recommended Changes to DA Publications	**DA Form 2028-2**

A-3. FIELD MANUALS

First Aid Manual	**FM 21-11**

A-4. TECHNICAL MANUALS

Deleted

Organizational, Direct Support and General Support (including Depot) Repair Parts and Special Tools List for Compressor, Reciprocating, Gasoline Engine Driven, 15 CFM, 175 PSI	**TM 5-4310-376-24P**
The Army Maintenance Management System (TAMMS)	**DA PAM 738-750**
Painting Instructions for Field Use	**TM 43-0139**
Administrative Storage of Equipment	**TM 740-90-1**
Destruction of Army Materiel to Prevent Enemy Use	**TM 750-244-3**
Inspection and Test of Air and Other Gas Compressors	**TB 43-0151**

A-5. MISCELLANEOUS PUBLICATIONS

Fuels, Lubricants, Oil and Waxes	**C91OO11**
Consolidated Index of Army Publications and Blank Forms	**DA PAM 310-1**
Preservation, Packaging, Packing and Marking Materials, Supplies and Equipment Used by the Army.	**SB 38-100**
Fuels, Lubricants, Oils & Waxes	**C910011**

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APPENDIX B

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B-1. GENERAL

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance categories.

b. The Maintenance Allocation Chart (MAC) in section II designates overall authority and responsibility of the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance categories.

c. Section Ill lists the tools and test equipment (both special tools and common tools sets) required for each maintenance function as referenced from section Il.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. MAINTENANCE FUNCTIONS

Maintenance functions will be limited to and defined as follows:

a. *Inspect.* To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound or feel).

b. *Test.* To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d. Adjust. To maintain, or regulate, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specified variable elements of an item to bring about an optimum or desired performances.

f. *Calibrate.* To compare an instrument (measurement standard or item of test, measurement and diagnostic equipment) of unverified accuracy with an instrument of known and greater accuracy to detect and correct any discrepancy in the accuracy of the unverified instrument.

g. *Remove//nsta//.* To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, setting, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

h. *Replace.* To remove an unserviceable item and install a serviceable counterpart in its place. “Replace” is authorized by the MAC as shown in the 3rd position code of the SMR code.

i. *Repair.* The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace), including 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), and disassembly/assembly (encompasses the step-by-step taking apart (or breakdown of a spare/functional group coded item to the level of its least componency identified as maintenance significant (i.e., assigned an SMR code) for the category of maintenance under consideration) procedures, and maintenance actions (welding, grinding, riveting, straightening, facing, remachining, and/or resurfacing) 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.* To restore an item to a complete serviceable condition as prescribed by maintenance serviceable standards.

k. *Rebuild.* To restore an item, to a standard as nearly as possible to original or new condition in appearance, performance, and life expectancy. This is accomplished through the maintenance technique of complete disassembly of the item, inspection of all parts or components, repair or replacement of worn or unserviceable elements using original manufacturing tolerances and specifications and subsequent reassembly of the item.

B-3. COLUMN ENTRIES

a. *Column 1, Group Number.* Column 1 lists functional group numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group number shall be “00”

b. *Column 2, Component/Assembly.* Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. *Column 3, Maintenance Functions.* Column 3 lists the functions to be performed on the item listed in column 2. (For detailed explanation of these functions, see paragraph B-2).

d. *Column 4, Maintenance Category.* Column 4 specifies, by the listing of a “worktime” figure in the appropriate subcolumn(s), the category of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate “worktime” figures will be shown for each category. The number of task-hours specified by the “worktime” 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 categories are as follows:

C Operator/Crew
O Organizational Maintenance
F Direct Support Maintenance
H General Support Maintenance
D Depot Maintenance

e. *Column 5, Tools and Equipment.* Column 5 specifies by code, those common tools sets (not individual tools), and special tools, TMDE, and support equipment required to perform the designated function.

f. *Column 6, Remarks.* This column shall, when applicable, contain a letter code, in alphabetic order, which shall be keyed to the remarks in Section IV.

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, Section III.

a. *Column 1, Reference Code.* The tool and test equipment reference code correlates with a code used in the MAC, Section II, Column 5.

b. *Column 2, Maintenance Category.* The lowest category of maintenance authorized to use the tool or test equipment.

c. *Column 3, Nomenclature.* Name or identification of the tool or test equipment.

d. *Column 4, National Stock Number.* The National stock number of the specific tool or test equipment.

e. *Column 5, Tool Number.* The manufacturer's part number.

B-5. EXPLANATION OF COLUMNS IN REMARKS, Section IV

a. *Column 1, Reference Code.* The code recorded in column 6, Section II.

b. *Column 2, Remarks.* This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL C	O	F	H	D	(5) TOOLS AND M	(6) REMARKS
01	**COMPRESSOR DRIVE**								
	Guard Assembly, Belt	Inspect	0.1						
		Replace		0.2					
		Repair		0.2					
	Belts, V, Matched Set	Inspect	0.1						
		Adjust		0.3					
		Replace		0.3					
	Pulley and Hub (Engine Drive)	Inspect	0.1						
		Replace		0.2					
02	**FUEL SYSTEM**								
	Tank, Lines and Fittings	Inspect	0.1						
		Service		0.2					
		Repair		0.3					
		Replace		0.2					
03	**CAPACITY CONTROL**								
	Unloader Assembly	Inspect							
		Replace							
		Inspect							
		Replace							
	Pneumatic Cylinder, Signal to Engine Governor	Inspect							
		Replace							
04	**COMPRESSOR ASSEMBLY**	Inspect							
		Service							
		Replace						T1	
		Repair						T2	
		Overhaul				.0		T2, T3	
	Air Cleaner	Inspect							
		Replace							
	Cylinder Heads, Intake and Exhaust Valves	Inspect						T1	
		Replace						T1	
	Flywheel	Inspect							
		Replace						T1	
		Replace						T2	
	Pistons, Breather Tube & Cylinders	Inspect						T2	
		Replace						T2	
	Crankshaft, Connecting Rod, Oil Seals Bushing & Crankcase	Inspect						T2	
		Replace						T2	

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL C	O	F	H	D	(5) TOOLS AND EQUIPMENT	(6) REMARKS
05	ENGINE ASSEMBLY	Inspect	0.2						
		Service		0.2				T1	
		Test		0.3				T1	
		Replace		0.8				T1, T4	A
		Repair			2.0			T2	
		Overhaul				6.0		T2, T3	
	Fuel Filter	Inspect	0.1						
		Replace		0.2				T1	
	Air Cleaner Assembly	Inspect	0.1						
		Service	0.1						
		Replace	0.1						
		Repair		0.2				T1	B
	Lubrication System								
	Oil Gage Rod & Oil Filler Tube	Inspect	0.1						
		Replace		0.3				T1	C
	Carburetor & Fuel Pump								
	Fuel Pump, Lines & Fittings	Inspect		0.1				T1	
		Test		0.3				T1	
		Replace		0.3				T1	
	Carburetor	Inspect		0.1				T1	
		Adjust		0.2				T1	
		Replace		0.3				T1	
		Repair		0.5				T1	D
	Exhaust System								
	Muffler	Inspect		0.1					
		Replace		0.2				T1	
	Starter/Blower Housing								
	Starter, Manual	Inspect		0.1				T1	
		Replace		0.3				T1	
	Clutch, Assembly	Inspect		0.1				T1	
		Replace		0.3				T1	
	Ignition System								
	Magneto (Armature Assembly) & Spark Plug Cable	Inspect		0.2				T1	
		Test		0.4				T1	
		Adjust		0.2				T1	
		Replace		0.5				T1	E
	Spark Plug	Inspect		0.2				T1	
		Replace		0.3				T1	
	Flywheel	Inspect		0.2				T1	
		Replace		0.5				T1	
	Governor Control & Linkage	Inspect		0.1					
		Adjust		0.1				T1	
		Replace		0.2				T1	

Section II. MAINTENANCE ALLOCATION CHART - Continued

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) M	T	I	CE LE	EL	(5) TOOLS AND EQUIPMENT	(6) REMARKS
			C	O		H	D		
	Governor Gear	Inspect			1			T2	
		Replace			4			T2	
	Cylinder Head, Crankcase & Cylinder	Inspect							
		Service						T1	
		Test						T1	
		Replace						T1	
		Repair			4			T2	
	Breather & Intake Manifold	Inspect			1				
		Test			2				
		Replace			5			T2	
	Valves & Springs	Inspect			4			T2	
		Service			3			T2	
		Test			5			T2	
		Replace			4			T2	
		Repair			3			T2	
	Cylinder Head	Inspect							
		Replace						T2	
		Repair			4			T2	
	Piston & Rod Assembly	Inspect			4			T2	
		Replace			7			T2	
		Repair			6			T2	
	Camshaft & Tappets	Inspect			2			T2	
		Replace			8			T2	
	Crankshaft with Bearings	Inspect			2			T2	
		Replace			8			T2	
	Crankcase & Oil Seals	Inspect			2			T2	
		Replace			0			T2	
								T2	
06	AIR DISCHARGE SYSTEM								
	Inflator gage	Inspect	0						
		Replace		0.				T1	
	Air Hose	Inspect	0						
		Replace		0.				T1	
	Globe Valve	Inspect	0						
		Replace		0.				T1	
07	AIR RECEIVER SYSTEM								
	Pressure gage	Inspect	0						
		Replace		0.				T1	
	Safety Valve	Inspect	0					T1	
		Replace		0.				T1	
	Drain Cock	Inspect		0.				T1	
		Replace		0.					
	Air Tank	Inspect	0						
		Replace		5.				T1	

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) REFERENCE CODE	(2) MAINTENANCE CATEGORY	(3) NOMENCLATURE	(4) NATIONAL/NATO STOCK NUMBER	(5) TOOL NUMBER
T1	C, O, F, H	Tool Kit, General Mechanic, Automotive	5180-00-177-7033	
T2	F	Shop Set, Automotive Repair Field Maintenance, Basic	4910-00-754-0705	
T3	H	Shop Set, Machine: Field Maintenance, Heavy	3470-00-754-0738	
T4	O	Shop Equipment, Automotive Maintenance & Repair: Organization, Common NO. 1	4910-00-754-0654	

Section IV. REMARKS

REFERENCE CODE	REMARKS
A	Oil drain tube and elbow must be removed and installed on replacement engine.
B	Repair by replacement.
C	Cover must be removed.
D	Throttle stop spring and screw.
E	Readjustment of ignition system required.

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

C-1. SCOPE.

This appendix lists components of end item and Basic Issue Items (BII) 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/tern.* This listing is for information 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. Illustrations are furnished to assist you in identifying the items.

b. *Section ///. Basic Issue Items.* These are the minimum essential items required to place the Air Compressor in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the Air Compressor during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement Bn, based on TOE/MTOE authorization of the end item.

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.

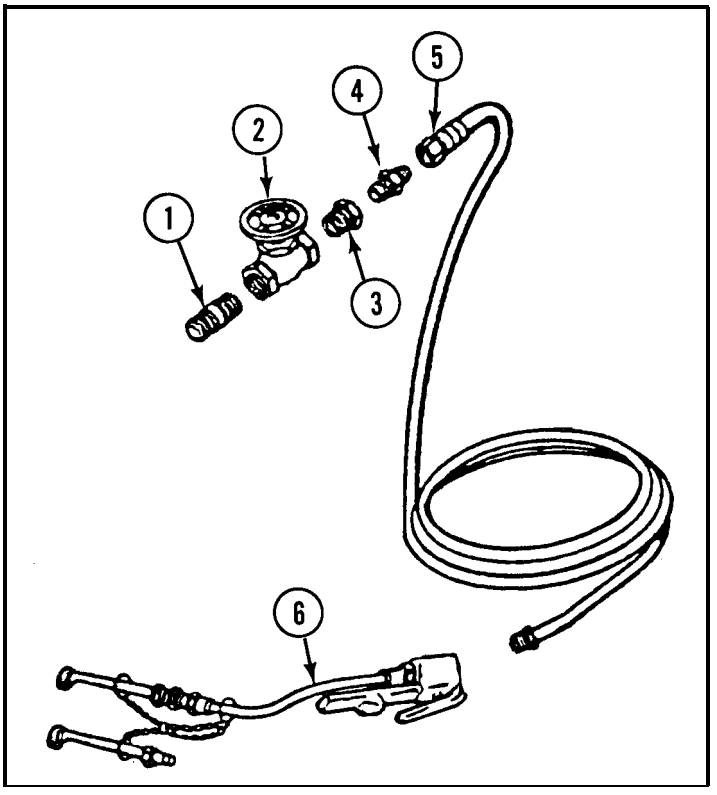
b. Column (2) - National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

c. Column (3) - Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.

d. Column (4) - Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e. g., ea, in, pr).

e. Column (5) - Quantity Required (Qty. Rqr). Indicates the quantity of the item authorized to be used with/on the equipment.

Section II. COMPONENTS OF END ITEM



(1) Illus Number	(2) National Stock Number	(3) Description FSCM and Part Number	Usable On Code	(4) U/M	(5) Qty rqr
1		Nipple, Close, Pipe (19272) 5-00-409-8		EA	1
2		Valve, Globe (19272) 11-6319		EA	1
3		Reducer (19272) 5-08-24-8		EA	1
4		Adapter (19272) 20-4400-11.		EA	1
5		Hose Assembly, Air (19272) 50-6741		EA	1
6		Assembly, Inflator Gage (19272) 11-6208		EA	1

SECTION III. BASIC ISSUE ITEMS

(1) ILLUS. NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM & PART NUMBER	(4) U/M	(5) QTY. RQR.
		TM 5-4310-376-14 **Operator's, Organizational, Direct Support, and General Support Maintenance Manual Compressor Reciprocating, GED, 15 CFM, 175 PSI Model 50-8640**		

APPENDIX D

ADDITIONAL AUTHORIZATION LIST

D-1. SCOPE.

This appendix lists additional items you are authorized for the support of the Compressor.

D-2. GENERAL

This list identifies items that do not have to accompany the 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 the equipment. The items are listed in alphabetical sequence by item name under the type document (i.e., CTA, MTOE, TDA, or JTA) which authorizes the item(s) to you

(1)	(2)		(3)	(4)
	DESCRIPTION			
NATIONAL STOCK NUMBER	FSCM & PART NUMBER	USABLE ON CODE	U/M	QTY AUTH
4210-00-555-8837	EXTINGUISHER, FIRE		EA	1

APPENDIX E

EXPENDABLE 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 compressor. These are authorized to you by CTA50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic 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 soft bristled brush, item 1, Appendix E).

b. *Column (2) - Level.* This column identifies the lowest level of maintenance that required the listed item.

C - Operator/Crew

O - Organizational Maintenance

F - Direct Support Maintenance

G - General Support Maintenance

c. *Column (3) - National Stock Number.* This is the national stock number assigned to the item. Use it to request or requisition the item.

d. *Column (4) - Description.* Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Federal Supply Code for Manufacturer (FSCM) in parentheses, if applicable.

e. *Column (5) - Unit of Measure (U/M).* Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr.). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1.	C	6850-00-274-5421	Drycleaning Solvent, P-D-680	gal.
2.	C	7920-00-205-1711	Rag, Wiping	lb.
3.	C	9150-00-190-0804	GAA Grease, Auto/Artillery MIL-G-10924 (81349)	lb.
4.	C	9150-00-181-9858	Lubricating Oil, Engine OE MIL-L-2104 (81349)	gal.
5.	C		Mineral Oil	gal.
6.	C	8415-00-753-6553	Gloves, Toxicological Agents Protective	pair
7.	O	MS20995C32	Safety Wire	ft.
8.	C	8020-00-263-3873	Brush, Medium, Oval	ea.

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APPENDIX F

ILLUSTRATED LIST OF MANUFACTURED ITEMS

This appendix includes instructions for making items authorized to be manufactured or fabricated at general support maintenance.

All parts and bulk materials needed for manufacture on the items are listed by part number or specification number in a tabular list on the illustration.

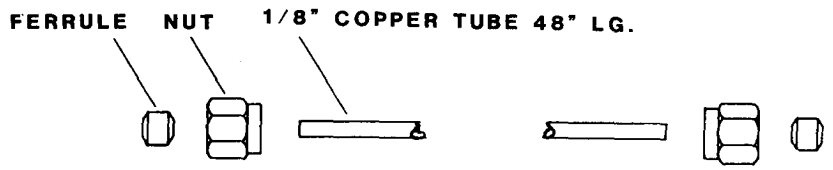

Figure F-1. Control Tube Fabrication Details

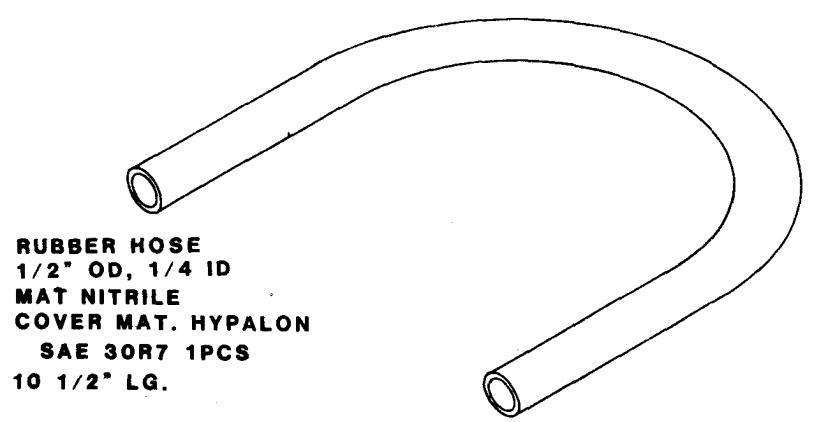

Figure F-2. Fuel Line Fabrication Details

APPENDIX G

TORQUE VALUES

Section I. GENERAL

This appendix list the torque values used in tightening major components of the Air Compressor.

Section II TORQUE VALUES

TORQUE VALUE TABLE

		National Coarse Grade 1 & 2		National Coarse Grade 5	
Dia.	Pitch	Ft. Lbs.	Meter Kilograms	Ft. Lbs.	Meter Kilograms
1/4"	20	6	.83	8	1.1
5/16"	18	11	1.52	16	2.21
3/8"	16	18	2.49	30	4.1
7/16"	14	29	4.0	48	6.6
1/2"	13	44	6.1	72	10.0
9/16"	12	63	8.7	105	14.50
5/8"	11	88	12.2	144	20.0
3/4"	10	144	20.0	240	33.2

NOTE

Values given are for threads lubricated with light oil. Reduce torque values by 20% if threads are lubricated with “Never-Seez”.

Engine Assembly Component	Foot-pounds	Meter Kilograms	Newton meter
Starter Clutch	65	9.0	88.1
	Inch-pounds		
Cylinder head Bolts	165	1.9	18.65
Connecting Rod Bolts	190	2.19	21.47

GLOSSARY

AC	Alternating current
Attn	Attention
AR	Army regulation
C	Centigrade
cc	Cubic centimeter
CFM	Cubic feet per minute
cm	Centimeter
DA	Department of the Army
dc	Direct current
F	Farhenheit
kg	Kilogram
lbs	Pounds
M	Monthly
MAC	Maintenance allocation chart
mkp	Meter kilogram pressure
mm	Millimeter
No.	Number
Nm	Newton meters
NSN	National stock number
Para	Paragraph
PMCS	Preventive maintenance checks and services
P/N	Part number
PSI	Pounds per square inch
Q	Quarterly
RPM	Revolutions per minute
TM	Technical manual
V	Volts
W	Weekly

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INDEX (Continued)

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COA, 3d ENGINEER BN
FT. LEONARDWOOD, MO 63108

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 5- 4310-376-14	12 July 1985	Compressor, Reciprocating, 15 CFM

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
6	2-1 a			In line 6 of paragraph 2-1a the manual states the engine has 6 Cylenders. The engine on my set only has 4 Cylenders. Change the manual to show 4 Cylenders.
B1		4-3		Callout 16 on figure 4-3 is pointing at a bolt. In key to figure 4-3, item 16 is called a shim - Please Correct one or the Other.
125	line 20			I ordered a gasket, item 19 on figure B-16 by NSN 2 910-00-762-3001. I got a gasket but it doesn't fit. Supply says I got what I ordered, so the NSN is wrong. Please give me a good NSN

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
JOHN DOE, PFC (268) 317-7111

SIGN HERE: John Doe
JOHN DOE

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ATTN: AMSTR-MPS
4300 GOODFELLOW BOULEVARD
ST. LOUIS, MO 63120-1798

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 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 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 acres
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

PIN: 058577-006