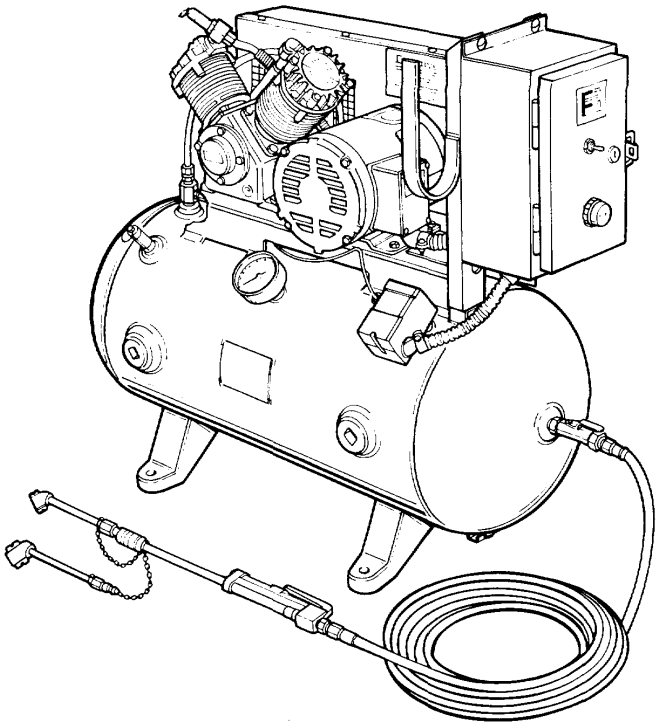
TECHNICAL MANUAL

OPERATOR'S, UNIT, AND INTERMEDIATE DIRECT SUPPORT MAINTENANCE MANUAL



COMPRESSOR, RECIPROCATING, AIR:
ELECTRIC MOTOR DRIVEN
5 CFM, 175 PSI
C & H MODEL 20-918
NSN 4310-01-252-3957

HEADQUARTERS, DEPARTMENT OF THE ARMY
30 SEPTEMBER 1987

SAFETY WARNINGS

WARNING

Always disconnect electric power from the air compressor before starting any work on it. The air compressor could start up accidentally and could cause serious injury to maintenance personnel.

WARNING

Never attempt to service any of the air compressor components until the unit is relieved of all air pressure through the drain cock on bottom of tank.

WARNING

Lethal voltages are present in the circuitry of the air compressor. Disconnect power from the compressor before starting any repair work.

WARNING

Do not weld the air receiver tank to repair leaks.

WARNING

Do not operate the air compressor with the belt guard removed.

WARNING

Do not operate in a tilted position.

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

Operation of this equipment presents a noise hazard to personnel in the area. If the noise level exceeds the allowable limits for unprotected personnel, wear ear muffs or earplugs which were fitted by a trained professional.

WARNING

Make certain any lifting device used has a capacity equal to the weight being lifted. Failure to observe this precaution could result in injury or death to personnel and damage to equipment.

WARNING

Before starting motor or operating any of the components, be sure that no loose bars, tools or 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 have hanging objects (pull-strings, test wires, etc.) while inspecting or servicing machine in operation. Rotating motor, shafts, and pulleys may entrap personnel and cause serious injury.

WARNING

Drycleaning solvent, P-D-680, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact by wearing rubber or non-porous gloves when handling the solvent or material wet with drycleaning solvent. Wash hands immediately after exposure with soap and water and use a lanolin based skin cream to prevent skin drying. Do not use near open flame or excessive heat. Flash point of solvent is 100°F (38°C). Do not work with solvent in a closed room. Be sure there is good ventilation or the solvent vapors will build up in the air and become a poisonous mixture which can cause physical injury or even death.

WARNING

Eye protective equipment must be worn when removing rust and loose paint.

WARNING

Clean components with compressed air no greater than 30 psi (2.11 kgcm^2). Eye protection must be worn when cleaning with compressed air.

TECHNICAL MANUAL
TM 5-4310-385-13

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 30 September 1987

OPERATOR'S, UNIT AND INTERMEDIATE DIRECT SUPPORT MAINTENANCE MANUAL FOR COMPRESSOR, RECIPROCATING, AIR: ELECTRIC MOTOR DRIVEN 5 CFM, 175 PSI NSN 4310-01-252-3957

Approved for public release. Distribution is unlimited.

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, D.A. Form 2028 (Recommended Changes to Publications and Blank Forms), or D.A. Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Troop Support ATTN: AMSTR-MCTS, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. A reply will be furnished directly to you.

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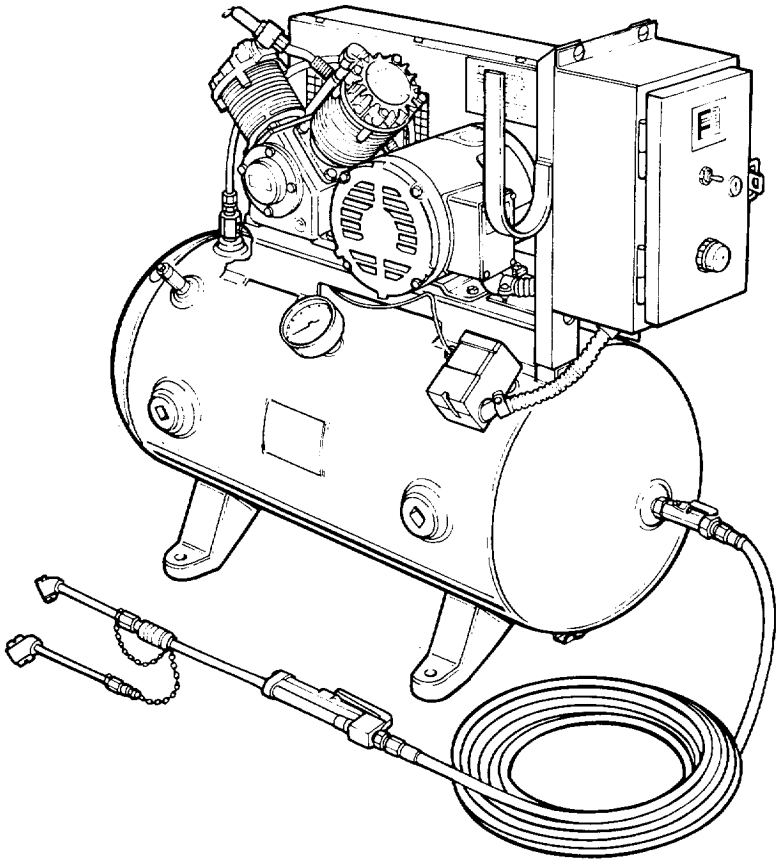
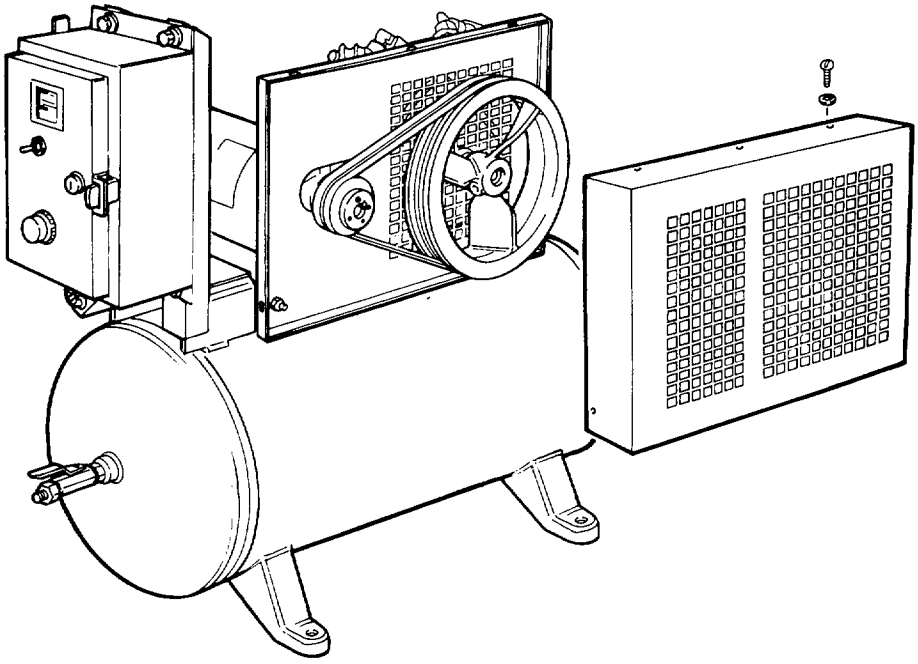


STARTER SIDE VIEW



BELT GUARD VIEW

CHAPTER 1. INTRODUCTION

SECTION I. GENERAL INFORMATION

1-1. ORIENTATION VIEWS. The following two illustrations are provided to orient manual user with the overall air compressor and specific components.

1-2. SCOPE.

a. *Type of Manual:* Operator's, Unit, and Intermediate Direct Support Maintenance Manual.

b. *Model Number and Equipment Name:* Air Compressor, Reciprocating, Electric Motor Driven, 5 cfm, 175 psi, Model 20-918.

c. *Purpose of Equipment:* Stationary compressor used as a source of compressed air in normal operations at motor pools and vehicle maintenance shops.

NOTE

The term "compressor" will refer to the overall machine and the term "compressor unit" will refer to the specific air pump functioning as a compressor unit.

NOTE

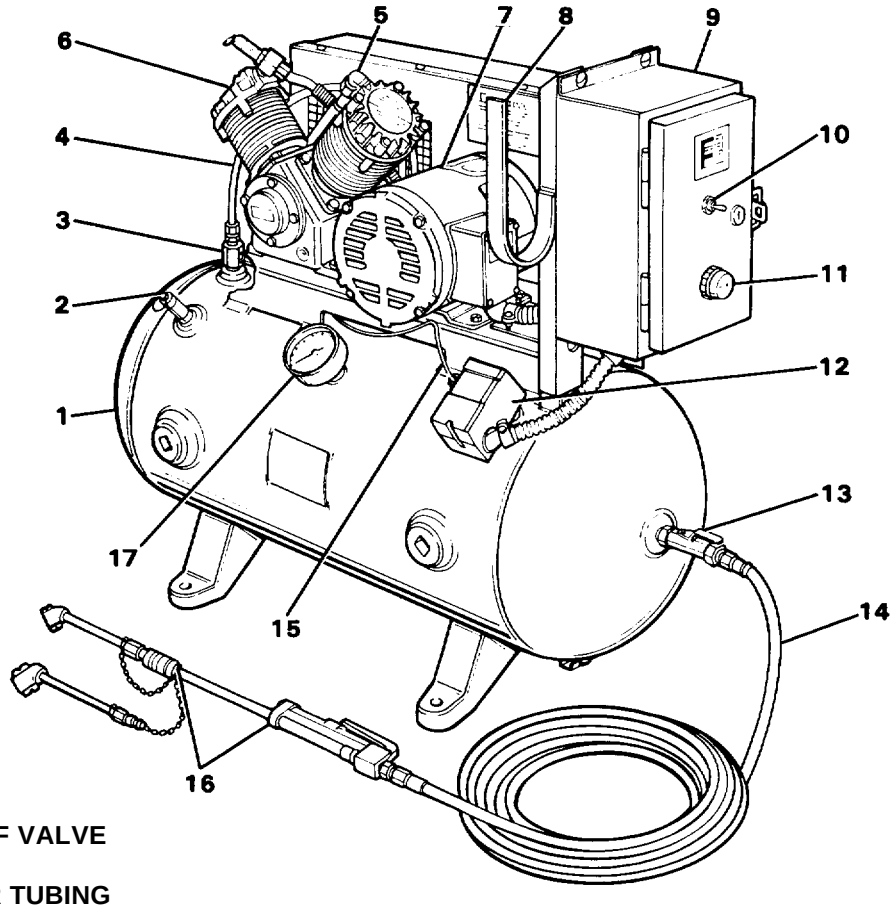
To help find components and eliminate confusion, certain overall views of the air compressor will be called Belt Guard View and Starter View instead of "front" or "rear"'.

1-3. MAINTENANCE FORMS AND RECORDS. Equipment maintenance forms and procedures for their use are contained in DA PAM 738-750 update, The Army Maintenance Management System (TAMMS).

1-4. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR'S). If your air 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 like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at Commander, Headquarters, U.S. Army Troop Support Command, ATTN: AMSTR-QX, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. We will send you a reply.

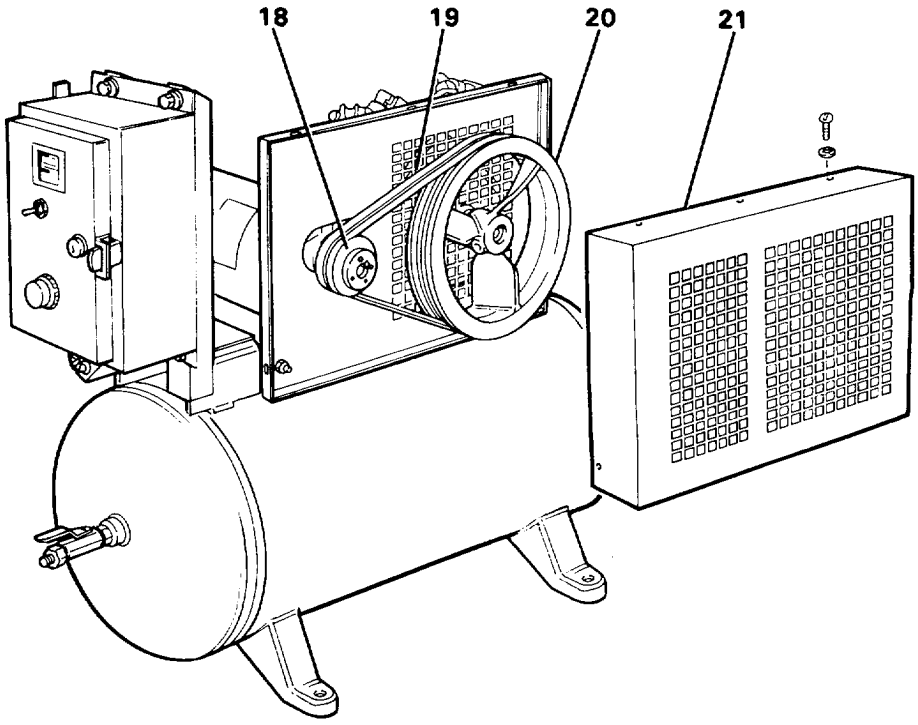
1-5. WARRANTY information. All components of the air compressor are warranted by C&H Distributors Inc. for a period of 12 months. The warranty starts on the date found in block 23, DA Form 2408-9, in the logbook. Report all defects in material or workmanship to your supervisor who will take appropriate action through your organizational maintenance shop.

1-6. DESTRUCTION OF ARMY MATERIAL TO PREVENT ENEMY USE. Refer to TM 750-244-3, Procedures for Destruction of Equipment to Prevent Enemy Use.



1. AIR TANK
2. SAFETY RELIEF VALVE
3. CHECK VALVE
4. AFTERCOOLER TUBING
5. INTERCOOLER TUBING
6. COMPRESSOR UNIT
7. ELECTRIC MOTOR
8. HOSE RACK
9. MOTOR STARTER
10. ON/OFF SWITCH
11. RESET BUTTON
12. PRESSURE SWITCH
13. SHUTOFF VALVE
14. AIR HOSE
15. UNLOADER LINE
16. INFLATOR VALVE ASSEMBLY
17. PRESSURE GAUGE
18. DRIVE PULLEY
19. V-BELTS
20. FLYWHEEL
21. BELT GUARD

Compressor. Starter Side View



Compressor, Belt Guard View

SECTION II. EQUIPMENT DESCRIPTION

1-7. PURPOSE OF THE AIR COMPRESSOR. An electric motor driven compressor for tools, tire inflation and general shop use.

1-8. CAPABILITIES AND FEATURES.

a. Two stage compressor provides compressed air at 5 cfm and 175 psi.

b. Electric motor driven.

c. Magnetic motor starter with thermal relay protects motor against overload.

d. Pressure switch provides for automatic compressor cut-in at 160 psi and cut-out at 190 psi.

e. Tank safety relief valve to prevent damage to compressor and injury to personnel.

f. Automatic unloading of compressor unit upon machine shutdown.

g. Air discharge system with inflator gage can be used to directly inflate tires to proper pressure.

h. Tank mounted pressure gage gives constant reading of air pressure in tank.

1-9. DESCRIPTION OF COMPRESSOR COMPONENTS.

a. *Air Tank (1).* A 20 gallon air tank with welded boss openings for check valve, pressure gauge, pressure switch, outlet valve, and safety relief valve. Has a welded platform base for electric motor and compressor mounting.

b. *Safety Relief Valve (2).* Tank mounted valve with relief setting of 200 psi. Pull ring for manual check of operation.

c. *Check Valve (3).* Spring and poppet valve that prevents air from returning to the compressor head from the tank. Has threaded opening for unloader line fitting.

d. *Aftercooler Tubing (4).* Air discharge tubing from high pressure cylinder head to check valve and air tank.

e. *Intercooler Tubing (5).* Finned copper tubing between the high and low pressure cylinder heads. Provides heat dissipation between the high and low pressure cylinder heads.

f. *Compressor Unit (6).* A two stage air cooled pump driven by pulleys and V-belts. Rated at 5 cfm at 175 psi.

g. *Electric Motor (7).* Three phase, 2 hp induction motor. Shaft mounted pulley powers larger compressor flywheel. Wired in series with pressure switch and magnetic motor starter.

h. *Hose Rack (8).* Welded to motor starter frame to provide hose storage.

i. *Motor Starter (9).* Contacts are magnetically closed when power is applied. Contains a thermal or melting relay which opens the circuit when a current overload is sensed. Enclosure contains ON/OFF switch (10) and RESET button (11).

j. *Pressure Switch (12).* Controls operating pressure range between 160 psi (cut-in) and 190 psi (cut-out) with a differential of 30 psi. Diaphragm senses operating pressure and opens and closes contacts. Adjustable pressure setting. Contains a pressure relief fitting for the unloader line.

k. *Shutoff Valve (13).* Hand operated globe valve to shut off air flow from tank to air hoses.

l. *Air Hose (14).* 50 ft. hose couples to shutoff valve and inflator gauge assembly. Stores on tank hose rack.

m. *Unloader Line (15).* Runs between check valve and pressure switch. Upon compressor shutdown, provides release of air pressure in cylinder heads and aftercooler for easier startup.

n. *Inflator Valve and Gauge Assembly (16).* Connected to 50 ft. air hoses. Hand lever releases air pressure. Sight glass provided for inflation reading. Quick connect couplings between gauge and inflator valves (one regular tire valve, one special application valve).

o. *Pressure Gauge (17).* Provides continuous reading of tank pressure between 0-200 psi.

p. *Drive Pulley (18).* Mounted on electric motor shaft with square key and setscrew to power compressor.

q. *V-Belts (19).* Two belts provides coupling between drive pulley and compressor flywheel.

r. *Flywheel (20).* Mounted on compressor crankshaft with square key and setscrew. Three fan blades provide air cooling of cylinder heads, intercooler and aftercooler.

s. *Belt Guard (21).* Two piece metal frame provides enclosure of drive pulley, V-belts, and flywheel. Vented for proper air flow.

1-10. EQUIPMENT DATA.

Air Compressor
- Manufacturer ..... C & H Distributors, Inc.
- Model 20-918
- Output ..... 5 cfm at 175 psi
- Type ..... Electric motor driven, tank mounted
- Length ..... 36 in. (91 cm)
- Width ..... 13 in. (33 cm)
- Height ..... 31.5 in. (80 cm)
- Weight, net ..... 180 lbs. (81.6 kg)
- Weight, shipping ..... 250 lbs. (113.4 kg)

Air Compressor Pump
- Manufacturer ..... Champion
- Model ..... CAVCHM
- Type ..... V-2, two stage
- Bore and Stroke
  - Low pressure stage ..... 2-5/8 x 2 in. (6.68 x 5.10 cm)
  - High pressure stage ..... 1-3/4 x 2 in. (4.45 x 5.10 cm)
- Pumping rate ..... 5 cfm at 175 psi
- Air filter element ..... Foam filter with felt silencer

Electric Motor
- Manufacturer ..... Baldor Electric Corporation
- Model MM3155
- RPM 3450
- Horsepower 2
- Input requirements 208-230/460
- Full load current 5.9-5.6/2.8
- Phase ..... Three
- Duty ..... Continuous

Air Tank
- Pressure limit ..... 200 psi (14 kPa)
- Capacity ..... 20 gal. (75 L)

Air Hose
- Manufacturer ..... C & H Distributors, Inc.
- Length ..... 50 feet (15 m)
- Maximum pressure ..... 200 psi (14 kPa)
- Inflator gage ..... Milton Industries, Inc.

Magnetic Starter
- Manufacturer ..... Furnas Electric Co.
- Model No. 14CP32AD
- Enclosure ..... NEMA 12
- Phase ..... Three
- Type ..... Magnetic
- Overload relay ..... Melting alloy

Pressure Switch
- Manufacturer ..... Furnas Electric Co.
- Model 69MC8Y2A
- Type ..... Diaphragm operated
- Cut-in pressure (adjustable) ..... 160 psi
- Cut-out pressure (adjustable) ..... 190 psi
- Differential (adjustable) ..... 30-45 psi

Safety Relief Valve
- Manufacturer ..... Control Devices, Inc.
- Model SV25-200
- Relief pressure ..... 200 psi, factory set non-adjustable

Safety Interstage Valve
- Manufacturer ..... Control Devices, Inc.
- Relief pressure ..... 60 psi, factory set non-adjustable

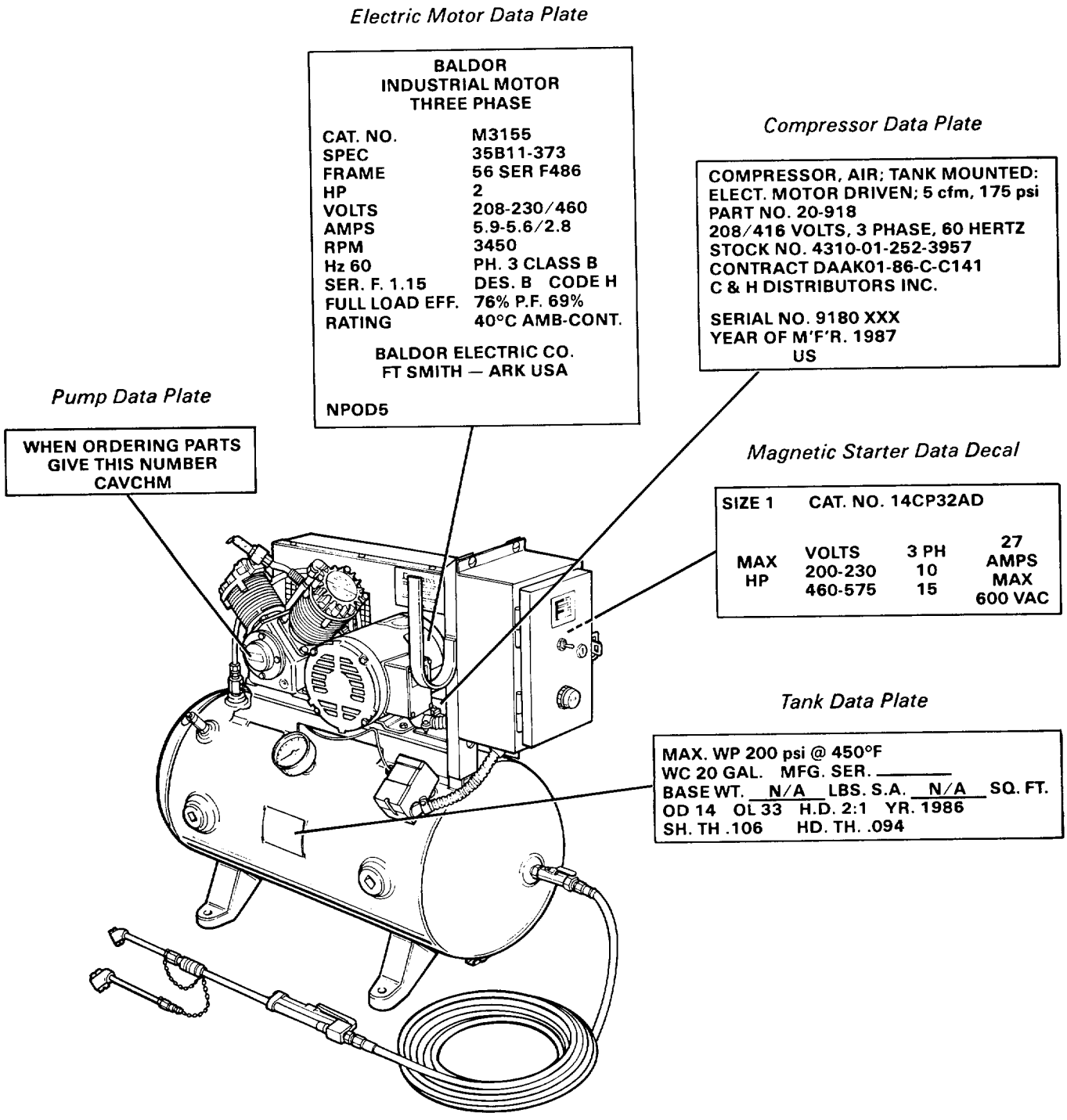
Pressure Gage
- Range ..... 0-300 psi

Check Valve
- Manufacturer ..... Control Devices, Inc.
- Type ..... Spring and disc

Electric Motor Pulley
- Manufacturer ..... Browning
- Model ..... 2AK 28 x 5/8
- Type ..... Two-groove

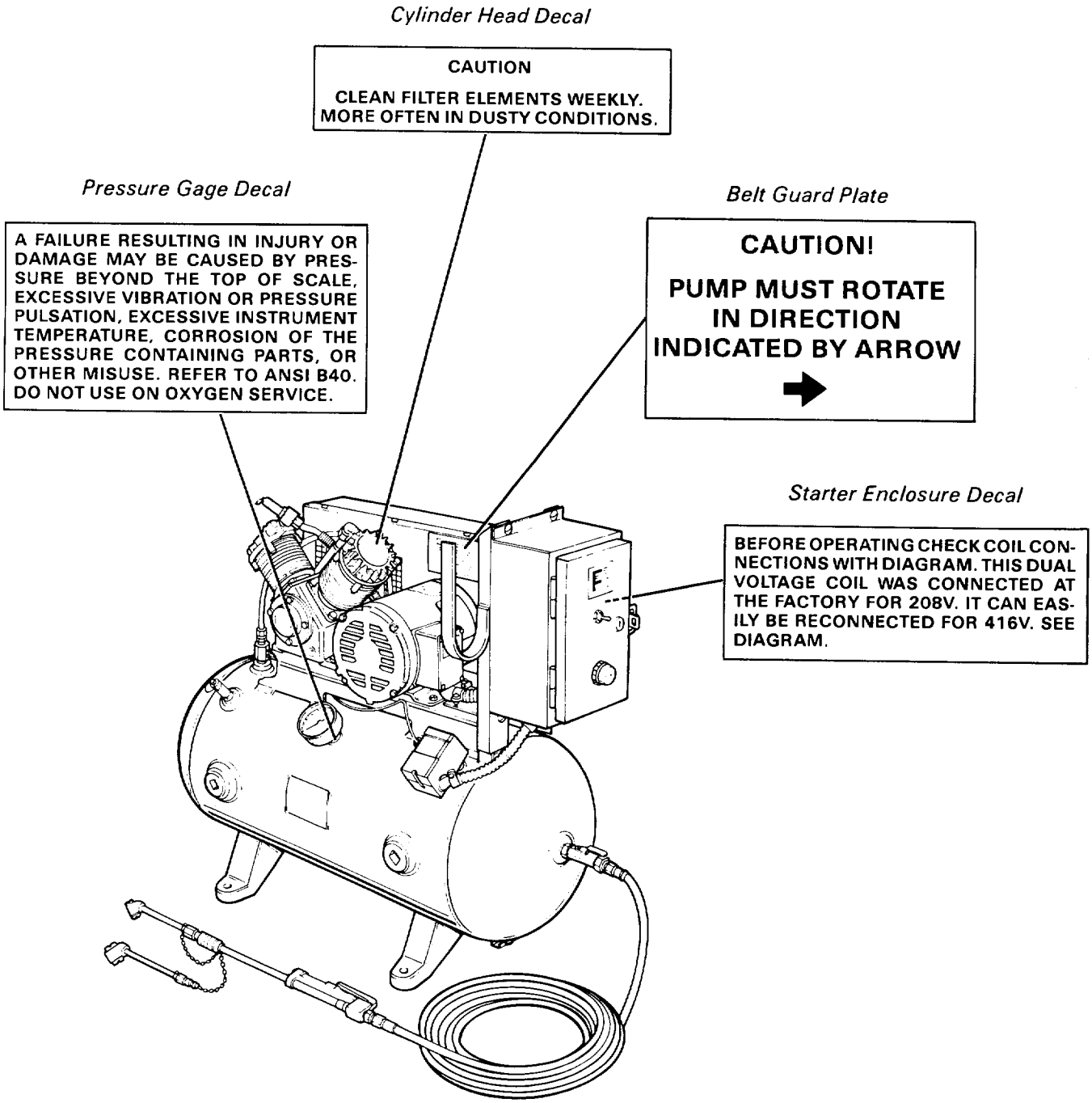
V-Belts
- Model A-40

1-11. DATA PLATE LOCATION.



Data Plate Location

1-12. WARNING LOCATION.



Warning Location

SECTION III. TECHNICAL PRINCIPLES OF OPERATION

1-13. GENERAL. This section contains a description of how the air compressor works. The overall system was described in paragraph 1-9. The operation of the compressor unit is described in further detail in paragraph 1 -14, and operation of the electric motor is described in paragraph 1-15, and electric motor controls are described in paragraph 1-16.

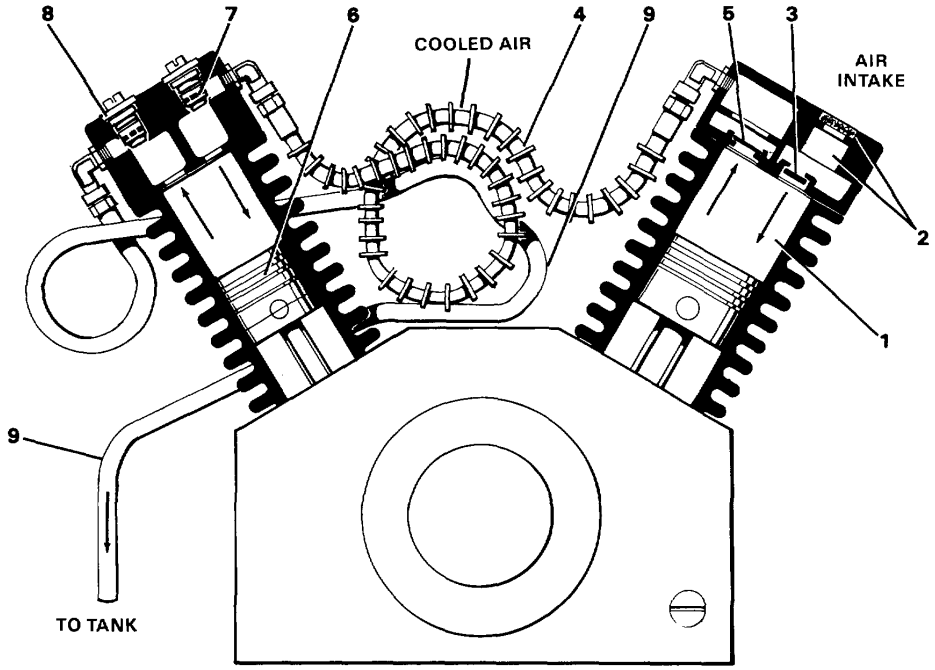
1-14. OPERATION OF THE AIR COMPRESSOR UNIT

a. The air compressor is a two stage air cooled type compressor powered by the electric motor through pulley, belts and flywheel.

b. The cycle starts with the low pressure piston (1) at the top of its stroke. When the piston moves down, it draws air through the air filter and silencer (2) and inlet valve blade (3) into the cylinder. The air filter keeps dirt out of the cylinder head.

c. On the upstroke, inlet valve blade (3) closes and the low pressure piston (1) pushes air out into the intercooler (4) through the exhaust valve blade (5). Compressing the air heats it up. The finned intercooler tubing (4) gets rid of some of that heat before passing the air on to the high pressure head. The intercooler is cooled by air drawn by the flywheel fan blades.

d. The high pressure stage works the same as the low pressure stage except that the high pressure piston (6) goes up when the low pressure piston (1) goes down. The low pressure piston draws air in while the high pressure piston pushes air out.



COMPRESSOR UNIT

1. LOW PRESSURE (LP) PISTON
2. AIR FILTER
3. LP INTAKE VALE
4. INTERCOOLER
5. LP EXHAUST VALVE
6. HIGH PRESSURE (HP) PISTON
7. HP INTAKE VALVE ASSEMBLY
8. HP EXHAUST VALE ASSEMBLY
9. AFTERCOOLER

Operation of Compressor Unit

e. Compressed air in the high pressure cylinder enters through intake valve assembly (7) and exits (at high pressure) through the exhaust valve assembly (8) to the aftercooler (9).

f. The aftercooler tubing (9) is looped around the back of the compressor to allow air cooling from flywheel fan blades. Air passes from the aftercooler through a check valve to the air tank.

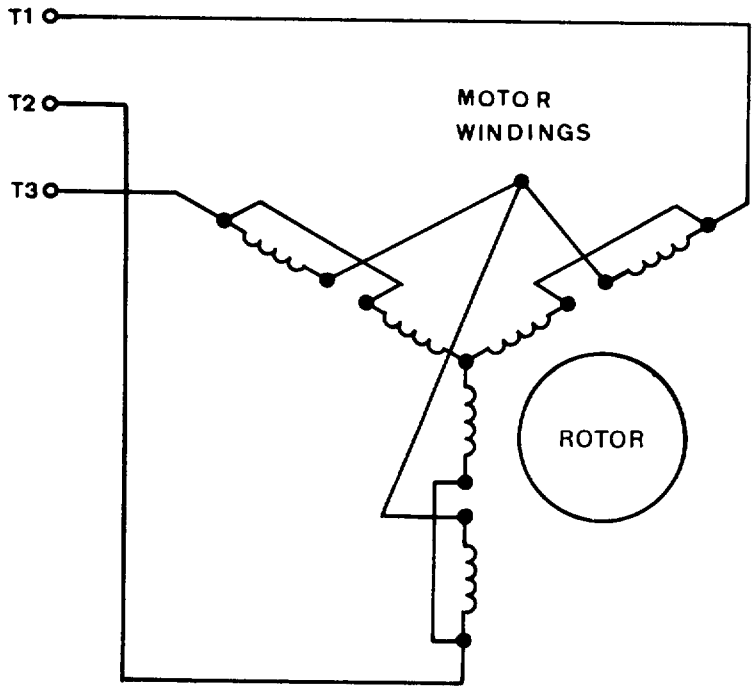
1-15. OPERATION OF THE ELECTRIC MOTOR.

a. The electric motor is a three phase induction motor. The operation of a three phase induction motor depends on two basic parts, the stator or stationary windings and the rotor.

b. The rotor does not have windings, but has metal bars pressed into its frame which act as conductors of electrical current. The rotor does not have any external connections.

c. 208 VAC is connected across T1, T2, T3, which causes current to flow in the stator windings and produce a rotating magnetic field.

d. This magnetic field cuts across the conductors in the rotor, inducing currents in the conductors. This causes a repelling force between the conductors and the magnetic field and causes the rotor to turn.



Electric Motor Schematic

1-16. OPERATION OF ELECTRIC MOTOR CONTROLS.

a. The electric motor controls consist of the on/off switch, the reset button, the pressure switch, and the motor starter. These controls make the operation of the air compressor fully automatic.

NOTE

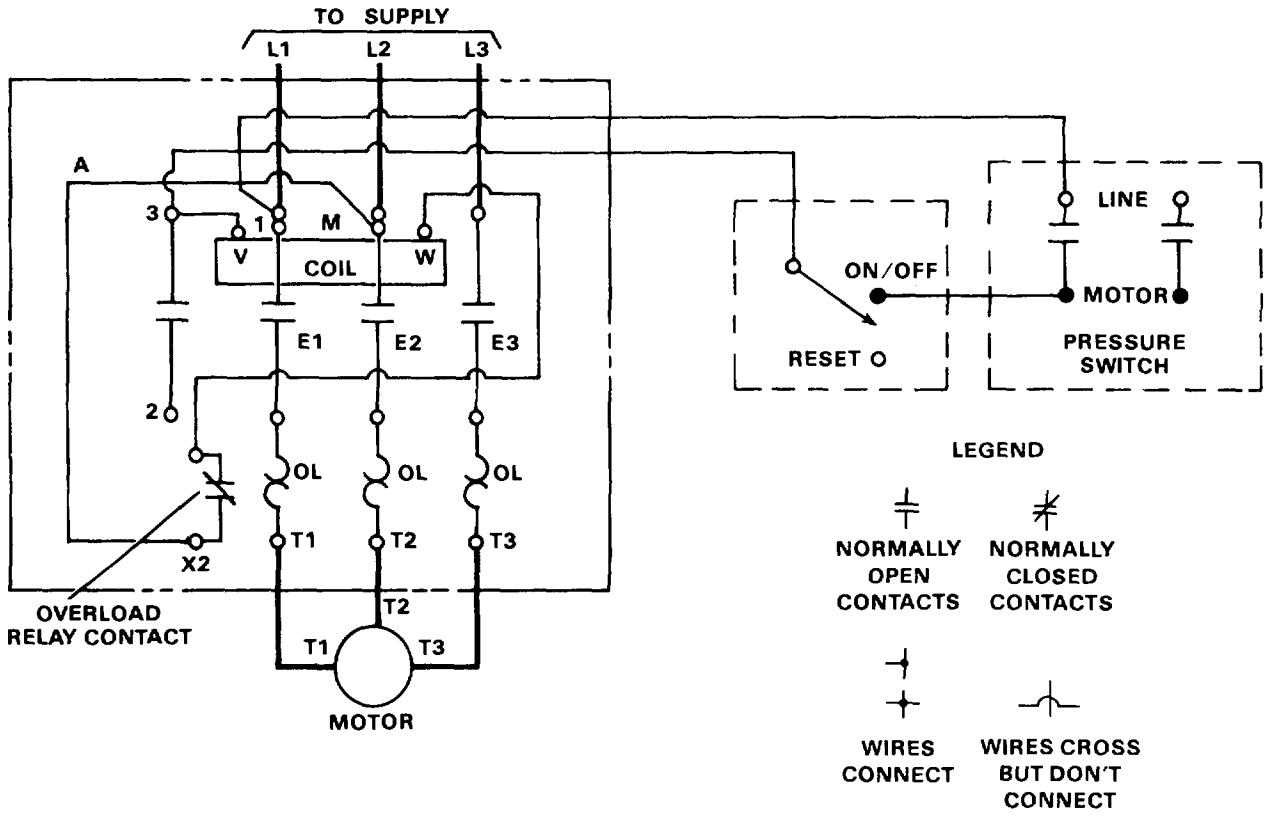
The overload (OL) in the diagram stands for the melting alloy or heat type device that opens when too much current is drawn by the motor such as an OL condition.

b. Power from the main switch comes into the starter at L1, L2, and L3. Connections to the motor are at T1, T2, and T3.

c. Normal operation pressure below 160 psi: when the on/off switch is turned on and the pressure in the tank is below 160 psi, the pressure switch contacts will be closed. Current will then go through the coil. The coil then pulls the normally open contacts E1, E2, and E3 closed. The circuit to the motor is completed and the motor starts.

d. Normal operation pressure above 190 psi: when the pressure goes above 190 psi, the contacts of the pressure switch open and stop the current through the coil. Contacts E1, E2, and E3 open and the motor stops.

e. Overload Condition: If the motor draws too much current, overload relay OL heats up and the normally closed contacts in series with the coil open up. This stops the current through the coil and contacts E1, E2, and E3 open. This stops the motor and prevents it from burning out. The relay has to be manually reset before the motor can be started again. This is accomplished by pushing the reset button which manually closes the overload relay contacts.



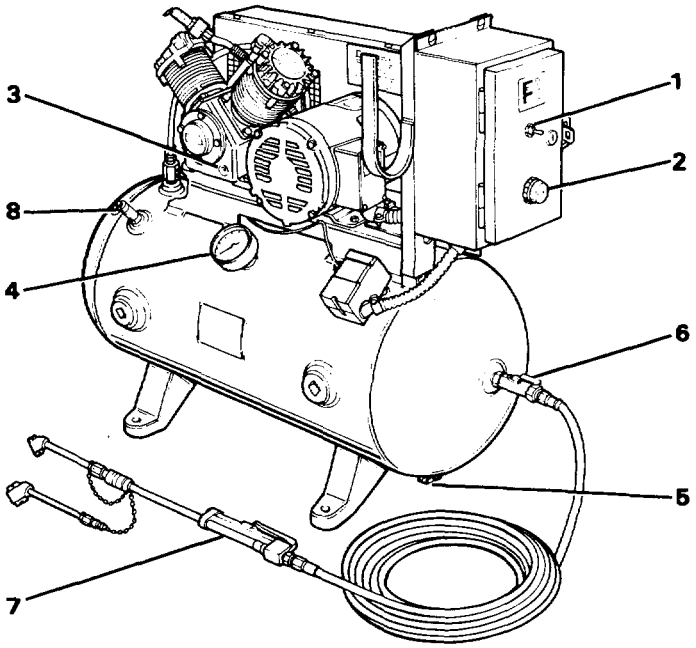
Electric Motor Controls Schematic

CHAPTER 2. OPERATING INSTRUCTIONS

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

2-1. OPERATOR'S CONTROLS AND INDICATORS.

Key	Name	Location	Function
On Location	Main power switch	Main switch box	Turns electric power to the compressor on and off.
1	ON/OFF switch	Starter enclosure	Start and stop compressor.
2	RESET button	Starter enclosure	Push to reset after overload condition has tripped the protective relay on magnetic starter.
3	Oil level sight glass	Compressor crankcase	Shows oil level in crankcase.
4	Pressure gage	Air tank	Shows air pressure in tank.
5	Drain cock	Bottom of air tank	To drain air and water from tank.
6	Shutoff valve	End of tank	To close off air tank when air hose has to be removed.
7	Inflator gage	End of hose	To pressurize pneumatic equipment and read air pressure.
8	Safety relief valve	Air tank	Releases air pressure in tank above 200 psi. Can be manually checked by pulling ring.



Operator's Controls and Indicators

SECTION II. OPERATOR'S PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-2. GENERAL. The operators PMCS table lists the inspections and service procedures to properly maintain the air compressor in good operating condition. Items covered here are appropriate for operator level only. Always keep in mind the CAUTIONS and WARNINGS before performing checks and services listed in the PMCS table.

2-3. PMCS TABLE FORMAT. The following columns make up the PMCS table.

a. *Item No.* Each maintenance check is identified by a separate item number. The item column will be used as a source of item numbers for the "TM Number" column on DA Form 2404 Equipment Inspection and Maintenance Worksheet, in recording results of PMCS.

b. *Interval*. The interval column of the PMCS table identifies when to perform the service check or maintenance. A dot (•) appears underneath the appropriate column(s) abbreviation:

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

c. *Item To Be Inspected/Procedure.* This column identifies how to perform the required checks and services. Carefully follow these instructions. If appropriate tools are not available to operator, organizational maintenance should perform the work. If your equipment does not perform as required, refer to Chapter 3, Section V. Troubleshooting for possible problems. Report any malfunctions or failures to organizational maintenance.

d. *Equipment Not Ready/Available If:* This column indicates when and why equipment cannot be used after completing the specific PMCS.

NOTE

The terms ready/available and mission capable refer to the same status: Equipment is on hand and is able to perform its combat missions (see DA PAM 738-750).

2-4. SPECIAL INSTRUCTIONS.

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

b. "Before Operation (B) " checks should be limited to those required for consecutive application by an assigned operator/crew. Perform "Weekly (W) " as well as "Before Operation (B) " PMCS if:

(1) Compressor has not been operated since the last weekly PMCS, or;

(2) Compressor is being operated for the first time.

c. Leakage definitions for operator/crew PMCS are classified as follows:

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

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

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

CAUTION

Equipment operation is allowable with minor leakages Class I or II). Consider the fluid capacity in the item/system being checked/inspected. When in doubt, notify your supervisor.

When operating with Class I or Class II leaks, continue to check fluid levels as required by PMCS table.

Class III leaks should be reported to your supervisor.

Table 2-1. Operator's Preventive Maintenance Checks and Services

B - Before Operation **D - During Operation** **A - After Operation** **W - Weekly**

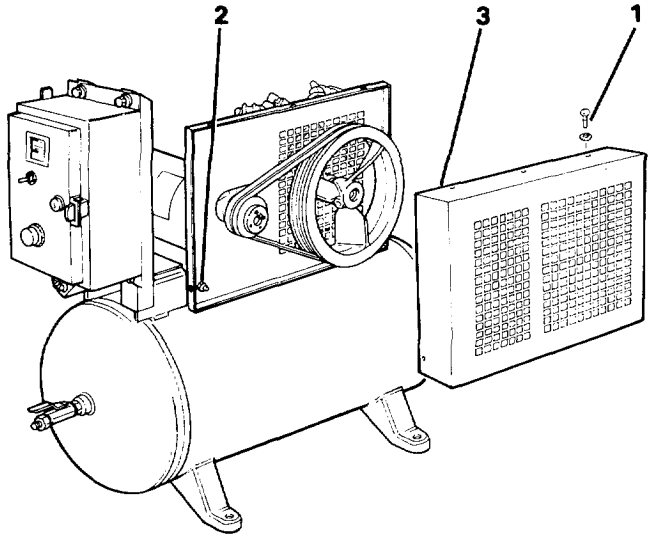
Item No.	Interval				Item To Be Inspected. Procedure:	Equipment Not Ready/Available If:
	B	D	A	W		
1					COMPRESSOR DRIVE SYSTEM	
	•				a. Inspect belt guard mounting screws (1).	Belt guard is damaged or loose enough to obstruct motion of pulley, flywheel or belts.
	•				b. Inspect belt guard mounting bolts (2) to tank.	
	•				c. Inspect belt guard (3) for damage.	
						
2					COMPRESSOR UNIT **WARNING** **Drycleaning solvent, P-D-680, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact by wearing rubber or non-porous gloves when handling the solvent or material wet with drycleaning solvent. Wash hands immediately after exposure with soap and water and use a lanolin based skin cream to prevent skin drying. Do not use near open flame or excessive heat. Flash point of solvent is 100°F (38°C). Do not work with solvent in a closed room. Be sure there is good ventilation or the solvent vapors will build up in the air and become a poisonous mixture which can cause physical injury or even death.**	

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

B - Before Operation **D - During Operation** **A - After Operation** **W - Weekly**

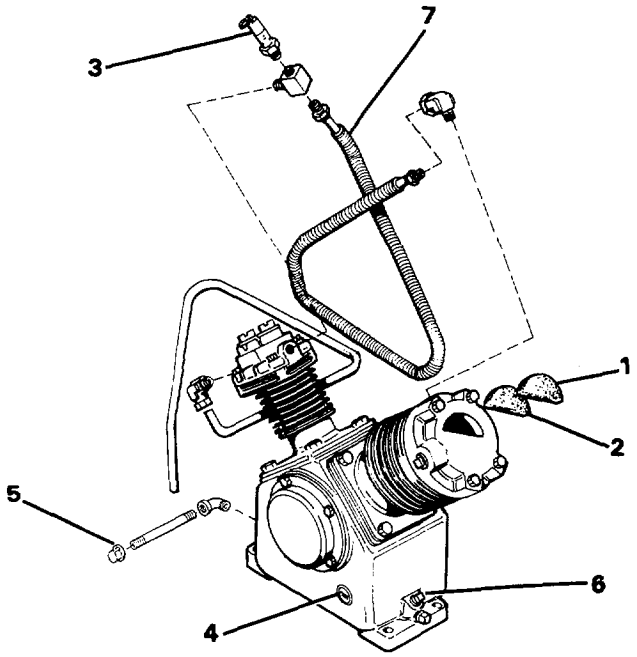
Item No.	Interval				Item To Be Inspected. Procedure:	Equipment Not Ready/Available If:
	B	D	A	W		
						
	•			•	a. Inspect foam air filter (1) and felt silencer (2) for dirt or debris. Clean with P-D-680 as necessary and replace.	
		•			b. Inspect the safety interstage valve (3) during operation for air release. Air release indicates crimped intercooler or compressor damage.	Air release from valve during operation.
	•				c. Inspect oil level through sight glass (4). on sight glass.	Oil level is not seen
	•				d. Inspect drain plugs (5) and fill plugs (6) for tightness.	
	•				e. Inspect intercooler (7) for cracks, dents, broken cooling fins, and secure fitting attachment. pressure and over-heating.	Damaged intercooler may cause loss of air

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

B - Before Operation **D - During Operation** **A - After Operation** **W - Weekly**

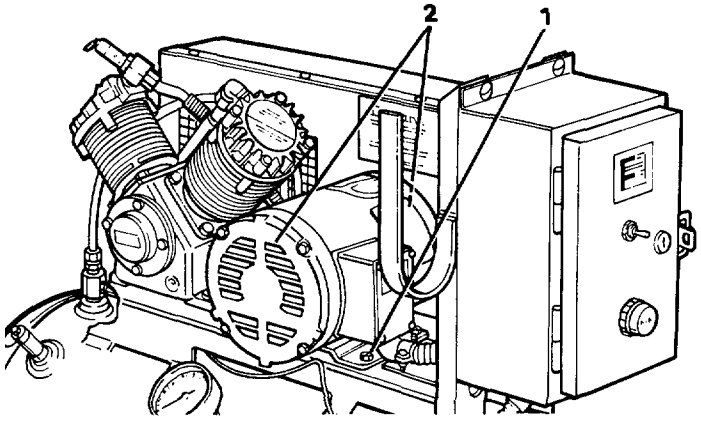
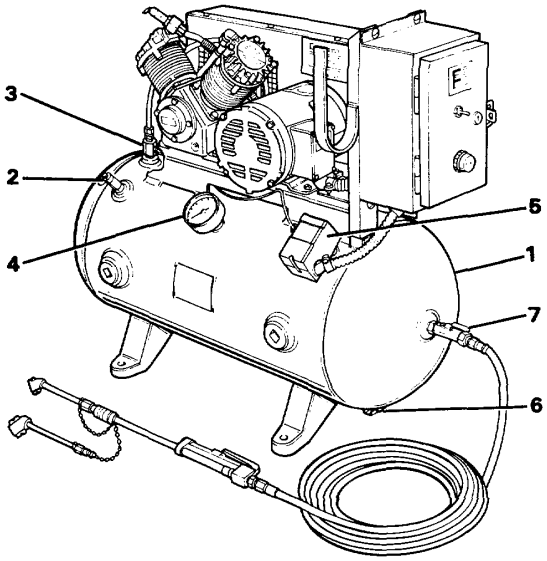
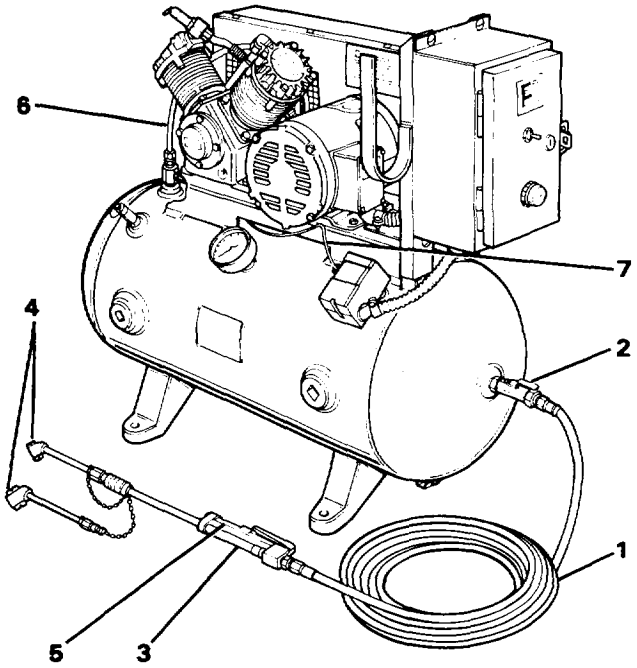
Item No.	Interval				Item To Be Inspected. Procedure:	Equipment Not Ready/Available If:
	B	D	A	W		
3					ELECTRIC MOTOR	
				•	a. Check mounting bolts (1) for tightness.	Loose mounting bolts will not allow proper
				•	b. Inspect end plates (2) for clogged vents, dirt, or debris.	belt tension.
						
4					AIR RECEIVER SYSTEM	
				•	a. Inspect air tank (1) for any signs of damage.	Damaged tank or components allows air
	•				b. Inspect fittings on air tank for secure attachment: safety valve (2), check valve (3), pressure gauge (4), pressure switch (5), drain cock (6), and globe valve (7).	leak.
						

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

B - Before Operation **D - During Operation** **A - After Operation** **W - Weekly**

Item No.	Interval				Item To Be Inspected. Procedure:	Equipment Not Ready/Available If:
	B	D	A	W		
5					AIR DISCHARGE SYSTEM	
				•	a. Inspect air hoses (1) for cracks, splits, or other signs of deterioration. Check for secure attachment to shutoff valve (2).	Not ready if these faults are found.
				•	b. Inspect inflator gauge (3) and valves (4) for damage. Inspect inflation sight glass (5) for damage.	Not ready if these faults are found.
				•	c. Inspect aftercooler (6) and unloader line (7) for cracks, dents, broken cooling fins, and secure fitting attachment.	Not ready if these faults are found.
						

SECTION III. OPERATION UNDER USUAL CONDITIONS

2-5. PREPARATION FOR USE.

a. The air compressor is shipped completely assembled with all components in place, secured to a bottom skid, within a wood crating enclosure.

b. If compressor is to be used as a portable unit, compressor can be left bolted to bottom skid. Compressor and skid must be placed on firm level ground or flooring to minimize vibration and ensure proper operation.

c. For permanent installation, the manufacturer recommends leaving the compressor bolted to the bottom skid and installing the skids to a level surface. The base should be at least 12" from any wall.

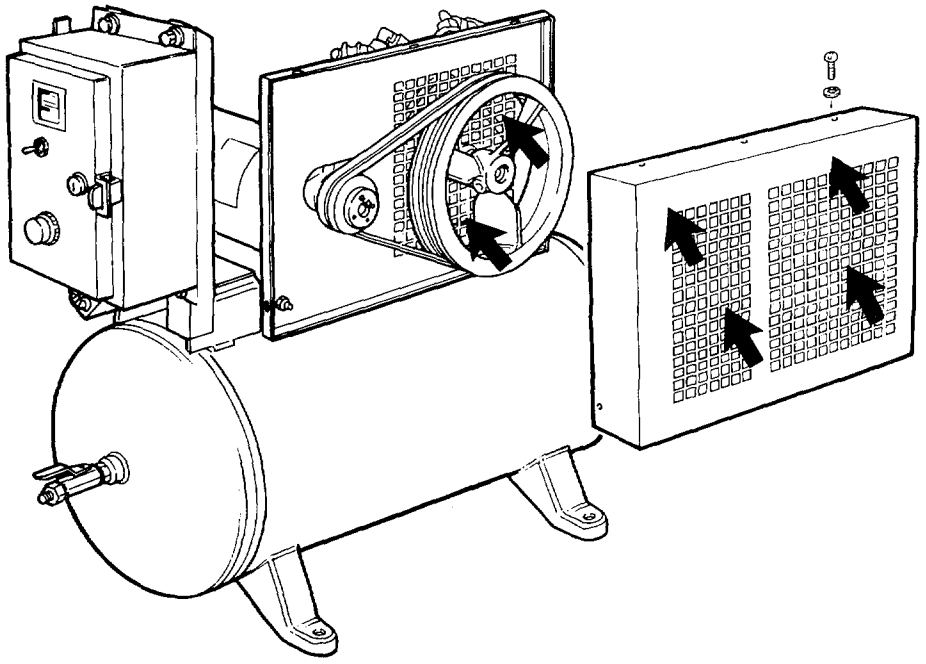
CAUTION

If skids are removed, do not eliminate space between the base and a foot by drawing the foot down. This would stress the tank foot and result in abnormal vibration and possible damage to the tank.

d. If flooring or base is not completely level, shims must be used.

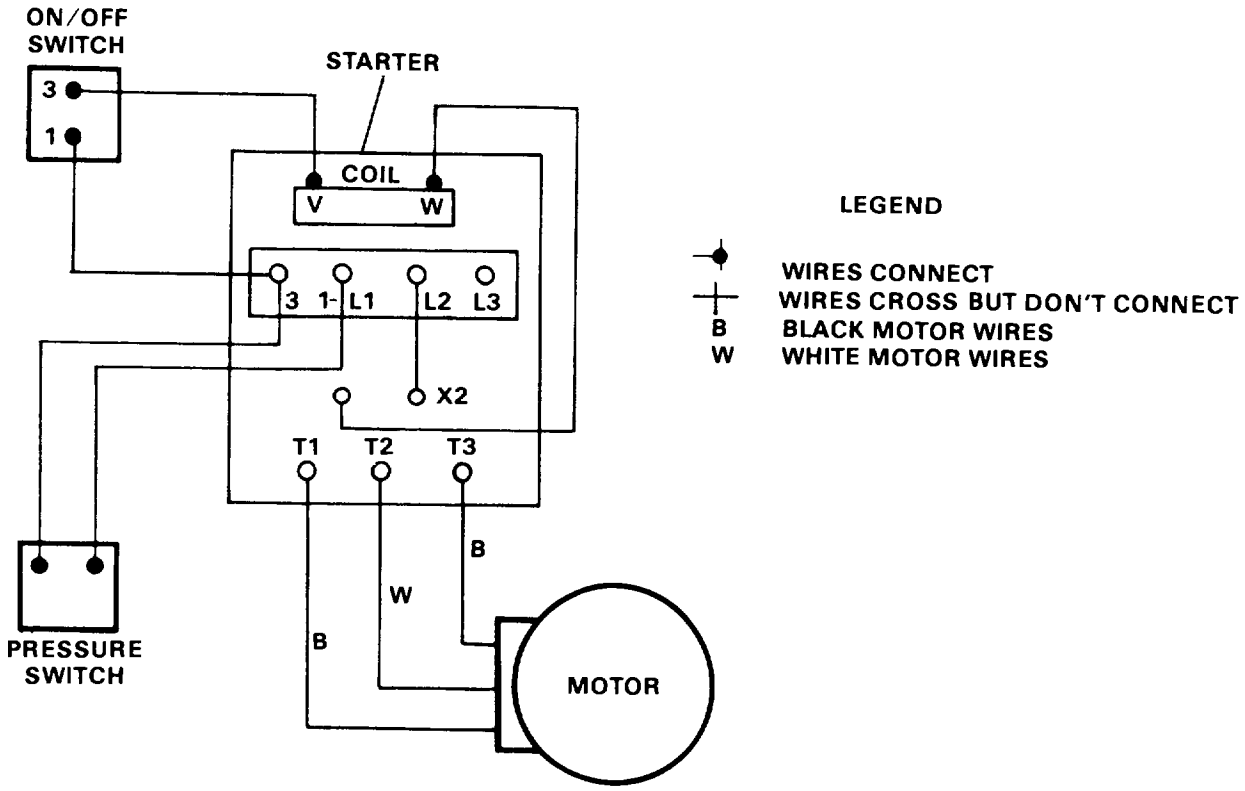
e. Compressor must be located in a clean, well ventilated dry room so compressor receives an adequate supply of fresh, clean, cool and dry air. Allow sufficient space around the compressor so that it is accessible from all sides for maintenance.

f. For proper cooling, ensure that no object will obstruct the flow of air through the belt guard to the fan bladed flywheel.



Proper Air Flow

2-6. ELECTRICAL CONNECTIONS. Connect the motor starter to a 208 VAC 3 phase power source. The source must have a separate on/off switch for the compressor.



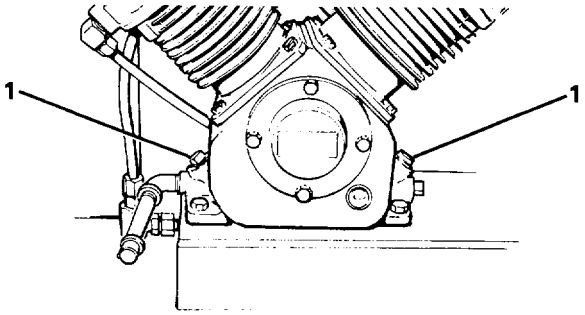
Motor Starter Connections

2-7. INITIAL SERVICE.

CAUTION

The compressor is shipped without oil in the crankcase. Running compressor without oil will damage the equipment.

a. Before start-up, remove either fill plug (1) and fill the crankcase with 10 oz. (.3 L) of oil. Refer to Table 2-2 for proper oil viscosity. Replace the fill plug.



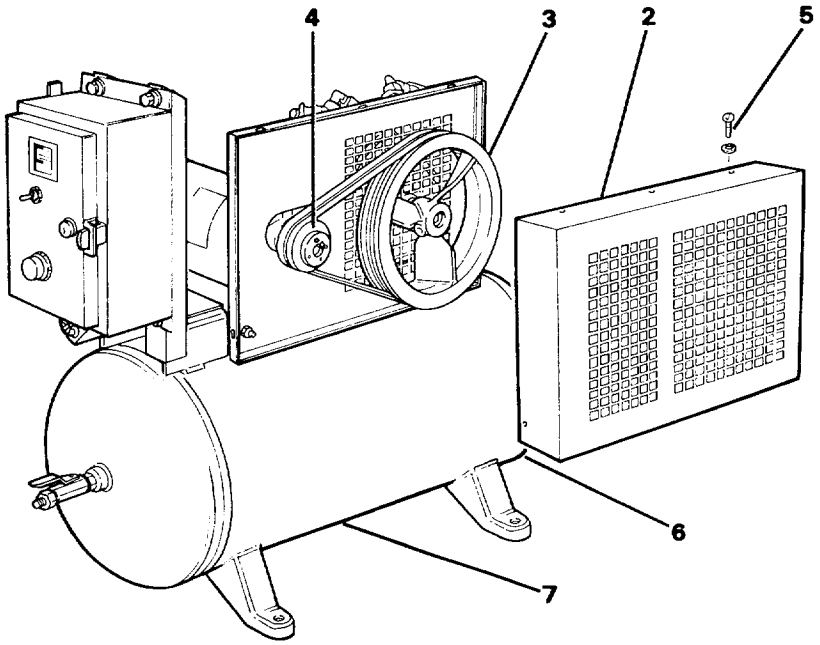
Oil Fill

Ambient	Oil Type.
Above 90°F (32°C)	OE/HDO 40
32-90°F (0-32°C)	OE/HDO 30
Below 32°F (0°C)	OE/HDO 20

Table 2-2. Proper Oil Viscosity

b. Before start-up, remove the belt guard (2) and turn the compressor flywheel (3) and drive pulley (4) over a few revolutions by hand to make sure that there are not any obstructions to shaft rotations. Replace the belt guard (2) and tighten mounting hardware (5).

c. Open the drain cock (6) and drain any moisture from the air tank (7). Close the drain cock (6).



Belt Drive System

2-8. OPERATING PROCEDURE. (Illustration on Page 2-10.)

a. Turn the switch ON at the power source on location.

b. Turn the ON/OFF switch (1) on the face of the starter box ON.

CAUTION

Notify organizational maintenance if the compressor has shut down due to overload. Overload condition must be removed before compressor is restarted.

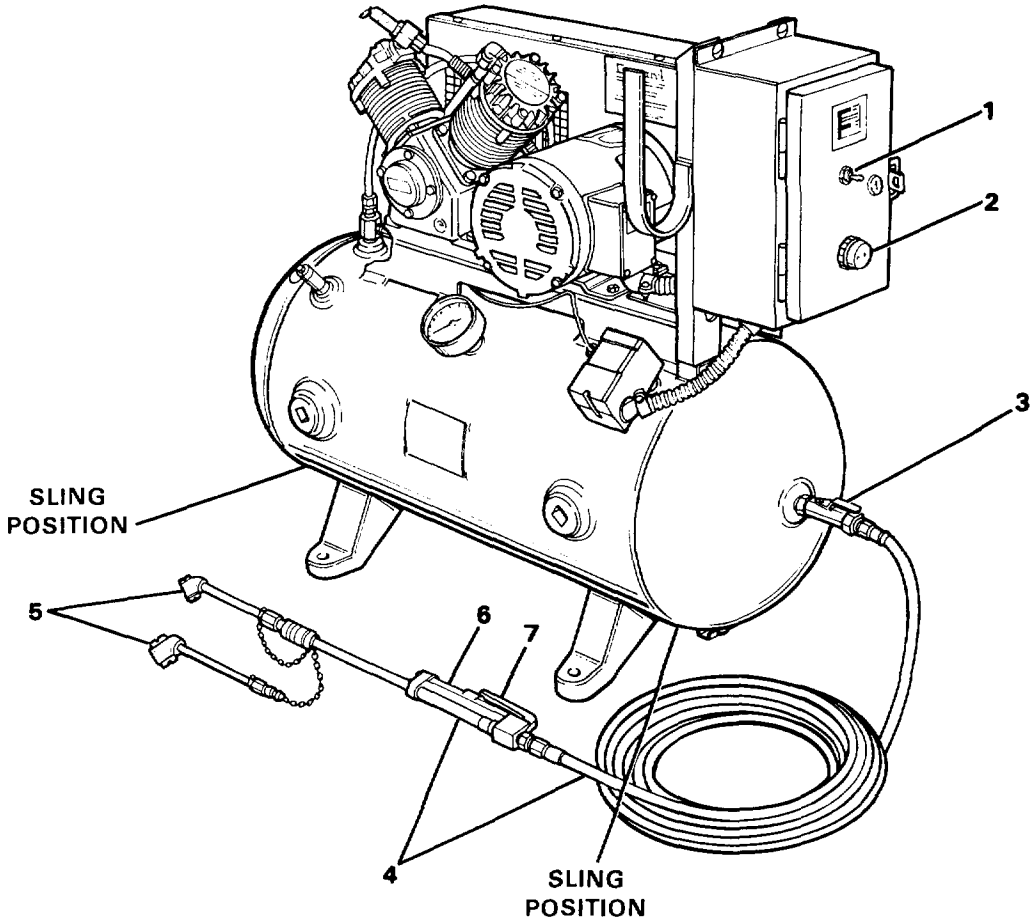
c. Turn the shutoff valve (3) counterclockwise to the open position to enable service air to pass from the tank to the air hose and gage (4).

d. Unwind the air hose (4) from the tank.

e. Attach inflator gage valve (5) to tire or other object requiring air and read pressure with pressure indicator (6).

f. Depress lever (7) to use service air.

g. Turn the ON/OFF switch to the starter box OFF at the end of the work shift.



Operating Procedure

WARNING

Make certain any lifting device used has a capacity equal to the weight being lifted. Failure to observe this precaution could result in injury or death to personnel and damage to equipment.

2-9. PREPARATION FOR MOVEMENT. The air compressor must be bolted to a bottom skid at all four base legs before moving by a fork lift. Slings maybe used to transport a compressor a short distance using a suitable hoist or overhead lifting device. Place slings on outboard ends of tank and center lift hook above unit.

SECTION IV. OPERATION UNDER UNUSUAL CONDITIONS

2-10. OPERATION IN DUSTY ENVIRONMENT

a. Check and clean air filter (1) and silencer (2) daily to keep it from being clogged.

b. Clean dirt off of electric motor (3), compressor fins (4), intercooler tubing (5), and aftercooler tubing (6) to maximize air cooling ability.

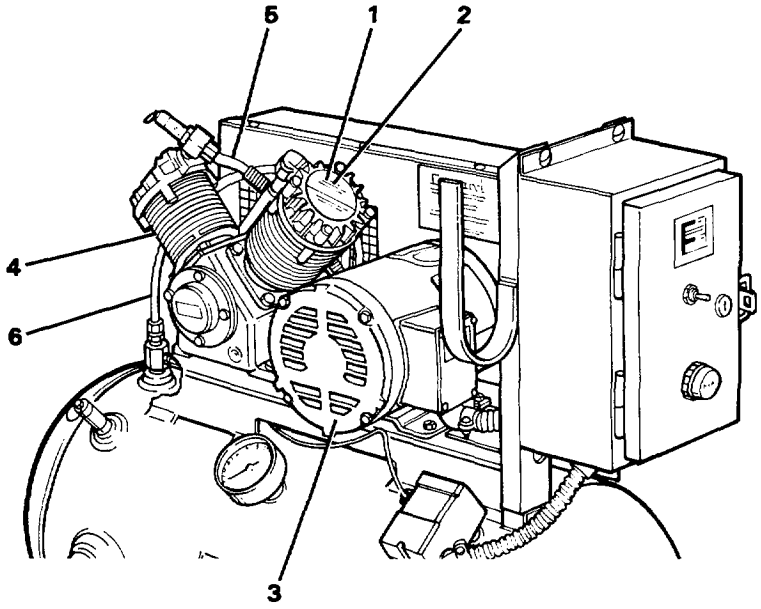
2-11. OPERATION IN EXTREME HEAT.

a. Make sure that there are no air flow obstructions through the slotted belt guard to the fan bladed flywheel.

b. Clean dirt off of electric motor (3), compressor fins (4), intercooler tubing (5), and aftercooler tubing (6) to maximize air cooling ability.

c. Check air filter (1) and silencer (2) in accordance with the PMCS table schedule (weekly) or sooner (daily).

d. Check for proper oil viscosity. Refer to paragraph 3-2.



Operation Under Unusual Conditions

CHAPTER 3. UNIT MAINTENANCE INSTRUCTIONS

SECTION I. LUBRICATION INSTRUCTIONS

NOTE

These lubrication instructions are mandatory.

3-1. GENERAL. Lubrication of the air compressor is limited to servicing (changing) the oil in the air compressor unit.

WARNING

The air compressor must be stopped and power switch set to OFF position before adding oil to prevent ejection of hot oil.

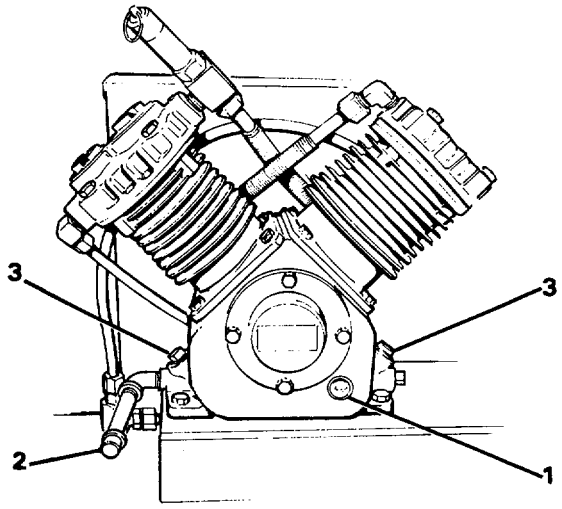
3-2. COMPRESSOR UNIT LUBRICATION.

a. Daily. Check the oil level in the sightglass (1). Add oil through the filler opening (3) to bring the level up to the full mark. Refer to following table for proper viscosity.

b. Quarterly. Remove the drain cap (2) and drain oil into appropriate container with at least a 1 pint (.5 L) capacity. Install cap and pour 10 oz. (.3 L) of proper oil into either filler opening (3). Check oil after running following the oil change.

Ambient	Oil Type
Above 90°F (32°C)	OE/HDO 40
32-90°F (0-32°C)	OE/HDO 30
Below 32°F (0°C)	OE/HDO 20

Table 3-1. Proper Oil Viscosity



Compressor Lubrication

3-3. ELECTRIC MOTOR LUBRICATION. The electric motor ball bearings have been factory lubricated and sealed. No grease fittings are present to lubricate bearings.

SECTION II. REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

3-4. COMMON TOOLS AND EQUIPMENT. Refer to Appendix B, Section III Maintenance Allocation Chart, for tool reference usage.

3-5. SPECIAL TOOLS; TEST MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE) ; AND SUPPORT EQUIPMENT. No special tools are required for the maintenance of this air compressor.

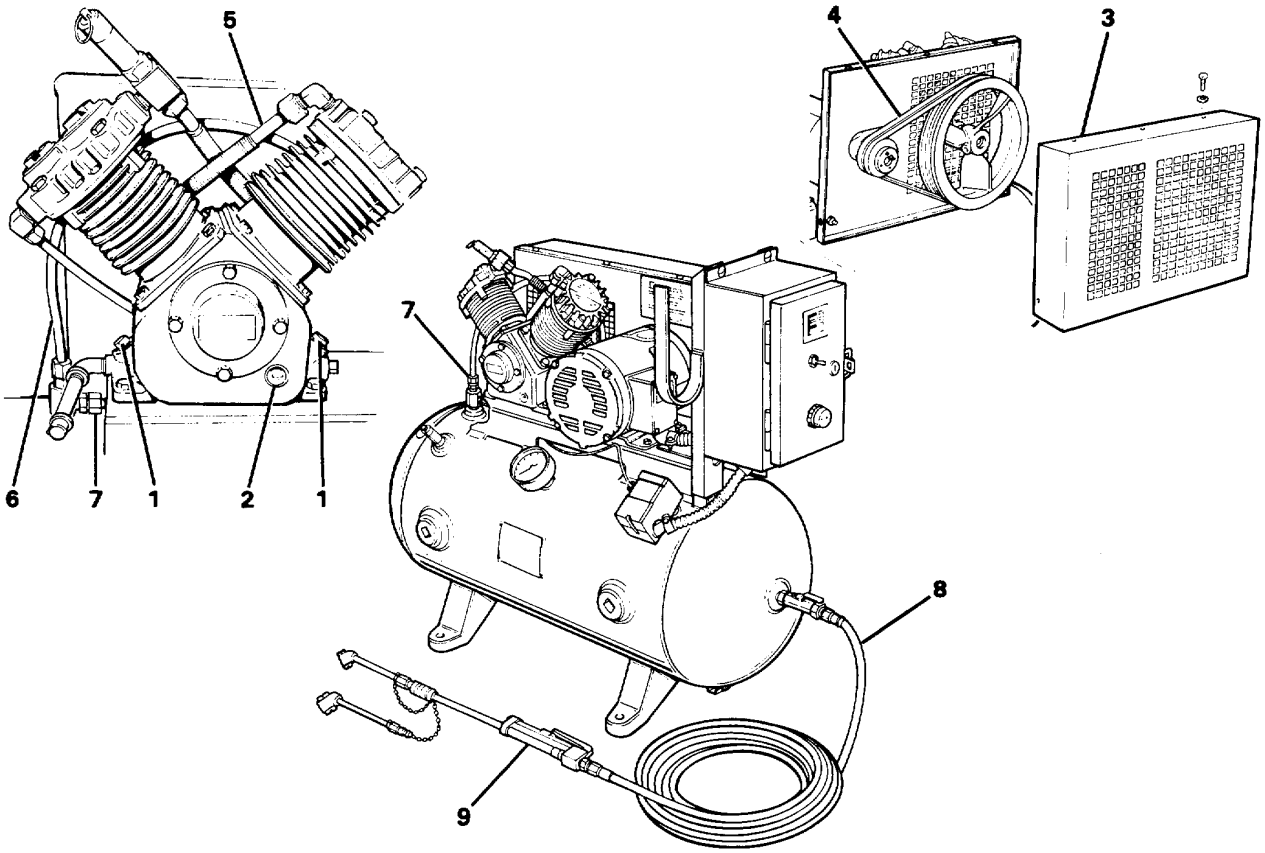
3-6. REPAIR PARTS. Repair parts are listed and illustrated in the Repair Parts and Special Tools List (RPSTL, TM 5-4310-385-23P) covering organizational maintenance for this equipment.

SECTION III. SERVICE UPON RECEIPT OF EQUIPMENT

3-7. CHECKING EQUIPMENT UPON RECEIPT.

CAUTION

The compressor is shipped without oil in the crankcase. Operating compressor without oil will destroy the compressor unit.



Service Upon Receipt

a. Before initial start-up, remove either oil fill plug (1) and fill crankcase with 10 oz. (.3 L) of oil of proper viscosity. Refer to paragraph 3-2. Replace fill plug.

b. Check oil level on sightglass (2) before and after first operation.

c. Remove the belt guard (3) and check V-belts (4) for proper tension. Inspect the compressor flywheel and electric motor drive pulley for secure attachment to shafts.

d. Before start-up, turn the flywheel over a few revolutions by hand to make sure that there aren't any obstructions anywhere in the unit.

e. Inspect the intercooler tubing (5) and aftercooler tubing (6) for dents, crimps, and secure attachment. Inspect compressor unloader line (7) to the pressure switch for crimping and secure attachment.

f. Inspect air hose (8) for cuts or cracks or other signs of obvious damage. Inspect the inflator gage (9) for secure attachment to air hose.

g. Inspect all hardware for tightness, particularly for compressor unit and electric motor mountings.

3-8. SITE AND SHELTER REQUIREMENT

a. The compressor was designed for permanent installation in a sheltered environment. Protect the compressor from water, excessive dirt and corrosive atmospheres.

b. Compressor must be located in a clean, well ventilated dry place where compressor receives an adequate supply of fresh, clean, cool and dry air. Allow sufficient space around the compressor so that it is accessible from all sides for maintenance.

c. Locate the compressor away from work areas and areas frequently traveled, preferably outside of the maintenance building. A special noise reduction enclosure may be necessary.

d. Locate the compressor where appropriate three phase, 208 V electrical power with a separate ON/OFF switch may be installed.

e. For proper cooling, insure that no object will obstruct the flow of air through the slotted belt guard to the fan bladed flywheel.

f. Compressor requires a space approximately 3' x 2' (1 m x .6 m). Locate compressor at least 12" (30.5 cm) from any wall on a solid, level base.

3-9. INSTALLATION INSTRUCTIONS.

a. Compressor must be installed on a solid, level base. If compressor is to be used as a portable unit, compressor can be left bolted to bottom skid. Compressor and skid must be placed on firm level ground or flooring to minimize vibration and ensure proper operation.

CAUTION

Do not eliminate space between the base and a foot by drawing the foot down. This would stress the tank foot and result in abnormal vibration and possible damage to the tank.

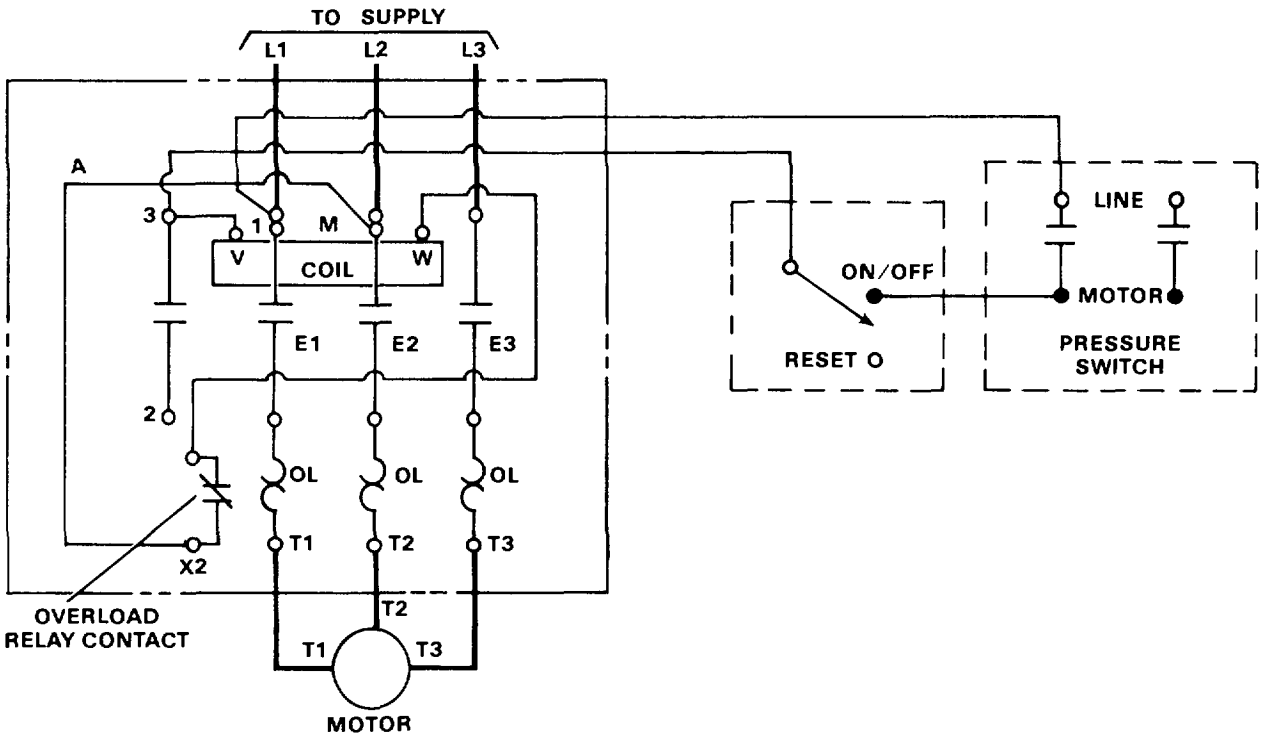
b. For permanent installation, bolt the compressor securely and evenly to a level base. If flooring or base is not completely level, shims must be used under the feet.

WARNING

Power must be shut off to source line before installation service is performed. Voltages present in this equipment can cause injury or death.

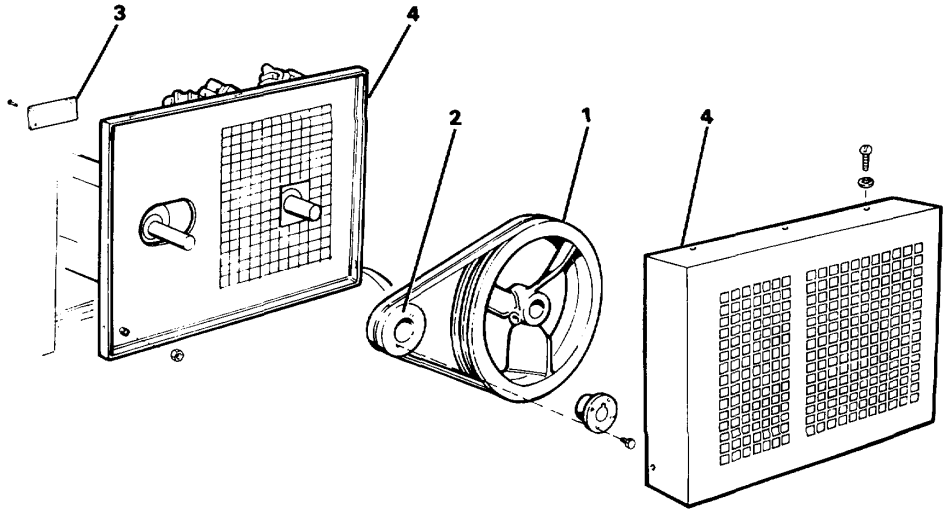
c. Connect the magnetic motor starter to 208 VAC 3 phase line with a separate ON/OFF switch.

d. Before power is applied to unit, check all other wiring terminals in the starter enclosure and pressure switch for a secure fitting.



Motor Starter Wiring Diagram

3-10. OPERATIONAL CHECK. Upon initial startup, observe the direction of rotation of compressor flywheel (1) and drive pulley (2). The caution plate (3) attached to belt guard (4) indicates correct direction of rotation. If flywheel does not rotate in direction of arrow, stop unit immediately. Change rotation to the correct direction by reversing any two of the three power input wires.



Equipment Check

SECTION IV. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

3-11. INTRODUCTION. The preventive maintenance checks and services listed in the PMCS table cover procedures to be performed by unit maintenance personnel.

3-12. PMCS TABLE. Explanation of the columns:

a. *Item Number*. Checks and services are numbered in sequence. This column shall be used as source of item numbers for the TM Number Column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording results of PMCS.

b. *Interval*. The amount of time, in calendar days, between scheduled checks and services.

(1) W - Weekly
(2) M - Monthly
(3) Q - Quarterly

c. *Item To Be Inspected*. This column gives the name of the item to be inspected or serviced.

d. *Procedures*. This column lists inspection procedures.

Table 3-2. Unit Preventive Maintenance Checks and Services.

W - Weekly M - Monthly Q - Quarterly

Item No.	Interval W	Interval M	Interval Q	Item To Be Inspected. Procedures
1			•	MOTOR STARTER a. Check starter enclosure mounting bolts and nuts (1) for tightness.
		•		b. Turn main power off and ON/OFF switch off. Check all wire connections at terminal screws (2) for secure attachment.
		•		c. With power on and ON/OFF switch on, observe motor starter while machine cycles. Magnetic contact arm (3) should open and close (contact base) with operation of pressure switch.

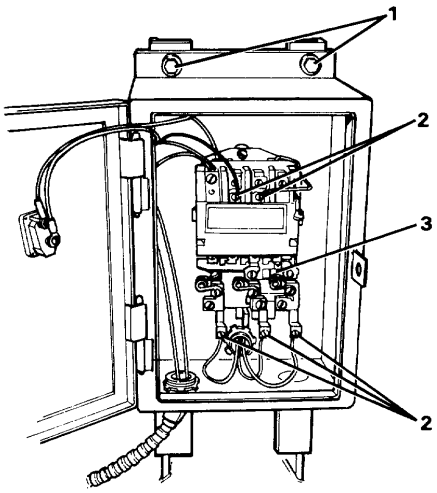


Table 3-2. Unit Preventive Maintenance Checks and Services (Continued).

W - Weekly M - Monthly Q - Quarterly

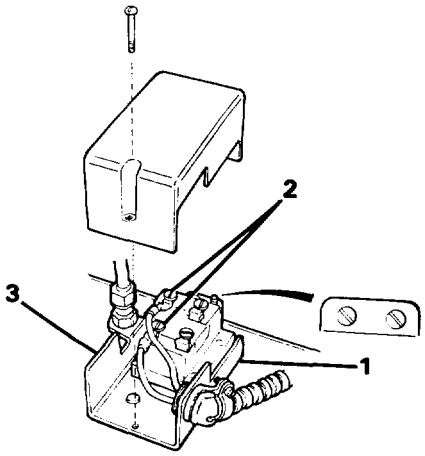
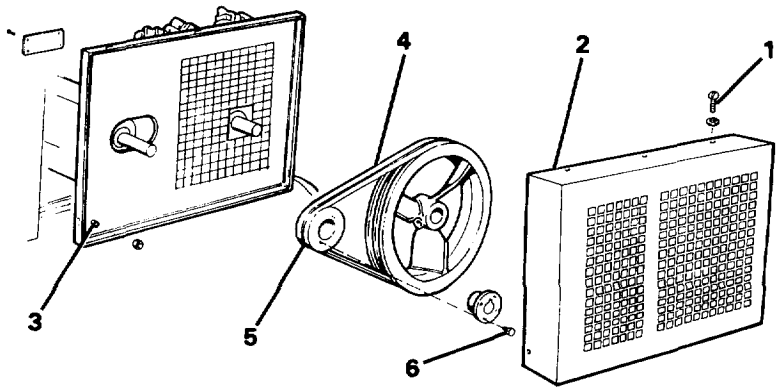
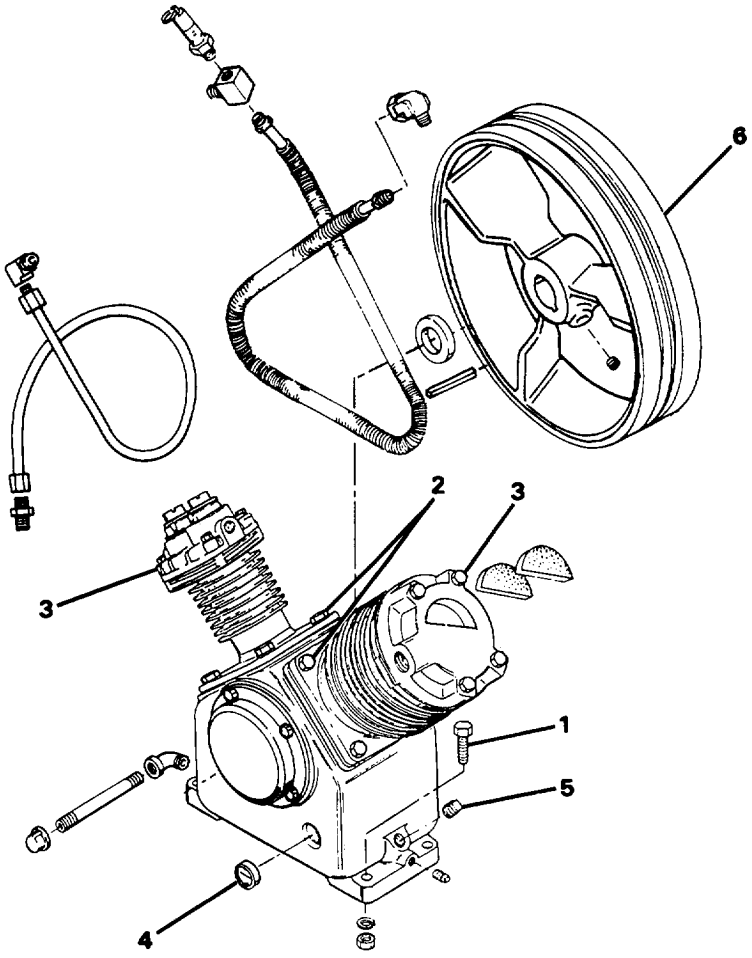
Item No.	Interval W	Interval M	Interval Q	Item To Be Inspected. Procedures
2				PRESSURE SWITCH
			•	a. Inspect pressure switch fitting (1) at tank for air leaks.
		•		b. Turn power off and ON/OFF switch off. Check wire connections at screw terminals (2) for secure attachment.
		•		c. With power on and ON/OFF switch on, check operation of pressure switch (3) by observing pressure gauge while depressing inflator gauge lever. Pressure switch should engage starter at 160 psi and stop starter at 190 psi.
				
3				COMPRESSOR DRIVE
			•	a. Inspect belt guard mounting screws (1). Remove screws and belt guard (2).
	•			b. Inspect belt guard mounting bolts (3) to tank saddle.
	•			c. Inspect V-belts (4) for cracks or signs of wear.
			•	d. Inspect drive pulley (5) for secure attachment to motor shaft. Check key and bushing capscrews (6) for tightness.
				

Table 3-2. Unit Preventive Maintenance Checks and Services (Continued).

W - Weekly **M - Monthly** **Q - Quarterly**

Item No.	Interval W	Interval M	Interval Q	Item To Be Inspected. Procedures
4			•	COMPRESSOR ASSEMBLY a. Check mounting bolts (1) for tightness.
	•			b. Check eight cylinder mounting bolts (2) to crankcase.
	•			c. Check eight cylinder head mounting bolts (3) for tightness.
	•			d. Check oil level through sight glass (4). Add oil through either fill plug opening (5) until oil reaches full mark on glass.
			•	e. Remove belt guard and inspect flywheel (6) for secure attachment to shaft.



SECTION V. UNIT TROUBLESHOOTING

3-13. GENERAL. Troubleshooting at the unit maintenance level requires location of any trouble as quickly as possible. Once trouble is located, repair or replace the part if authorized to do so or determine if a higher category of maintenance is required. Repairs by unit maintenance are limited by tools, test equipment and replacement parts allocated to that level.

3-14. ELECTRICAL SYSTEM.

a. Problems in the motor control circuitry will usually cause the motor to stop running. Note that there has to be current through the coil for contacts E1, E2 and E3 to close. This means that the motor won't run if the coil circuit is bad even though the rest of the circuit is good.

b. Overload conditions will cause the overload relay contact to open. Overloading may be caused by shorts in the motor or by a blockage in the compressor. Overload conditions must be removed before the compressor can be put back in operation. Otherwise, the relay will just open up again.

c. Once overload conditions have been eliminated, the RESET button on the motor starter box must be pushed to restart the compressor.

d. The electric motor is made up of electrical and mechanical components. The main mechanical components which may fail are the bearings.

e. Other malfunctions are usually due to problems with the electrical components.

3-15. COMPRESSOR UNIT.

a. The compressor drive is a fairly simple system. The main problems are improper belt tension, bad alignment and loose parts.

b. The intake and exhaust valves are the most critical parts of the compressor. Loss of pumping efficiency can most often be traced back to the valves.

c. Problems with not getting enough air are not always caused by the compressor. Leaky fittings or an improperly adjusted pressure switch may also be at fault.

3-16. TROUBLESHOOTING TABLE. The following columns are used in the Troubleshooting Table.

a. *Malfunction*. Malfunctions listed are the ones most likely to happen. Not all possible malfunctions can be foreseen and listed.

b. *Test or Inspection*. Tests or inspections are listed to help you find the cause of the malfunction. The malfunctions which are most likely to occur are listed first. The malfunctions least likely to occur are listed last.

c. *Corrective Action*. Corrective actions are listed to help eliminate the malfunction. Where the corrective action is too complicated to be listed in full detail, the paragraph number of the maintenance procedure is given in parentheses.

Table 3-3. Troubleshooting

Malfunction Test or Inspection Corrective Action
ELECTRICAL SYSTEM
1. ELECTRIC MOTOR WON'T START
Step 1. Check to see that main power and ON/OFF switch is ON. Turn power ON.
Step 2. Press RESET button on motor starter box. Reset button will start motor only if relay was tripped by momentary overload.
Step 3. Check pressure switch connections for tightness. Tighten connections as necessary.
Step 4. Check if pressure switch contacts are open at pressures below 160 psi. Replace switch if contacts do not close. Refer to paragraph 3-21.
Step 5. Check motor starter connections for looseness. Tighten connections as necessary. Refer to paragraph 3-20.
Step 6. Check motor controls for faulty wiring. Wire controls correctly. Refer to paragraph 3-20.
Step 7. Check for bad motor control coil. Check for continuity between terminals of the coil. Replace coil. Refer to paragraph 3-20.
Step 8. Check for bad motor control contactor. Check for continuity across each pair of terminals. Replace contactor. Refer to paragraph 3-20.
Step 9. Check for burned motor control contacts. Replace contactor. Refer to paragraph 3-20.
2. MOTOR HUMS BUT WON'T RUN.
Step 1. Check all three phases for power using voltmeter. If voltage is incorrect, provide correct voltage.
Step 2. Check for open or short circuited motor windings. Refer to paragraph 3-33. If windings are defective, notify direct support.
3. LOW AIR PRESSURE.
Step 1. Check to see if compressor cuts out at pressure below 190 psi. Adjust pressure switch. Refer to paragraph 3-21.

Table 3-3. Troubleshooting (Continued)

Malfunction Test or Inspection Corrective Action

4. IF OVERLOAD KICKS OUT REPEATEDLY.

Step 1. Check for short circuits between windings T1, T2, T3 and motor frame. Refer to paragraph 3-33.

If windings are shorted, notify direct support.

Step 2. Check for restriction of air flow between cylinder heads (intercooler), or from compressor to tank (aftercooler).

Replace damaged compressor tubing. Refer to paragraphs 3-31 and 3-44.

Step 3. Check for overloading of compressor.

Reduce air pressure to within tolerance.

COMPRESSOR UNIT

5. COMPRESSOR DOES NOT PUT OUT ENOUGH AIR.

Step 1. Check for dirty or clogged intake filters.

Clean or replace as necessary.

Step 2. Check if V-belts are loose.

Tighten belts. Refer to paragraph 3-24.

6. BELTS WEAR TOO FAST.

Step 1. Check if V-belts are loose.

Tighten belts. Refer to paragraph 3-24.

Step 2. Check if drive pulley and flywheel are out of alignment.

Align pulley and flywheel. Refer to paragraph 3-25.

7. COMPRESSOR OIL LOSS.

Step 1. If unit is new, oil consumption may be high until valve assemblies seat.
Wait for valves to seat, then recheck oil consumption.
Notify direct support if oil consumption continues to be high.

8. SLOW PUMPING OR INSUFFICIENT PRESSURE.

Step 1. Check for leaks in air lines and fittings.
Tighten fittings or replace leaking parts. Refer to paragraph 3-34.
Step 2. Check for exceeding compressor capacity.
Reduce air usage.
Step 3. Check for wrong adjustment of pressure switch.
Adjust pressure switch to cut in at 160 psi and to cut out at 190 psi. Refer to paragraph 3-21.
Step 4. Check for broken valve assembles.
Replace damaged valve. Refer to paragraph 3-32.

Table 3-3. Troubleshooting (Continued)

Malfunction Test or Inspection Corrective Action

9. COMPRESSOR OVERHEATS.

Step 1. Check if pump is low on oil.

Add oil to bring level up to full mark on sight glass. Refer to paragraph 3-2.

Step 2. Check for dirt in intercooler, aftercooler or cylinder fins.
Remove dirt.

Step 3. Compressor is getting poor ventilation.

Clear obstructions from around the compressor. Ensure proper air flow through belt guard.

Step 4. Check for leaky cylinder gaskets.

Replace gaskets if defective. Refer to paragraph 3-32.

Step 5. Check for broken valve.

Replace valve if damaged. Refer to paragraph 3-32.

Step 6. Check if compressor is running backwards (clockwise as you face the flywheel).

Rewire motor so it runs counterclockwise. Refer to paragraph 3-33.

10. NOISY COMPRESSOR OPERATION.

Step 1. Check for loose mounting bolts, drive pulley or flywheel.

Tighten loose components. Refer to paragraph 3-27, 3-25 or 3-30.

Step 2. Check for foreign matter such as carbon, metal chips, etc. in cylinder.

Remove cylinder head and valve plates and clean cylinder. Refer to paragraph 3-32.

Step 3. Listen for loose or damaged internal compressor parts (connecting rods, crankshaft, etc.).

Refer to direct support for inspection and repair if internal compressor damage is suspected.

SECTION VI. UNIT MAINTENANCE PROCEDURES

3-17. GENERAL. This section contains removal, disassembly, inspection, cleaning, repair, assembly and installation of compressor components listed in Appendix B, Section III, Maintenance Allocation Chart. Paragraph references are listed below for each grouping for locating component repair instructions.

a. *Paragraph 3-18, Motor Controls Group*: Motor Starter Enclosure, Motor Starter, Pressure Switch.

b. *Paragraph 3-22, Compressor Drive Group*: Belt Guard, V-Belts, Drive Pulley.

c. *Paragraph 3-26, Compressor* Assembly Compressor Unit, Safety Interstage Valve, Oil Filler and Drain Plugs, Flywheel, Intercooler, Intake and Exhaust Valves.

d. *Paragraph 3-33, Electric Motor.*

e. *Paragraph 3-34, Air Receiver System*: Safety Valve, Check Valve, Pressure Gauge, Drain Cock, Shutoff Valve, and Air Tank.

f. *Paragraph 3-41, Air Discharge System*: Air Hoses, Inflator Gage, Tube Assemblies.

3-18. MOTOR CONTROLS GROUP.

3-19. MOTOR STARTER ENCLOSURE. This task covers:

a. Initial Setup. b. Removal. c. Installation.

INITIAL SETUP.

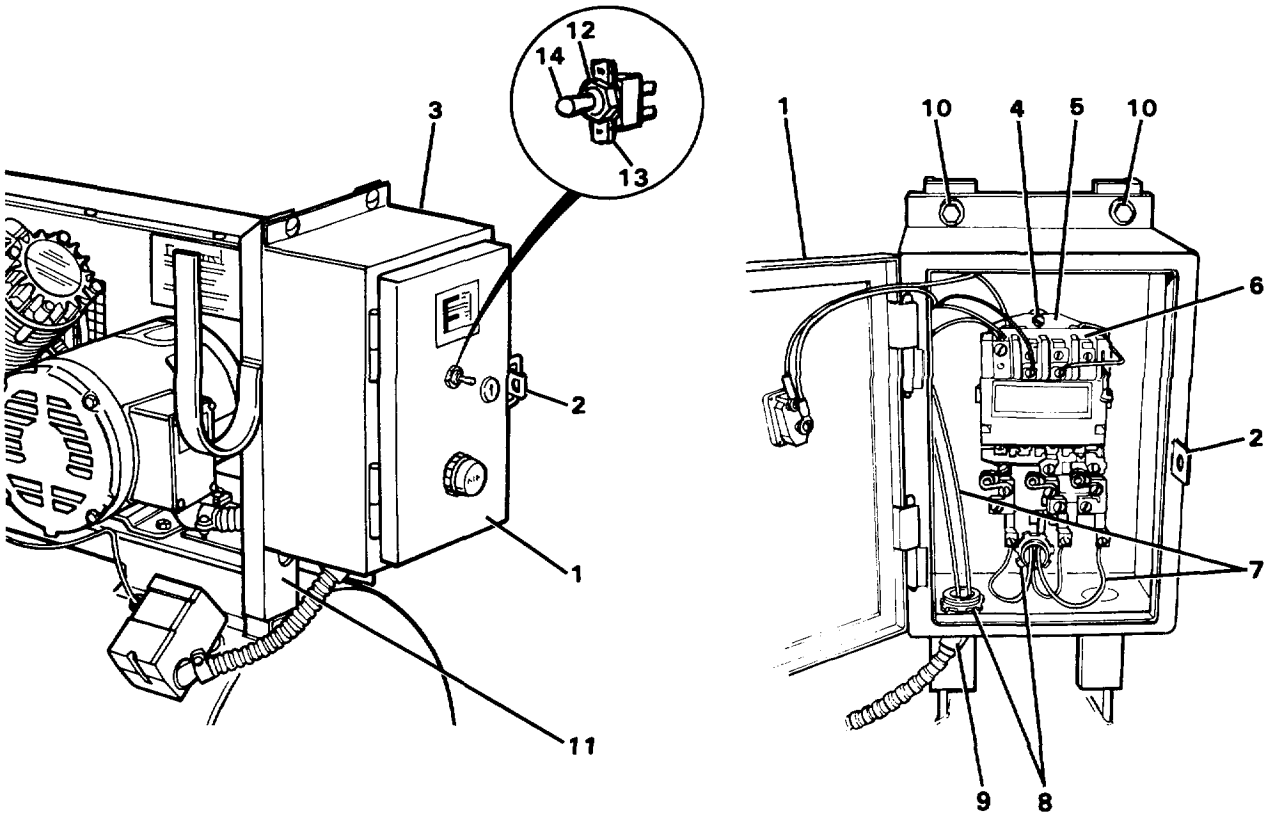
a. *Tools*. General Mechanic Automotive Tool Kit. T1 5180-00-177-7033.

b. *Equipment Condition*. Main power disconnected; Compressor unit OFF.

c. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose Clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Motor Starter Enclosure

REMOVAL.

WARNING

Disconnect main power source and turn compressor unit OFF before performing maintenance procedures. Voltages present in this equipment can cause injury or death.

a. Open cover (1) by turning key (2) and depressing latch on enclosure (3).
b. Disconnect and tag all wires (7) from starter assembly.
c. Loosen three screws (4) from base plate (5) and raise base plate up.
d. Remove starter assembly (6) from enclosure (3).
e. Remove conduit locknuts (8) and pull conduits and wires (9) from enclosure.
f. Remove bolts, nuts, and washers (10) securing enclosure to saddle frame (11).
g. Remove nut (12), ON/OFF plate (13) and toggle switch (14) from enclosure cover.

INSTALLATION.

a. Position toggle switch (14) and ON/OFF plate (13) on enclosure cover and secure with nut (12).
b. Install bolts, nuts, and washers (10) securing enclosure (3) to frame (11).
c. Push power source conduit and motor wires (9) through holes in enclosure and secure with locknuts (8).
d. Place starter assembly (6) into enclosure far enough to connect wires (9).
e. Connect all wires (9) to starter assembly (6) as tagged.
f. Install screws and washers (4) that secure starter assembly base plate (5) to enclosure.

CAUTION

Recheck all wiring connections before turning main power on. If not sure, refer to wiring diagram.

g. Close enclosure door.
h. Reconnect main power.

3-20. MOTOR STARTER. This task covers:

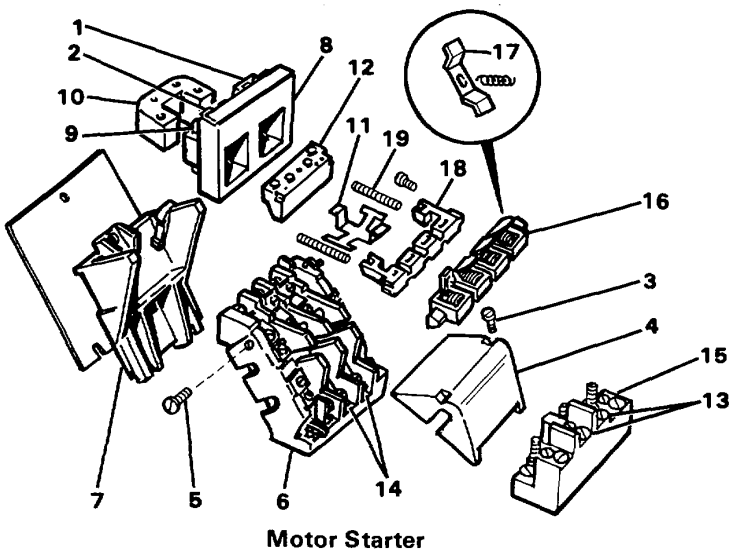
a. Initial Setup.
b. Disassembly.
c. Cleaning and Inspection.
d. Reassembly.

INITIAL SETUP

a. *Tools*. General Mechanic Auto; T1 5180-00-177-7033.
b. *Materials/Parts*. Compressed Air; Wiping rag.
c. *Equipment Condition.* Main power disconnected; Compressor Unit OFF; Motor Starter Removed (paragraph 3-19).
d. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose Clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Motor Starter

DISASSEMBLY

WARNING

Be sure main power is disconnected and tagged before doing any work on electrical systems. Voltages present in this equipment can cause injury or death.

a. Tag and remove wires from coil terminal W (1) and terminal screw L2 (2).

b. Remove starter assembly from enclosure. Refer to paragraph 3-19.

c. Remove screws (3) that retain cover (4). Remove cover.

d. Remove two screws (5) that secure contact board (6) to base plate (7).

e. Separate coil (8) from base plate (7) by pulling back on clips (9).

f. Remove magnet (10) from coil (8).

g. Holding starter in left hand, press on crossarm as far as it will go while you grasp the clip (11) and lift and slide the armature (12) from coil (8).

h. Tag and remove relay wires (13) at X1 and X2.

i. Loosen three setscrews (14) and remove overload relay (15) from contact board (6).

NOTE

Relay(15) is not repairable and should not be disassembled. Replace entire relay as necessary.

j. Remove cross arm assembly (16, 17, 18) and springs (19) from board (6).

CLEANING AND INSPECTION.

WARNING
Clean motor starter components with compressed air no greater than 30 psi. Eye protective equipment must be worn when cleaning with compressed air.

a. Use compressed air no greater than 30 psi to blow out dirt from all motor starter components. Wipe with clean rag.

b. Inspect all non-metal components for cracks. Replace as necessary.

NOTE
Contacts will discolor and pit in use.

c. Inspect contacts (17) for excessive pitting or burning. Replace as necessary.

d. Inspect overload relay (15) for cracks or melted overload coils. Replace entire relay as necessary.

REASSEMBLY.

a. Install contacts (17) on crossarm (16).
b. Assemble crossarm (16), crossarm base (18), and springs (19) to contact board (6).
c. Install spring clip (11) and armature (12).
d. Install overload relay (15) to contact board (6). Tighten setscrews (14).
e. Connect two relay wires (13) at X1 and X2.
f. Slide magnet (10) into coil (8).
g. Install coil (8) into base plate (7). Make sure retaining clips (9) are engaged.
h. Position contact board (6) onto base plate (7) and secure with two screws (5).
i. Install cover (4) and tighten screws (3).
j. Connect wires to coil terminal W (1) and terminal screw (2).
k. Connect wires to overload relay terminals (13).
l. Install starter assembly to enclosure. Refer to paragraph 3-19.
m. Double check wiring for correct installation and make sure all terminal screws are tight.

3-21. PRESSURE SWITCH. This task covers:

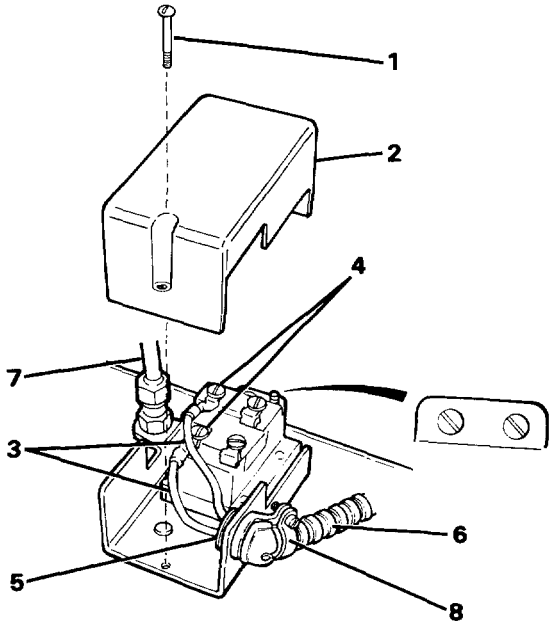
a. Initial Setup.
b. Removal.
c. Inspection.
d. Cleaning.
e. Installation.
f. Adjustment.

INITIAL SETUP.

a. *Tools*. General Mechanic Automotive Tool Kit; T1 5180-00-177-7033.
b. *Materials/Parts*. Compressed Air; Brush; Anti-Seize Tape.
c. *Equipment Condition*. Main power disconnected; Compressor unit OFF; Air in tank discharged.
d. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose Clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Pressure Switch

INSPECTION.

CAUTION
Use soap solution to check for air leaks at tank fittings only.

a. With air pressure present in tank, inspect the pressure switch for air leaks using a soap and water solution.
b. Check for air discharge from unloader valve (7) upon compressor shutdown.
c. Inspect the switch contacts for burning or pitting. Replace the pressure switch if contacts are bad.

REMOVAL.

WARNING

Be sure main power is disconnected before doing any work on electrical systems. Voltages present in this equipment can cause injury or death.

a. Disconnect the main power and turn the ON/OFF switch OFF.

WARNING

Air in tank must be discharged before removal of pressure switch to prevent serious injury.

b. Open the drain cock on bottom of tank to discharge all air pressure. Close drain cock.

c. Loosen screw (1) and remove cover (2).

d. Tag and label motor and power wires (3).

e. Loosen terminal screws (4) and disconnect wires from switch terminals.

f. Remove conduit locknuts (5) and remove conduit (6).

g. Remove unloader line (7) at fitting.

h. Unscrew pressure switch by hand from pipe fitting (8).

CLEANING.

WARNING

Clean pressure switch with compressed air no greater than 30 psi. Eye protective equipment must be worn when cleaning with compressed air.

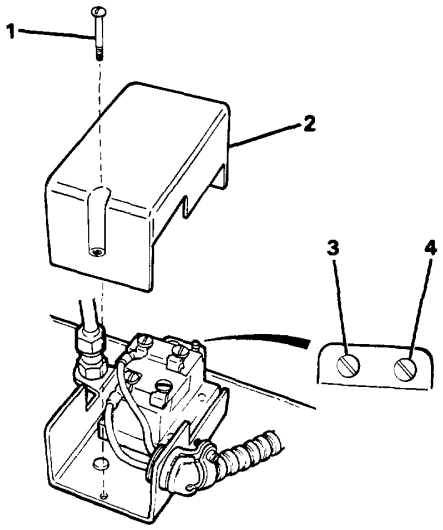
a. Remove loose dirt from inside of pressure switch with soft brush and compressed air.

INSTALLATION.

WARNING

Be sure main power is disconnected before doing any work on electrical systems. Voltages present in this equipment can cause injury or death.

a. Install the pressure switch onto pipe fitting (8).
b. Install the unloader line (7) at the fitting.
c. Remove the cover (2).
d. Attach the conduit (6) with locknuts (5).
e. Attach wires (3) to switch terminals as tagged and tighten screws (4).
f. Replace cover (2) and tighten screw (1).
g. Connect the main power and turn the ON/OFF switch ON.
h. Compressor should start up if switch is properly connected.



Pressure Switch Adjustment

ADJUSTMENT

WARNING

To prevent injury, be sure the compressor unit is free of objects or loose Clothing, as it will be running during part of the adjustment procedure.

a. Depress lever on inflator gage while watching pressure gage. Compressor should kick-on at approximately 160 psi (cut-in).

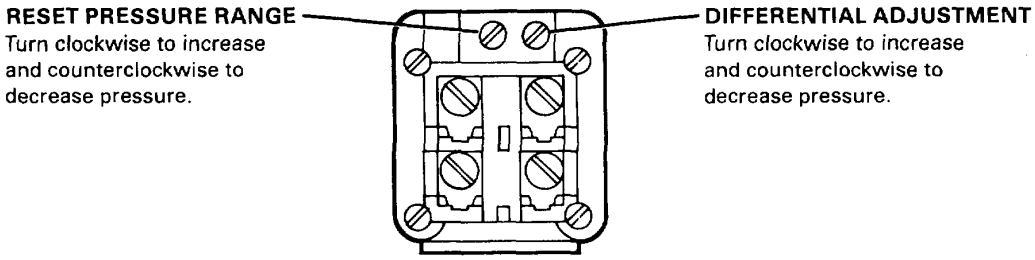
b. Release lever and allow pressure to build in air tank while watching pressure gage. Compressor should kick off at approximately 190 psi (cut-out).

c. if either cut-in or cut-out pressure is incorrect (± 5 psi), proceed to step d.

d. Disconnect main power and turn OFF/ON switch OFF.

e. Loosen screw (1) and remove pressure switch cover (2).

f. Turn pressure adjusting screw (3) and differential adjusting screw (4) according to the following:



Pressure Adjustment Procedure

g. Recheck cut-in and cut-out pressures until adjustment is within limits.
h. Install pressure switch cover (2) and tighten screw (1).
i. Connect main power supply.

3-22. COMPRESSOR DRIVE GROUP

3-23. BELT GUARD ASSEMBLY. This task covers:

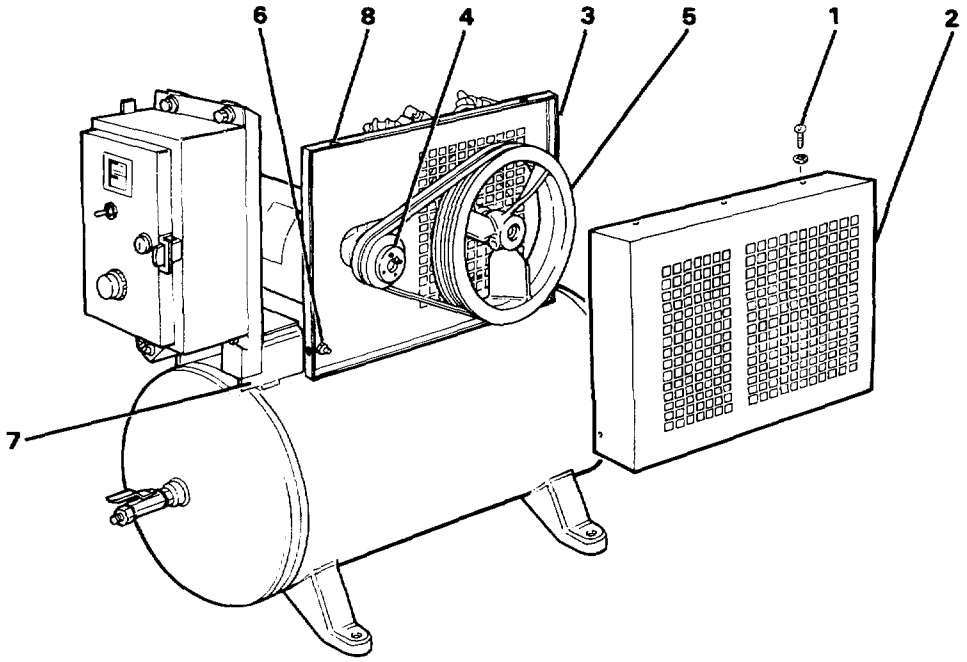
a. Initial Setup.
b. Removal.
c. Repair.
d. Installation.

INITIAL SETUP.

a. *Tools*. General Mechanic Automotive Tool Set, T1 5180-00-177-7033.
b. *Equipment Condition*. Compressor unit OFF; Main power disconnected.
c. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Belt Guard

REMOVAL.

WARNING

Disconnect main power source and turn compressor unit OFF before performing maintenance procedures.

a. Disconnect the main power and turn the power switch OFF.
b. Remove the screws (1) that retain the belt guard (2) to the base plate (3).
c. If base plate (3) must be removed, refer to paragraph 3-25 for drive pulley(4) removal and paragraph 3-30 for flywheel (5) removal.
d. Remove the mounting bolts, nuts, and lockwashers (6) securing base plate (3) to tank saddle (7).
e. Remove the base plate (3).

REPAIR.

a. Inspect the belt guard for missing rivnuts (8). Replace with metal screws as necessary.
b. Inspect the belt guard (2) and base plate (3) for damage. Straighten as necessary to ensure correct fit and alignment.

INSTALLATION.

a. Disconnect the main power and turn the power switch OFF.
b. Install the base plate (3) and mounting hardware (6) if removed.
c. Refer to paragraph 3-25 for drive pulley (4) installation and paragraph 3-30 for flywheel (5) installation.
d. Install belt guard (2) and retaining screws (1).
e. Reconnect the main power source and turn compressor on.

3-24. V-BELT. This task covers:

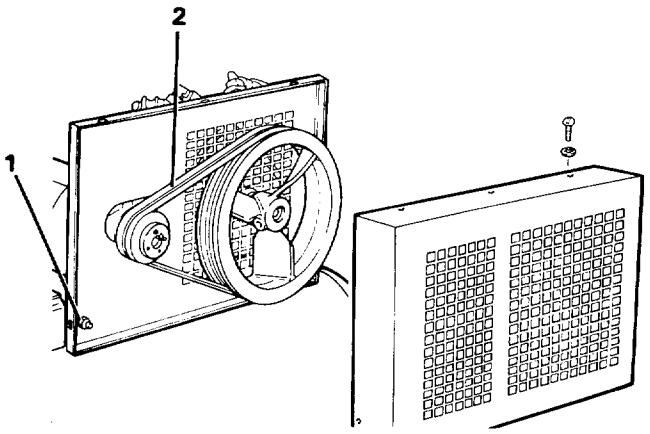
a. Initial Setup b. Removal c. Installation. d. Adjustment

INITIAL SETUP.

a. *Tools*. General Automatic Tool Set, T1 5180-00-177-7033.
b. *Equipment Condition.* Main power disconnected; Compressor unit OFF, Belt guard removed (paragraph 3-23).
c. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose Clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



V-Belt

REMOVAL.

WARNING

Disconnect main power source and turn compressor unit off before performing maintenance procedures.

a. Disconnect the main power source and turn compressor switch OFF.
b. Loosen the electric motor mounting bolts (1) and slide motor towards compressor flywheel to relieve belt tension.

CAUTION
Belts may be cut or damaged if removed under tension.

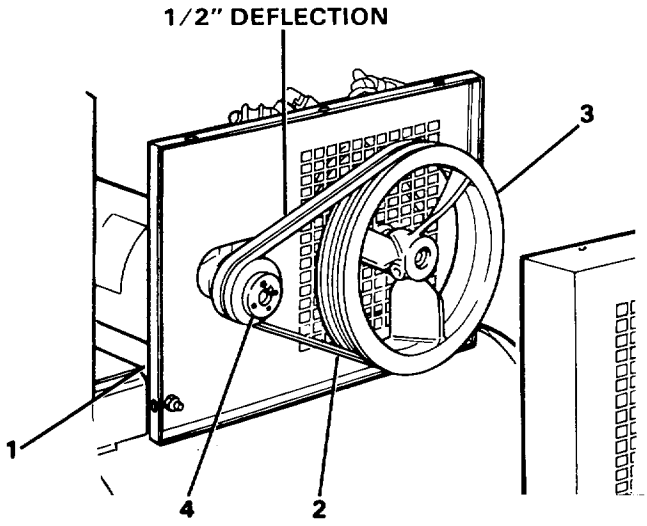
c. Remove two V-belts (2).

INSTALLATION.

a. Disconnect the main power source and turn the power switch OFF.
b. Be sure the electric motor mounting bolts (1) are loose and motor is moved toward compressor flywheel.

NOTE
V-belts must be replaced as a set.

c. Place V-belts (2) in position over compressor flywheel (3) and drive pulley (4).
d. Adjust belt tension. Refer to next paragraph.



V-Belt Adjustment

ADJUSTMENT.

WARNING
Disconnect main power source and turn compressor unit off before performing maintenance procedures.

a. Disconnect main power supply and turn power switch OFF.
b. Remove belt guard. Refer to paragraph 3-23.
c. Loosen the electric motor mounting bolts (1) and slide motor away from compressor to tighten belt tension or towards compressor to loosen.

CAUTION
Too little belt tension causes belts to overheat and wear out prematurely. Too much tension causes bearing wear in motor and compressor.

d. Tighten mounting bolts (1) when proper belt tension is achieved. Belt should move 1/2" when pushed halfway between pulley (4) and flywheel (3).
e. Install belt guard. Refer to paragraph 3-23.

3-25. DRIVE PULLEY. This task covers:

a. Initial Setup. b. Removal. c. Installation. d. Alignment.

INITIAL SETUP.

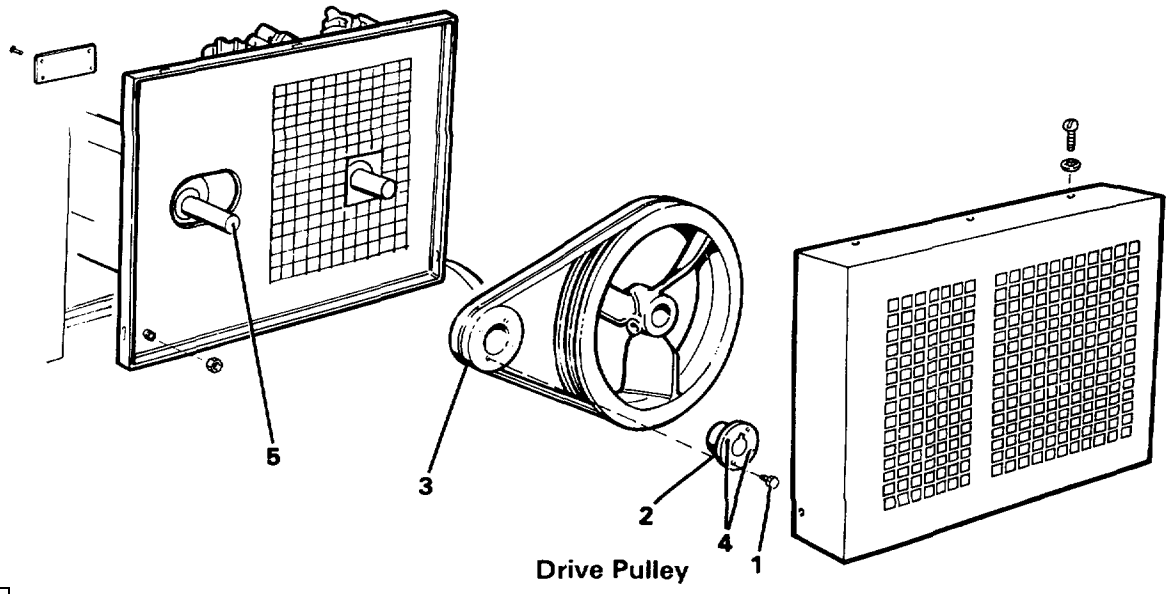
a. *Tools*. General Mechanic Automotive Tool Set T1 5180-00-177-7033. Automotive Maintenance and Repair Shop Equipment T3 4910-00-754-0654.

b. *Equipment Condition.* Main power disconnected; Compressor unit OFF; Belt Guard Remove (paragraph 3-23) ; V-Belts Removed (paragraph 3-24).

c. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose Clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Drive Pulley

REMOVAL.

WARNING

Disconnect main power source and turn compressor unit off before performing maintenance procedures.

a. Disconnect the main power supply and turn the power switch OFF.
b. Remove the belt guard. Refer to paragraph 3-23.
c. Remove the V-belts. Refer to paragraph 3-24.

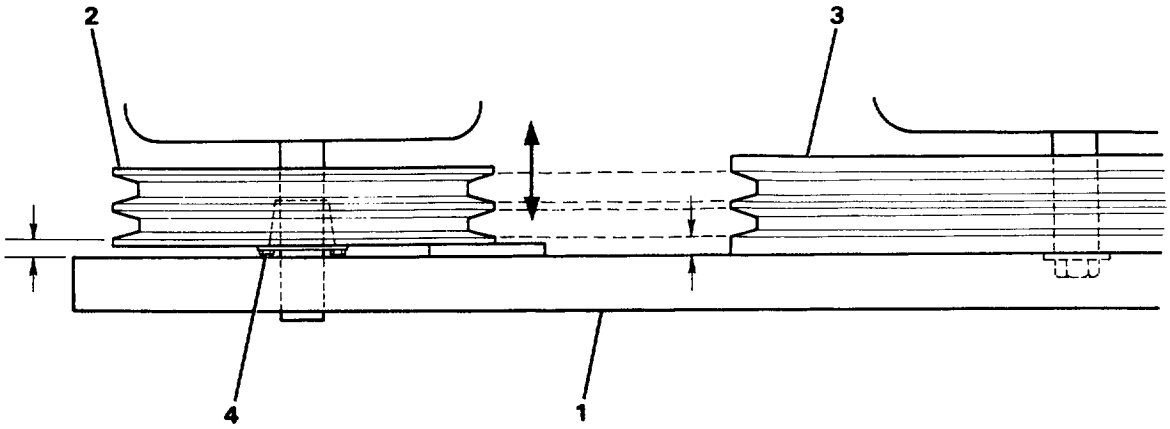
d. Remove the capscrews (1) securing the bushing (2) to the pulley (3).
e. Thread capscrews (1) into jacking holes (4) and tighten evenly until bushing and pulley separate.

NOTE
Apply a thin coat of oil to shaft to ease bushing removal.

f. Remove bushing and pulley from shaft.
g. Remove key (5) from shaft.

INSTALLATION.

a. Install key (5) in shaft keyway.
b. Place pulley (3) into position with aligning key.
c. Place bushing (2) on shaft and align unthreaded holes in bushing with threaded holes in pulley.
d. Thread capscrews (1) into pulley (3).
e. Before tightening capscrews, align drive pulley grooves with flywheel grooves. Refer to next paragraph.
f. Tighten capscrews evenly until bushing is seated and pulley is secure.



Drive Pulley Alignment

ALIGNMENT.

a. Place straightedge (1) across compressor flywheel (2) and drive pulley (3).

b. Measure distance from straightedge to flywheel outer belt groove.

c. Loosen capscrews on drive pulley and move drive pulley on motor shaft so that pulley outer belt groove is same distance from straightedge.

d. Tighten capscrews (4) after alignment.

3-26. COMPRESSOR ASSEMBLY GROUP.
3-27. COMPRESSOR UNIT. This task covers:
a. Initial Setup.
b. Inspection.
c. Removal.
d. Installation.

INITIAL SETUP.

a. *Tools*. General Mechanic Automotive Tool Set, T1 5180-00-177-7033.

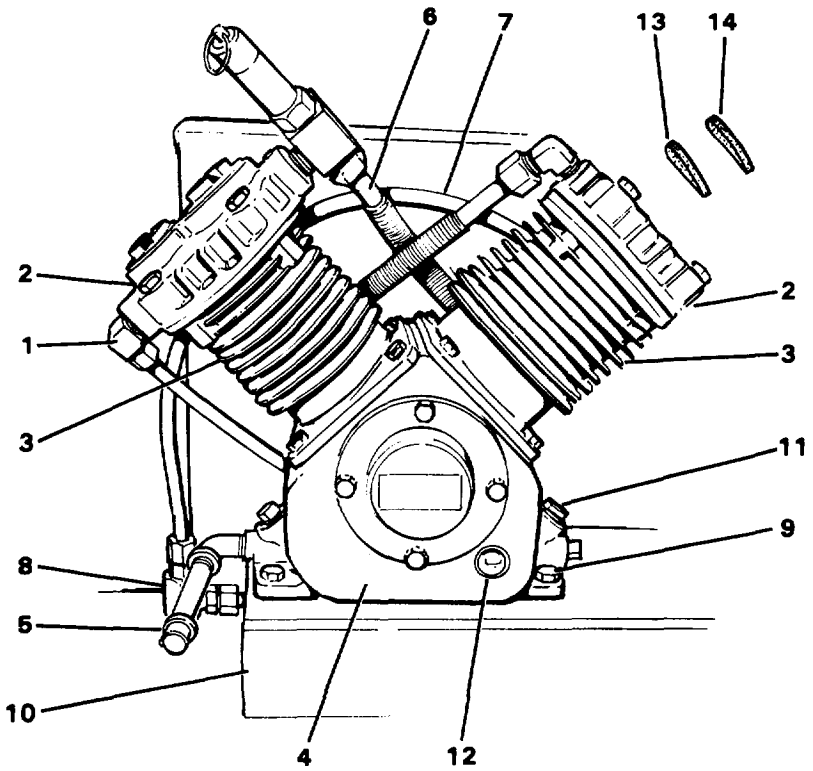
b. *Materials/Parts*. 10 oz. (.3 L) Engine Lubricating Oil, OE-30 or equivalent.

c. *Equipment Condition.* Main power disconnected, Compressor unit OFF, Tank pressure discharged, Belt guard removed (paragraph 3-23), V-belts removed (paragraph 3-24), Flywheel removed (paragraph 3-28).

d. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose Clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Compressor Unit

INSPECTION.

a. Inspect the cylinder head fittings (1) for cracks and secure attachment.

b. Inspect the cylinder heads (2) and cylinders (3) for cracks and broken cooling fins. Notify intermediate direct support if damaged.

c. Inspect the crankcase (4) for cracks. Notify direct support if damaged.

d. Inspect the air cleaner filter (13) and felt silencer(14) for dirt and debris. Clean with P-D-680 as necessary. If distorted or damaged, replace.

REMOVAL.

WARNING

Disconnect main power and turn compressor unit off before performing maintenance procedures.

a. Turn the compressor power switch OFF.

b. Open drain cock at bottom of tank to release air pressure. Close drain cock.

c. Remove belt guard. Refer to paragraph 3-23.

d. Remove V-belts. Refer to paragraph 3-24.

e. Remove flywheel. Refer to paragraph 3-30.

f. Remove oil drain cap (5) and drain oil into an appropriate container (at least 1 pint (.5 L) capacity). Replace oil drain cap.

g. Remove intercooler (6) at cylinder head fittings (1).

h. Remove aftercooler (7) at cylinder head fitting (1) and check valve fitting (8).

i. Remove mounting bolts, washers, and nuts (9) securing compressor to tank saddle.

j. Lift compressor unit (10) off base.

INSTALLATION.

a. Position compressor unit (10) on base.

b. Install mounting bolts, washers, and nuts (9) to secure compressor to tank saddle.

c. Install aftercooler (7) at cylinder head fitting (1) and check valve fitting (8).

d. Install intercooler (6) at cylinder head fittings (1).

e. Install flywheel. Refer to paragraph 3-30.

f. Install V-belts. Refer to paragraph 3-24.

g. Check belt tension and pulley alignment. Compressor should turn freely by hand. If not, refer to paragraph 3-24 for belt adjustment and paragraph 3-25 for pulley alignment.

h. Install belt guard. Refer to paragraph 3-23.

i. Remove oil filler plug (11) and add 10 oz. (.3 L) if oil has been drained. Check oil level in sight glass (12).

j. Reconnect main power.

3-28. SAFETY INTERSTAGE VALVE. This task covers:

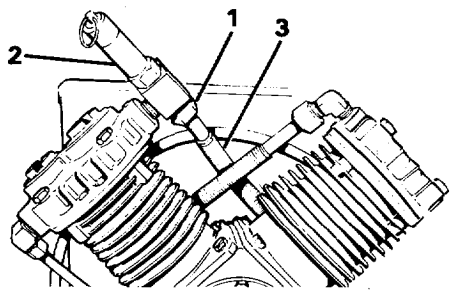
a. Inspection. b. Removal. c. Installation

INITIAL SETUP.

a. *Tools*. General Automotive Tool Set, T1-5180-00-177-7033.
b. *Materials/Parts*. Soap Solution. Anti-seize tape.
c. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose Clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Safety Interstage Valve

INSPECTION.

a. Using a soap solution, check for release of air from the brass fitting (1) or safety valve (2) itself.
b. If leakage was detected from the valve, valve may be defective or valve may have blown due to overpressure in intercooler. Check for crimped intercooler tubing (3), replace valve, and restart compressor. If valve blows again, refer compressor to intermediate direct support maintenance.
c. If air leaks between brass fitting (1) and valve (2), tighten valve.

REMOVAL.

WARNING

Disconnect main power and turn compressor unit off before performing maintenance procedures.

a. Remove safety valve (2) from brass fitting (1).

INSTALLATION.

a. Coat threads of valve (2) with anti-seize tape.
b. Install valve (2) to brass fitting (1).

3-29. OIL FILTER, DRAIN AND PLUGS. This task covers:

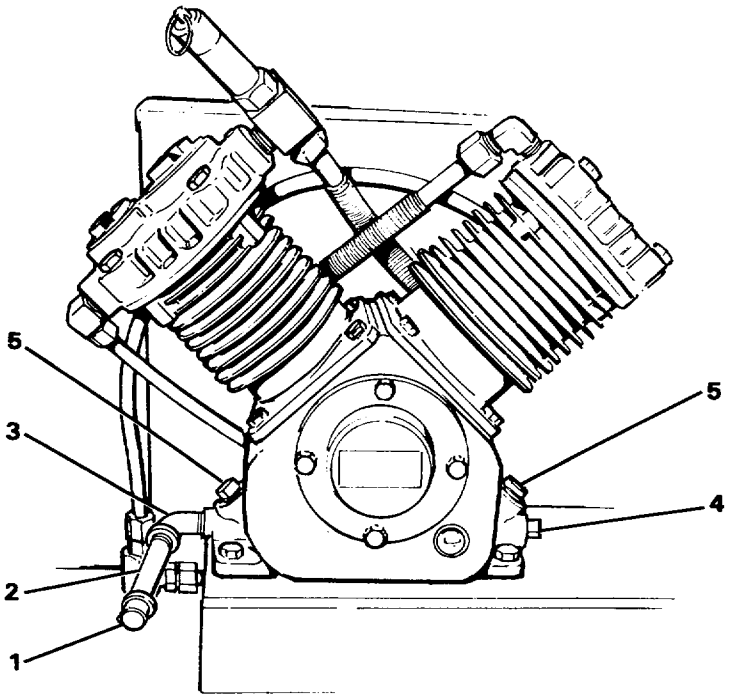
a. Initial Setup. b. Removal. c. Installation.

INITIAL SETUP.

a. *Tool*. General Automotive Tool Kit T1-5180-00-170-7033.
b. *Material/Parts Compressor*. Oil, OE-30 or equivalent.
c. *Equipment Condition*. Main power disconnected, Compressor unit OFF.
d. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose Clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Oil Fill and Drain Plugs

REMOVAL.

WARNING

Disconnect main power and turn compressor unit off before performing maintenance procedures.

a. Remove oil drain cap (1) and drain oil into a suitable container (minimum 10 oz., .3 L).

b. Remove drain pipe (2) from elbow (3).

c. Remove elbow (3).

d. Remove drain plug (4) on opposite side.

e. Remove fill plugs (5).

INSTALLATION.

a. Install pipe elbow (3) to compressor crankcase.

b. Install drain pipe (2) and drain cap (1).

c. Install drain plug (4) on opposite side.

d. Fill crankcase with 10 oz. (.3 L) of OE-30 oil (or equivalent). Check level on sight glass.

e. Replace fill plugs (5).

f. Connect main power and perform operational check.

3-30. FLYWHEEL. This task covers:

a. Initial Setup.
b. Inspection.
c. Removal.
d. Installation.

INITIAL SETUP.

a. *Tools*. General Mechanic Automotive Tool Set, T1 5180-00-177-7033; Automotive Maintenance and Repair Shop Equipment, T3 4910-00-754-0654.

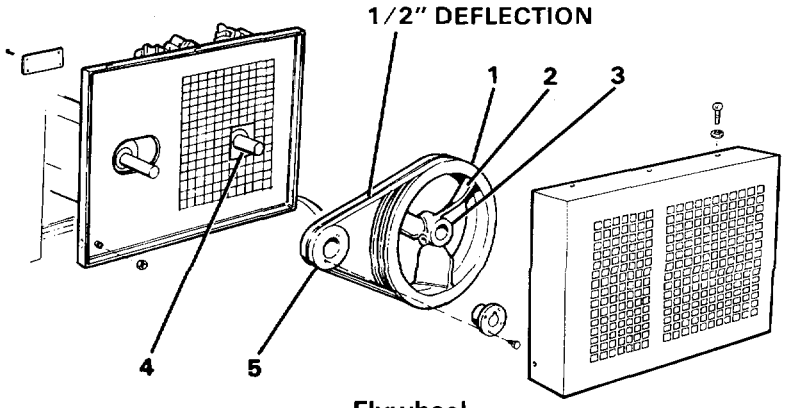
b. *Materials/Parts*. Engine Lubricating Oil OE-30 or equivalent.

c. *Equipment Condition*. Main power disconnected, Compressor unit OFF, Belt guard removed (paragraph 3-23), V-belts removed (paragraph 3-24).

d. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose Clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Flywheel

INSPECTION.

WARNING

Disconnect main power and turn compressor unit off before performing maintenance services.

a. Disconnect main power and turn compressor switch OFF.

b. Remove belt guard. Refer to paragraph 3-23.

c. Inspect flywheel (1) for cracks, damaged blades (2), loose set screw(3) or shaft key (4). Tighten or replace as required.

d. Check V-belt tension. Deflection should be 1 /2"(13 mm) halfway between drive pulley(5) and flywheel (1).

REMOVAL

a. Disconnect main power and turn compressor switch OFF.
b. Remove belt guard. Refer to paragraph 3-23.
c. Remove V-belts. Refer to paragraph 3-24.
d. Loosen hex head setscrew (3).
e. Tap flywheel (1) to loosen and remove from shaft.
f. Remove shaft key (4) and retain for installation.

INSTALLATION

a. Apply light lubricant (engine oil or equivalent) to shaft.
b. Install key (4) in shaft keyway.
c. Place flywheel (1) in position on shaft.
d. Tighten setscrew (3).
e. Install V-belts. Refer to paragraph 3-24.
f. Check belt tension. Refer to paragraph 3-24.
g. Check pulley alignment. Refer to paragraph 3-25.
h. Install belt guard. Refer to paragraph 3-23.
i. Reconnect main power.

3-31. INTERCOOLER. This task covers:

a. Initial Setup.
b. Inspection.
c. Removal.
d. Installation.

INITIAL SETUP.

a. *Tools*. General Mechanic Automotive Tool Kit, T1 5180-00-177-033.

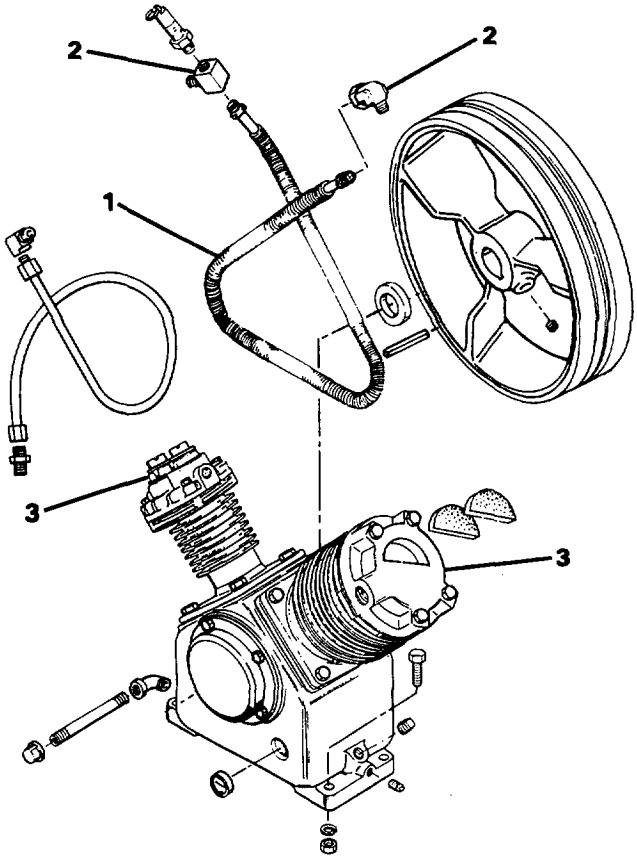
b. *Materials/Parts*. Soap solution.

c. *Equipment.* Main power disconnected, Compressor unit OFF Belt guard removed (paragraph 3-23), V-Belts removed (paragraph 3-24), Flywheel removed (paragraph 3-30).

d. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Intercooler

INSPECTION.

WARNING
Disconnect main power and turn compressor unit off before performing maintenance services.

a. Inspect the intercooler tubing (1) for cracks, dents, or crimping.
b. Using soap solution, inspect the intercooler fittings (2) at the cylinder heads (3) for leaks.

REMOVAL

a. Disconnect main power and turn compressor switch OFF.
b. Remove the belt guard. Refer to paragraph 3-23.
c. Remove the V-belts. Refer to paragraph 3-24.
d. Remove the flywheel. Refer to paragraph 3-30.

CAUTION
Be careful not to bend tubing when removing.

e. Remove the intercooler tubing (1) at the cylinder head fittings (2).

INSTALLATION.

a. Install the intercooler tubing (1) at the cylinder head fittings (2).
b. Install the flywheel. Refer to paragraph 3-30.
c. Install the V-belts. Refer to paragraph 3-24.
d. Install the belt guard. Refer to paragraph 3-23.
e. Connect the main power.

3-32. INTAKE/EXHAUST VALVE ASSEMBLIES. This task covers:

a. Initial Setup.
b. Removal.
c. Inspection and Cleaning.
d. Installation.

INITIAL SETUP.

a. *Tools.* General Mechanic Automotive Tool Set, T1 5180-00-177-7033.

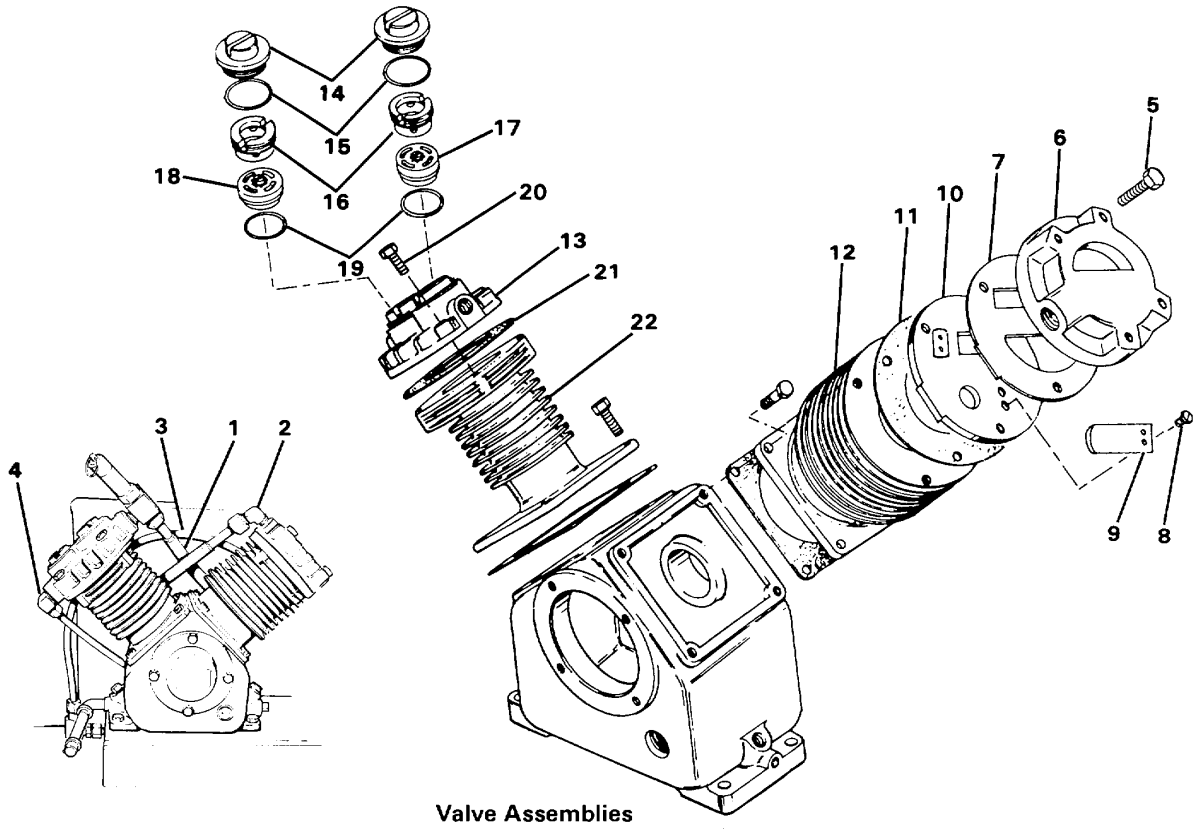
b. *Materials/Parts*. Compressed Air; Clean Rag; Compressor Gasket Set/Valve Set.

c. *Equipment Condition.* Main power disconnected; Compressor unit OFF; Belt guard removed (paragraph 3-23) ; V-Belts removed (paragraph 3-24) ; Flywheel removed (paragraph 3-30); Intercooler removed (paragraph 3-31) ; Aftercooler removed (paragraph 3-44).

d. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Valve Assemblies

REMOVAL

WARNING

Disconnect main power and turn compressor unit off before performing maintenance procedures.

CAUTION

Intake valve assembly and exhaust valve assembly must not be interchanged. Identify and tag during removal.

a. Disconnect main power and turn compressor switch OFF.

b. Open drain cock and completely relieve tank pressure. Close drain cock.

c. Remove intercooler (1) at cylinder head fittings (2). Refer to paragraph 3-31.

d. Remove aftercooler (3) at cylinder head fitting (4) only. Refer to paragraph 3-44.

e. Remove capscrews (5) securing low pressure (reed valve) head (6).

f. Remove head (6).

g. Remove valve plate gasket (7) and discard.

h. Remove rolling screws (8) and reed valves (9). Identify reed valves for proper reassembly.

i. Remove valve plate (10).

j. Remove cylinder head gasket (11) from low pressure cylinder (12).

k. On high pressure cylinder head (13), remove valve chamber caps (14) and gaskets (15). Discard gaskets.

l. Remove valve retainers (16).

m. Remove intake valve assembly (17) and exhaust valve assembly (18).

n. Remove valve gaskets (19) and discard.

o. Remove capscrews (20) securing high pressure cylinder head (13). Remove head.

p. Remove head gasket (21) from high pressure cylinder (22) and discard.

CLEANING AND INSPECTION.

WARNING

Clean with compressed air no greater than 30 psi. Protective eyewear must be worn when using compressed air.

a. Clean cylinders (12 and 22) and cylinder heads (6 and 13), especially area between cooling fins.

b. Remove old gasket material stuck to top of cylinders and bottom of heads.

c. Clean reed valves (9), valve plate (10), and valve assemblies (17 and 18) with compressed air. Wipe clean with rag.

d. Inspect reed valves (9) for flatness by placing on valve plate (10). Replace if not flat, or if it is distorted or cracked.

e. Inspect high pressure valve assemblies (17 and 18) by inserting small tool in valve holes and push parts up and down. Movement of parts should be free. Replace valve assembly if movement is sticky. Valves are not repairable.

f. Inspect valve plate (10) for cracks or carbon pitting. Replace plate if damaged or distorted.

INSTALLATION.

CAUTION
Valve gaskets should be replaced each time valves are serviced.

a. Install new gasket (21) on high pressure cylinder (22).

b. Install cylinder head (13) and capscrews (20). Tighten capscrews alternately and evenly.

c. Install intake valve assembly (17) and exhaust valve assembly (18) with new gaskets (19).

d. Screw valve retainers (16) into cylinder head.

e. Install new gaskets (15) and chamber caps (14).

f. Install new gasket (11) on low pressure cylinder (12).

g. Install valve plate (10).

h. Install reed valves (9) as identified and secure with rolling screws (8).

i. Install new valve plate gasket (7).

j. Install cylinder head (6) and secure with capscrews (5). Tighten capscrews alternately and evenly.

k. Install aftercooler (3) at high pressure head fitting (4). Refer to paragraph 3-44.

l. Install intercooler (1) at cylinder head fittings (2). Refer to paragraph 3-31.

m. Connect main power and check for proper operation upon startup. Check gaskets (7, 11,15, 19 and 21) and fittings (2 and 4) for leaks.

3-33. ELECTRIC MOTOR. This task covers:

a. Initial Setup.
b. Continuity Test.
c. Short Circuit Test.
d. Removal.
e. Installation.

INITIAL SETUP.

a. *Tools*. General Mechanic Automotive Tool Kit T1 5180-00-177-7033; Automotive Maintenance and Repair Shop Equipment, T3 4910-00-754-0654.

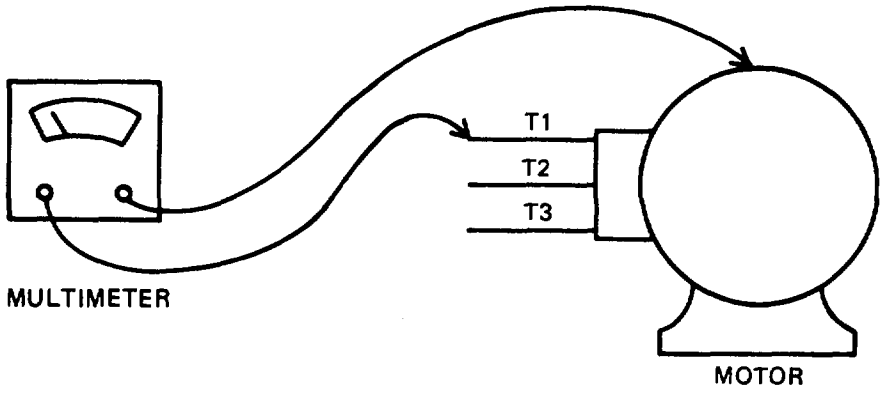
b. *Equipment Condition*. Main power disconnected; Compressor unit OFF; Belt guard removed (paragraph 3-23) ; V-Belts removed (paragraph 3-24) ; Drive pulley removed (paragraph 3-25).

c. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**

SET MULTIMETER TO OHMS x 1 SCALE



Continuity Test

CONTINUITY TEST.

WARNING

Disconnect main power and turn compressor unit off before performing maintenance services.

a. Disconnect main power and turn compressor switch OFF.

b. Tag and disconnect motor leads (T1, T2, T3).

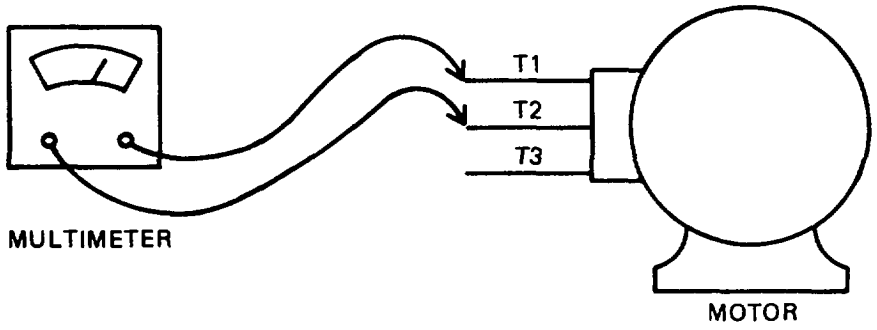
c. Set multimeter to OHMS x 1 scale.

d. Connect test leads between all pairs of motor leads:

(1) T1 and T2.
(2) T1 and T3.
(3) T2 and T3.

e. Multimeter readings should be zero or near zero for each step. If meter reading is infinity (X), windings are open. Notify direct support.

SET MULTIMETER TO OHMS x 1000 SCALE



Short Circuit Test

SHORT CIRCUIT TEST.

a. Disconnect main power and turn compressor switch OFF.

b. Tag and disconnect motor leads (T1, T2, T3).

c. Set multimeter to OHMS x 1000 scale.

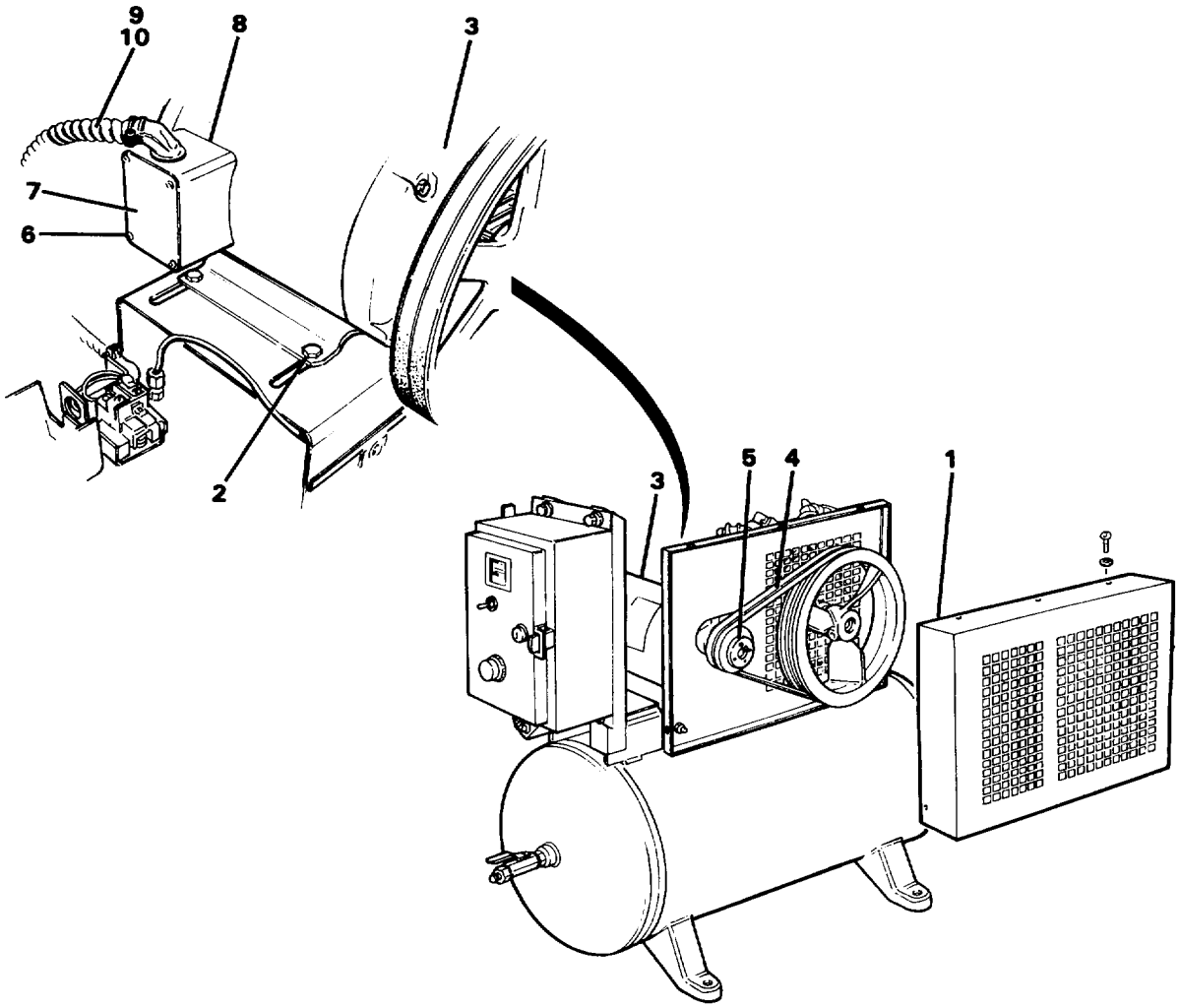
d. Connect test leads between motor lead and frame:

(1) T1 and motor frame.

(2) T2 and motor frame.

(3) T3 and motor frame.

e. Multimeter readings should read infinity (X) for each step. If meter reading is zero, windings are short circuited. Notify direct support.



Electric Motor

REMOVAL.

a. Disconnect main power and turn compressor switch OFF.
b. Remove the belt guard (1). Refer to paragraph 3-23.
c. Loosen four mounting bolts, washers, nuts (2).
d. Slide motor (3) towards compressor unit and remove V-belts (4).
e. Remove drive pulley (5). Refer to paragraph 3-25.
f. Remove screws (6) and cover plate (7) on motor conduit box (8).
g. Tag and disconnect motor leads (T1, T2, T3) in conduit box.
h. Remove conduit locknut and remove conduit (9) and wires (10) from box (8).
i. Remove four mounting bolts, washers, and nuts (2).
j. Lift electric motor (3) off tank saddle.

INSTALLATION.

a. Position electric motor (3) on tank saddle.
b. Install, but do not tighten, mounting bolts, washers and nuts (2)
c. Route conduit (9) and wires (10) into box (8) and secure with locknut.
d. Connect motor leads (T1, T2, T3) in conduit box.
e. Install cover plate (7) and screws (6) on conduit box (8).
f. Install drive pulley and check alignment. Refer to paragraph 3-25.
g. Install V-belts and adjust belt tension. Refer to paragraph 3-24.
h. Tighten mounting hardware (2).
i. Install the belt guard. Refer to paragraph 3-23.
j. Reconnect main power.

3-34. AIR RECEIVER SYSTEM.

3-35. SAFETY VALVE. This task covers:

a. Initial Setup.
b. Inspection.
c. Removal.
d. Installation.

INITIAL SETUP.

a. *Tools.* General Mechanic Automotive Tool Set, T1 5180-00-177-7033.

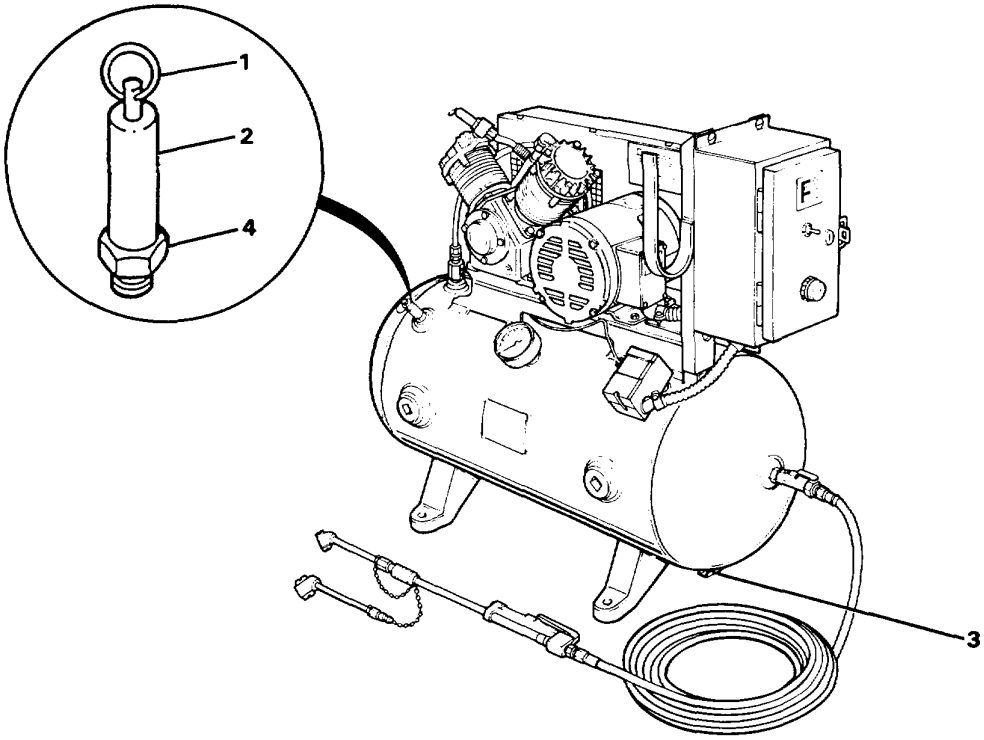
b. *Material/Parts.* Soap solution, Anti-Seize Tape.

c. *Equipment Condition.* As noted in procedure.

d. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Safety Valve

INSPECTION.

NOTE

Air tank should be under pressure to check action of safety valve.

a. Run compressor until unit kicks off (tank pressure close to 190 psi).

b. Turn compressor switch OFF.

c. Pull ring (1) on safety valve (2) and release. Air should escape when ring is pulled; valve should reseat itself and stop air release after several seconds.

d. Replace valve (2) if air continues to escape or if plunger action is sticky. Refer to next paragraph.

e. Apply soap solution to valve and check for leaks. If bubbles appear tighten valve. If leak continues, replace valve.

REMOVAL.

WARNING

Disconnect main power and turn compressor unit off before performing maintenance procedures.

a. Disconnect main power and turn compressor switch OFF.

WARNING

Air pressure in tank must be discharged before removal of safety valve. Removal under pressure could cause serious injury.

b. Open drain cock (3) and completely release tank pressure. Close drain cock.

c. Unscrew safety valve (2) at hex head face at base of valve.

NOTE

Safety valve is not repairable. Replace if defective.

INSTALLATION.

a. Coat threads with anti-seize tape install safety valve (2) on tank and tighten. Be careful not to strip threads when installing.

b. Check that drain cock (3) is closed.

c. Connect main power and turn compressor on.

d. Run compressor and check for leaks.

3-36. CHECK VALVE. This task covers:

a. Initial Setup.
b. Inspection.
c. Removal.
d. Disassembly.
e. Assembly.
f. Installation.

INITIAL SETUP.

a. Tool General Mechanic Automotive Tool Set, T1 5100-00-173-7033.

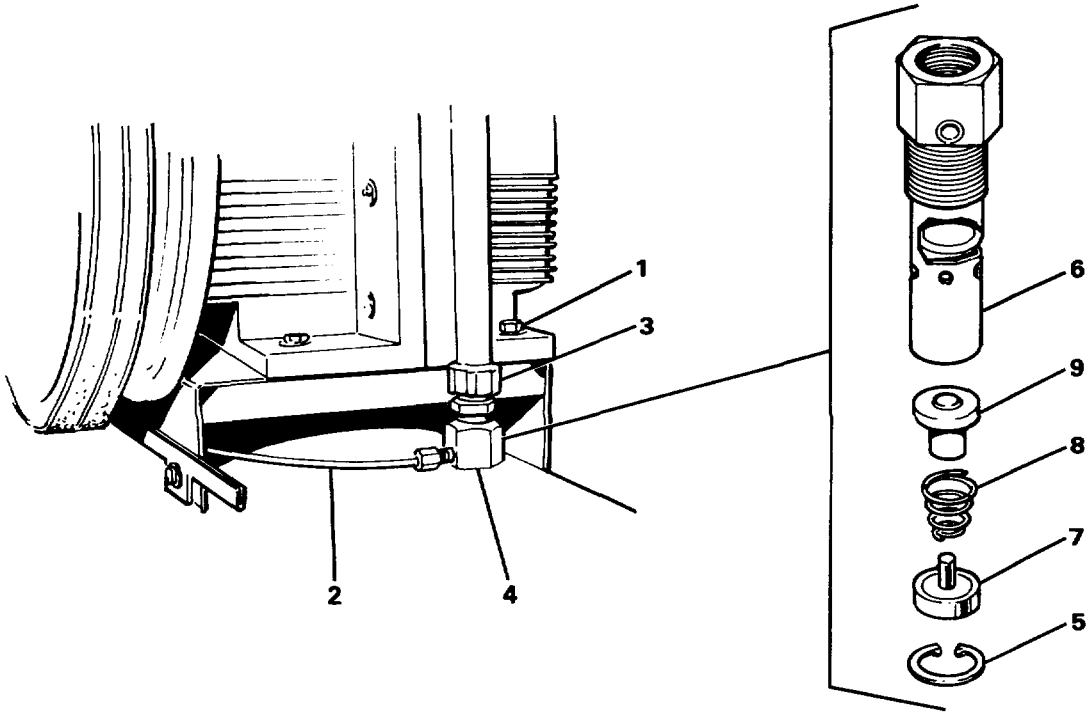
b. Materials/Parts, Soap solution. Replacement parts as required. Antiseize tape.

c. Equipment Condition. As noted in procedure.

d. General Safety Requirements.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Check Valve

INSPECTION.

NOTE

Air tank should be under pressure to check action of check valve.

a. Run compressor until unit kicks off (tank pressure close to 190 psi).

b. Turn compressor switch OFF.

c. Air pressure in aftercooler tubing (1) should have been released to unloader line (2) upon compressor shutdown.

CAUTION
Loosen fitting slowly. Do not remove until air has escaped.

d. Loosen aftercooler tubing fitting (3) and wait for any air release. Remove aftercooler tubing.

e. Remove unloader line (2) from check valve (4).

f. Apply soap solution to check valve (4) and check for leaks. If bubbles appear, repair or replace check valve. Refer to following paragraphs.

REMOVAL

WARNING
Disconnect main power and turn compressor unit off before performing maintenance procedures.

a. Disconnect main power and turn compressor switch OFF.

WARNING
Air pressure in tank must be discharged before removal of check valve. Removal under pressure could cause serious injury.

b. Open drain cock and completely release tank pressure. Close drain cock.

c. Disconnect aftercooler tubing fitting (3) from check valve (4).

d. Remove pipe.

e. Disconnect unloader line (2) from check valve (4).

f. Unscrew check valve (4) from tank.

DISASSEMBLY.

a. Remove retaining ring (5) from body (6).

b. Remove brass seat (7), spring (8), and teflon poppet (9).

c. Replace poppet (9) if worn or pitted.

ASSEMBLY.

a. Install poppet (9), spring (8), and seat (7) into body (6).
b. Install retaining ring (5).
c. Check that seat and poppet assembly move freely and seat against body dashpot.

INSTALLATION.

a. Coat threads with anti-seize tape and install check valve (4) in tank and tighten.
b. Connect unloader line (2) to check valve (4).
c. Connect aftercooler tubing fitting (3) to check valve (4).
d. Check that drain cock is closed.
e. Connect main power.
f. Run compressor and check fittings for air leaks.

3-37. PRESSURE GAGE This task covers:

a. Initial Setup.
b. Inspection.
c. Removal.
d. Installation.

INITIAL SETUP.

a. *Tools*. General Mechanic Automotive Tool Set, T1 5180-00-177-7033.

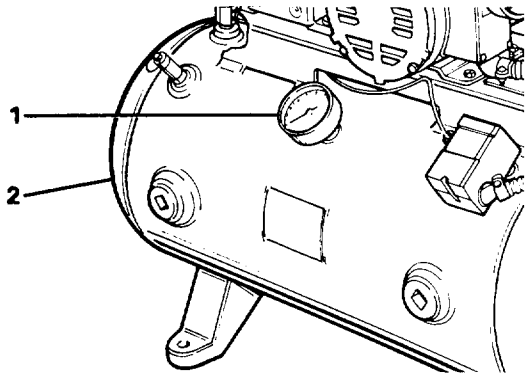
b. *Materials/Parts*. Soap solution. Anti-seize tape.

c. *Equipment Condition*. As noted in procedure.

d. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Pressure Gage

INSPECTION

NOTE
Air tank should be under pressure to check operation of pressure gage.

a. Run compressor until unit kicks off (tank pressure close to 190 psi).

b. Inspect pressure gage (1) for cracked glass, bent needle, or unreadable face. Replace if defective.

c. Apply soap solution at base of gage. If bubbles appear, tighten gage slowly. If leak continues, replace gage.

REMOVAL.

WARNING

Disconnect main power and turn compressor unit off before performing maintenance procedure.

a. Disconnect main power and turn compressor switch OFF.

WARNING

Air pressure in tank must be discharged before removal of pressure gage. Removal under pressure could cause serious injury.

b. Open drain cock and completely relieve tank pressure. Close drain cock.

c. Unscrew pressure gage (1) from tank.

NOTE

Pressure gage is not repairable. Replace if defective.

INSTALLATION.

a. Coat threads with anti-seize tape and install pressure gauge (1) on tank and tighten.

b. Check that drain cock is closed.

c. Connect main power.

d. Run compressor and check for leaks.

3-38. DRAIN COCK. This task covers:

a. Initial Setup.
b. Inspection.
c. Removal.
d. Installation.

INITIAL SETUP.

a. *Tools*. General Mechanic Automotive Tool Set, T1 5180-00-173-7033.

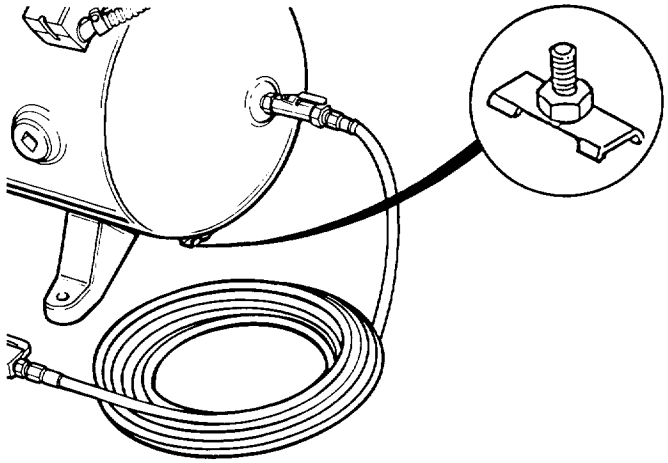
b. *Materials/Parts*. Soap solution.

c. *Equipment Condition*. As noted in procedures.

d. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Drain Cock

INSPECTION.

NOTE
Air tank should be under pressure to check drain cock for leaks.

a. Run compressor until unit kicks off (tank pressure close to 190 psi).

b. Apply soap solution to drain cock (1) and check for leaks. If bubbles appear, first tighten drain cock (1) and then fitting at tank.

c. If leaks continue, replace drain cock.

d. Inspect for corrosion or damage. Replace if defective.

REMOVAL.

WARNING
Disconnect main power and turn compressor unit off before performing maintenance procedure.

a. Disconnect main power and turn compressor switch OFF.

WARNING
Air pressure in tank must be discharged before removal of drain cock. Removal under pressure could cause serious injury.

b. Open drain cock (1) and completely release tank pressure.

c. Unscrew drain cock (1) from tank.

NOTE
Drain cock is not repairable. Replace if defective.

INSTALLATION.

a. Screw drain cock (1) securely into tank.

b. Connect main power.

c. Run compressor and check for leaks.

3-39. SHUTOFF VALVE. This task covers:

a. Initial Setup.
b. Inspection.
c. Removal.
d. Installation.

INITIAL SETUP.

a. *Tools.* General Mechanic Automotive Tool Set, T1 5180-00-173-7033.

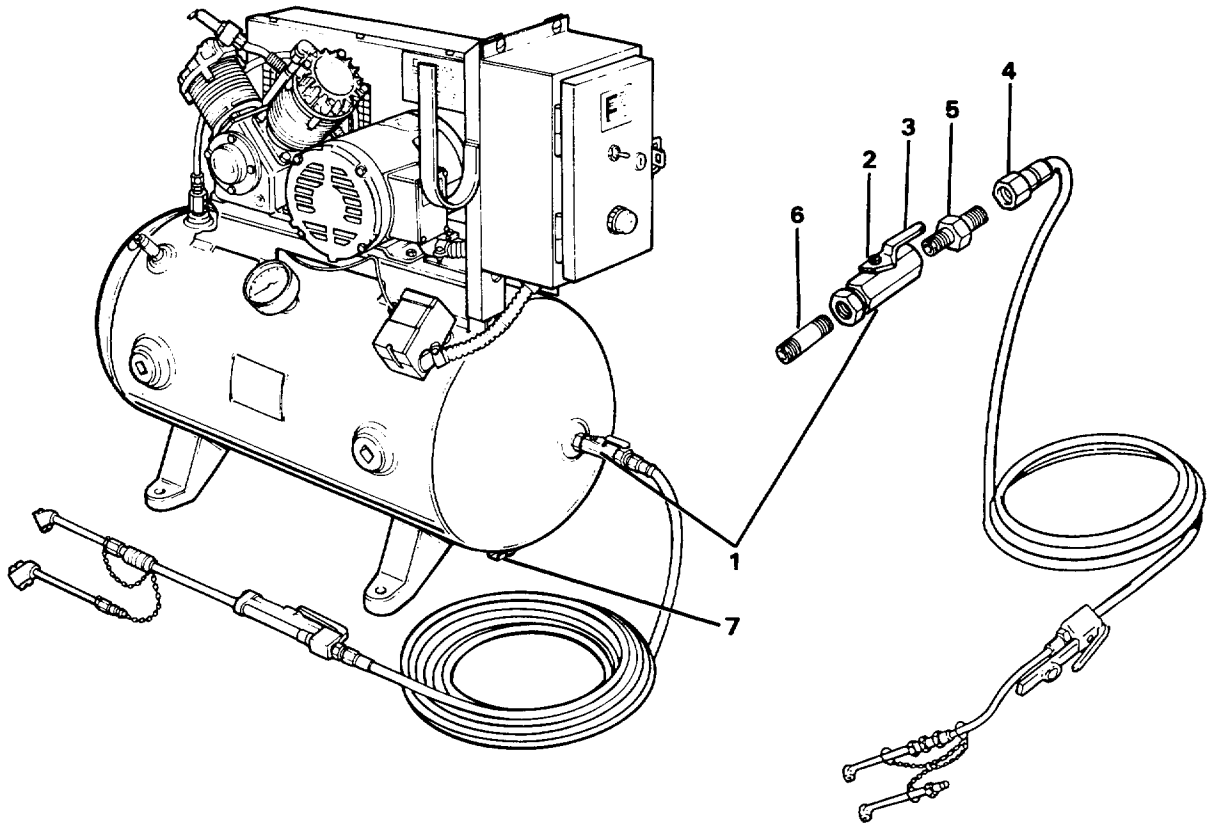
b. *Material/Parts*. Soap solution.

c. *Equipment Condition.* As noted in procedures.

d. *General Safety Requirements.*

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Shutoff Valve

INSPECTION.

NOTE
Air tank should be under pressure to check shutoff valve for leaks.

a. Run compressor until unit kicks off (tank pressure close to 190 psi).

b. Apply soap solution to shutoff valve (1) and check for leaks.

c. Be sure screw (2) is tight.

d. Check lever (3) for smooth turning. Replace valve if leaks continue or lever is hard to turn.

REMOVAL

WARNING
Disconnect main power and turn compressor unit off before performing maintenance procedures.

a. Disconnect main power and turn compressor switch OFF.

WARNING
Air pressure in tank must be discharged before removal of shutoff valve. Removal under pressure could cause serious injury.

b. Open drain cock(7) and completely relieve tank pressure. Make sure shutoff valve (1) is open so pressure in air hose is also relieved. Close drain cock.

c. Unscrew air hose fitting (4) and remove hose.

d. Unscrew bushing (5) from valve (1).

e. Unscrew shutoff valve from pipe nipple (6).

INSTALLATION.

a. Install shutoff valve (1) on pipe nipple (6).

b. Install bushing (5) to valve.

c. Install air hose fitting (4).

d. Check that drain cock (7) is securely closed.

e. Connect main power.

f. Run compressor and inspect shutoff valve and fittings for leaks and proper operation.

3-40. AIR TANK. This task covers:

a. Initial Setup. b. Removal. c. Installation.

INITIAL SETUP.

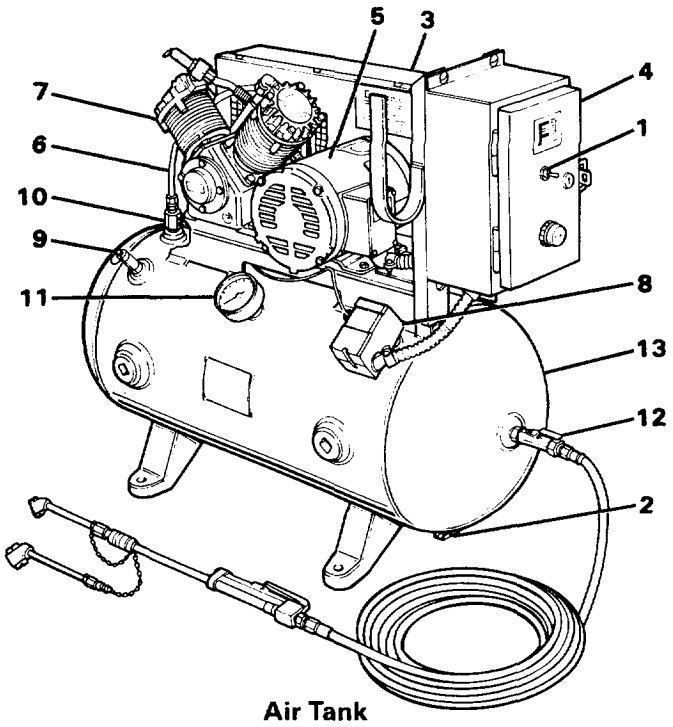
a. *Tools.* General Mechanic Automotive Tool Set, T1 5083-00-177-7033.

b. *Equipment Condition.* Main power disconnected; Compressor unit OFF; Air in tank discharged.

c. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Air Tank

REMOVAL

WARNING

Disconnect main power and turn compressor unit off before performing maintenance procedures.

a. Disconnect main power and turn compressor switch (1) OFF.

WARNING

Air pressure in tank must be discharged before removing any tank component. Removal of any tank component under pressure could cause serious injury.

b. Open drain cock (2) and completely release tank pressure.

c. Remove belt guard (3). Refer to paragraph 3-23.

d. Remove motor starter and enclosure (4). Refer to paragraphs 3-19 and 3-20.

e. Remove electric motor (5). Refer to paragraph 3-33.

f. Remove tubing assemblies (6). Refer to paragraphs 3-31 and 3-44.

g. Remove compressor unit (7). Refer to paragraph 3-27.

h. Remove pressure switch (8). Refer to paragraph 3-21.

i. Remove safety valve (9). Refer to paragraph 3-35.

j. Remove check valve (10). Refer to paragraph 3-36.

k. Remove pressure gauge (11). Refer to paragraph 3-37.

l. Remove drain cock (2). Refer to paragraph 3-38.

m. Remove shutoff valve (12). Refer to paragraph 3-39.

n. Unbolt tank (13) from base.

INSTALLATION.

a. Bolt air tank (13) to base. Make sure base is on firm level ground or flooring.

b. Install shutoff valve (12). Refer to paragraph 3-39.

c. Install drain cock (2). Refer to paragraph 3-38.

d. Install pressure gage (11). Refer to paragraph 3-37.

e. Install check valve (10). Refer to paragraph 3-36.

f. Install safety valve (9). Refer to paragraph 3-35.

g. Install pressure switch (8). Refer to paragraph 3-21.

h. Install compressor unit (7). Refer to paragraph 3-27.

i. Install tubing assemblies (6). Refer to paragraphs 3-31 and 3-44.

j. Install electric motor (5). Refer to paragraph 3-33.

k. Adjust belt tension (paragraph 3-24) and pulley alignment (paragraph 3-25).

l. Install motor starter and enclosure (4). Refer to paragraphs 3-19 and 3-20.

m. Install belt guard (3). Refer to paragraph 3-23.

n. Close drain cock (2).

CAUTION

Before operating compressor, be sure all components and fittings are secure and tight. Also, check that wiring is correct. Check that tools and objects are clear of unit.

o. Connect main power.

p. Turn power switch (1) on and run compressor. Inspect entire unit, check for air leaks and perform operational check.

3-41. AIR DISCHARGE SYSTEM.

3-42. AIR HOSES. This task covers:

a. Initial Setup. b. Removal. c. Installation.

INITIAL SETUP.

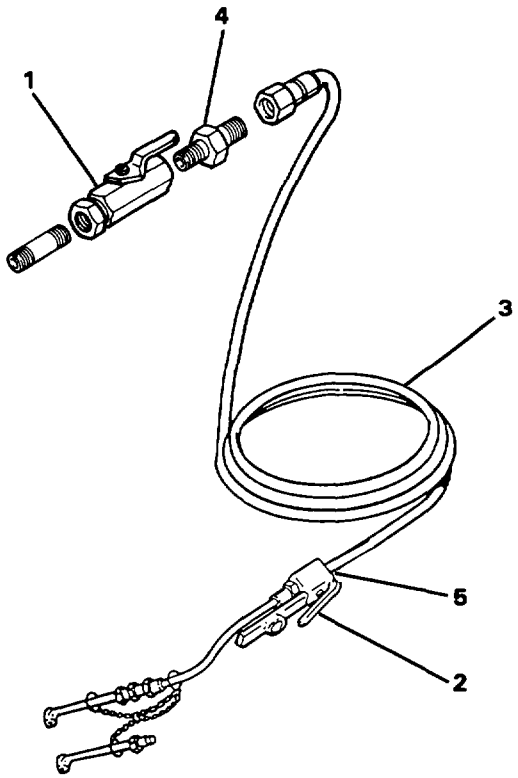
a. *Tools*. General Mechanic Automotive Tool Set, T1 5180-00-177-7033.

b. *Equipment Condition*. Main power disconnected; Compressor unit OFF; Shutoff valve closed or air in tank discharged.

c. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Air Hoses

REMOVAL.

a. Turn compressor switch OFF.

WARNING

Shutoff valve must be closed or air in tank must be discharged before removal of hoses. Removal under pressure could cause serious injury.

b. Turn shutoff valve (1) clockwise to close air supply.

WARNING

Air in hoses must be discharged before removing hose.

c. Depress lever (2) to discharge any air pressure in hoses (3).

d. Remove hoses at shutoff valve fitting (4) and inflator gage fittings (5).

INSTALLATION.

a. Install hoses (3) at shutoff valve fitting (4) and inflator gage fittings (5). Tighten fittings.

b. Turn shutoff valve (1) counterclockwise to open air supply.

c. Turn compressor unit ON, run compressor, and check for leaks.

3-43. INFLATOR GAUGE. This task covers:

a. Initial Setup. b. Removal. c. Installation.

INITIAL SETUP.

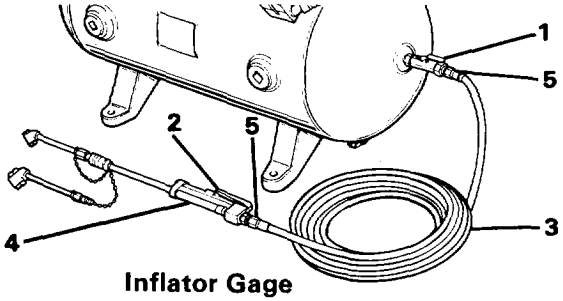
a. *Tools.* General Mechanic Automotive Tool Set, T1 5180-00-177-7033.

b. *Equipment Condition.* Main power disconnected; Compressor unit OFF; Shutoff valve closed or air in tank discharged.

c. *General Safety Requirements.*

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Inflator Gage

REMOVAL.

a. Turn compressor switch OFF.

WARNING

Shutoff valve must be closed or air in tank must be discharged before removal of inflator gage. Removal under pressure could cause serious injury.

b. Turn shutoff valve (1) clockwise to close air supply.

WARNING

Air in hoses must be discharged before removing inflator gage.

c. Depress lever (2) to discharge any air pressure in hose (3).

d. Remove inflator gage (4) at hose fittings (5).

INSTALLATION.

a. Attach inflator gage (4) to hose fittings (5).

b. Turn shutoff valve (1) clockwise to open air supply.

c. Turn compressor unit ON, run compressor, and check for leaks.

3-44. TUBE ASSEMBLIES. This task covers:
a. Inspection. b. Removal. c. Installation.

INITIAL SETUP.

a. *Tools*. General Automotive Tool Kit, T1-5180-00-170-7033.

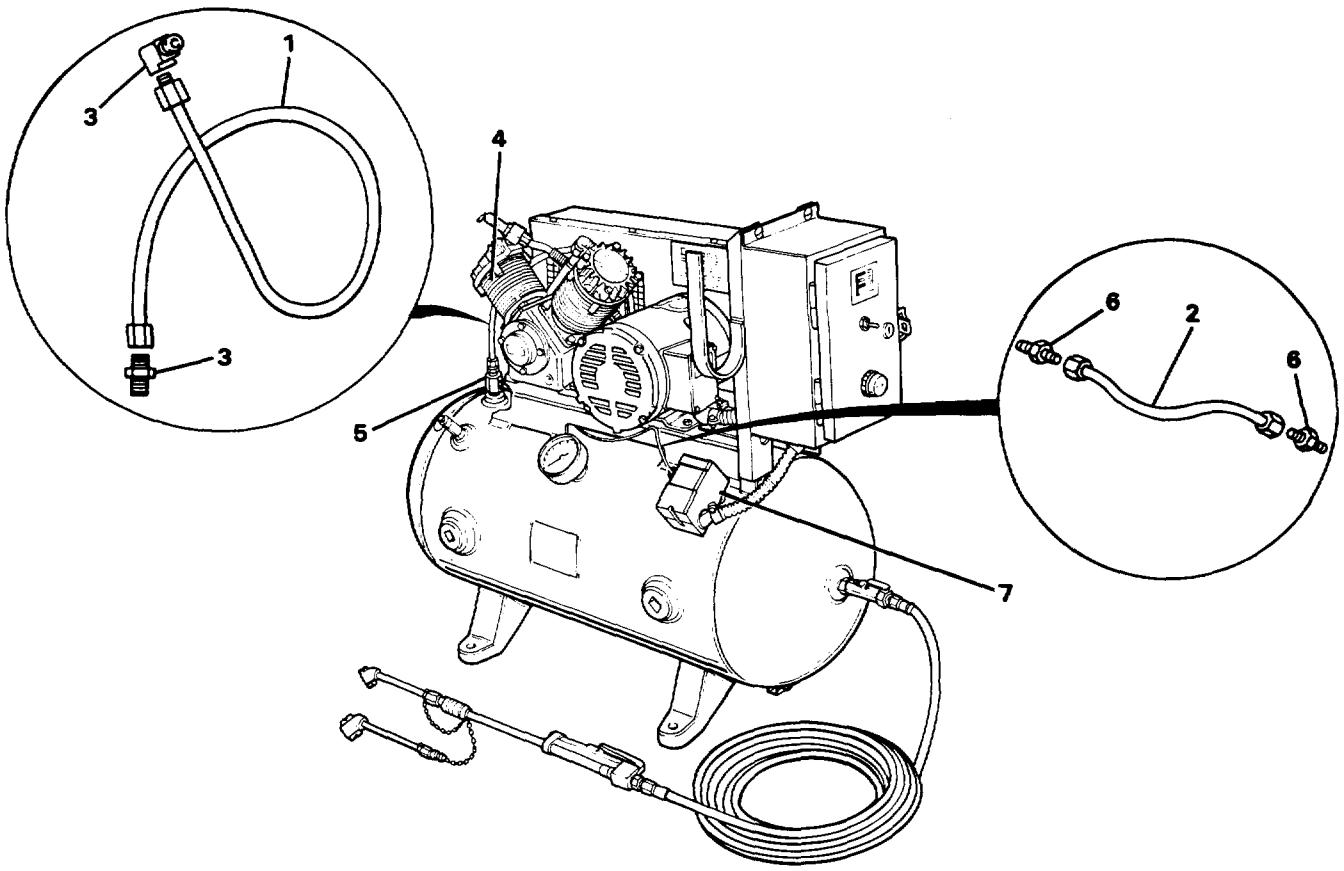
b. *Material/Parts*. Soap solution. Anti-seize tape.

c. *Equipment Condition Main power disconnected*, Compressor unit OFE Belt guard removed (paragraph 3-23), V-Belts removed (paragraph 3-24), Flywheel removed (paragraph 3-30).

d. *General Safety Requirements*.

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



INSPECTION.

a. Inspect the after cooler tubing (1) and unloader line (2) for cracks, dents, or crimping.

b. Using soap solution, check the aftercooler fittings (3) at the cylinder head (4) and check valve (5) for leaks.

c. Using soap solution, check the unloader line fittings (6) at the check valve (5) and pressure switch (7) for leaks.

REMOVAL.

WARNING

Disconnect main power and turn compressor unit off before performing maintenance procedures.

a. Remove the aftercooler tubing fittings (3) at the cylinder head (4) and check valve (5).

b. Remove the unloader line fittings (6) at the check valve (5) and pressure switch (7).

INSTALLATION.

WARNING

Disconnect main power and turn compressor unit off before performing maintenance procedures.

a. Coat all threaded fittings with anti-seize tape.

b. Install the aftercooler tubing fittings (3) at the cylinder head (4) and check valve (5).

c. Install the unloader line fittings (6) at the check valve (5) and pressure switch (7).

SECTION VII. PREPARATION FOR STORAGE

3-45. LONG TERM STORAGE. For storage longer than 30 days, prepare the air compressor as follows:

WARNING
Disconnect main power and turn compressor unit off before performing maintenance procedures.

NOTE
Compressor should be stored on skids, if available.

a. Turn compressor switch (1) OFF.

b. Remove oil drain cap (2) and drain oil into suitable container. Replace cap.

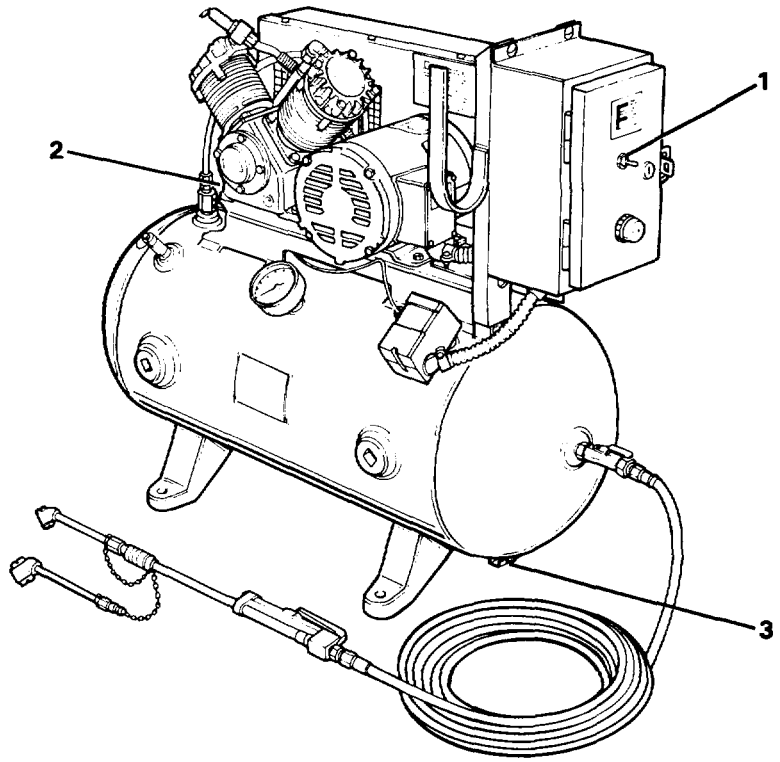
c. Refill crankcase with 10 oz. (.3 L) of 30 weight preservative lubricating oil (MIL-L-21260B, Grade 2).

d. Open the drain cock(3) to release air pressure in tank and depress inflator gauge lever (4) to release air hose pressure.

e. Remove the belt guard (paragraph 3-23) and loosen belt tension (paragraph 3-24). Insert heavy paper strips between the pulleys and belts to prevent sticking.

f. Clean and dry the compressor unit with a wiping rag.

g. Protect the compressor with a good weather-resistant tarpaulin and store it under cover, preferably in a dry building.



Compressor Storage

CHAPTER 4. INTERMEDIATE DIRECT SUPPORT MAINTENANCE INSTRUCTIONS
SECTION I. TROUBLESHOOTING

4-1. GENERAL. This section contains troubleshooting procedures to be performed by direct support maintenance. This assumes that troubleshooting and maintenance procedures have already been performed at the organizational level for similar malfunctions. information should be reviewed in Chapter 3: Unit Maintenance Instructions; Section V. Troubleshooting; and Section VI. Organizational Maintenance Procedures.

4-2. COMPRESSOR UNIT. Direct support troubleshooting and maintenance procedures cover cylinder and crankcase component replacement: cylinder block, pistons, connecting rod assemblies, crankshaft and oil seals.

4-3. ELECTRIC MOTOR. Direct support troubleshooting and maintenance procedures cover motor component replacement.

4-4. TROUBLESHOOTING TABLE. The following columns are used in the Troubleshooting Table.

a. *Malfunctions.* Malfunctions listed are the ones most likely to happen. Not all possible malfunctions can be foreseen and listed.

b. *Test or inspection.* Tests or inspections are listed to help you find the cause of the malfunction. The tests that are easiest to do are listed first. The tests that are hardest to do are listed last.

c. *Corrective Action.* Corrective actions are listed to help eliminate the malfunction. The paragraph number of the detailed maintenance procedure is given in parentheses.

Table 4-1. Troubleshooting

Malfunction Test or Inspection Corrective Action
COMPRESSOR
1. COMPRESSOR DOES NOT PUT OUT ENOUGH AIR.
Step 1. Check for leaking gaskets between cylinder heads and cylinders, and gaskets between cylinders and crankcase. Install new gaskets (paragraph 4-7).
Step 2. Check for worn or damaged intake or exhaust valves in low pressure cylinder. Replace as necessary.
2. EXCESSIVE OIL CONSUMPTION.
Step 1. Check for worn or stuck piston rings, particularly oil ring. Install new piston rings (paragraph 4-7).
Step 2. Check for leaking gasket between cylinder and crankcase, leaking gaskets between crankcase and crankcase cover, or leaking gasket between crankcase cover and breather assembly cover. Install new gaskets (paragraph 4-7).
Step 3. If oil leakage occurs between crankcase cover and breather assembly cover, check felt oil separator on breather assembly. Replace oil separator (paragraph 4-7).

Table 4-1. Troubleshooting (Continued)

Malfunction Test or Inspection Corrective Action

Step 4. Check for leaking oil seal at the crankcase shaft.

Install new oil seal in crankcase (paragraph 4-7).

3. COMPRESSOR RUNS NOISY.

Step 1. Check for foreign matter, such as carbon, metal chips, etc. or damaged components in cylinder and crankcase.

Remove heads and clean cylinder; inspect crankcase (paragraph 4-7).

Step 2. Check for worn or damaged connecting rod assemblies.

Replace damaged connecting rod components (paragraph 4-8).

Step 3. Check for worn bearings.

Replace bearings as necessary (paragraph 4-9).

Step 4. Check for worn or unbalanced crankshaft.

Replace crankshaft (paragraph 4-7).

Step 5. Check for end play in crankshaft.

Remove crankcase cover gasket (shim, .005" or .010") until end play is reduced (paragraph 4-7). Removing too many gaskets may cause crankshaft to bind.

ELECTRIC MOTOR

1. MOTOR WON'T RUN.

Step 1. Test for open motor windings (paragraph 3-33).

Replace frame and stator assembly (paragraph 4-10).

Step 2. Test for shorts between windings and motor frame (paragraph 3-33).

Replace frame and stator assembly (paragraph 4-10).

2. NOISY OPERATION OF MOTOR.

Step 1. Rotate motor shaft by hand and check for rough spots or binding. If rotation is not smooth, bearings are bad.

Replace bearings (paragraph 4-10).

SECTION II. INTERMEDIATE DIRECT SUPPORT MAINTENANCE PROCEDURES

4-5. GENERAL. This section contains disassembly, assembly, inspection, and repair instructions for the compressor components listed in Appendix B, Section III, Maintenance Allocation Chart. Paragraph references are listed below for each grouping for locating repair instruction:

a. *Paragraph 4-6, Compressor Assembly*: Compressor Unit, Piston and Connecting Rods, Crankcase Bearings.

b. *Paragraph 4-10, Electric Motor.*

4-6. COMPRESSOR ASSEMBLY.

4-7. COMPRESSOR UNIT. This task covers:

a. Initial Setup.
b. Disassembly.
c. Inspection.
d. Cleaning.
e. Assembly.

INITIAL SETUP.

a. *Tools*. General Mechanic Automotive Tool Set, T1 5800-00-177-7033; Field Maintenance Automotive Repair Shop Set, T2 4910-00-754-0705.

b. *Materials/Parts*. Gasket Set; Gasket Sealant; Compressed Air.

c. *Equipment Condition.* Compressor unit removed (paragraph 3-27) and placed on workbench; Cylinder head assemblies removed (paragraph 3-32).

d. *General Safety Requirements.*

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose Clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**

DISASSEMBLY.

WARNING

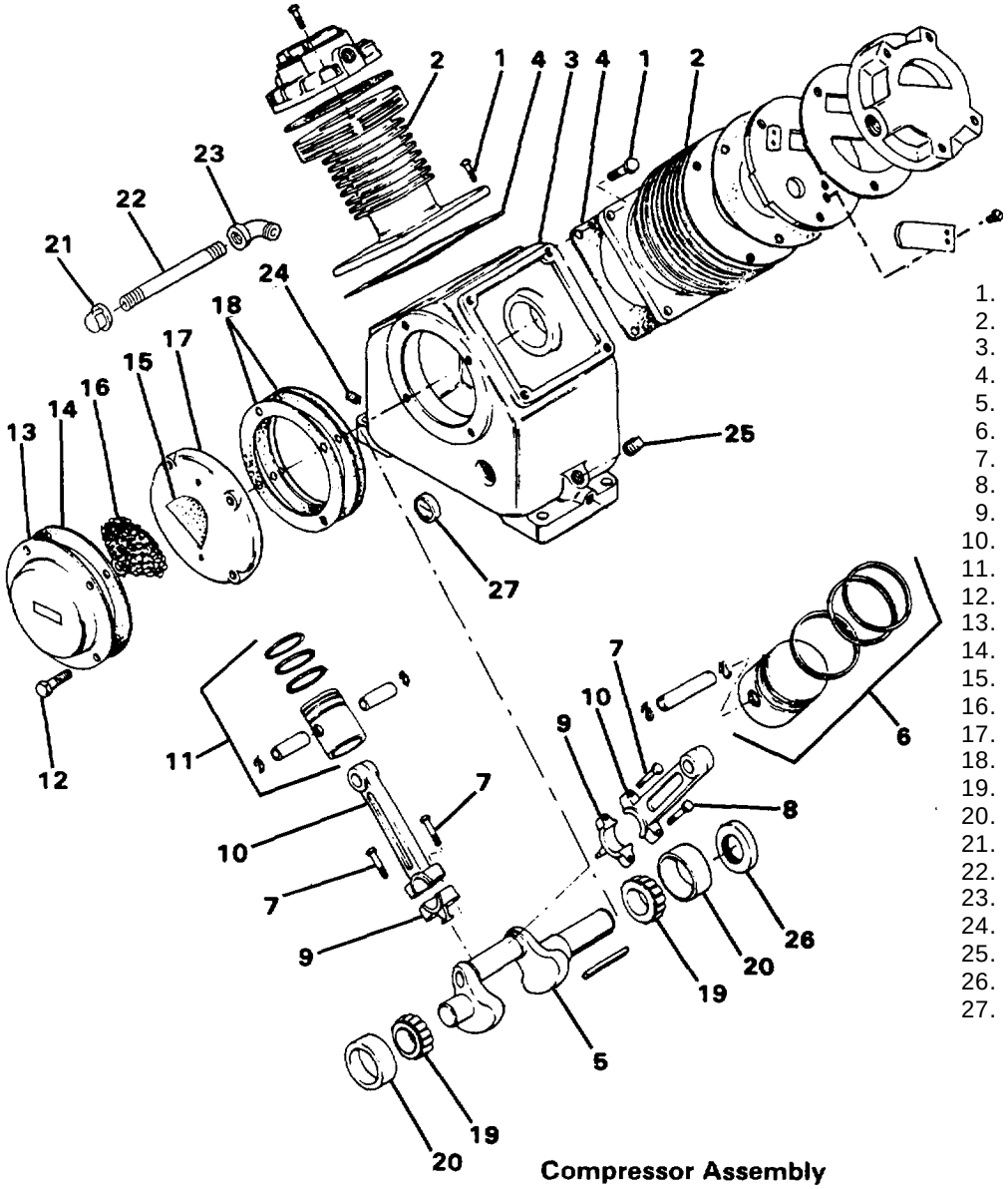
Disconnect main power and turn compressor unit off before performing maintenance procedures.

a. Remove capscrews (1) securing cylinder (2) to crankcase (3).

CAUTION

Pistons and connecting rods may be damaged by hitting crankcase when cylinder is removed. Support pistons when removing cylinder.

b. Remove cylinder (2) by twisting slightly back and forth while pulling upward.



Compressor Assembly

c. Discard old cylinder gasket (4).

CAUTION

Pistons, connecting rods, piston pins and caps are matched parts and seat with the operation of the compressor. They must keep their original positions at reassembly. Mark each component to be sure they match when they are reassembled. Also mark the cylinders from which they are removed.

d. Turn crankshaft (5) until low pressure piston (6) is at top dead center (TDC).

e. Remove capscrews (7 and 8) securing cap (9) to connecting rod (10).

NOTE

Capscrew (8) is an oil slinger and must be assembled in correct position as shown.

f. Remove entire piston assembly and reattach parts (7, 8, 9 and 10) in original position and mark for reassembly.

g. Turn crankshaft (5) until high pressure piston (11) is at TDC and repeat above steps i and j.

h. Remove capscrews (12) securing breather chamber cover (13). Remove cover.

i. Discard cover gasket (14).

j. Remove felt oil separator (15) and breather element (16).

k. Remove crankcase cover (17).

l. Remove and discard crankcase cover gaskets (18) used as shims.

m. Remove crankshaft (5) with bearings (19) and cups (20) in place. Leave bearings on crankshaft until after inspection.

n. Remove oil drain cap (21), elbow (23), and pipe nipple (22).

o. Remove opposite drain plug (24) and both filler plugs (25).

p. Remove oil seal (26) by driving out from inside of crankcase and discard.

q. Do not remove oil level gage (27) unless broken or unreadable. Gage is press fit into crankcase and removal by driving out will damage it.

INSPECTION.

a. Inspect cylinder (2) for cracks, broken cooling fins, and scored cylinder. Replace as necessary.

b. Inspect pistons (6 and 11) for cracks, broken ring seats, or scored surfaces. Replace as necessary.

NOTE

Piston rings should not be reused as they will not seat themselves in the cylinder bore in the same position as they originally were in.

c. Inspect piston rings for any signs of wear. New piston rings should normally be installed during cylinder assembly.

d. Inspect connecting rods (10) for scored bearing surfaces and loose fit. Replace as necessary.

CAUTION

Crankshaft bearings and bearing cups are matched sets. If bearing replacement is necessary, replace both bearing and cup.

e. Inspect crankshaft (5), bearings (19), and cups (20) for scored journals or pitted bearings. Replace as necessary. Refer to paragraph 4-9.

f. Inspect crankcase (3) for cracks or warpage. Inspect all pipe plug threads for damage. Retap threads or replace crankcase as necessary.

g. Inspect oil level gage (27) for cracked glass or unreadable scale. Replace as necessary.

CLEANING.

WARNING

Drycleaning solvent, P-D-680 used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact by wearing rubber or non-porous gloves when handling the solvent or material wet with drycleaning solvent. Wash hands immediately after exposure with soap and water and use a lanolin based skin cream to prevent skin drying. Do not use near open flame or excessive heat Flash point of solvent is 100° F (38°C). Do not work with solvent in a closed room. Be sure there is good ventilation or the solvent vapors will build up in the air and become a poisonous mixture which can cause physical injury or even death.

a. Clean all parts of the compressor assembly with solvent.

WARNING

Clean with compressed air no greater than 30 psi. Protective eyewear must be worn when using compressed air.

b. Blow off parts with compressed air.

c. Dry with clean rag.

d. Replace breather element (16) and felt oil separator (15) if cleaning is not effective.

ASSEMBLY.

CAUTION

Do not get sealant on bearing surfaces of oil seal.

a. Apply sealant to outside edges of oil seal (26).

b. Install oil seal (26) in crankcase by driving squarely with block of wood and hammer.

c. Install drain plug (24) and filler plugs (25).

d. Install oil drain cap (21), elbow (23) and pipe nipple (22).

NOTE

Coat all components with oil before assembly.

e. Insert flywheel portion of crankshaft through oil seal (26) and install crankshaft (5) with bearings (19) and cups (20) in crankcase.

f. Install new crankcase cover gaskets (18) used as shims (.005" and .010").

g. Position crankcase cover (17) in place and secure temporarily with capscrews (12). Check crankshaft end play and adjust as necessary be removing or adding cover gaskets (18). Crankshaft should turn freely without binding or slop (end play).

h. Remove capscrews (12) and install oil separator (15) and breather element (16).

i. Install new cover gasket (14) and breather chamber cover (13). Secure with capscrews (12).

CAUTION

Pistons, connecting rods, caps, and bushings are matched parts and seat with the operation of the compressor. They must keep their original positions at reassembly. Mark each connecting rod and cap, piston, and bearing component to be sure they match when they are reassembled. Also mark the cylinders from which they are removed.

j. Rotate crankshaft until high pressure piston (11) journal is at TDC and install connecting rod (10), cap (9) and capscrews(7 and 8). Capscrew (8) is an oil slinger and must be assembled as shown. Be sure connecting rods (10) and cap (9) mate as marked.

k. Rotate crankshaft until low pressure piston (6) journal is at TDC and repeat step i for low pressure connecting rod assembly.

NOTE

To prevent air leaking past pistons, turn rings on pistons so that ring gaps are not in line with each other.

l. Install new cylinder gasket (4).

m. Use suitable ring compressor to compress piston rings and install cylinder (2) onto crankcase.

n. Install capscrews (1) securing cylinder (2) to crankcase (3). Tighten capscrews.

o. Install cylinder head and intake/exhaust valve assemblies. Use new gaskets for reassembly. Refer to paragraph 3-32.

p. Install compressor unit on tank saddle. Refer to paragraph 3-27.

q. Fill crankcase with 10 oz. (.3 L) of OE-30 oil. Refer to paragraph 3-2 for proper viscosity.

r. Connect main power and turn compressor on.

s. Check all mating surfaces, gaskets, fittings, and mounting hardware for secure attachment.

4-8. PISTONS AND CONNECTING ROD ASSEMBLY. This task covers:

a. Initial Setup. b. Assembly. c. Disassembly.

INITIAL SETUP.

a. *Tools.* General Mechanic Automotive Tool Kit, T1 5180-00-177-7033; Basic Field Maintenance Automotive Repair Shop Set, T2 4910-00-754-0705.

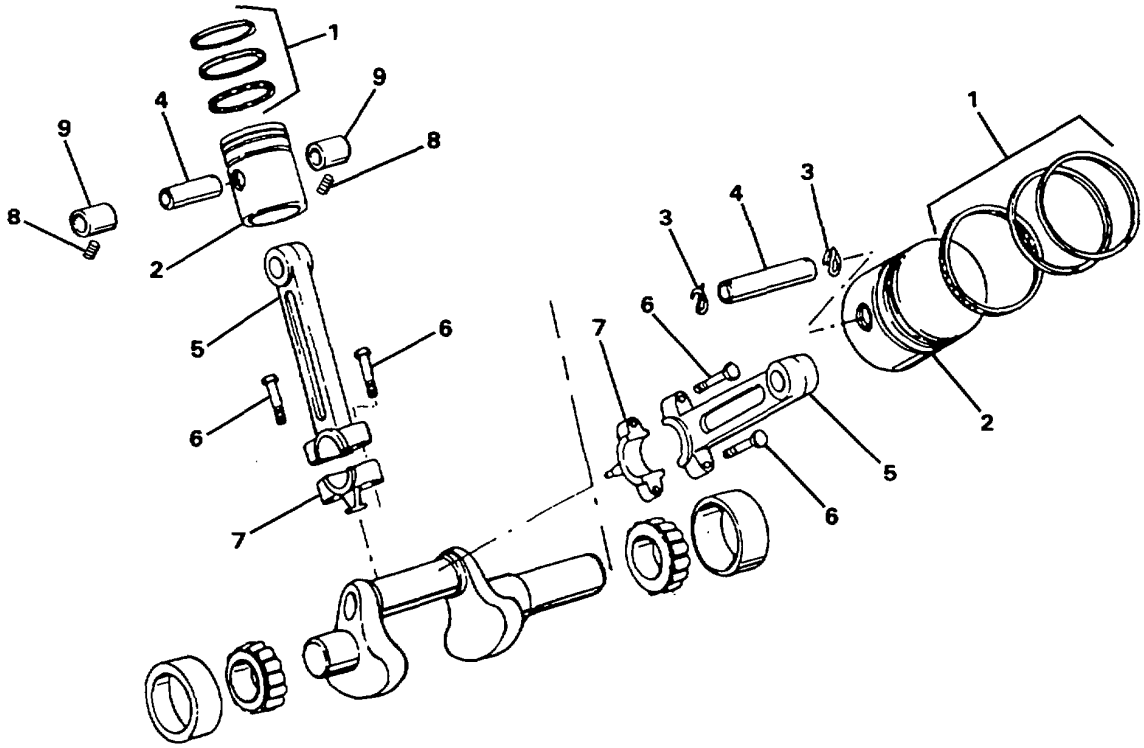
b. *Material/Parts.* Piston Rings, Oil OE-30.

c. *Equipment Condition.* Compressor disassembled (paragraph 4-7).

d. *General Safety Requirements.*

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Pistons and Connecting Rods

DISASSEMBLY.

CAUTION

Pistons, connecting rods, piston pins, and caps are matched parts and seat with the operation of the compressor. They must keep their original positions at reassembly. Mark each component to be sure they match when they are reassembled.

a. Clamp connecting rod assembly in vise or suitable fixture. Be careful not to score pistons.

b. Remove piston rings (1) from piston (2).

c. Using suitable pliers, squeeze retaining rings (3) and remove from piston.

NOTE

To remove pin (4) on high pressure piston, loosen setscrew (8) and press out bushings (9).

d. Push out piston pins (4) and remove pistons (2) from connecting rods (5).

e. Remove capscrews (6) and rod caps (7) from connecting rod.

ASSEMBLY.

CAUTION

Pistons, connecting rods, piston pins, and caps are matched parts and seat with the operation of the compressor. They must keep their original positions at reassembly. Mark each component to be sure they match when they are reassembled.

NOTE

Coat all parts with oil before assembly.

a. Attach capscrews (6) and rod caps (7) to connecting rods (5). Secure nuts finger-tight.

b. Clamp connecting rod (5) in vise or suitable fixture and position piston (2) on connecting rod.

c. Attach piston (2) by installing piston pins (4) through holes in pistons and connecting rods.

d. Center piston pins (4) and install retaining rings (3) in grooves on pins. Be sure retaining rings are properly seated in grooves.

CAUTION

Piston rings must be installed correctly. The oil ring must be in the lowest groove.

e. Install piston rings (1) on pistons.

4-9. CRANKSHAFT BEARINGS. This task covers:

a. Initial Setup. b. Disassembly. c. Assembly.

INITIAL SETUP.

a. *Tools.* General Mechanic Automotive Tool Kit T1 5180-00-177-7033; Basic Field Maintenance Automotive Repair Shop Set, T2 4910-00-754-0705.

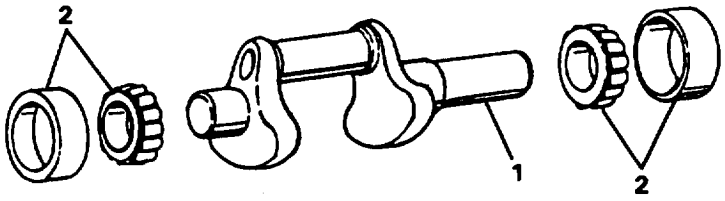
b. *Materials/Parts.* Mineral Oil.

c. *Equipment Condition.* Compressor disassembled (paragraph 4-7).

d. *General Safety Requirements.*

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Crankshaft Bearings and Oil Seals

CAUTION

Crankshaft must be supported in a suitable fixture when removing or installing bearings to prevent damage to crankshaft.

DISASSEMBLY.

a. Clamp crankshaft (1) in a suitable fixture.

b. Using a suitable bearing puller, remove bearings (2) from crankshaft (1).

ASSEMBLY.

a. Clamp crankshaft (1) in suitable fixture.

NOTE

Bearings should be immersed in mineral oil heated to a temperature of 6000F prior to installing.

b. Press bearings (2) onto crankshaft.

4-10. ELECTRIC MOTOR. This task covers:

a. Disassembly.
b. Inspection.
c. Cleaning.
d. Assembly.

INITIAL SETUP.

a. *Tools.* General Mechanic Automotive Tool Set, T1 5180-00-177-7033; Base Field Maintenance Automotive Repair Shop Set, T2 4910-00-754-0705.

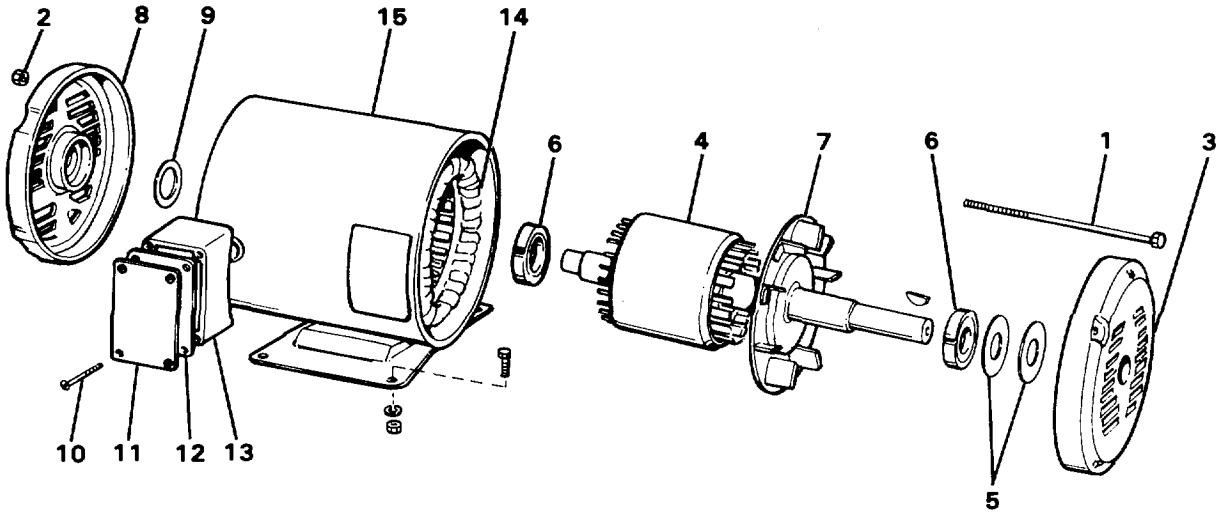
b. *Materials/Parts.* Mineral Oil, Clean Rags, Bearing Grease.

c. *Equipment Condition.* Electric motor removed from tank saddle (paragraph 3-33).

d. *General Safety Requirements.*

WARNING

- **Observe all Warnings and Cautions.**
- **Never wear loose clothing or jewelry while inspecting or servicing equipment.**
- **Beware of rotating shafts, pulleys and fans which could entrap personnel and cause serious injury.**



Electric Motor

DISASSEMBLY.

WARNING

Disconnect main power and turn compressor off before performing maintenance procedures.

a. Remove lid (11) and lid gasket (12) from conduit box (13) and disconnect wires from power source.

b. Remove electric motor from air tank base. Refer to paragraph 3-33.

NOTE

Before beginning disassembly, slowly rotate motor shaft by hand to check out bearings. If you notice any rough spots or binding, bearings are bad and must be replaced. Bearings are sealed and cannot be visually inspected.

c. Remove four thru bolts (1) and nuts (2).

d. Mark endplates (3, 8) and remove front endplate (3).

e. Remove rotor assembly (4).

f. Remove bearing guards (5), if present. (Guards are used as shims for adjusting shaft end play.)

g. Using a suitable bearing puller, remove bearings (6) if any binding or rough spots were noticed prior to disassembly.

h. Remove cooling fan (7).

i. Remove rear endplate (8).

j. Remove thrust washer (9).

k. Remove screws (10) from conduit box lid (11).

INSPECTION.

a. Inspect leads and windings (14) of stator assembly (15) for evidence of cracked or burned insulation. Replace if leads or windings are damaged.

b. Inspect rotor and shaft assembly (4) for loose or damaged fan. If damaged, replace motor.

c. Remove any small nicks on keyway with file.

d. Inspect bearings (6) for wear or loose roller cone. Replace as necessary.

e. Inspect endplates (3 and 8) for cracks or plugged vent slots.

f. Inspect bearing guards (5) and thrust washer (9) for cracks or bends. Replace as necessary.

CLEANING.

WARNING

Clean motor components with compressed air no greater than 30 psi. Eye protective wear must be worn when cleaning with compressed air or scraping paint.

a. Remove any loose paint from frame.

b. Blow off stator and rotor assemblies (4 and 1 5) with compressed air. Wipe rotor assembly (4) with clean rag.

c. Wipe off bearings (6) with clean rag if grease is dry or dirty. Apply a coat of new bearing grease.

d. Clean endplate (3 and 8) vent slots with compressed air and wipe off with clean rag.

ASSEMBLY.

a. Install conduit box lid gasket (12), and lid (11) and secure with screws (10).

b. Install thrust washer (9) in rear endplate (8).

c. Install rear endplate (8).

NOTE

Bearings should be immersed in mineral oil heated to a temperature of 6000 Fahrenheit prior to installing.

d. Press bearings (6) onto rotor assembly (4).

e. Install rotor assembly (4).

f. Install bearing guards (5) into front endplate (3) if any were removed.

g. Install front endplate (3).

h. Install thru bolts (1) and nuts (2). Tighten nuts.

i. Install electric motor onto tank frame. Refer to paragraph 3-33.

APPENDIX A. REFERENCES

A-1. SCOPE. This appendix lists all forms, field manuals, and technical manuals referenced in this manual.

A-2. FORMS.

Equipment Inspection and Maintenance Work Sheet ..... DA Form 2404
Quality Deficiency Report ..... SF 368
Recommended Changes to DA Publications ..... DA Form 2028-2

A-3. TECHNICAL MANUALS.

Unit and Intermediate Direct Support Maintenance Repair Parts and Special Tools List,
Compressor Unit, Reciprocating Air, Electric Motor Driven, Model 20-918 ..... TM 5-4310-385-23P
The Army Maintenance Management System (TAMMS) ..... DA PAM 738-750
Hand Portable Fire Extinguishers Approved for Army Users ..... TB 5-4200-200-10
Administrative Storage of Equipment ..... TM 740-90-1
Procedures for Destruction of Equipment to Prevent Enemy Use ..... TM 750-244-3

A-4. MISCELLANEOUS PUBLICATIONS.

Fuels, Lubricants, Oils and Waxes C91001L

APPENDIX B. MAINTENANCE ALLOCATION CHART
SECTION I. INTRODUCTION

B-1. GENERAL.

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

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

c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from Section II.

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

B-2. MAINTENANCE FUNCTIONS. Maintenance functions will be limited to and defined as follows:

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

b. *Test.* To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. *Service.* Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

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

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

f. *Calibrate.* To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipment's used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

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

h. *Replace.* To remove an unserviceable item and install a serviceable counterpart in its place.

i. *Repair.* The application of maintenance services (inspect, test, service, adjust, align, calibrate or replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining or resurfacing) to restore service ability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. *Overhaul.* That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new conditions.

k. *Rebuild.* Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipment/components.

B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II.

a. *Column 1, Group Number*. Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly.

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

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

d. *Column 4 Maintenance Category.* Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the category of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number of complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate work time figures will be shown for each category. The work time figure represents the average time required to restore an item (assembly. subassembly, component module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance categories are as follows:

C ..... Operator or Crew (Unit
O ..... Organizational Maintenance (Unit)
F ..... Direct Support Maintenance (Intermediate)
H ..... General Support Maintenance (Intermediate)
D ..... Depot Maintenance

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

f. *Column 6 Remarks.* This column contains remarks or added information pertaining to maintenance functions.

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 tool or test equipment.

e. *Column 5, Tool Number.* The manufacturer's part number, if available.

B-5. EXPLANATION OF COLUMNS in REMARKS, SECTION IV.

a. *Column 1, Reference Code.* The code recorded in column 6 of the MAC (Section II), as applicable.

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					(5) Tools and Equipment	(6) Remarks
			Unit		Intermediate		Depot		
			C	O	F	H	D		
01	MOTOR CONTROLS								
	Starter, Electric Motor, Enclosure and Wiring	Inspect		0.1					
		Replace		0.7				T1	
		Repair		1.0				T1	A
	Pressure Switch	Inspect		0.1					
		Adjust		0.2				T1	
		Replace		0.5				T1	
02	COMPRESSOR DRIVE								
	Guard Assembly, Belt	Inspect	0.1						
		Replace		1.0				T1	
		Repair		0.5				T1	B
	Belts, V. Matched Set	Inspect		0.1					
		Replace		0.3				T1	
		Adjust		0.2				T1	
	Pulley, Drive	Inspect		0.1					
		Replace		0.5				T1, T3	
		Align		0.2				T1,	
03	COMPRESSOR UNIT	Inspect	0.2	T1					
		Service		0.2				T1	
		Replace		2.0				T1	
		Repair			2.0			T1, T2	A
	Safety Interstage Valve	Inspect	0.1						
		Replace		0.2				T1	
	Oil Filler, Drain and Plugs	Inspect	0.1						
		Replace		0.2				T1	
	Flywheel	Inspect		0.2				T1	
		Replace		0.8				T1, T3	
	Intercooler Assembly	Inspect	0.2	T1					
		Replace		0.5				T1	
	Intake/Exhaust Valve Assemblies	Inspect		0.2				T1	
		Replace		1.0				T1	
	Cylinder Block and Pistons, Connecting Rods	Inspect			0.3			T1, T2	
		Replace			0.5			T1, T2	
		Repair			2.0			T1, T2	A
	Crankshaft and Bearings	Inspect			0.4			T1, T2	
		Replace			1.0			T1, T2	
		Repair		2.0				T1, T2	A

(1) Group Number	(2) Component/ Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			Unit		Intermediate		Depot		
			C	O	F	H	D		
04	MOTOR, ELECTRIC	Inspect	0.1					T1	
		Service		0.2				T1	
		Test		0.5				T1, T3	
		Replace		1.0				T1	
		Repair			1.0			T1, T2	A
05	AIR RECEIVER SYSTEM								
	Safety Valve	Inspect	0.1					T1	
		Replace		0.2				T1	
	Check Valve	Inspect	0.1	T1					
		Replace		0.2				T1	
		Repair		0.1				T1	A
	Pressure Gage	Inspect	0.1					T1	
		Replace		0.2				T1	
	Drain Cock	Inspect	0.1					T1	
		Replace		0.1				T1	
	Shutoff Valve	Inspect	0.1					T1	
		Replace		0.2				T1	
	Air Tank	Inspect	0.1						
		Replace		1.3				T1	
06	AIR DISCHARGE SYSTEM								
	Hose Assembly	Inspect	0.1						
		Replace		0.2				T1	
		Repair		0.5				T1	A
	Inflator Gage	Inspect	0.1					T1	
		Replace		0.2				T1	
	Tube Assemblies	Inspect	0.2					T1	
		Replace		0.5				T1	

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) Reference Code	(2) Maintenance Level	(3) National/NATO Nomenclature	(4) Tool Stock Number	(5) 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	O	Shop Equipment Automotive Maintenance and Repair: Organization, Common No. 1	4910-00-754-0654	

SECTION IV. REMARKS

A - Repair by replacing components.

B - Repair by welding and/or hammering out dents as needed.

APPENDIX C. COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS

SECTION I. INTRODUCTION

C-1. SCOPE. This appendix lists Components of and Basic Issue Items (B11) for the Air Compressor to help you inventory items required for safe and efficient operation.

C-2. GENERAL. The components of end item list are divided into the following sections:

a. *Section II. Components of the End Item.* These items, when assembled, comprise the Air Compressor and must accompany it whenever it is transferred or turned in. These illustrations will help you identify these items.

b. *Section III. Basic Issue Items.* These are minimum essential items required to place the Air Compressor in operation, to operate it and to perform emergency repairs. Although shipped separately packed, they must accompany the Air Compressor during operation and whenever it is transferred between accountable officers. The illustrations will assist you with hard-to-identify items. This manual is your authority to requisition replacement B11 based on Table(s) of Organization and Equipment (TOE) /Modification Table of Organization and Equipment (MTOE) authorization of the end item.

C-3. EXPLANATION OF COLUMNS.

a. *Illustration.* This column is divided as follows:

(1) *Figure Number.* Indicates the figure number of the illustration on which the item is shown (if applicable).

(2) *Item Number.* The number used to identify item called out in the illustration.

b. *National Stock Number (NSN).* Indicates the national stock number assigned to the end item which will be used for requisitioning.

c. *Part Number (P/N).* Indicates the primary number used by the manufacturer which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards and inspection requirements to identify an item or range of items.

d. *Description.* Indicates the federal hem name and, if required, a minimum description to identify the item.

e. *Location.* The physical location of each item listed is given in this column. The lists are designed to inventory all items in one area of the major item before moving on to an adjacent area.

f. *Usable on Code*. "Usable On" codes are included to help you identify which component items are used on the different models. Identification of the codes used in this list are:

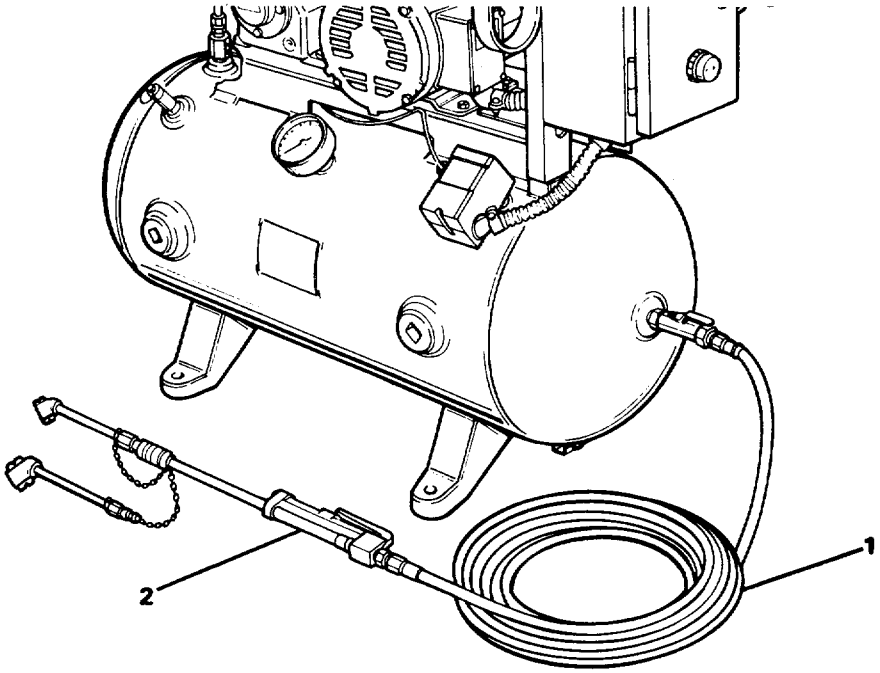
CODE	USED ON

g. *Quantity Required (Qty. Reqd).* This column lists the quantity of each item required for a complete major item.

h. *Quantity.* This column is left blank for use during inventory. Under the received column, list the quantity you actually receive on your major item. The date columns are for use when you inventory the major item at a later date, such as for shipment to another site.

SECTION II. COMPONENTS OF END ITEM

(1) Illustration Item No.	(2) National Stock No.	(3) Part No. & FSCM	(4) Description	(5) Location	(6) Usable On Code	(7) Qty Reqd	(8) Quantity Rcvd	Date	Date	Date
1	4720-00-874-3179	86-751 (04718)	Hose Assembly, Air	Air Tank		1				
2	4910-00-204-2644	61J2-1506 (94894)	Inflator Gage Assembly	Air Hose		1				



Components of End Item

SECTION III. BASIC ISSUE ITEMS

(1) Illustration Item No.	(2) National Stock No.	(3) Part No. & FSCM	(4) Description	(5) Location	(6) Usable On Code	(7) Qty Reqd	(8) Quantity Rcvd	Date	Date	Date
			TM 5-4310-385-13 Operator's, Unit and Intermediate Direct Support Maintenance Manual for Compressor, Reciprocating, Air; Electric Motor Driven, 5 cfm, 175 psi			1				

APPENDIX D. ADDITIONAL AUTHORIZATION LIST

SECTION I. INTRODUCTION

D-1. SCOPE. This appendix lists additional items authorized for the support of the Air Compressor.

D-2. GENERAL. This list identifies items that do not have to accompany the Air Compressor and that do not have to be turned in with it. These items are authorized to you by CTA, MTOE, TDA or JTA.

D-3. EXPLANATION OF LISTING. Not applicable.

SECTION II. ADDITIONAL AUTHORIZATION LIST

(1) National Stock Number	(2) Part Number & FSCM	Description	(3) Usable On Code	(4) U/M	Qty. Auth
4210-00-555-8837		Fire Extinguisher		EA	1

APPENDIX E. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

SECTION I. INTRODUCTION

E-1. SCOPE. This appendix lists expendable/durable supplies and materials needed to operate and maintain the Air Compressor Unit.

This listing is for informational purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items. (Except Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

E-2. EXPLANATION OF COLUMNS.

a. *Column 1 Item Number.* This number is assigned to the entry in the listing.

b. *Column 2 Level*. This column identifies the lowest level of maintenance that requires the listed item.

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

c. *Column 3- National Stock Number.* This is the National stock number assigned to the item; use to request or requisition the item.

d. *Column 4 - Description.* Indicates the Federal Hem 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.

Expendable Supplies and Materials List

(1) Item Number	(2) Level	(3) National Stock Number	(4) Description	(5) U/M
1	C, O, F	6850-00-274-5421	Dry Cleaning Solvent, P-D-680	gal.
2	C	7920-00-205-1711	Rag, Wiping	lb.
3	C, O, F	9150-00-190-0904	GAA Grease, Auto/Artillery MIL-G-10924 (81349)	lb.
4	C, O, F	9150-00-181-9858	Lubricating Oil, Engine OE 30 MIL-L-2104 (81349)	gal.
5	C, O, F		Mineral Oil	gal.
6	C, O, F	8415-00-753-6553	Gloves, Toxicological Agents Protective	pair
7	C, O, F	7930-00-068-1669	Soap, Mild	gal.
8	O, F	8020-00-263-3873	Brush, Medium, Oval	ea.
9	O, F	8030-01-044-5034	Compound, Anti-Seize	lb.
10	O, F	8030-00-889-3534	Tape, Anti-Seize	ea.

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FT. LEONARDWOOD, MO 63108

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 5-4310-385-13	30 Sep 87	Compressor, Reciprocating, Air: Electric Motor Driven 5 CFM

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO	TABLE NO.
6	2-1 a		
B1		4-3	
125	line 20		

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

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.

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.

I ordered a gasket, item 19 on figure B-16 by NSN 2910-00-762-3001. 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
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SIGN HERE: John Doe
JOHN DOE

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
I hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3.280.8 feet

Liquid Measure

1 centiliter = 10 milliliters = .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

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
I gram = 10 decigrams = .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

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 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

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