

**TECHNICAL MANUAL**

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

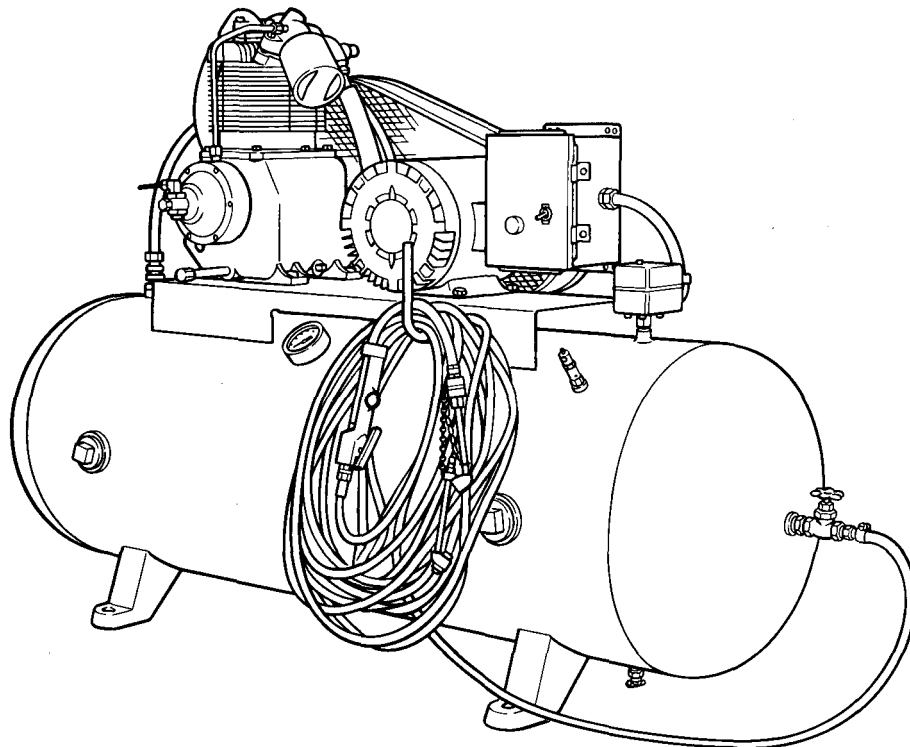
**FOR**

**COMPRESSOR, RECIPROCATING, AIR:  
ELECTRIC MOTOR DRIVEN**

**15 CFM, 175 PSI**

**C & H MODEL 20-912**

**NSN 4310-01-120-7669**



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**HEADQUARTERS, DEPARTMENT OF THE ARMY**

**11 MAY 1983**



**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.

**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. The noise level exceeds the allowable limits for unprotected personnel. Wear ear muffs or ear-plugs 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, ensure 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 hanging appendages from person or clothing, while inspecting running motor moving shafts, or like machinery.

**WARNING**

Wear gloves or other skin protective equipment when working with cleaning solvents.

**WARNING**

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



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NO. 5-4310-373-14

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WASHINGTON, D.C., 11 May 1983

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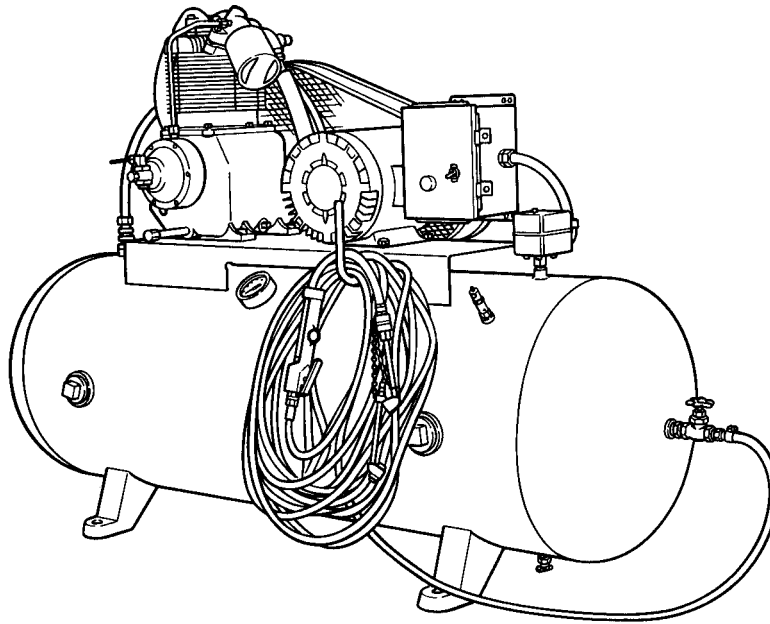
REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

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 & Aviation Readiness Command, ATTN: DRSTS-MPSD, 4300 Goodfellow Boulevard, St. Louis, MO 63120. A reply will be furnished directly to you.

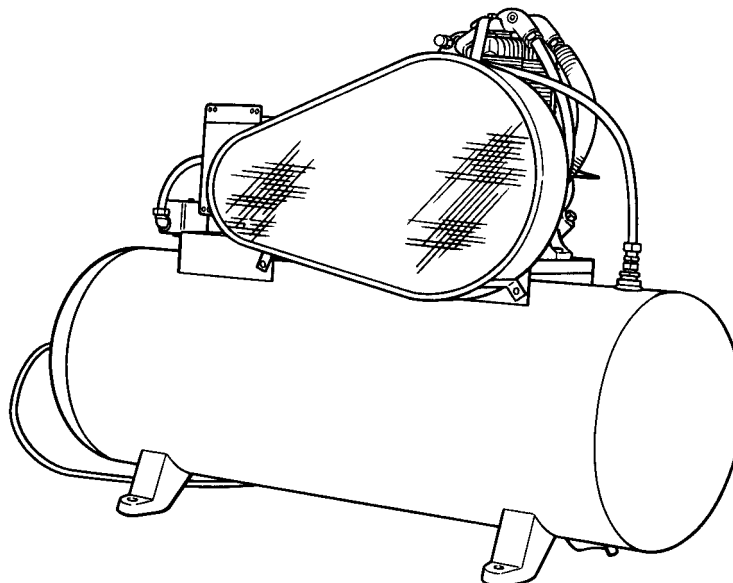
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Compressor Unit - Starter Side View



Compressor Unit - Belt Guard View





## CHAPTER 1

### INTRODUCTION

#### Section I. GENERAL INFORMATION

1-1. **SCOPE.** This manual is for your use in operating and maintaining the model 20-912 air compressor unit. Chapters 2 and 3 provide information on operation, preventive maintenance services, and operator's maintenance of equipment, accessories, components and attachments. Chapters 4 through 5 provide maintenance information for the Organizational, Direct and General Support levels.

Also included are descriptions of all components.

1-2. **MAINTENANCE FORMS AND RECORDS.** Equipment maintenance forms and procedures for their use are contained in TM 38-750, The Army Maintenance Management System (TAMMS).

1-3. **REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR'S).** EIR can and must be submitted by anyone who is aware of an unsatisfactory condition with the equipment design or use. It is not necessary to show a new design or list a better way to perform a procedure, just simply tell why the design is unfavorable or why a procedure is difficult. EIR may be submitted on SF 368 (Quality Deficiency Report). Instructions for preparing EIR'S are provided in TM 38-750, The Army Maintenance Managements System. Mail directly to Commander, Headquarters, U.S. Army Troop Support and Aviation Material Readiness Command, ATTN: DRSTS-MPSD, 4300 Goodfellow Blvd., St. Louis, MO 63120. A reply will be furnished directly to you.

1-4. **HAND RECEIPT.** Hand receipts for Components of End Item (COEI), Basic Issue Items (BII), and Additional Authorization List (AAL) items are published to aid in property accountability and is available through: Commander, US Army Adjutant General, 2800 Eastern Blvd., Baltimore, MD 21220.

1-5. **WARRANTY INFORMATION.** All components of the Air Compressor Unit 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 log-book. 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.

#### Section II. EQUIPMENT DESCRIPTION

1-7. **PURPOSE OF THE AIR COMPRESSOR UNIT.** An electric motor driven compressor for general shop use.

1-8. **CAPABILITIES AND FEATURES.**

- 2 stage compressor provides compressed air at 15 cfm and 175 psi
- Electric motor driven
- Motor starter with thermal relay protects motor against overload
- Pressure switch provides for automatic compressor cut-in at 160 psi and cut-out at 180 psi
- Two safety relief valves to prevent damage to compressor and injury to personnel.
- Air discharge system with inflator gage can be used to directly inflate tires to proper pressure
- Tank mounted pressure gage gives constant reading of air pressure in tank

#### NOTE

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

The component parts of the air compressor unit will be referred to by their proper names, eg. "electric motor" refers only to the electric motor.

1-9. **LOCATION AND DESCRIPTION OF MOTOR COMPONENTS.** (Figures 1-1 and 1-2.)

**PRESSURE SWITCH (1).** Diaphragm senses pressure and opens and closes switch contacts. Cut-out pressure and pressure difference between cut-in and cut-out are adjustable with 2 screws.

**MOTOR STARTER (2).** Contacts are magnetically closed when power is applied. Also contains a thermal or melting relay which opens the circuit when a current overload is sensed.

**BELT GUARD (3).** Steel mesh and sheet metal construction protects belts and personnel.

**COMPRESSOR (4).** Dual stage, two piston, air cooled with 15 cfm capacity. Includes interstage safety valve, inter-cooler, aftercooler and air inlet filter as well as centrifugal unloader for no load starting.

**ELECTRIC MOTOR (5).** Three phase, 5 HP induction motor.

**AIR TANK ASSEMBLY (6).** Consists of 80-gallon air tank, check valve to prevent escape of air back to compressor, pressure gage, drain cock, safety relief valve and shutoff valve at the outlet.

**AIR DISCHARGE SYSTEM (7).** Consists of air hose and inflator gage which permits simultaneous filling of tires and reading of pressure.

## 1-10. EQUIPMENT DATA.

## Air Compressor Unit

Manufacturer . . . . .	C & H Distributors Inc.
Model . . . . .	20-912
Output . . . . .	15 cfm at 175 psi
Type . . . . .	Electric motor driven, tank mounted
Length . . . . .	66 in. (168 cm)
Width . . . . .	23 in. (58 cm)
Height . . . . .	44 in. (112 cm)
Weight, net . . . . .	600 lbs. (272 kg)
Weight, shipping . . . . .	750 lbs. (340 kg)

## Air Compressor

Manufacturer . . . . . Champion Pneumatic  
Model . . . . . R15  
Type . . . . . 2 stage vertical  
Bore and Stroke  
    Low pressure stage . . . . . 4-5/8 x 3 in.  
  (11.4 x 7.6 cm)  
    High pressure stage . . . . . 2-1/2 x 3 in.  
  (6.3 x 7.6 cm)  
Pumping rate . . . . . 15 cfm at 175 psi  
Muffler element . . . . . Washable type

## Electric Motor

Manufacturer . . .	Leeson Electric Corporation
Model . . . . .	N184T17DB1A
RPM . . . . .	1740
Horsepower . . . . .	.5
Input requirements . . . . .	230V 60 Hz
Full load current . . . . .	14.8A
Phase . . . . .	Three
Service factor . . . . .	1.15
Duty . . . . .	Continuous

## Air Tank

Manufacturer . . . . . C & H Distributors Inc.  
Pressure limit . . . . . 200 psi (14 kPa)  
Capacity . . . . . 80 gal. (303 l)

## Air Hose

Manufacturer . . . . . C & H Distributors Inc.  
Length . . . . . 50 feet (15 m)  
Inside diameter . . . . . 5/16 in. (8 mm)  
Maximum pressure . . . . . 200 psi (14 kPa)

## Magnetic Starter

Manufacturer . . . . . S & H Controls  
(Div. of Landis & Gyr)  
Model No . . . . . CA3  
Enclosure . . . . . NEMA 12  
Phase . . . . . Three  
Type . . . . . Magnetic  
Overload relay . . . . . Melting alloy

## Pressure Switch

Manufacturer . . . . . Furnas Electric Co.  
Model . . . . . 69HA1  
Type . . . . . Diaphragm operated  
Cut-in and cut-out pressure  
and differential . . . . . Adjustable

## Safety Relief Valve

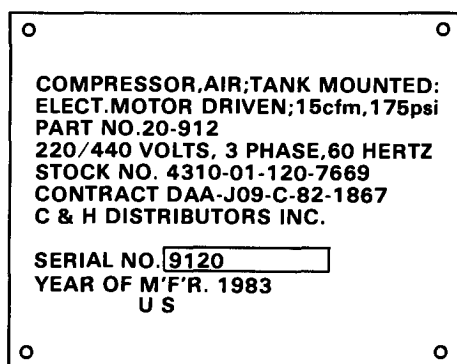
Manufacturer . . . . . F. C. Kingston Co.  
Model . . . . . 112C-1/4-200  
Relief pressure . . . . . 200 psi, factory set  
non-adjustable

## Pressure Gage

Manufacturer . . . . . Marsh Instrument Co.  
Model . . . . . J5458  
Type . . . . . Liquid filled  
Range . . . . . 0-300 psi

### Safety Interstage Valve

Manufacturer . . . . . Rego  
Model . . . . . NRV 2508



### Compressor Data Plate

### Section iii. TECHNICAL PRINCIPLES OF OPERATION

1-11. SECTION OVERVIEW. This section contains a description of how the air compressor works. Paragraph 1-12 describes the operation of the whole system. Paragraph 1-13 describes the operation of the individual components.

#### 1-12. OPERATION OF THE AIR COMPRESSOR UNIT.

- a. **PRESSURE SWITCH.** The switch is wired in series with the motor. When pressure in the tank drops below 160 psi, the switch closes and starts the motor. When pressure in the air tank rises above 180 psi, the switch opens and stops the motor.
- b. **MOTOR STARTER.** The starter protects the motor from a current overload. Current overload causes the starter to break the circuit and stop the motor to prevent it from burning out.
- c. **ELECTRIC MOTOR.** The electric motor drives the air compressor D. An electric motor has the advantage of being easily turned on and off so that the compressor does not have to be run when no air is being drawn from the air tank E.
- d. **AIR COMPRESSOR.** The air compressor compresses the air by means of two pistons. Its operation is similar to a gasoline engine except that the power to drive the pistons is supplied by the electric motor.
- e. **AIR TANK.** The air tank acts as a reservoir for the compressed air. It also dampens pressure fluctuations which you would get if you took the compressed air directly from the air compressor.

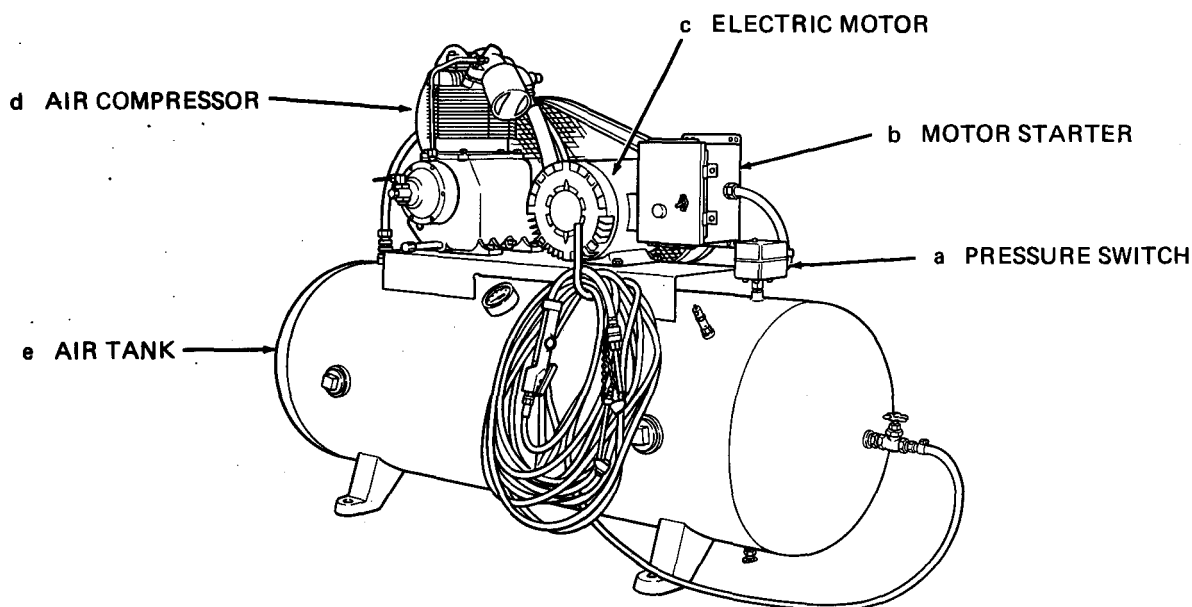


Figure 1-1. Compressor unit, starter side

# 1-13. COMPONENT FUNCTION.

- a. **AIR COMPRESSOR.** The air compressor is a 2 stage air cooled type compressor with a centrifugal unloader.

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 muffler element (2) and inlet valve (3) into the cylinder. The air cleaner keeps dirt out of the compressor.

On the upstroke, inlet valve (3) closes and the low pressure piston (1) pushes air out into the intercooler (5) through the exhaust valve (4).

Compressing the air heats it up. The intercooler (5) gets rid of some of that heat before passing the air on to the high pressure stage.

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. This way, the low pressure piston is drawing air in while the high pressure piston is pushing air out.

Compressed air from the high pressure stage goes to the air tank through the aftercooler. The aftercooler gets rid of some more of the heat generated by compression of the air.

If there is an excessive pressure build-up due to a stuck valve or other air blockage, the interstage relief valve (10) will open and prevent damage to the compressor.

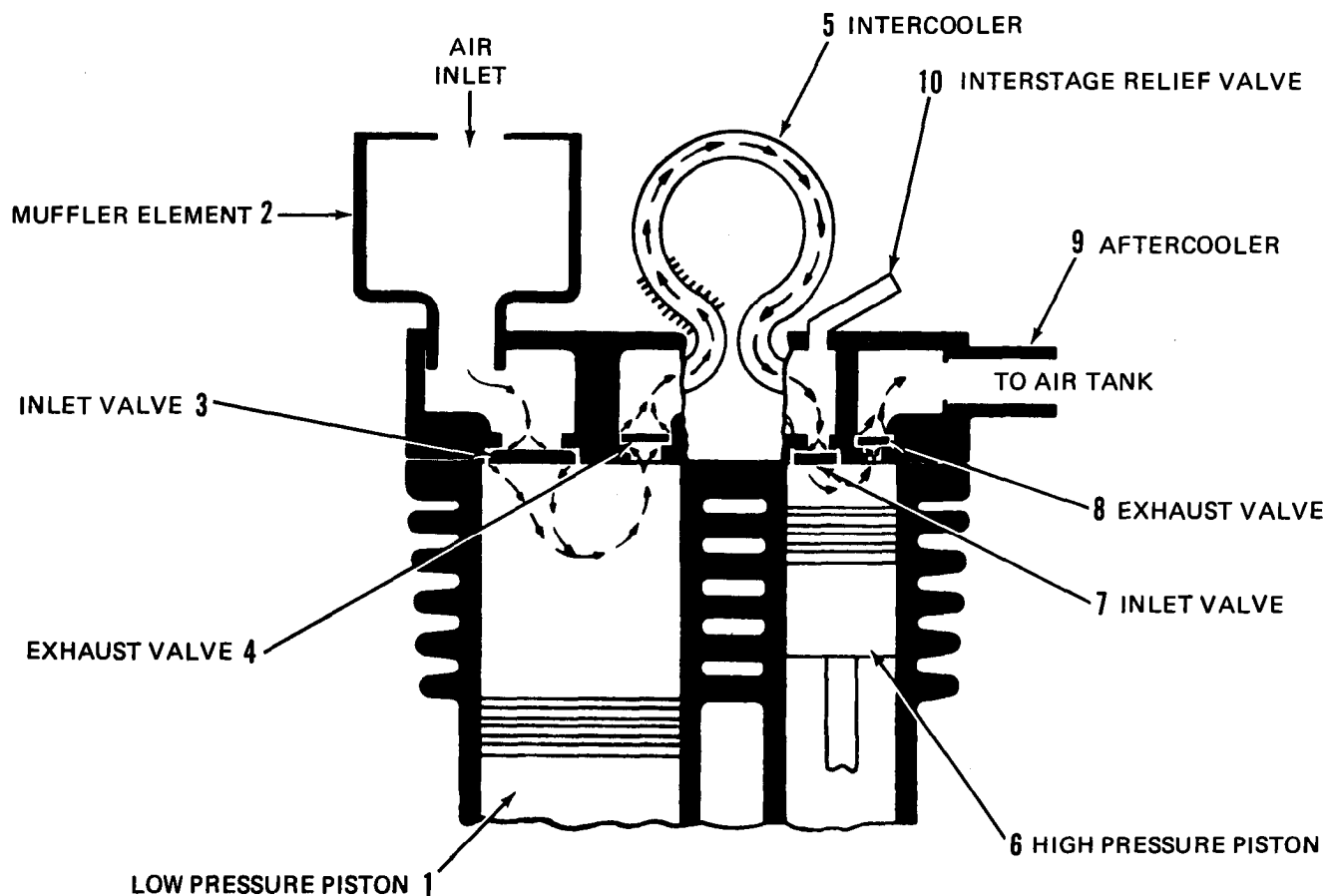


Figure 1-2. Operation of compressor

b. **CENTRIFUGAL UNLOADER.** The centrifugal unloader releases pressure from the high pres-

sure cylinder of the compressor until the electric motor is running close to full speed.

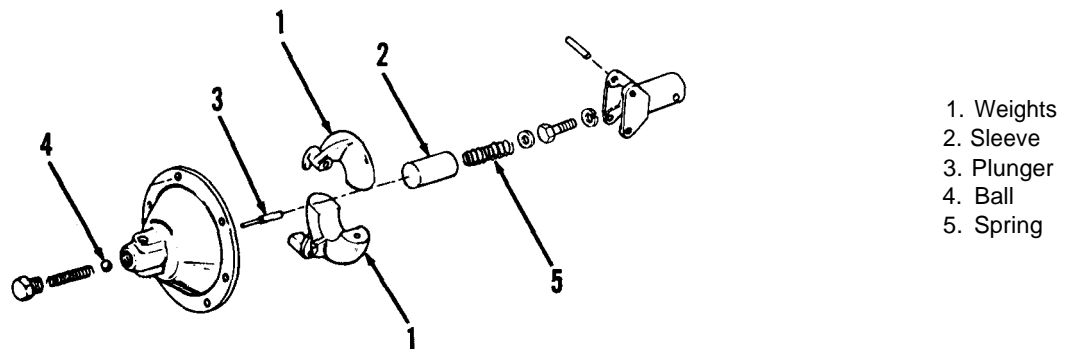


Figure 1-3. Operation of centrifugal unloader

The electric motor draws more current when it is first starting up than when it is running full speed. It also draws more current when it works against a load such as compressing air as when it is running without a load. The unloader prevents big current surges in the motor by unloading it during start up.

The plunger pushes ball (4) off of its seat and opens to release pressure from the cylinder.

When the compressor reaches normal speed, the centrifugal force causes the weights (1) to move outward. The fingers on the weights push sleeve (2) against spring (5) allowing plunger (3) to release and let ball (4) close and the compressor builds up pressure.

Here is how the unloader works: When the compressor is not operating or rotating at a low speed, the fingers on the weights (1) allow sleeve (2) to push against plunger (3).

c. **ELECTRIC MOTOR.** The electric motor is a three phase induction motor.

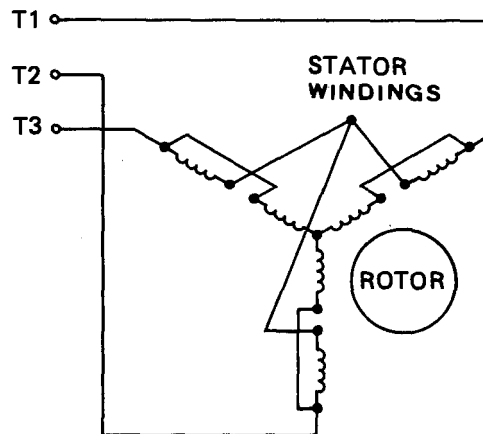


Figure 1-4. Electric motor schematic

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

230 VAC is connected across T1, T2, T3, which causes current to flow in the stator windings and produce a rotating magnetic field. This magnetic field cuts across the conductors in the rotor, inducing currents in the conductors.

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.

This causes a repelling force between the conductors and the magnetic field and causes the rotor to turn.

- d. **ELECTRIC MOTOR CONTROLS.** 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.

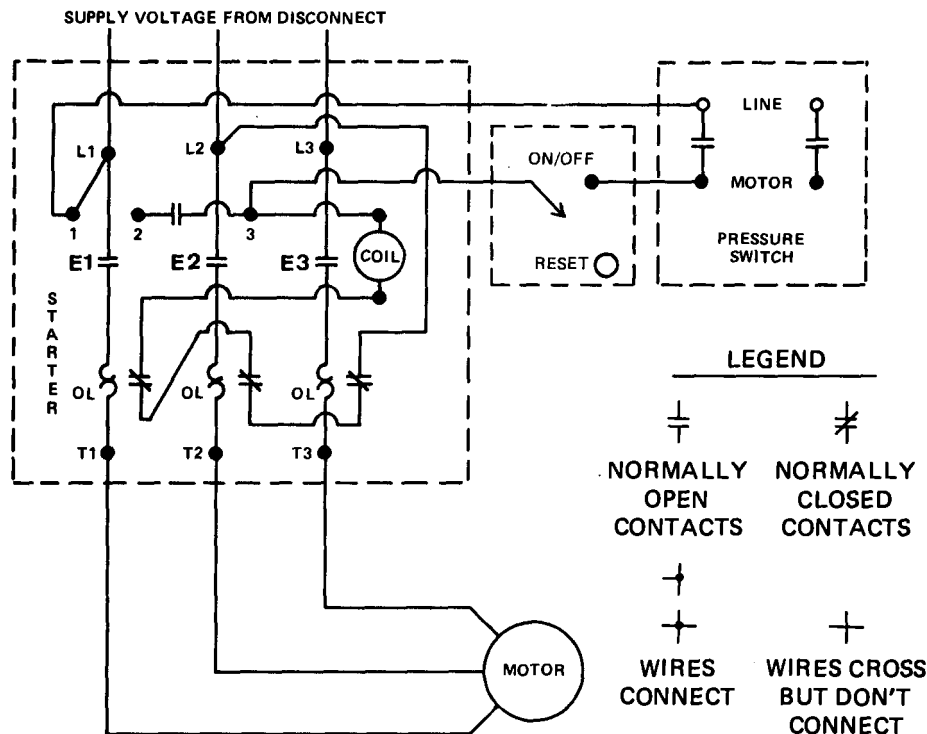


Figure 1-5. Electric motor controls schematic

- (1) Power from the main switch comes into the starter at L1, L2, and L3. Connections to the motor are at T1, T2, and T3.
- (2) 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.
- (3) Normal operation pressure above 180 psi. When the pressure goes above 180 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.
- (4) 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.

## 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
	Main power switch	Main switch box	Turn electric power to the compressor set on and off.
1	ON/OFF switch	Starter enclosure	Start and stop compressor set.
2	RESET button	Starter enclosure	Push to reset after overload condition has tripped the protective relay.
3	Oil level gage	Compressor crankcase	Shows oil level in crankcase.
4	Pressure gage	Air tank	Shows air pressure in tank.

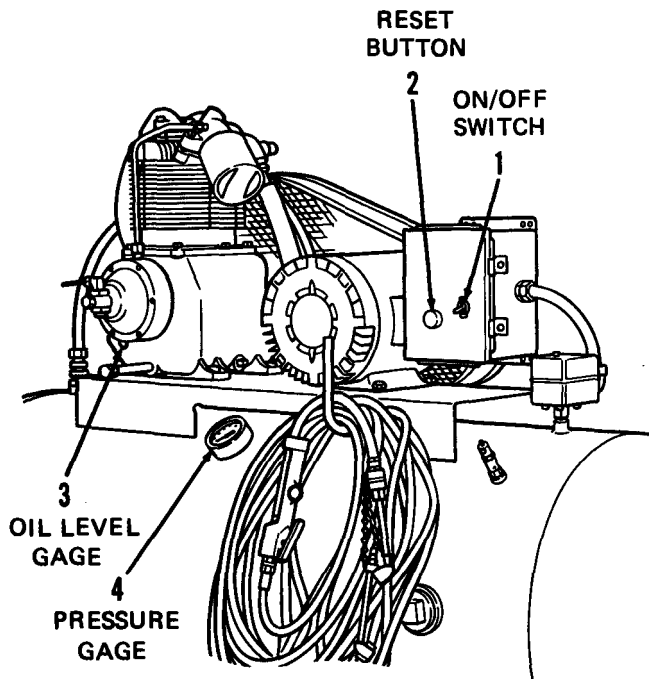


Figure 2-1. Operator's controls and indicators

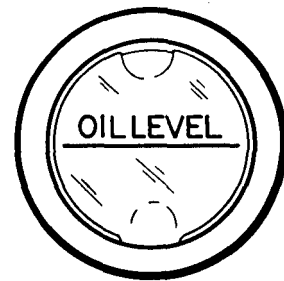


Figure 2-2. Oil level gage

2-1. OPERATOR'S CONTROLS AND INDICATORS (Cont)

KEY	NAME	LOCATION	FUNCTION
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.

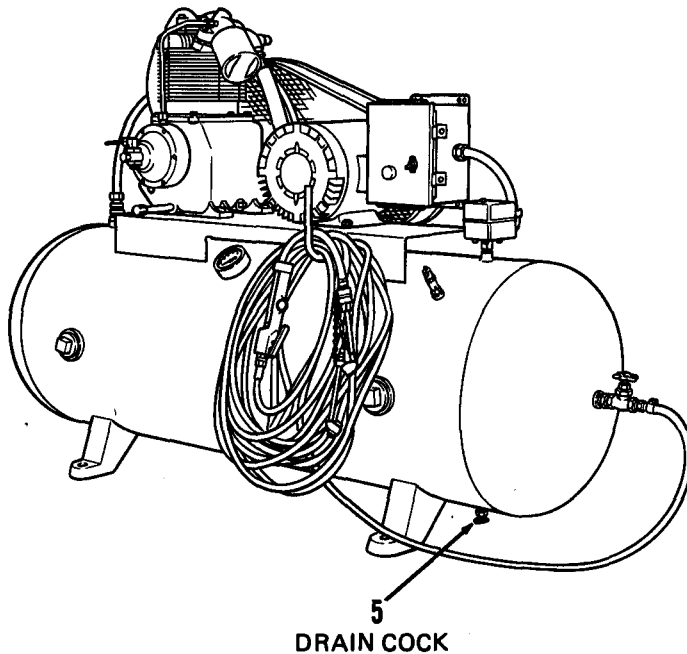


Figure 2-3. Drain cock location

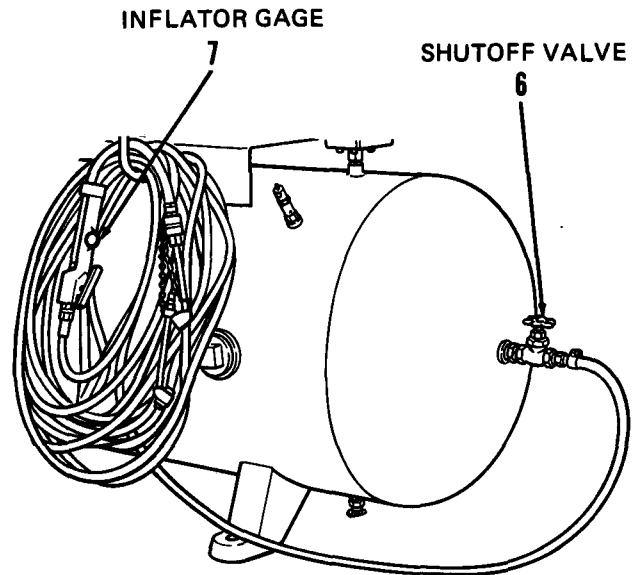


Figure 2-4. Shutoff valve, inflator gage

**Section ii. PREVENTIVE MAINTENANCE CHECKS AND SERVICES**

2-2. GENERAL.

- a. Before You Operate. Always keep in mind the CAUTIONS and WARNINGS. Perform your before (B) PMCS.
- b. While You Operate. Always keep in mind the CAUTIONS and WARNINGS. Perform your during (D) PMCS.
- c. After You Operate. Be sure to perform your after (A) PMCS.
- d. If Your Equipment Fails to Operate. Troubleshoot with proper equipment. Report any deficiencies using the proper forms. See TM 38-750.



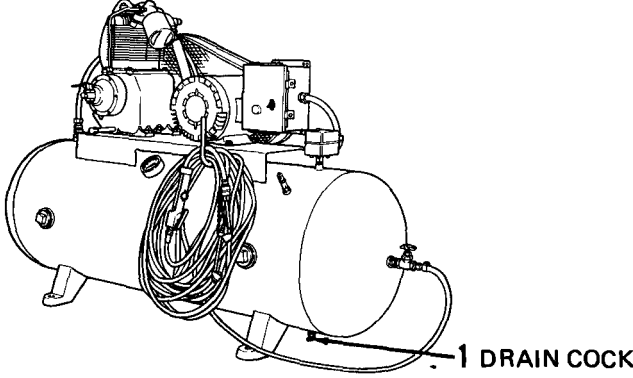
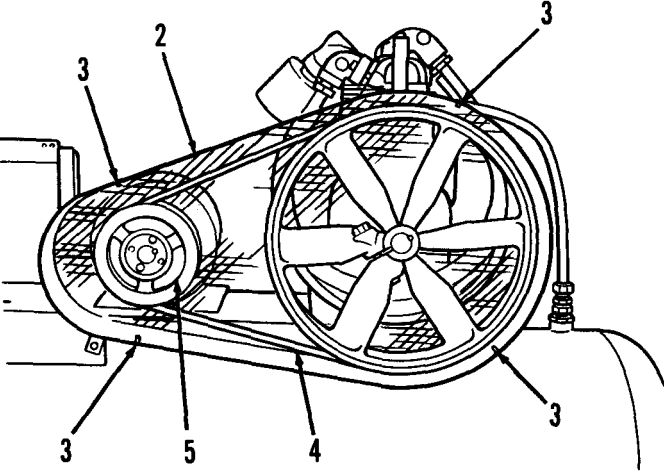
## 2-3. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B-Before Operation

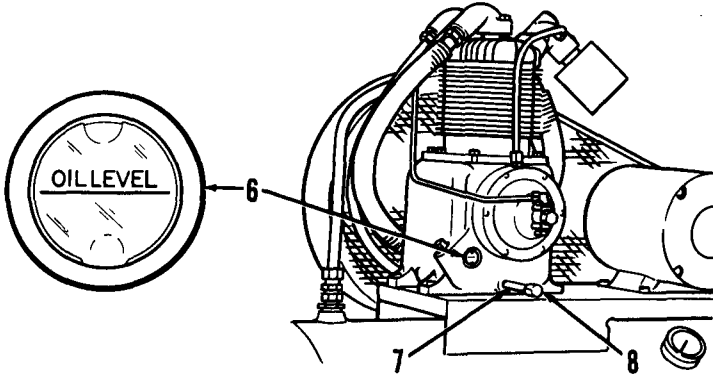
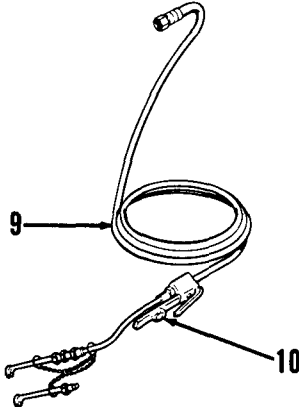
D-During Operation

A-After Operation

W-Weekly

ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE	Equipment Will Be Reported Not Ready (RED) If:
	B	D	A	W		
1	•				 <p>Figure 2-5. Compressor unit, starter side</p> <p>DRAIN COCK. Open drain cock (1) to drain condensed moisture.</p>	
					 <p>Figure 2-6. Belt guard and drive system</p>	
					BELT GUARD ASSEMBLY (2). Check for secureness of mounting. Tighten bolts (3).	
					V-BELTS (4). Check for cracks or cuts.	Belts are cut
4	•		•		DRIVE PULLEY. Check pulley (5) for secureness of mounting.	Pulley is loose

2-3. PREVENTIVE MAINTENANCE CHECKS AND SERVICES – continued

B-Before Operation					D-During Operation					A-After Operation					W-Weekly				
ITEM NO.	INTERVAL				ITEM TO BE INSPECTED										Equipment Will Be Reported Not Ready (RED) If:				
	B	D	A	W	PROCEDURE														
					<div></div> <p>Figure 2-7. Oil fill and drain location</p>														
5	•				<p><b>OIL LEVEL GAGE.</b> Check oil level with level gage (6). Add oil to bring level up to full mark.</p>														
6	•	•	•		<p><b>OIL DRAIN PIPE AND CAP.</b> Check for leaks around pipe (7) and cap (8). Tighten to stop leak. If leak can't be stopped by tightening, replace.</p>														
					<div></div> <p>Figure 2-8. Air hose</p>														
7	•	•			<p><b>AIR HOSE.</b> Check hose (9) for cuts or cracks. Check for air leaks during operation, especially around fittings. Tighten 2 connectors on either end of hose if loose.</p>														
8	•	•			<p><b>INFLATOR GAGE.</b> Check gage (10) for proper operation. Check connections for leaks. Tighten connections if loose.</p>														

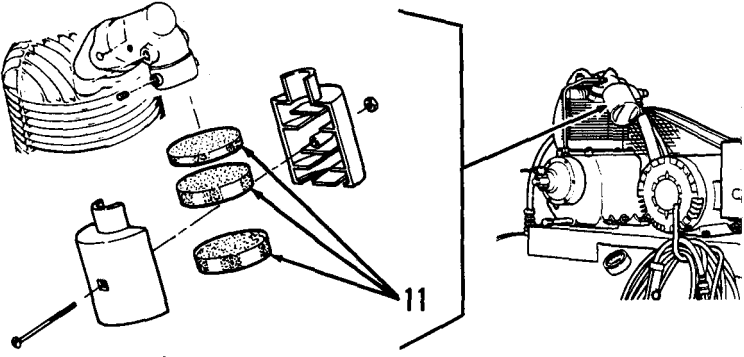
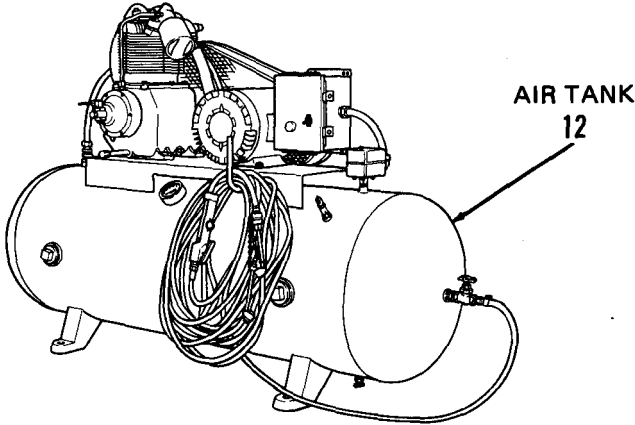
## 2-3. PREVENTIVE MAINTENANCE CHECKS AND SERVICES – continued

B-Before Operation

D-During Operation

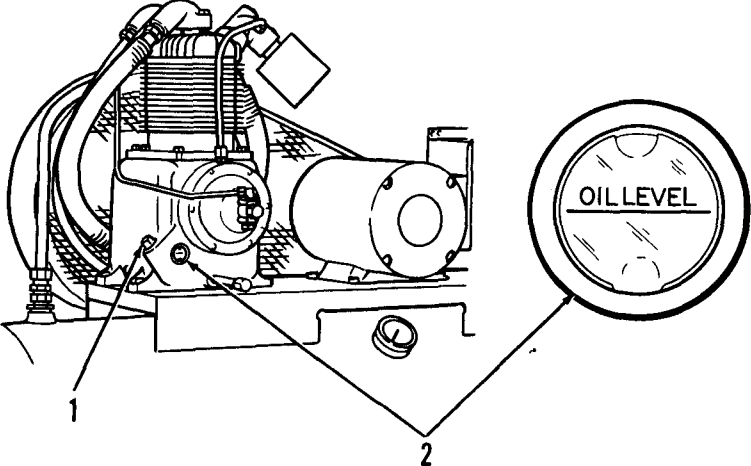
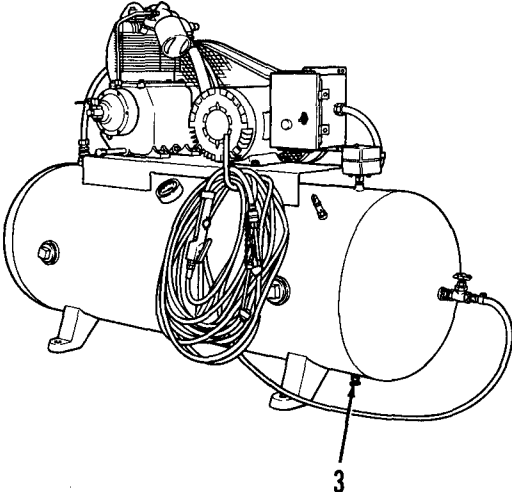
A-After Operation

W-Weekly

ITEM NO.	INTERVAL				ITEM TO BE INSPECTED PROCEDURE	Equipment Will Be Reported Not Ready (RED) If:
	B	D	A	W		
9					 <p>Figure 2-9. Air muffler assembly</p> <p><b>WARNING</b></p> <p>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.</p> <p>Wash in suitable solvent using a soft bristle brush.</p> <ul style="list-style-type: none"> <li>AIR MUFFLER ELEMENT. Check element (11) for dirt. Clean element with solvent P-D-680, if dirty. Replace element (11) if cleaning is ineffective.</li> </ul>	
					 <p>Figure 2-10. Air tank</p> <ul style="list-style-type: none"> <li>AIR TANK. Check tank (12) for rust or peeling paint. Remove rust or loose paint with wire brush and repaint affected area.</li> </ul>	
10						

Section iii. OPERATION UNDER USUAL CONDITIONS

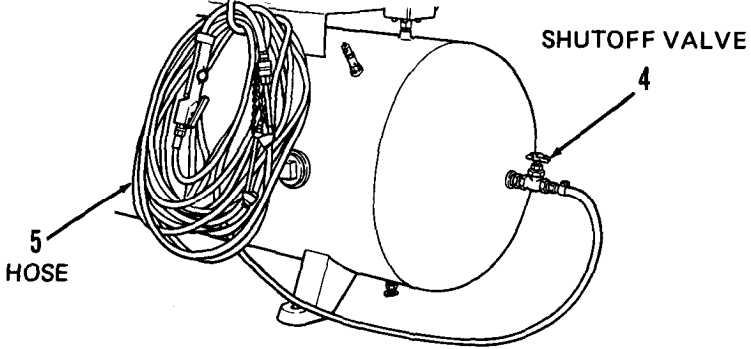
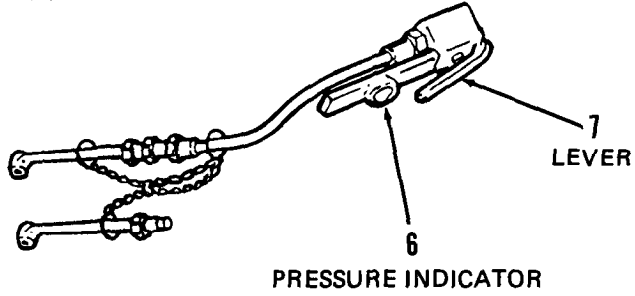
2-4. PREPARATION FOR USE

STEP	PROCEDURE	REMARKS
1. 2.	<p>Remove oil fill cap (1).</p> <p>Fill with 2 quarts (1.9 liter) of oil to oil level mark on gage (2).</p>  <p>Figure 2-11. Oil Fill</p>	<p>Use OE/HDO 30 above 32° (0°C). Use OE/HDO 10 below 32° (0°C).</p>
3. 4. 5.	<p>Install oil fill cap (1).</p> <p>Open drain cock (3).</p> <p>Close drain cock (3).</p>  <p>Figure 2-12. Drain cock location</p>	<p>To drain moisture from tank.</p>

## 2-5. OPERATING PROCEDURES

STEP	PROCEDURE	REMARKS
	<div data-bbox="384 352 1025 856" data-label="Image"> <p>The diagram shows a side view of an air compressor. A coiled hose is connected to the front. Three callout lines point to specific controls: line 1 points to a drain cock at the bottom, line 2 points to an ON/OFF switch on the right, and line 3 points to a RESET button on top.</p> </div> <p data-bbox="450 888 935 915">Figure 2-13. ON/OFF switch and reset button</p> <ol style="list-style-type: none"> <li data-bbox="227 982 1050 1035">1. Open drain cock (1) to drain condensation from tank. Then close drain cock (1).</li> <li data-bbox="227 1066 617 1094">2. Turn ON/OFF switch (2) ON.</li> </ol> <div data-bbox="640 1234 753 1272" data-label="Section-Header"> <p style="text-align: center;"><u>CAUTION</u></p> </div> <p data-bbox="398 1325 992 1409" style="text-align: center;">Notify organizational maintenance if the compressor has shut down due to overload. Overload condition must be removed before compressor is restarted.</p> <ol style="list-style-type: none"> <li data-bbox="227 1444 1058 1497">3. Push RESET button (3) to restart compressor which was shut down due to an overload.</li> </ol>	<p data-bbox="1125 978 1460 1031">Accumulated moisture will rust the inside of tank.</p> <p data-bbox="1125 1066 1483 1178">Air compressor will automatically cut in when pressure drops below 160 psi, and cut out when pressure reaches 180 psi.</p> <p data-bbox="1125 1440 1500 1524">Overloading of the electrical motor causes the relay in the motor starter to open.</p>

2-5. OPERATING PROCEDURES – continued

STEP	PROCEDURE	REMARKS
	 <p>Figure 2-14. Shutoff valve and air hose</p>	
4.	Open shutoff valve (4).	
5.	Unwind hose (5).	
	 <p>Figure 2-15. Inflator gage</p>	
6.	Read pressure with pressure indicator (6).	Do not press on lever (6) while reading pressure.
7.	Depress lever (7) to fill tire.	
8.	Turn main power switch OFF at end of work shift.	

**Section iV. OPERATION UNDER UNUSUAL CONDITIONS**

2-6. OPERATION IN DUSTY ENVIRONMENT.

Check and clean muffler element daily to keep it from being clogged.

Clean dirt off compressor fins so cooling ability won't be lost.

2-7. OPERATION IN EXTREME HEAT.

Keep motor and compressor clean. Dirt keeps heat from escaping.

Make sure compressor gets adequate ventilation and airflow isn't blocked.

Check muffler element often. A dirty muffler element will make the compressor run hot.

## CHAPTER 3

### OPERATOR'S MAINTENANCE INSTRUCTIONS

#### Section i. LUBRICATION INSTRUCTIONS

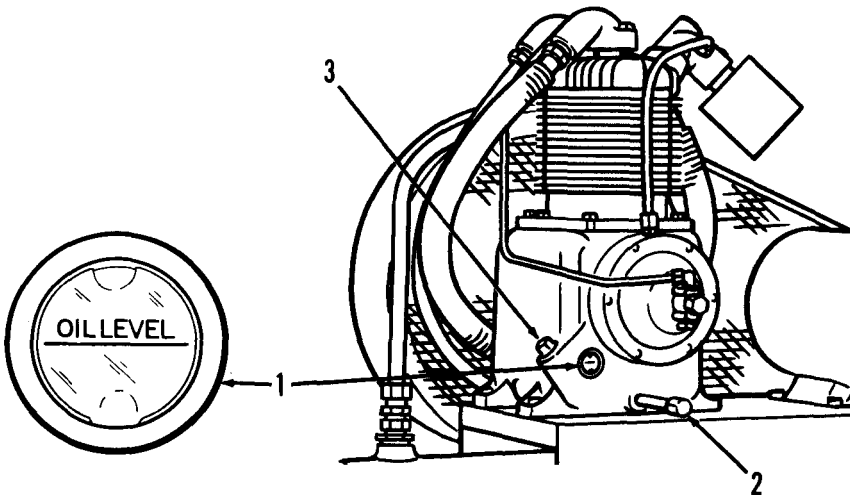
##### 3-1. GENERAL.

The air compressor is the only component of the compressor set which requires lubrication. The bearings of the electric motor are sealed and cannot be lubricated.

##### CAUTION

The air compressor must be stopped before checking or adding oil.

##### 3-2. LUBRICATION INSTRUCTIONS.

ITEM	PROCEDURE	INTERVAL
1. Oil level gage (1) 2. Oil drain cap (2) 3. Oil fill cap (3)	<div style="text-align: center;">  <p>Figure 3-1. Lubrication instructions</p> </div> <p>Check oil level. Add oil, OE-30 to bring up to oil level mark.</p> <p>a. Remove and drain oil into container with at least 2 quart (1.9 liter) capacity.</p> <p>b. Install cap (2) and pour 2 quarts (1.9 liter) of OE-30 into fill opening (3).</p> <p>c. Replace oil cap (3).</p>	Daily  Quarterly

#### Section ii. TROUBLESHOOTING PROCEDURES

##### 3-3. GENERAL.

This section contains troubleshooting procedures for the

operator. When the operator can't perform the procedure, he is referred to the proper level of maintenance.

3-4 TROUBLESHOOTING PROCEDURES.

The table lists the common malfunctions which you may find during the operation or maintenance of the air compressor or its components. You should perform the tests/inspections and corrective actions in the order listed.

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

Table 3-1. Troubleshooting

Malfunction	Test or Inspection	Corrective Action
-------------	--------------------	-------------------

1. ELECTRIC MOTOR WON'T START.

Step 1. See if main power switch is on.

Turn on main power.

Step 2. Check if overload condition has opened the overload relay.

Push RESET button on starter box.

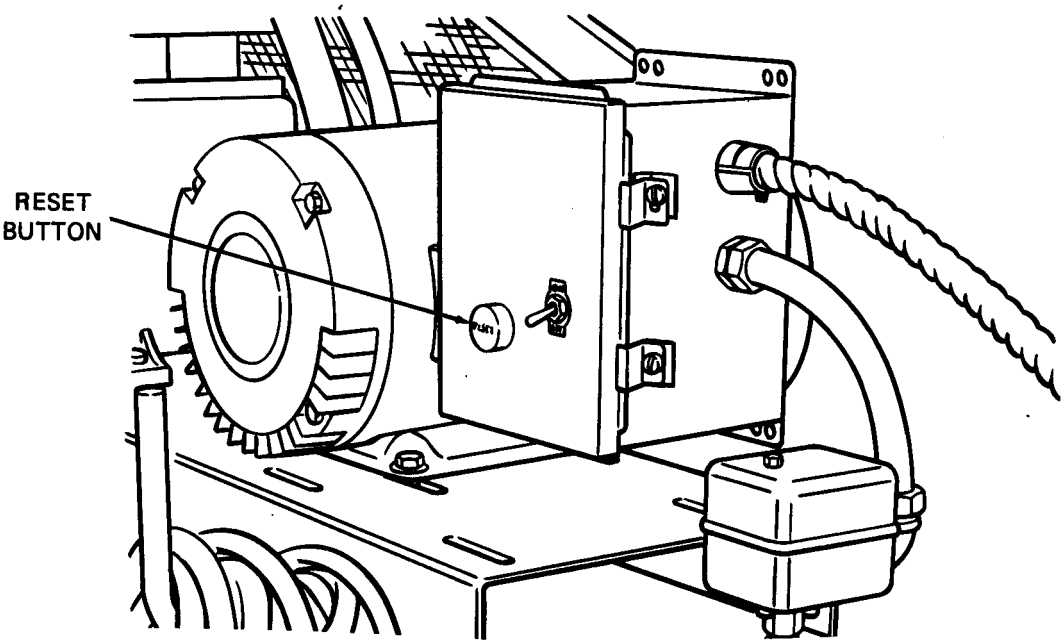


Figure 3-2. Reset button operation



Table 3-1. Troubleshooting – continued

Malfunction	Test or Inspection	Corrective Action
-------------	--------------------	-------------------

## 2. TANK PRESSURE IS LOW, PUMPING RATE IS SLOW.

Step 1. Inspect muffler element for clogging.

Clean muffler element by washing in solvent P-D-680 using small brush.

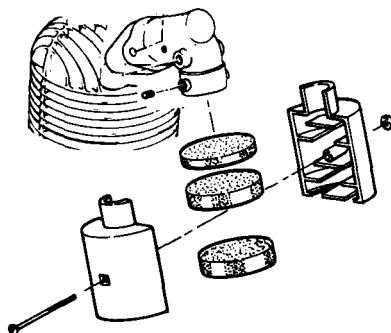


Figure 3-3. Air muffler element inspection (See Figure 2-9 )

Step 2. Check to see that drain cock is closed.

Close drain cock tightly.

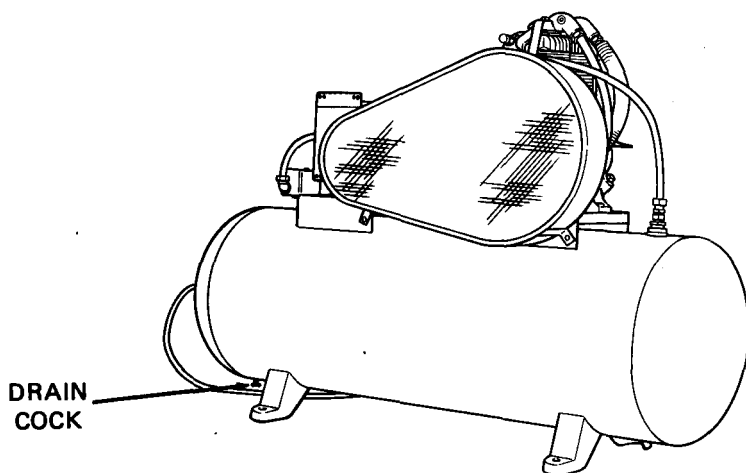


Figure 3-4. Compressor unit, belt guard side

**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.

Wash in suitable solvent using a soft bristle brush.

Table 3-1. Troubleshooting – continued

Malfunction	Test or Inspection	Corrective Action
-------------	--------------------	-------------------

2. TANK PRESSURE IS LOW, PUMPING RATE IS SLOW - continued.

- Step 3. Check for air leaks, using soapy water if necessary. Check around all air connections.
- a. Tighten loose connections.
  - b. Notify organizational maintenance if tightening does not eliminate leak.

3. COMPRESSOR OIL CONSUMPTION IS EXCESSIVE.

- Step 1. Check oil.
- OE-30 should be used. Change oil if too light.
- Step 2. Oil rings of new or rebuilt pump may take some time to seat in cylinder walls.
- a. Oil consumption should drop once rings are seated.
  - b. Notify organizational maintenance if oil consumption does not drop.

4. COMPRESSOR RUNS NOISY.

- Step 1. Check for loose mounting bolts.
- Tighten bolts.

- Step 2. Check for loose belt guard.
- Tighten mounting screws.

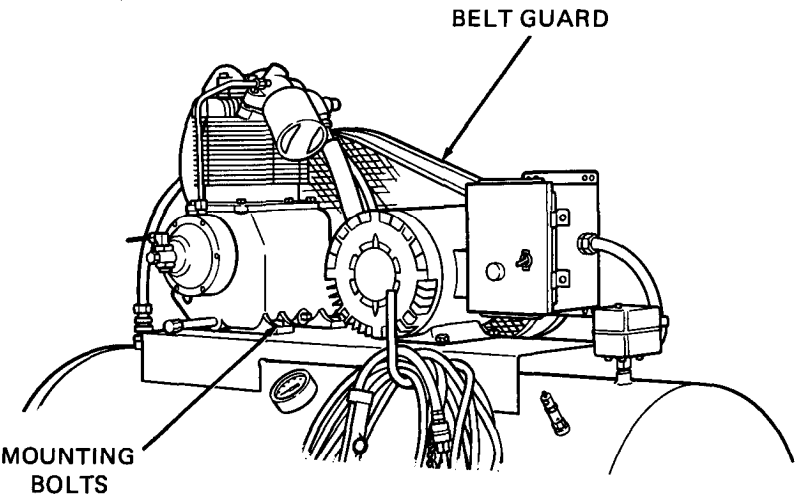


Figure 3-5. Compressor mounting bolts

Table 3-1. Troubleshooting – continued

Malfunction	Test or Inspection	Corrective Action
-------------	--------------------	-------------------

## 4. COMPRESSOR RUNS NOISY - continued.

Step 3. Check for loose flywheel or pulley.

- a. Tighten flywheel or pulley.
- b. Notify organizational maintenance if compressor still runs noisy.

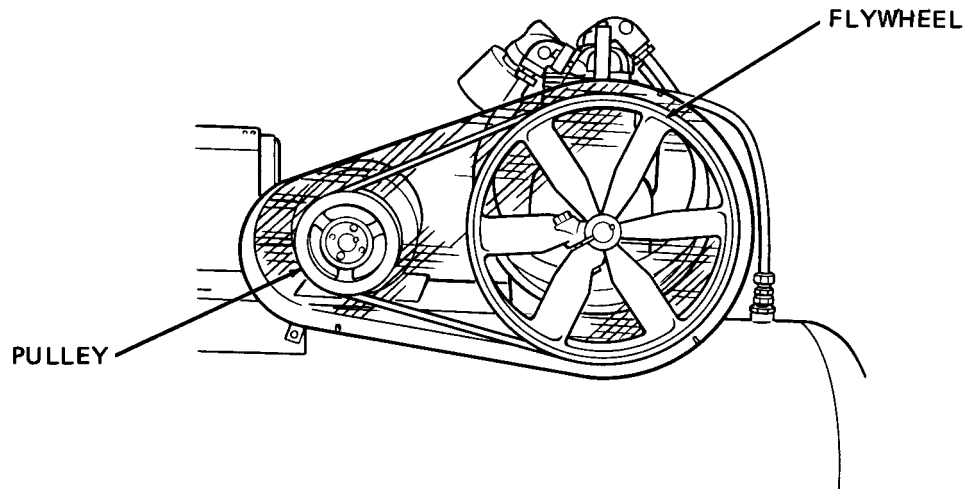


Figure 3-6. Flywheel and motor pulley

## 5. COMPRESSOR OVERHEATS.

Step 1. Check to see if pump is running backwards. Correct rotation is counterclockwise facing flywheel.

Notify organizational maintenance if pump is running backwards.

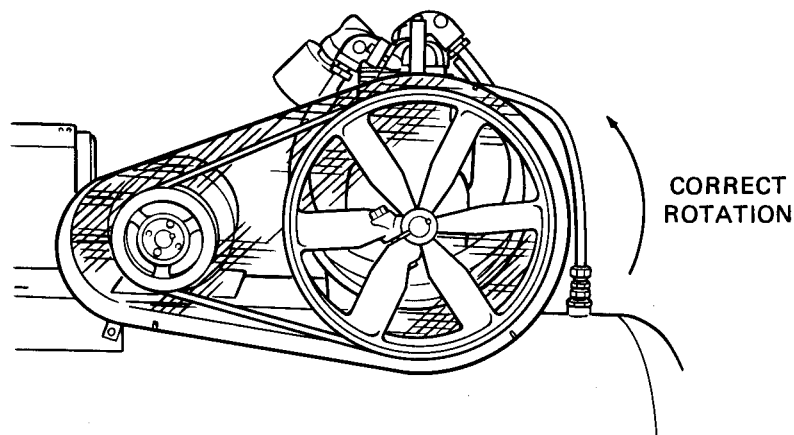


Figure 3-7. Direction of compressor rotation

Table 3-1. Troubleshooting – continued

Malfunction	Test or Inspection	Corrective Action
-------------	--------------------	-------------------

5. COMPRESSOR OVERHEATS - continued.

Step 2. Check for low oil level.

Add oil to OIL LEVEL mark.

Step 3. Check for dirt in cylinder or intercooler fins.

Remove dirt.

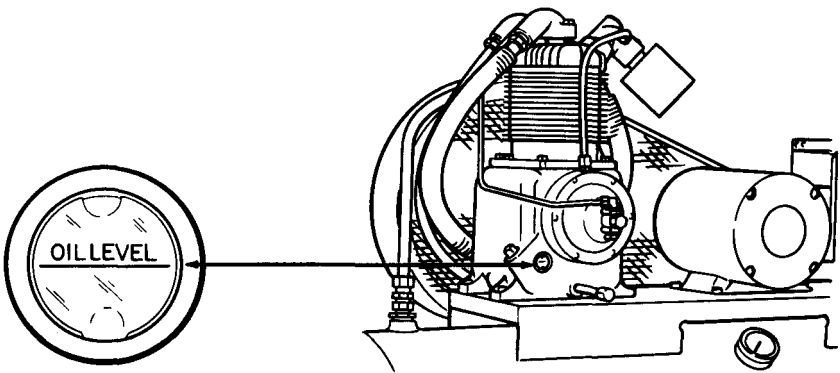


Figure 3-8. Adding oil

Step 4. Check for proper ventilation.

Move objects which prevent air circulation around compressor.

Step 5. Check for blown valve gaskets (air escaping between manifolds and cylinder).

Notify organizational maintenance.

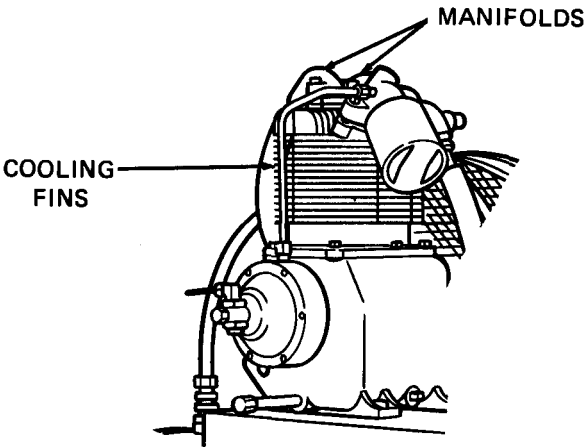
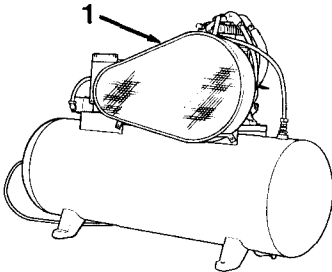
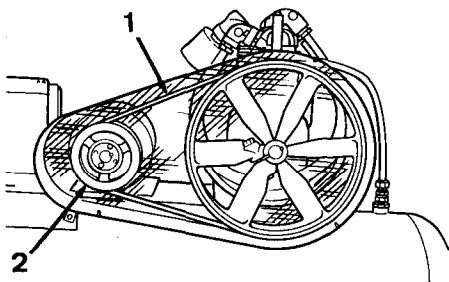
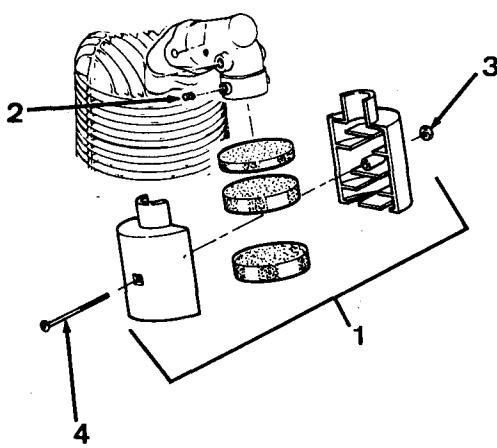


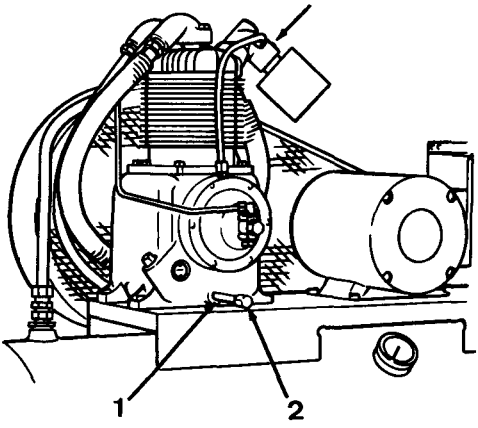
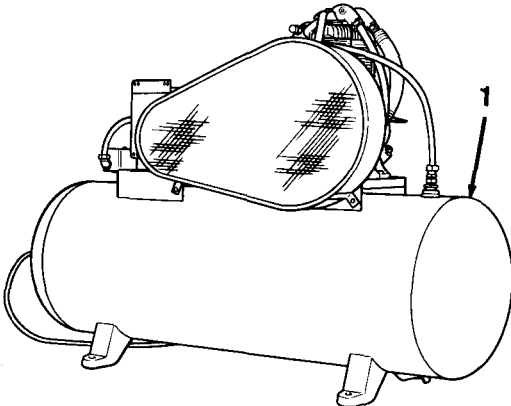
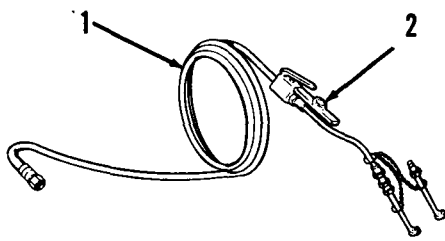
Figure 3-9. Cooling fins

## Section III. MAINTENANCE PROCEDURES

## 3-5. INTRODUCTION.

This section covers maintenance procedures that the operator has to perform.

LOCATION/ITEM	ACTION	REMARKS
3-6. OPERATOR'S MAINTENANCE		
1. Belt guard assembly (1)	<p>Inspect for loose mounting hardware. Tighten if necessary.</p> <p><b>WARNING</b></p> <p>Disconnect main power before inspecting belts and pulleys to avoid unexpected starting of the compressor.</p>	 <p>Figure 3-10. Compressor unit, belt guard side</p>
2. V-Belts (1)	<p>a. Inspect for cracks, proper tension and alignment.</p> <p>b. Notify organizational maintenance if belts are defective.</p>	 <p>Figure 3-11. V-belt inspection</p>
3. Drive pulley (2)	<p>a. Inspect for looseness.</p> <p>b. Tighten cap screws if loose.</p>	
4. Air muffler element (1)	<p>a. Loosen screw (2) and remove from compressor.</p> <p>b. Remove nut (3), screw (4) and separate element (1).</p> <p>c. Inspect for Dirt</p> <p><b>WARNING</b></p> <p>Use gloves or other skin protection equipment when working with cleaning solvents.</p> <p>d. Clean if dirty using cleaning solvent and let air dry.</p>	 <p>Figure 3-12. Air muffler inspection</p>

LOCATION/ITEM	ACTION	REMARKS
3-6. OPERATOR'S MAINTENANCE - continued		
4. (cont.)	e. Inspect for tears or holes. f. Replace element if defective. g. Assemble element with screw (4), nut (5) and tighten. h. Install on compressor and tighten screw (2).	
5. Oil drain pipe (1) and cap (2)	a. Inspect for leaks. b. Tighten if leaking. c. Replace if tightening does not stop leak.	<p>Figure 3-13. Oil drain cap and pipe</p>
6. Air tank (1)	a. Inspect for rust or peeling paint. b. Remove rust and loose paint with wire brush. c. Repaint affected area.	
7. Air hose (1)	a. Inspect for cuts or cracking. b. Notify organizational maintenance if defective.	<p>Figure 3-14. Air tank inspection</p>
8. Inflator gage (2)	a. Inspect for defective gage. b. Notify organizational maintenance if defective.	
<p>Figure 3-15. Air hose inspection</p>		

## CHAPTER 4

### ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

4-1. CHAPTER OVERVIEW. This chapter contains maintenance procedures for organizational maintenance personnel.

#### Section I. REPAIR PARTS, SPECIAL TOOLS, TMDE AND SUPPORT EQUIPMENT

4-2. COMMON TOOLS AND EQUIPMENT. For repair of the compressor unit you will need the following common tools:

Nomenclature	National/NATO Stock Number
• Tool Kit, General Mechanic, Automotive	5180-00-177-7033
• Shop Set, Automotive Repair, Field Maintenance, Basic	4910-00-754-0705
• Shop Set, Machine: Field Maintenance, Heavy	3470-00-754-0738
• Shop Equipment, Automotive Maintenance and Repair: Organization, Common NO. 1	4910-00-754-0654

4-3. SPECIAL TOOLS. Not applicable.

parts are listed and illustrated in the repair parts and special tools list covering organizational DS and GS maintenance for this equipment (TM 5-4310-373-24P).

4-4. SPARES AND REPAIR PARTS. Spares and repair

#### Section II. SERVICE UPON RECEIPT

4-5. SITE AND SHELTER REQUIREMENTS. The compressor unit was designed for permanent installation in a sheltered environment. Protect the compressor from water, excessive dirt and corrosive atmospheres. Install the compressor in an area that receives adequate ventilation to prevent overheating. 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.

4-6. SERVICE UPON RECEIPT.

#### WARNING

The compressor is shipped without oil in the crankcase. Running compressor without oil is dangerous to personnel and property.

Before start-up, fill the crankcase with 2 quarts (1.9 liter) of oil or up to the oil level mark on the level gage.

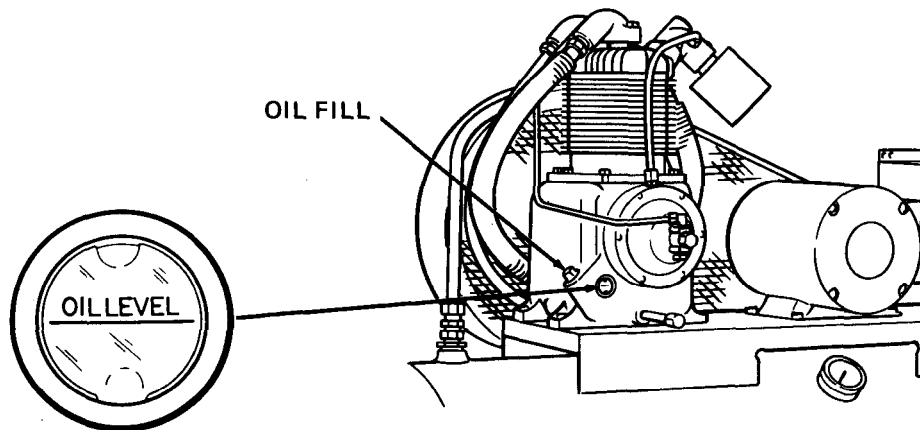


Figure 4-1. Oil fill, and oil level

Air Temperature	Oil Type
Above 32°F (0°C)	OE/HDO 30
0°C to 40°F (-18°C to 4°C)	OE/HDO 10

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.

4-7. **INSTALLATION INSTRUCTIONS.** Bolt the compressor unit securely and evenly to a level base. Where the

base isn't completely level, use shims under the feet. Do not eliminate space between the base and a foot by drawing the foot down. This would put strain on the unit.

Secure mounting of the base is necessary to minimize vibration.

Leave sufficient space around the compressor so that it is accessible from all sides for maintenance. Mount the compressor with the pulley side toward the wall and at least 6 inches (18 cm) away from it.

Connect the motor starter to 230 VAC 3 phase power source. The source must have a separate on-off switch for the compressor.

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

4-8. **INTRODUCTION.** The preventive maintenance checks and services listed in the PMCS table cover procedures to be performed by organizational maintenance personnel.

4-9. **PMCS TABLE.** Explanation of the columns:

- **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.
- **Item To Be Inspected.** This column gives the name of the item to be inspected or serviced.
- **Procedures.** This column lists inspection procedures.
- **Equipment Will Be Reported Not Ready/Available If:** This column contains the criteria which will cause the equipment to be classified as not ready or not available because of inability to perform its primary mission.



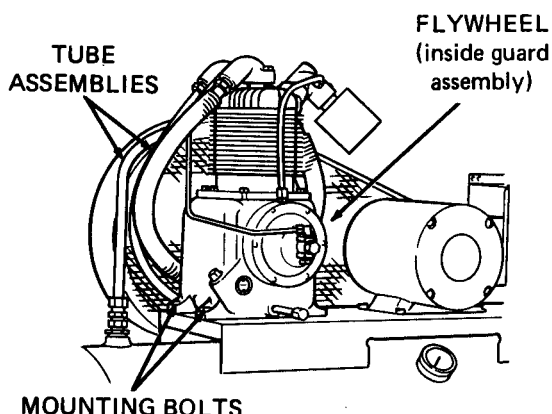
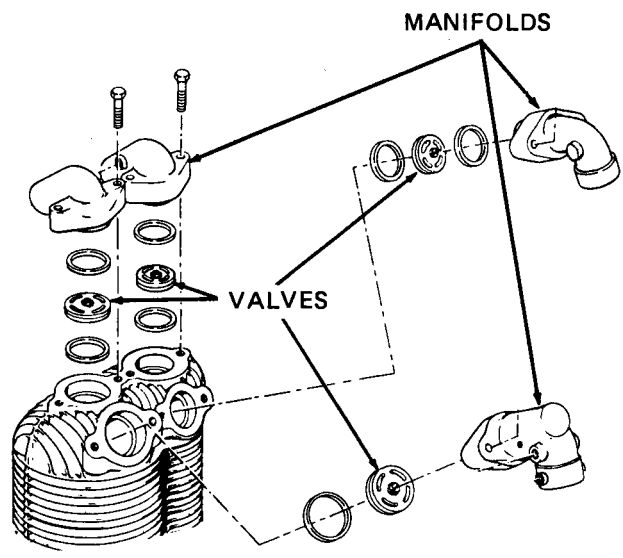
Table 4-1. Preventive Maintenance Checks and Services

Legend

W-Weekly

M-Monthly

Q-Quarterly

Item No.	Interval			Item To Be Inspected	Procedures	Equipment Will Be Reported Not Ready/ Available If:
	W	M	Q			
1	•			Compressor Assembly	<p>Check four mounting bolts for tightness.</p>  <p>Figure 4-2. Compressor assembly</p>	
2	•			Flywheel	Check for tightness of mounting.	
3	•			Tube Assemblies	Check tube fittings for tightness.	
4			•	Intake and exhaust valves	 <p>Figure 4-3. Manifolds and valve assemblies</p> <ol style="list-style-type: none"> <li>Remove manifolds.</li> <li>Remove valves.</li> </ol>	

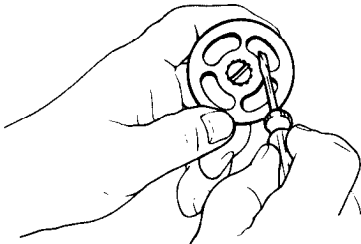
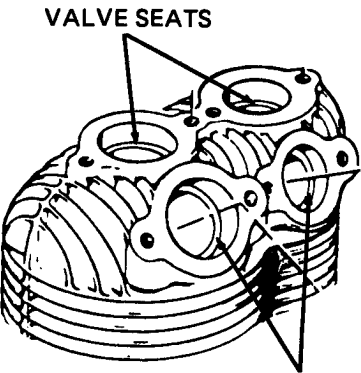
## Preventive Maintenance Checks and Services – continued

## Legend

W-Weekly

M-Monthly

Q-Quarterly

Item No.	Interval			Item To Be Inspected	Procedures	Equipment Will Be Reported Not Ready/ Available If:
	W	M	Q			
					<p>c. Inspect valves for carbon formation.</p> <p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Air pressure must not exceed 30 psi when being used to clean valves. Gloves or other skin protection must be used when working with cleaning solvents.</p> <p>d. Clean valve assembly with cleaning solvent and blow dry with compressed air.</p> <p>e. Inspect valve assembly by inserting thin tool such as screw driver through slot and push against valve parts. Be sure parts move up and down and are not sticking.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>Valve assembly is unrepairable.</p>  <p style="text-align: center;">Figure 4-4. Valve assembly</p> <p>f. If valve parts do not move up and down and are sticky as in procedure e, replace valve assembly.</p> <p>g. Clean valve seats in cylinder with compressed air and wipe with clean rag.</p>  <p style="text-align: center;">Figure 4-5. Valve seats</p>	Parts inside valve assembly are sticking.

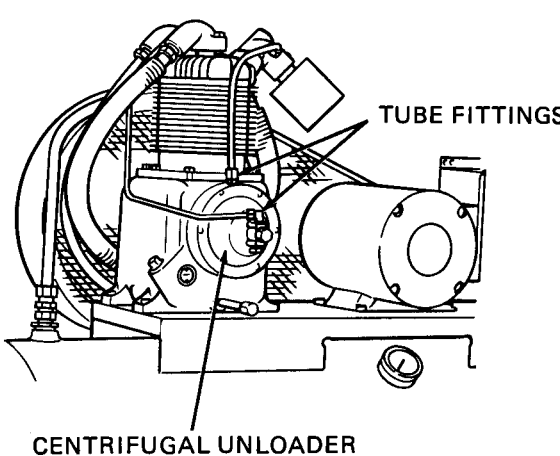
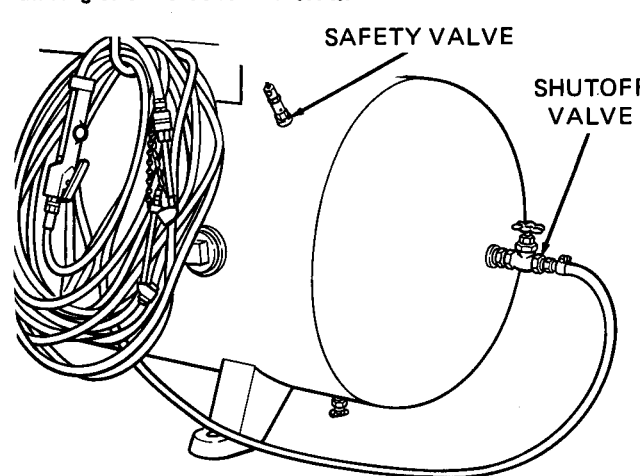
Preventive Maintenance Checks and Services – continued

Legend

W—Weekly

M—Monthly

Q—Quarterly

Item No.	Interval			Item To Be Inspected	Procedures	Equipment Will Be Reported Not Ready/ Available If:
	W	M	Q			
5	•			Centrifugal Unloader	 <p>Figure 4-6. Unloader and breather tube fittings</p> <ol style="list-style-type: none"> <li>Check tube fittings for tightness.</li> <li>Check tube fittings for leaks with soap solution.</li> </ol>	Tightening of fittings does not eliminate leaks.
6	•			Air Discharge System Safety Valve	<p>Pull ring to see that valve reseats.</p>  <p>Figure 4-7. Safety valve, shutoff valve</p>	Valve does not reset.
7	•			Shutoff Valve	Inspect for leaks.	

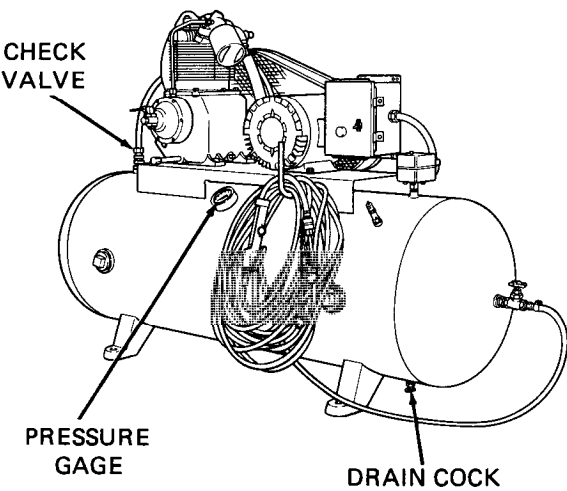
## Preventive Maintenance Checks and Services – continued

## Legend

W–Weekly

M–Monthly

Q–Quarterly

Item No.	Interval			Item To Be Inspected	Procedures	Equipment Will Be Reported Not Ready/ Available If:
	W	M	Q			
8		•		Check Valve	Check for leaks.	
9		•		Pressure Gage	a. Check for leaks. b. Check for cracked glass.	
10		•		Drain Cock	Check for leaks.	
 <p>Figure 4-8. Pressure gage, check valve, drain cock</p>						

## Section IV. TROUBLESHOOTING

4-10. GENERAL. This section contains troubleshooting procedures to be performed by organizational maintenance.

4-11. ELECTRIC. 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.

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.

Once overload conditions have been eliminated, the RESET button on the motor control box can be pushed to start the compressor back up.

The electric motor is made up of electrical and mechanical components. The main mechanical components to go bad are the bearings.

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

4-12. COMPRESSOR. The compressor drive is a fairly simple system. The main problems are improper belt tension, bad alignment and loose parts.

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.

However, problems with getting enough air aren't always caused by the compressor. Leaky fittings or an improperly adjusted pressure switch may also be at fault.

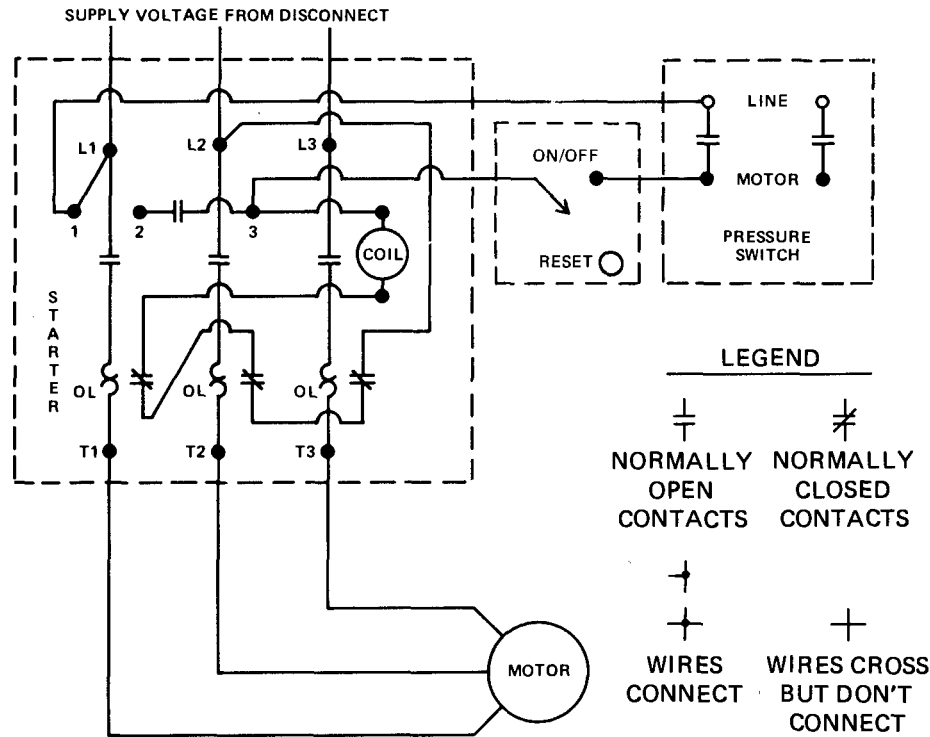


Figure 4-9. Electric motor controls schematic

#### 4-13. TROUBLESHOOTING CHART.

- **MALFUNCTION.** Malfunctions listed are the ones most likely to happen. Not all possible malfunctions can be foreseen and listed.
- **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.
- **CORRECTIVE ACTION.** Corrective actions are listed to help you eliminate the malfunction. Where the corrective action is too complicated to be listed in full detail, the paragraph number of the detailed procedure is given in parentheses.

Table 4-2. Troubleshooting

Malfunction	Test or Inspection	Corrective Action
-------------	--------------------	-------------------

#### ELECTRIC

##### 1. ELECTRIC MOTOR WON'T START.

Step 1. Check to see that main power and on/off switch is on.

Turn on power.

Step 2. Press RESET button on electric starter.

Reset button will start motor only if relay was tripped by momentary overload.

Table 4-2. Troubleshooting – continued

## Malfunction

Test or Inspection

Corrective Action

## ELECTRIC – continued

## 1. ELECTRIC MOTOR WON'T START - continued.

Step 3. Check pressure switch connections for tightness.

Tighten connections.

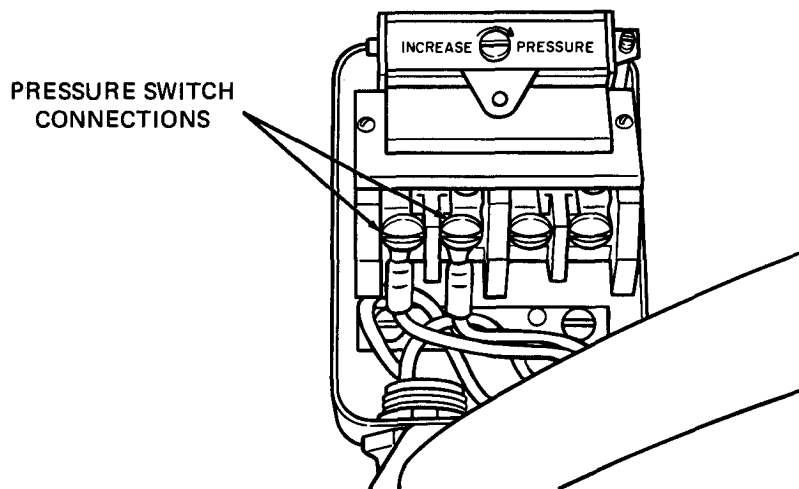


Figure 4-10. Pressure switch connections

Step 4. Check if pressure switch contacts are open at pressures below 160 psi.

**Replace switch if contacts don't close (para 4-19).**Step 5. **Check motor starter connections for looseness.****Tighten.**Step 6. **Check motor controls for faulty wiring.****Wire controls correctly.**Step 7. **Check for bad motor control coil.****Replace coil (para 4-16).**

CHECK FOR CONTINUITY  
BETWEEN THESE  
TERMINALS OF THE COIL

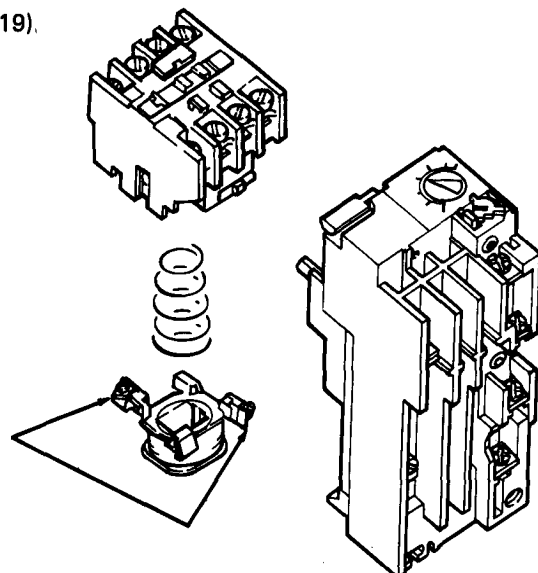


Figure 4-11. Motor control coil continuity

Table 4-2. Troubleshooting – continued

Malfunction	Test or Inspection	Corrective Action
-------------	--------------------	-------------------

## ELECTRIC – continued

## 1. ELECTRIC MOTOR WON'T START - continued.

Step 8. Check for bad motor control contactor.

Replace contactor.

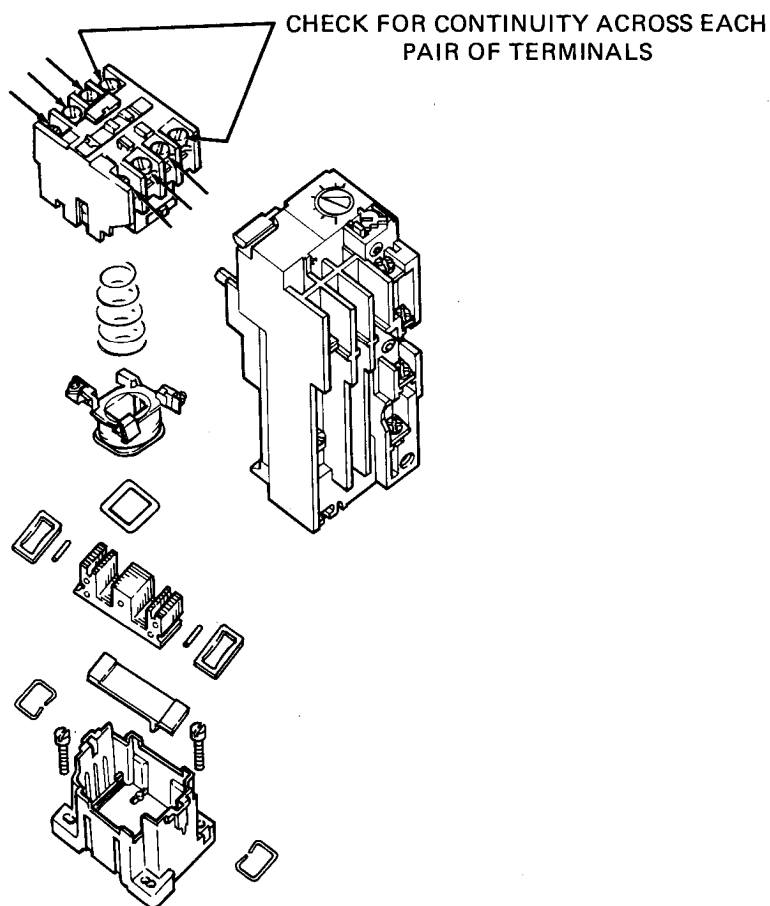


Figure 4-12. Motor control contactor continuity

Step 9. Check for burned motor control contacts.

Replace contactor (para 4-16).

## 2. LOW AIR PRESSURE.

Step 1. Check to see if compressor cuts out at pressure below 180 psi.

Adjust pressure switch (para 4-22).

Table 4-2. Troubleshooting – continued

Malfunction	Test or Inspection	Corrective Action
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ELECTRIC – continued

3. MOTOR HUMS BUT WON'T RUN.

Step 1. Check for open or short circuited motor windings (para 4-41).

If windings are defective, notify direct support.

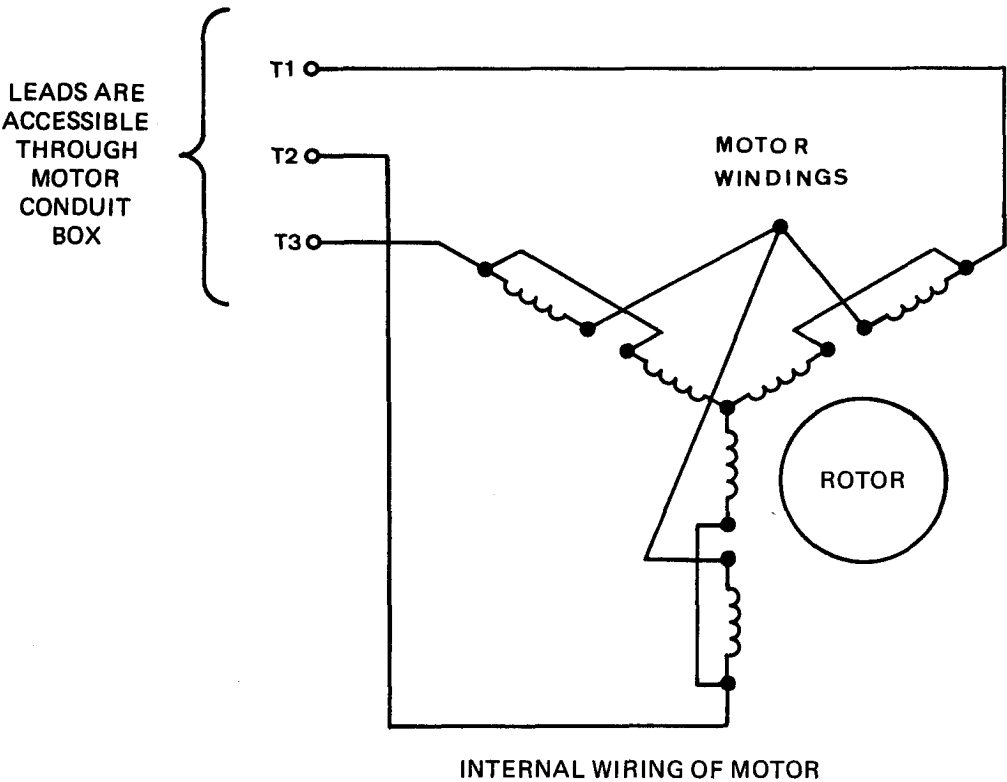


Figure 4-13. Motor schematic

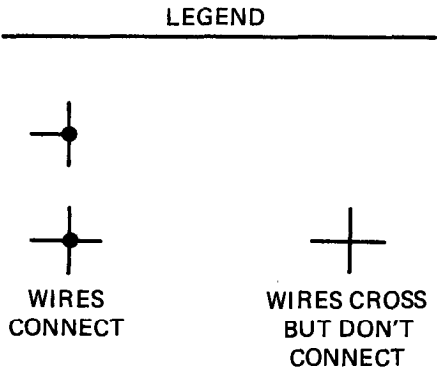




Table 4-2. Troubleshooting – continued

Malfunction	Test or Inspection	Corrective Action
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ELECTRIC – continued

4. MOTOR WON'T RUN.

Step 1. Check if main power and on/off switch is open.

Turn main power on.

Step 2. Check motor controls

Repair motor controls.

Step 3. Check wiring of motor.

Rewire motor correctly.

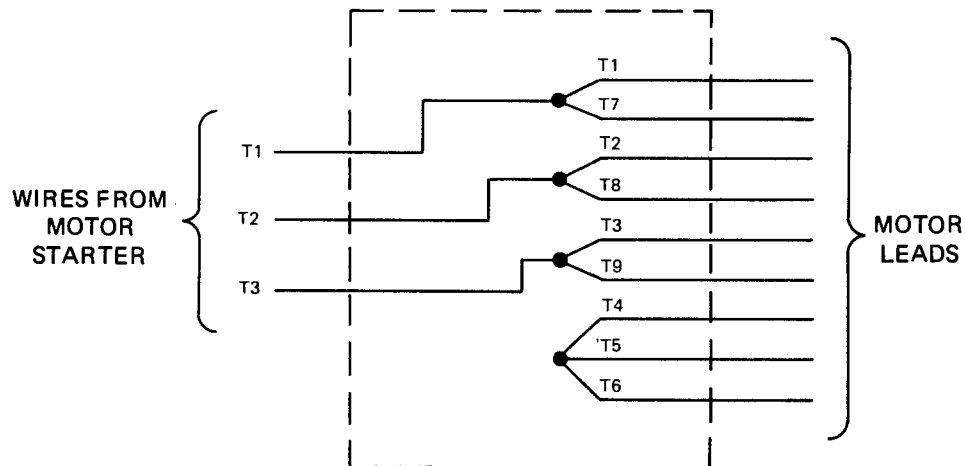


Figure 4-14. External wiring of motor

Step 4. Check for open motor windings. Check for open circuit between motor leads T1 and T2, T1 and T3, and T2 and T3 (para 4-41).

If windings are open, notify direct support..

5. IF OVERLOAD KICKS OUT REPEATEDLY.

Step 1. Check for short circuits between windings T1, T2, T3 and motor frame (para 4-41).

If windings are shorted, notify direct support.

Step 2. Check interstage safety relief valve for sticking.

Clean and replace if defective.

Step 3. Check compressor valves for damage or sticking.

Clean and replace if defective.

Table 4-2. Troubleshooting – continued

Malfunction	Test or Inspection	Corrective Action
-------------	--------------------	-------------------

COMPRESSOR

6. COMPRESSOR DOES NOT PUT OUT ENOUGH AIR.

Step 1. Check if the 2 belts (1) are loose.

Tighten belts (para 4-27).

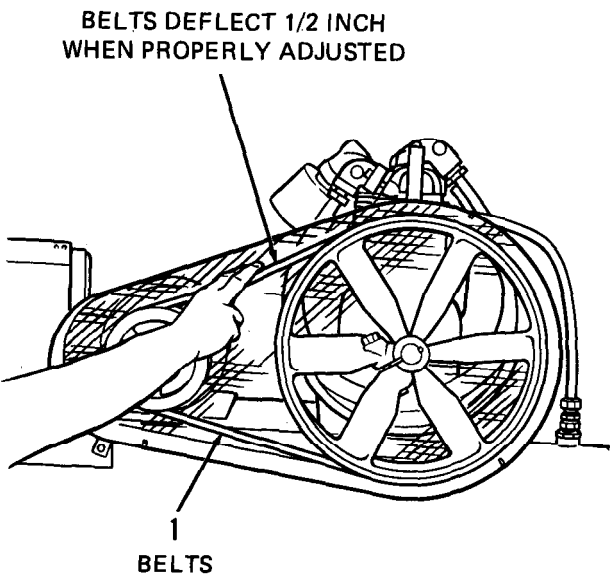


Figure 4-15. Belt tension

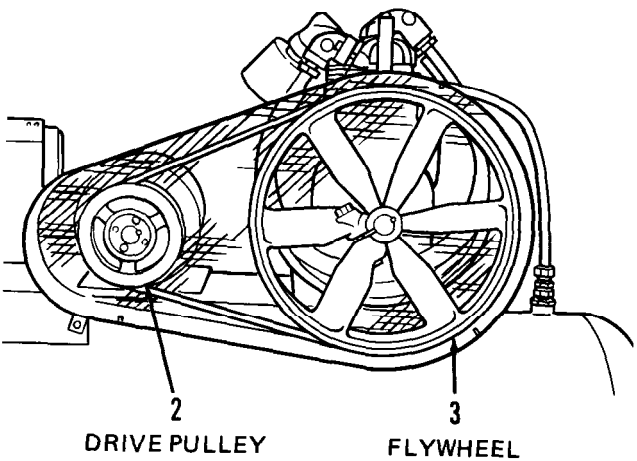


Figure 4-16. Belt guard and drive system

7. BELTS WEAR TOO FAST.

Step 1. Check if the 2 belts (1) are loose.

Tighten belts (para 4-27).

Step 2. Check if drive pulley (2) and flywheel (3) are out of alinement.

Aline (para 4-29 thru 4-33).

8. EXCESSIVE COMPRESSOR OIL CONSUMPTION.

Step 1. If unit is new, oil consumption may be high until rings seat.

Wait for rings to seat, then recheck oil consumption.

Notify direct support if oil consumption continues to be high.

Table 4-2. Troubleshooting – continued

---

Malfunction

Test or Inspection

Corrective Action

---

COMPRESSOR – continued

## 9. SLOW PUMPING OR INSUFFICIENT PRESSURE.

Step 1. Check for leaks in air lines and fittings.

Tighten fittings or replace leaking parts.

Step 2. Check for overloading of the compressor.

Reduce air use to less than 15 cfm.

Step 3. Check for wrong adjustment of pressure switch.

Adjust pressure switch to cut in at 160 psi and to cut out at 180 psi (para 4-22).

Step 4. Check for bad valves (para 4-35).

Replace bad valves.

## 10. COMPRESSOR OVERHEATS.

Step 1. Check if pump is low on oil.

Add oil to bring level up to full mark on oil gage.

Step 2. Check for dirt in intercooler or cylinder fins.

Remove dirt.

Step 3. Compressor is getting poor ventilation.

Clear obstructions from around the compressor.

Step 4. Check for leaky manifold gaskets.

Replace gaskets (para 4-35 and 4-36) if defective.

Step 5. Check for worn valves.

Replace valves (para 4-35 and 4-36) if defective.

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

Rewire motor so it runs counterclockwise (para 4-43).

Table 4-2. Troubleshooting – continued

Malfunction	Test or Inspection	Corrective Action
-------------	--------------------	-------------------

COMPRESSOR – continued

11. COMPRESSOR RUNS NOISY.

Step 1. Check for loose mounting bolts, motor pulley or flywheel (para 4-29 thru 4-33).

Tighten.

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

Remove manifolds and clean cylinder (para 4-35 thru 4-37).

Step 3. Check for end-play in crankshaft.

Install thinner governor housing gasket (para 4-39).

If noise continues, stop compressor and notify direct support.

## Section V. ORGANIZATIONAL MAINTENANCE PROCEDURES

This section contains removal, disassembly, inspection, cleaning, repair, assembly and installation of the following compressor systems:

- a. Motor controls
- b. Compressor drive
- c. Compressor assembly
- d. Electric motor
- e. Air tank system
- f. Air discharge system

### MOTOR CONTROLS

MAINTENANCE SUMMARY. This task covers:

The removal, disassembly, inspection, cleaning, repair, assembly and installation of:

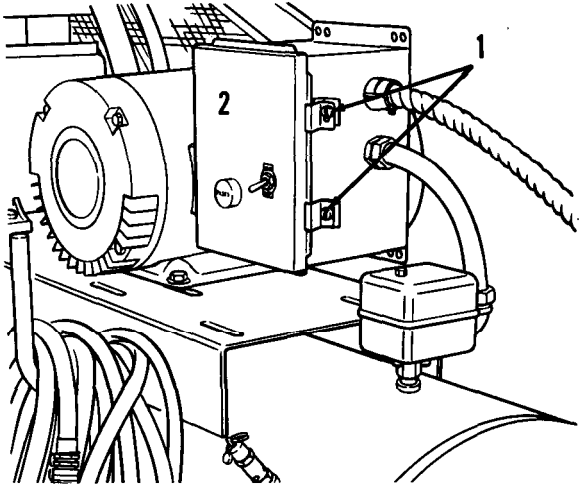
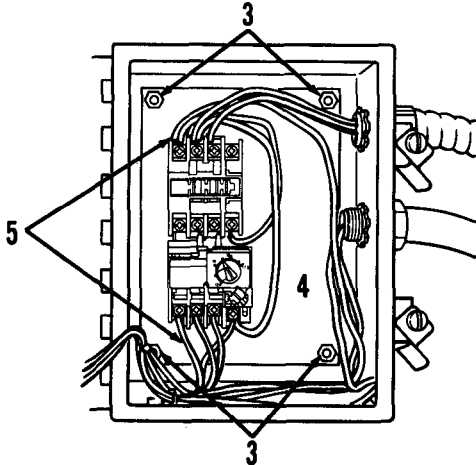
- a. Motor starter and enclosure
- b. Pressure switch

#### INITIAL SETUP

Personnel Required	General Safety Instructions
1	Disconnect electrical power before beginning maintenance procedure.

#### TASK SUMMARY

NO.	TASK	REFERENCE	REMARKS
1	Motor starter enclosure, removal	Para 4-14	Disassemble motor starter only as far as necessary to repair a problem.
2	Motor starter enclosure, installation	Para 4-15	
3	Motor starter, disassembly	Para 4-16	
4	Motor starter, assembly	Para 4-17	
5	Motor starter, inspection, cleaning, adjustment	Para 4-18	
6	Pressure switch removal	Para 4-19	Pressure switch may be inspected while installed. Remove switch only if it is bad.
7	Pressure switch installation	Para 4-20	If pressure switch is bad, replace it.
8	Pressure switch inspection, cleaning, repair	Para 4-21	
9	Pressure switch adjustment	Para 4-22	

4-14. MOTOR STARTER ENCLOSURE/REMOVAL		
This task covers:  The removal of the motor starter enclosure.		
<div>INITIAL SETUP</div> <div>Tools: T1 5180-00-177-7033</div> <div>Equipment Condition: Compressor Unit OFF Main Power OFF</div> <div>Materials/Parts: As required</div> <div>Personnel Required: 1 Mechanic</div> <div>Approximate Time Required (minutes): 20</div>		
LOCATION/ITEM	ACTION	REMARKS
<div>REMOVAL</div> <div>1. Cover screws (1)</div> <div>2. Cover (2)</div> <div>3. Nuts, washers (3)</div> <div>4. Starter assembly and base plate (4)</div> <div>5. Wires (5)</div>	<div><b>WARNING</b></div> <div>Be sure main power is disconnected before doing any work on electrical systems. Voltages present in this equipment can cause injury or death.</div> <div>Loosen two screws.</div> <div>Open.</div> <div>Remove.</div> <div>Pull out of enclosure far enough to tag and remove wires.</div> <div>NOTE</div> <div>Wires at ON/OFF switch in cover do not have to be disconnected.</div> <div>Tag and disconnect all wires on starter assembly.</div>	<div></div> <div>Figure 4-17. Motor starter enclosure</div> <div></div> <div>Figure 4-18. Motor starter, replace</div>

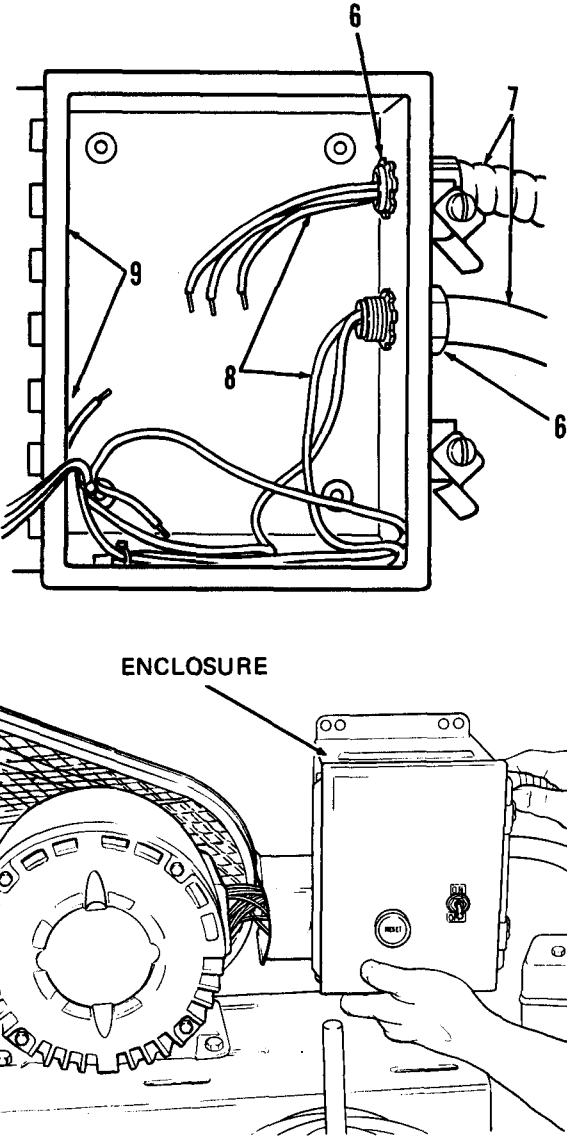
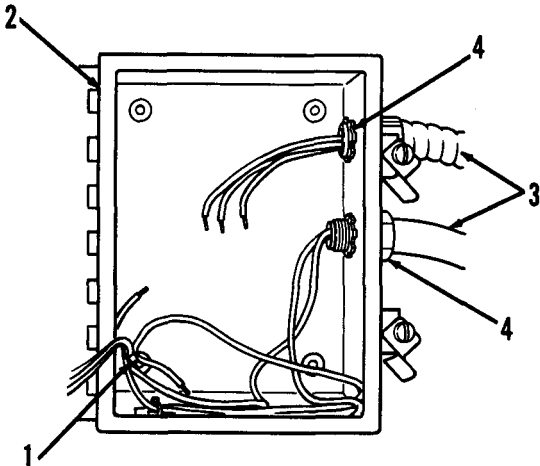
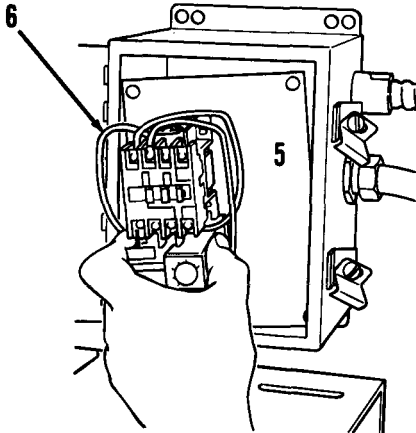
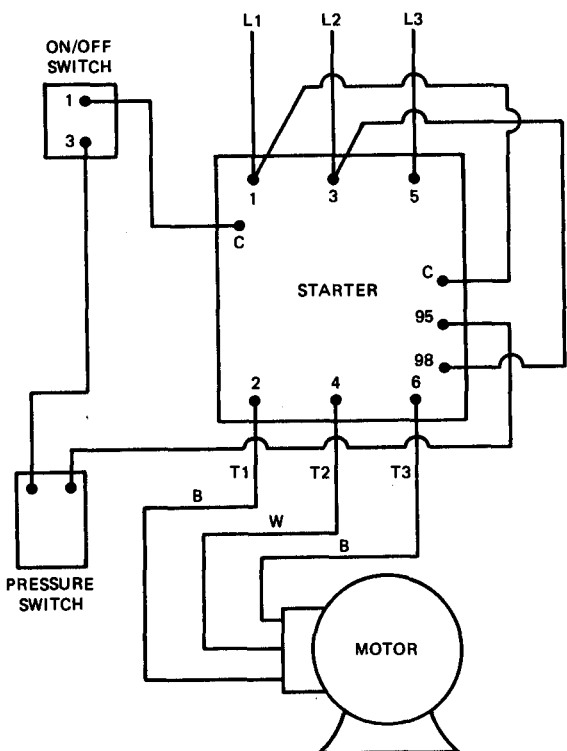


LOCATION/ITEM	ACTION	REMARKS
4-14. MOTOR STARTER ENCLOSURE/REMOVAL – continued		
6. Starter assembly and base plate (4)	Remove from enclosure.	
7. Conduit lock nuts (6)	Remove.	
8. Conduits (7) and wires (8)	Pull out of enclosure.	
9. Screws (9)	Remove.	
10. Enclosure	Remove from motor conduit box and wires.	

Figure 4-19. Motor starter, conduits

4-15. MOTOR STARTER ENCLOSURE/INSTALLATION		
<p>This task covers:</p> <p>The installation of the motor enclosure.</p>		
<p><b>INITIAL SETUP</b></p> <p><b>Tools:</b> T1 5180-00-177-7033</p> <p><b>Equipment Condition:</b> Compressor Unit OFF Main Power OFF</p> <p><b>Materials/Parts:</b> As required</p> <p><b>Personnel Required:</b> 1 Mechanic</p> <p><b>Approximate Time Required (minutes):</b> 20</p>		
LOCATION/ITEM	ACTION	REMARKS
<div>INSTALLATION</div> <ol style="list-style-type: none"><li>Motor wires (1)</li><li>Enclosure (2)</li><li>Conduits and wires (3)</li><li>Starter assembly (5) and base plate</li><li>Wires (6)</li><li>Starter assembly and base plate (5)</li></ol>	<p><b>WARNING</b></p> <p>Be sure main power is disconnected before doing any work on electrical systems. Voltages present in this equipment can cause injury or death.</p>	
	<p>Push through hole in enclosure.</p>	
	<p>Position and attach to motor conduit box with screws.</p>	
	<p>Attach to enclosure with conduit lock nuts (4).</p>	
	<p>Place into enclosure far enough to connect wires.</p>	
	<p>Connect to starter terminals as tagged.</p>	
	<p>Place into position over studs and attach with nuts and washers.</p>	

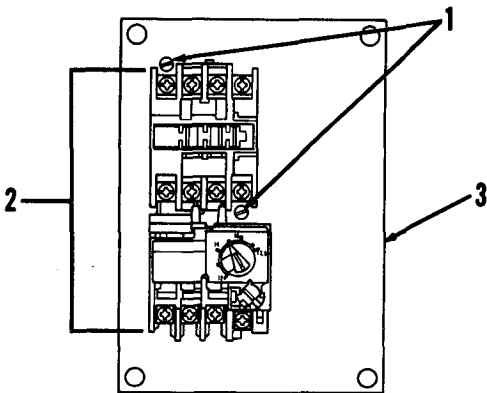


LOCATION/ITEM	ACTION	REMARKS
4-15. MOTOR STARTER ENCLOSURE/INSTALLATION – continued		
	<p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>7. Wiring Re-check all wiring connections before turning main power on. If not sure, refer to wiring diagram.</p> <p>8. Door Close and secure.</p> <p>9. Main power Connect.</p>	 <p style="text-align: center;">Figure 4-22. Motor starter wiring diagram</p> <p><b>Legend</b></p> <ul style="list-style-type: none"> <li> Wires connect.</li> <li> Wires cross but do not connect.</li> <li><b>C</b> Coil connections (not marked on coil, but connect to coil).</li> <li><b>B</b> Black motor wires.</li> <li><b>W</b> White motor wire.</li> </ul>

4-16. MOTOR STARTER/DISASSEMBLY		
This task covers:  The disassembly of motor starter.		
INITIAL SETUP		
Tools: T1 5180-00-177-7033		Equipment Condition: Motor Starter Removed Main Power OFF
Materials/Parts: As required		
Personnel Required: 1 Mechanic		Approximate Time Required (minutes): 20
LOCATION/ITEM	ACTION	REMARKS

**WARNING**

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



See para 4-14.

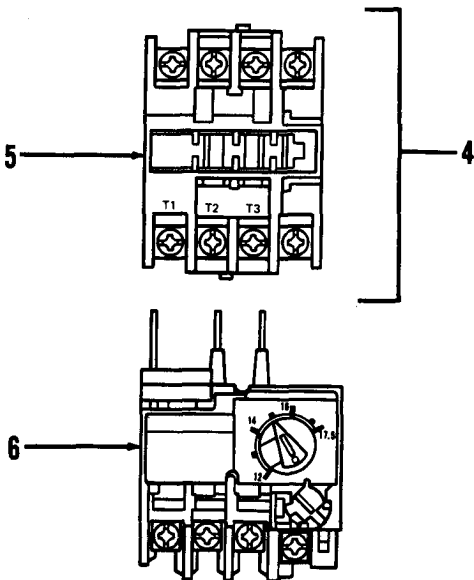


Figure 4-23. Motor starter and base plate

**DISASSEMBLY**

- 1. Motor starter enclosure
- 2. Screws (1)
- 3. Starter assembly (2)
- 4. Upper housing assembly (4) and contactor (5)

Remove from compressor.

Remove.

Remove from base plate (3).

Loosen screws at T1, T2, T3 and separate from overload relay (6).

Contactor (5) is not repairable and must not be disassembled. (See Figure 4-25.)

LOCATION/ITEM	ACTION	REMARKS
4-16. MOTOR STARTER/DISASSEMBLY - continued		
5. Retaining clips (7) holding upper housing assembly (4), to lower housing assembly (8)	Unsnap with small screwdriver.	To separate upper housing from lower housing.
6. Upper housing assembly (4)	Remove from lower housing assembly (8).	
7. Coil (10)	Remove from lower housing assembly (8).  NOTE Be careful not to lose retaining spring (9).	
8. Core (11)	Remove from lower housing (12).	
9. Shading rings (13)	Remove from core (11).	
10. Damping pins (14)	Remove from core by pushing out with fingers.	
11. Rubber pad (15)	Remove from core (11).	
12. Rubber cushion (16)	Remove from lower housing (12).	

Figure 4-25. Motor starter, exploded view

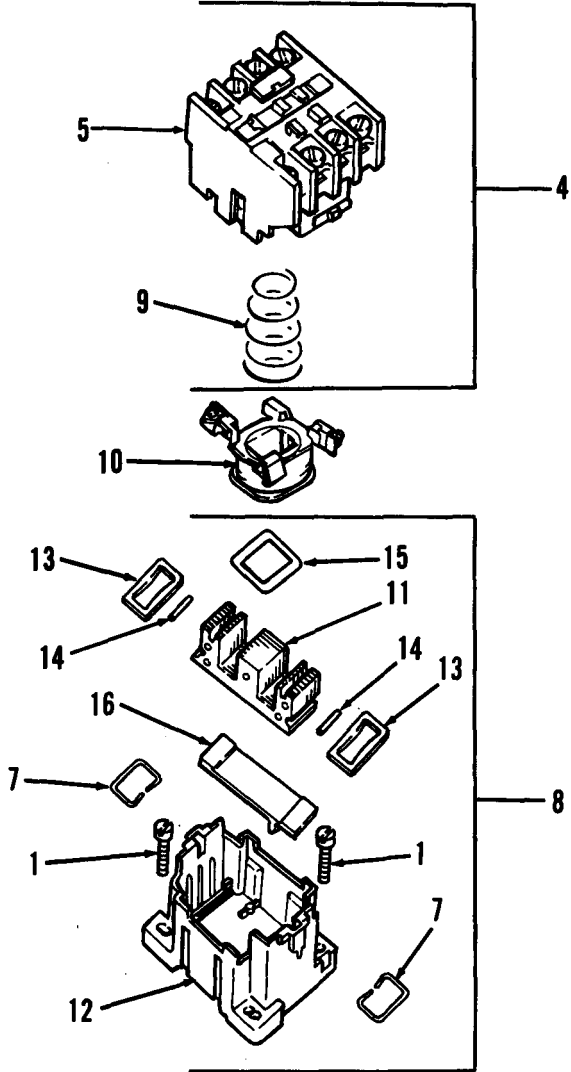
4-17. MOTOR STARTER/ASSEMBLY		
This task covers:  The assembly of motor starter.		
<div>INITIAL SETUP</div> <div>Tools: T1 5180-00-177-7033</div> <div>Materials/Parts: As required</div> <div>Personnel Required: 1 Mechanic</div> <div>Equipment Condition: Motor starter disassembled</div> <div>Approximate Time Required (minutes): 20</div>		
LOCATION/ITEM	ACTION	REMARKS
<div><div>ASSEMBLY</div><div>1. Upper housing assembly and contactor</div><div>1. Rubber cushion (16)</div><div>2. Rubber pad (15)</div><div>3. Damping pins (14)</div><div>4. Shading rings (13)</div><div>5. Core (11)</div><div>6. Coil (10)</div><div>7. Retaining spring (9)</div><div>8. Upper housing assembly (4)</div></div>	<div><div><div>WARNING</div><div>Be sure main power is disconnected before doing any work on electrical systems. Voltages present in this equipment can cause injury or death.</div></div><div><div>NOTE</div><div>Begin assembly by installing parts in lower housing assembly (8).</div><div>Install in lower housing (12).</div><div>Install on core (11).</div><div>Press into position on core (11).</div><div>Install on core (11).</div><div>Place in lower housing (12).</div><div>Place into position over core (11)</div><div>Place small end into upper housing (4).</div><div><div>NOTE</div><div>Be sure spring (9) is properly seated.</div></div><div>Place into position over coil, push down and secure by hooking retaining clips (7).</div></div></div>	<div></div>

Figure 4-26. Motor starter, exploded view



4-18. MOTOR STARTER COMPONENTS/INSPECTION/CLEANING/ADJUSTMENT

This task covers:

Inspection, cleaning and adjustment of motor starter components.

INITIAL SETUP

Tools:  
 T1 5180-177-7033

Equipment Condition:  
 Motor starter disassembled

Materials/Parts:  
 Compressed air  
 Clean rag

Personnel Required:  
 1 Mechanic

Approximate Time Required (minutes):  
 10

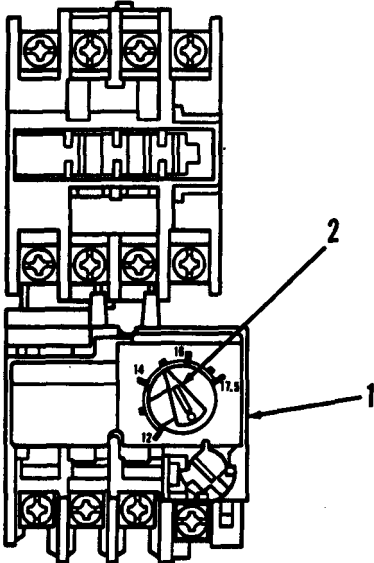
LOCATION/ITEM	ACTION	REMARKS
<div>INSPECTION</div> <p>1. All motor starter components</p>	<p>Inspect for cracks or evidence of burning.</p> <p><b>WARNING</b></p> <p>Clean motor starter components with compressed air no greater than 30 psi.</p> <p><b>WARNING</b></p> <p>Eye protective equipment must be worn when cleaning with compressed air.</p>	<p>Replace if cracked or burned.</p>
<div>CLEANING</div> <p>2. All motor starter components</p>	<p>Blow dirt out with compressed air, wipe with clean rag.</p>	
<div>ADJUSTMENT</div> <p>1. Overload relay (1)</p>	<p>Turn pointer (2) if necessary with small screwdriver to 14.8 (just below the 15 mark)</p>	

Figure 4-28. Overload Adjustment

## 4-19. PRESSURE SWITCH REMOVAL

This task covers:

Removal of pressure switch.

## INITIAL SETUP

Tools:

T1 5180-00-177-7033

Equipment Condition:

Compressor unit OFF

Air in tank discharged

Materials/Parts:

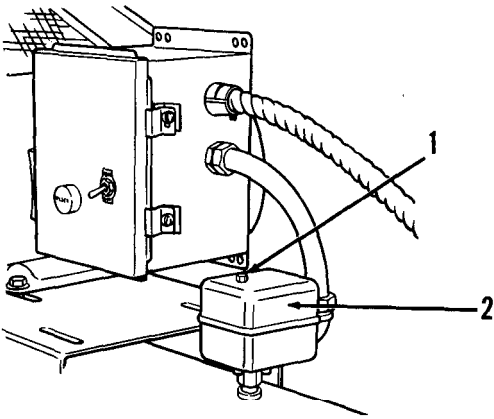
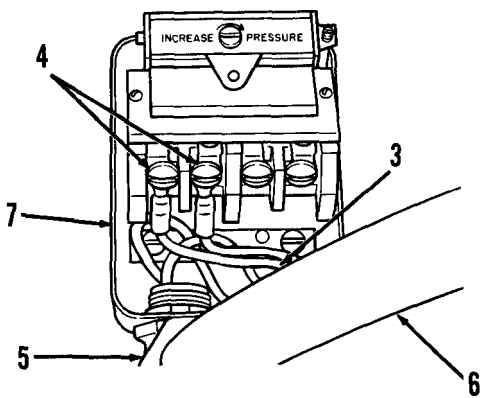
As required

Personnel Required:

1 Mechanic

Approximate Time Required (minutes):

15

LOCATION/ITEM	ACTION	REMARKS
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 10px;"><b>REMOVAL</b></div> <ol style="list-style-type: none"> <li>1. Main power</li> <li>2. Drain cock on bottom of tank</li> <li>3. Screw (1)</li> <li>4. Cover (2)</li> <li>5. Wires (3)</li> </ol>	<p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Be sure main power is disconnected before doing any work on electrical systems. Voltages present in this equipment can cause injury or death.</p> <p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Air in tank must be discharged before removal of pressure switch to prevent serious injury.</p>	 <p style="text-align: center;">Figure 4-29. Pressure switch</p>
	Disconnect.	 <p style="text-align: center;">Figure 4-30. Pressure switch connections</p>
	Open to discharge air in tank.	
	Loosen.	
	Lift off.	
	Tag and label motor and line.	Tag wires to make sure you connect them to the right terminals on installation.

LOCATION/ITEM	ACTION	REMARKS
4-19. PRESSURE SWITCH REMOVAL – continued		
6. Screws (4)	Loosen.	
7. Wires (3)	Disconnect from switch terminals.	
8. Conduit lock nuts (5)	Remove.	
9. Conduit (6)	Remove.	
10. Pressure switch (7)	Unscrew by hand.	



## 4-20. PRESSURE SWITCH INSTALLATION

This task covers:

Installation of pressure switch.

## INITIAL SETUP

Tools:

T1 5180-00-177-7033

Equipment Condition:

Compressor unit OFF

Materials/Parts:

As required

Personnel Required:

1 Mechanic

Approximate Time Required (minutes):

15

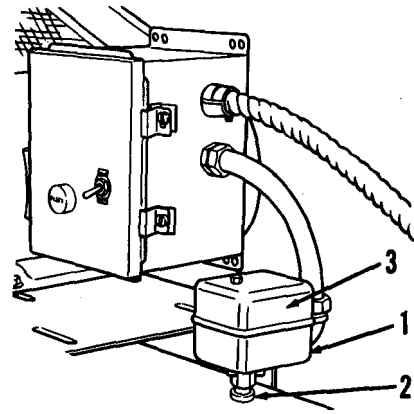
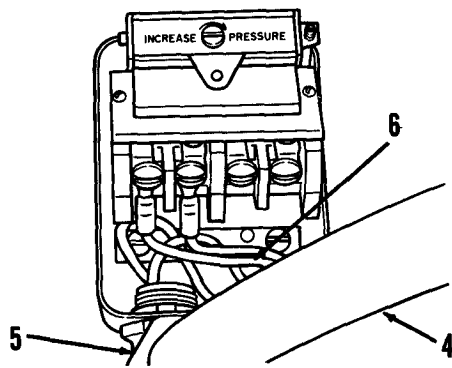
LOCATION/ITEM	ACTION	REMARKS
<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"><b>INSTALLATION</b></div> 1. Pressure switch (1) 2. Cover (3) 3. Conduit (4) 4. Wires (6)  5. Cover (3) 6. Draincock on bottom of tank 7. Main power	<b><u>WARNING</u></b>  Be sure main power is disconnected before doing any work on electrical systems. Voltages present in this equipment can cause injury or death.	
	Screw onto pipe (2).	
	Remove.	
	Attach with conduit nut (5).	Figure 4-31. Pressure switch assembly
	Attach to terminals per tags.	
	<b>NOTE</b>  Two terminals on right or left can be used.	
	Replace.	
	Close.	Compressor should start up if switch is properly connected.
	Connect.	

Figure 4-32. Pressure switch connections

4-21. PRESSURE SWITCH, INSPECTION/CLEANING/REPAIR		
This task covers:  Inspection, cleaning and repair of pressure switch.		
<div>INITIAL SETUP</div> <div>Tools: T1 5180-00-177-7033</div> <div>Materials/Parts: Compressed air Brush</div> <div>Personnel Required: 1 Mechanic</div> <div>Equipment Condition: Compressor unit OFF</div> <div>Approximate Time Required (minutes): 10</div>		
LOCATION/ITEM	ACTION	REMARKS
<div>INSPECTION</div>          1. Pressure switch          2. Switch contacts	<div><u>WARNING</u></div>  Be sure main power is disconnected before doing any work on electrical systems. Voltages present in this equipment can cause serious injury or death.  a. Inspect for air leaks.  b. Inspect for damaged pipe threads.  Inspect for bad contacts.	          Use soap solution to check for air leaks at connections to tank only.          Replace pressure switch if contacts are bad.
<div>CLEANING</div>          1. Pressure switch	<div><u>WARNING</u></div>  Eye protective equipment must be worn when cleaning with compressed air.  Remove loose dirt from inside of switch with soft brush and compressed air.	
<div>REPAIR</div>          	<div>NOTE</div>  The diaphragm is the only part of the pressure switch that is not repairable.	

LOCATION/ITEM	ACTION	REMARKS
4-21. PRESSURE SWITCH, INSPECTION/CLEANING/REPAIR - continued		
1. Pressure switch (1)	Remove from tank	See para 4-20.
2. Screws (2)	Remove	To replace diaphragm
3. Pressure switch (1)	Separate from base (3) and replace diaphragm.	
4. Pressure switch (1)	Position over base (3).	
5. Screws (2)	Install and tighten.	

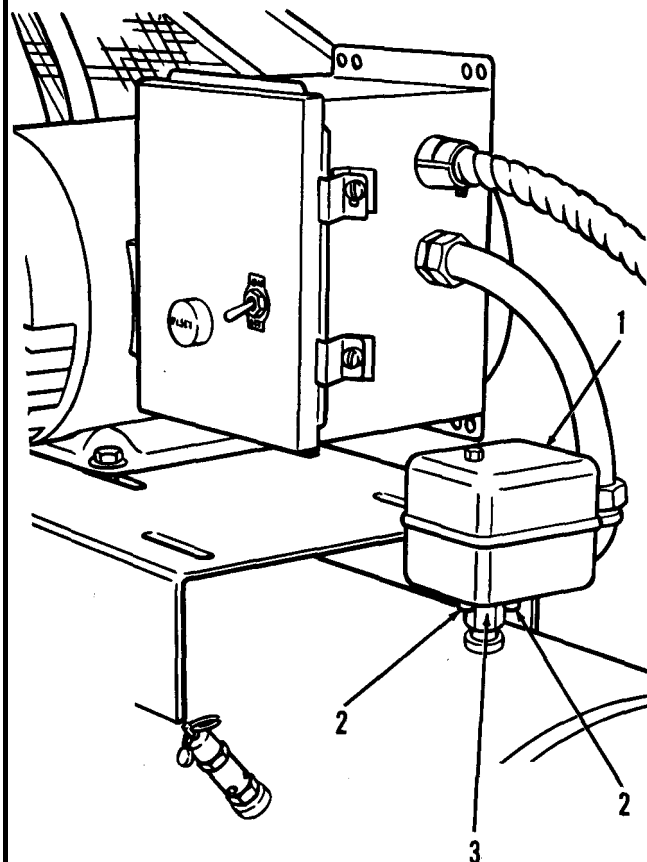


Figure 4-33. Pressure switch



LOCATION/ITEM	ACTION	REMARKS
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## 4-22. PRESSURE SWITCH ADJUSTMENT - continued

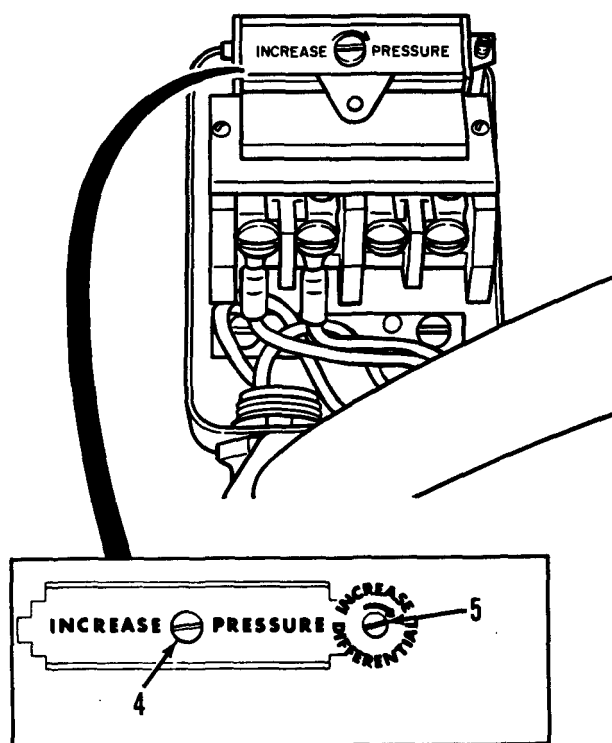


Figure 4-36. Pressure switch, adjustment

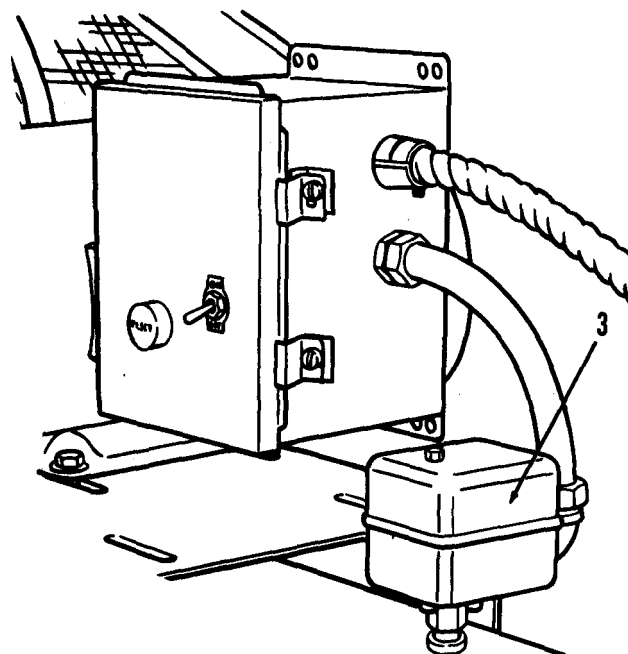


Figure 4-37. Pressure switch, cover

4. Pressure adjusting screw (4) and differential adjusting screw (5)

Turn Pressure Adjusting Screw	Turn Differential Adjusting Screw	Cut-In Pressure	Cut-out Pressure
Clockwise	—	Increase	Increase
Counterclockwise	—	Decrease	Decrease
—	Clockwise	No change	Increase
—	Counterclockwise	No change	Decrease
Clockwise	Clockwise	Increase	No change
Counterclockwise	Counterclockwise	Decrease	No change

5. Cut-in and cut-out pressure

Check. See step 1.

To make sure adjustment is correct.

6. Switch cover (3)

Replace.

7. Main power

Connect.

## COMPRESSOR DRIVE

MAINTENANCE SUMMARY. This task covers:

The replacement and adjustment of the compressor drive.

The compressor drive consists of the belt guard assembly, V-belts and drive pulley.

## INITIAL SETUP

Personnel Required	General Safety Instructions
1	Disconnect electrical power before beginning maintenance procedure.

## TASK SUMMARY

NO.	TASK	REFERENCE	REMARKS
1	Belt guard assembly removal, repair	Para 4-23	
2	Belt guard assembly installation	Para 4-24	
3	V-belt removal	Para 4-25	
4	V-belt installation	Para 4-26	
5	V-belt adjustment	Para 4-27	
6	Drive pulley removal	Para 4-28	
7	Drive pulley installation		

## 4-23. BELT GUARD ASSEMBLY REMOVAL/REPAIR

This task covers:

Removal and repair of the belt guard assembly.

## INITIAL SETUP

## Tools:

T1 5180-00-177-7033

## Equipment Condition:

Compressor unit OFF  
Main power OFF

## Materials/Parts:

As required

## Personnel Required:

1 Mechanic

## Approximate Time Required (minutes):

30

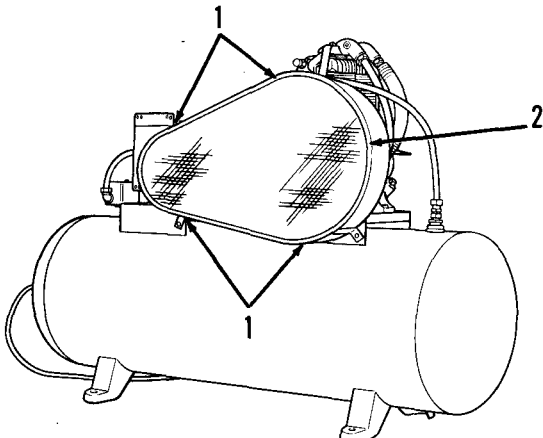
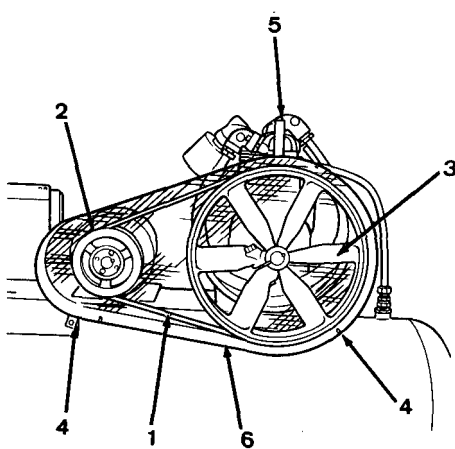
LOCATION/ITEM	ACTION	REMARKS
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"><b>REMOVAL</b></div> <ol style="list-style-type: none"> <li>1. Main power</li> <li>2. Screws on belt guard cover (1)</li> <li>3. Belt guard cover (2)</li> <li>4. Electric motor mounting bolts</li> <li>5. V-belts (1)</li> <li>6. Drive pulley (2)</li> <li>7. Flywheel (3)</li> <li>8. Bolts, nuts, washers (4)</li> <li>9. Manifold capscrew (5)</li> <li>10. Belt guard housing (6)</li> </ol>	Disconnect.	 <p>Figure 4-38. Belt guard cover</p>
	Remove.	
	Remove.	
	Loosen 4 bolts.	See para 4-25.
	Remove.	See para 4-25.
	Remove.	See para 4-28.
	Remove.	See para 4-33.
	Remove.	
	Remove.	
	Remove.	

Figure 4-39. Belt guard assembly removal

4-23. BELT GUARD ASSEMBLY REMOVAL/REPAIR - continued

REPAIR

1. Rivnuts (1)

2. Rivnuts (1)

3. Brackets (2)

4. Cover (3) housing (4)
- Inspect for thread damage.

Replace if necessary by:

a. Drill out.

b. Place new rivnuts in position.

c. Install by compressing with rivnut tool.

a. Inspect for cracked welds.

b. Weld if necessary.

a. Inspect for fit and alignment.

b. Straighten if necessary to ensure correct fit and alignment.

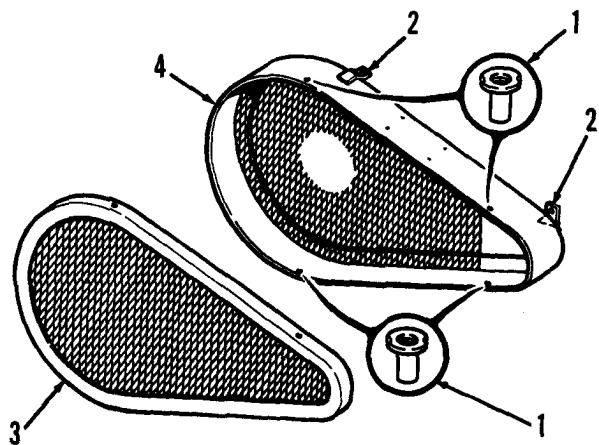


Figure 4-40. Belt guard assembly



## 4-24. BELT GUARD ASSEMBLY INSTALLATION

This task covers:

Installation of the belt guard assembly.

## INITIAL SETUP

Tools:

T1 5180-00-177-7033

Equipment Condition:

Compressor unit OFF

Main power OFF

Materials/Parts:

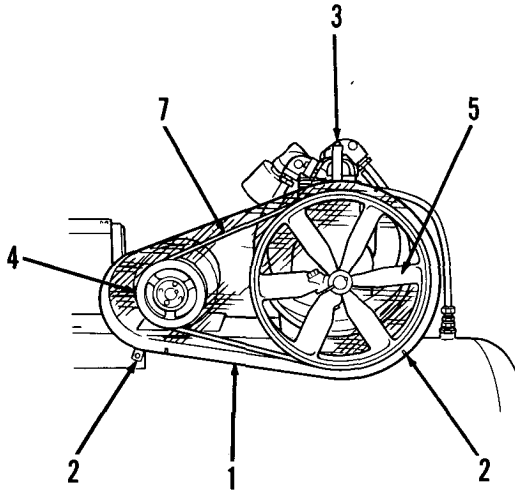
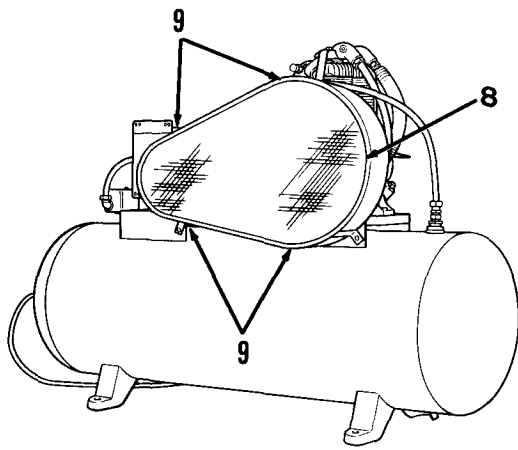
As required

Personnel Required:

1 Mechanic

Approximate Time Required (minutes):

30

LOCATION/ITEM	ACTION	REMARKS
<b>INSTALLATION</b>		
1. Main power	Disconnect.	 <p>Figure 4-41. Belt guard assembly installation</p>
2. Belt guard housing (1)	a. Attach to base with screws (2), nuts and lockwashers.  b. Attach to manifold (3) with existing manifold cap screw.	
3. Drive pulley (4)	Install.	
4. Flywheel (5)	Install.	See para 4-29.
5. Electric motor mounting bolts	Loosen four.	See para 4-33.
6. V-belts (7)	Install.	See para 4-25.
7. V-belts (7)	Adjust.	See para 4-26.
8. Belt guard cover (8)	Attach with screws (9).	See para 4-27.
		 <p>Figure 4-42. Belt guard cover</p>

## 4-25. V-BELT REMOVAL

This task covers:

Removal of the V-belts.

## INITIAL SETUP

Tools:

T1 5180-00-177-7033

Equipment Condition:

Compressor unit OFF

Main power OFF

Materials/Parts:

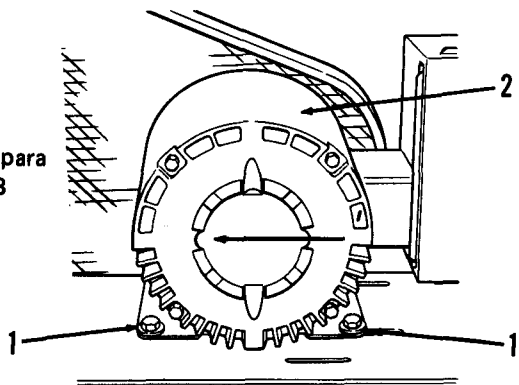
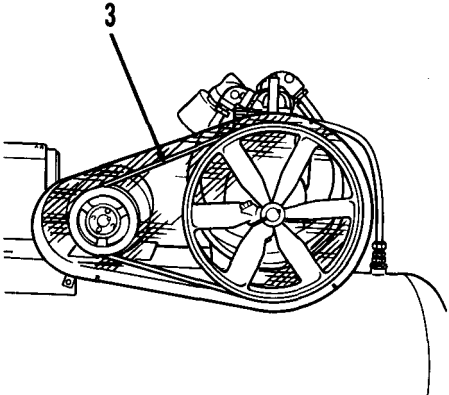
As required

Personnel Required:

1 Mechanic

Approximate Time Required (minutes):

10

LOCATION/ITEM	ACTION	REMARKS
1. Main power	Disconnect.	 <p>See para 4-23</p> <p>Belt may be cut or damaged if removed under full tension.</p> <p>Figure 4-43. Motor mounting, loosen</p>
2. Belt guard cover	Remove.	
3. Electric motor mounting bolts (1)	Loosen.	
4. Electric motor (2)	Slide motor in direction of arrow to relieve belt tension.	
5. 2 V-belts (3)	Remove.	
		 <p>Figure 4-44. V-belt removal</p>

#### 4-26. V-BELT INSTALLATION

This task covers:

### Installation of the V-belts.

## INITIAL SETUP

Tools:

T1 5180-00-177-7033

Equipment Condition:

Compressor unit OFF

Main power OFF

Materials/Parts:

As required

Personnel Required:

## 1 Mechanic

Approximate Time Required (minutes):

10

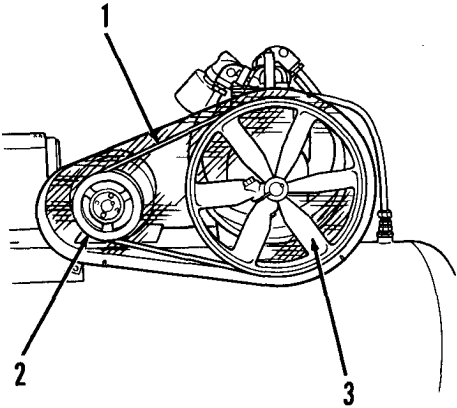
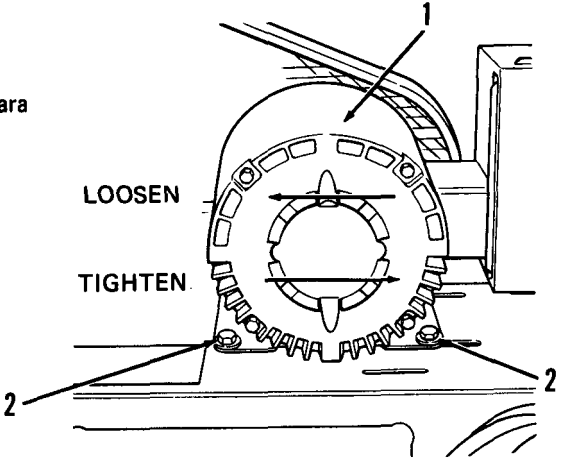
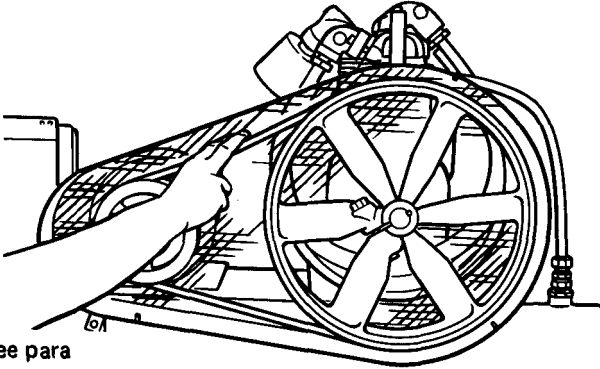
LOCATION/ITEM	ACTION	REMARKS
<b>INSTALLATION</b>	<p><b>CAUTION</b></p> <p>Be sure electric motor mounting bolts are loose before installing V-belts.</p> <p>Place in position over motor pulley (2) and flywheel (3).</p>	<p>See para 4-25.</p> <p>See para 4-27.</p>  <p>Figure 4-45. V-belt installation</p>

Figure 4-45. V-belt installation

4-27. V-BELT ADJUSTMENT		
This task covers:  The adjustment of the V-belt tension.		
<div>INITIAL SETUP</div> <div>Tools: T1 5180-00-177-7033</div> <div>Materials/Parts: None</div> <div>Personnel Required: 1 Mechanic</div> <div>Equipment Condition: Compressor Unit OFF Main power OFF</div> <div>Approximate Time Required (minutes): 10</div>		
LOCATION/ITEM	ACTION	REMARKS
<div>ADJUSTMENT</div> <div>1. Belt guard cover</div> <div>2. Electric motor mounting bolts (2)</div> <div>3. Electric motor (1)</div> <div>4. Electric motor mounting bolts (2)</div> <div>5. Belt guard cover</div>	<div>Remove.</div> <div>Loosen 4 bolts.</div> <div>Slide in direction of arrows and adjust position for proper belt tension.</div> <div>Tighten when proper belt tension is achieved.</div> <div><div>CAUTION</div><div>Too little belt tension causes belts to overheat and wear out prematurely. Too much tension causes bearing wear in motor and compressor.</div></div> <div>Install.</div>	<div>See para 4-23.</div> <div></div> <div>Figure 4-46. Motor mounting tighten</div> <div>Belt tension is right when belts move 1/2 inch when pushed on half way between pulley and flywheel.</div> <div></div> <div>See para 4-24.</div> <div>Figure 4-47. V-belt tension</div>

## 4-28. DRIVE PULLEY REMOVAL

This task covers:

The removal of the motor drive pulley.

## INITIAL SETUP

## Tools:

T1 5180-00-177-7033  
T4 4910-00-754-0654

## Equipment Condition:

Compressor unit OFF  
Main power OFF

## Materials/Parts:

As required

## Personnel Required:

1 Mechanic

## Approximate Time Required (minutes):

15

## LOCATION/ITEM

## ACTION

## REMARKS

**REMOVAL**

- |                     |   |  |
|---------------------|---|--|
| 1. Main power       | Disconnect.   |  |
| 2. Belt guard cover | Remove.   |  |
| 3. V-belts          | Remove.   |  |
| 4. Capscrews (1)    | Remove.   |  |
| 5. Capscrews (1)    | Thread into jacking holes (2).                            |  |
| 6. Capscrews (1)    | Tighten evenly until bushing (3) comes out of pulley (4). |  |
| 7. Bushing (3)      | Lay aside.  |  |
| 8. Pulley (4)       | Remove.   |  |

See para  
4-23.

See para  
4-25.

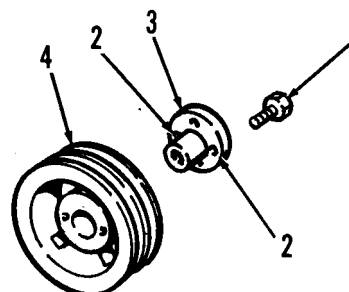


Figure 4-48. Drive pulley assembly

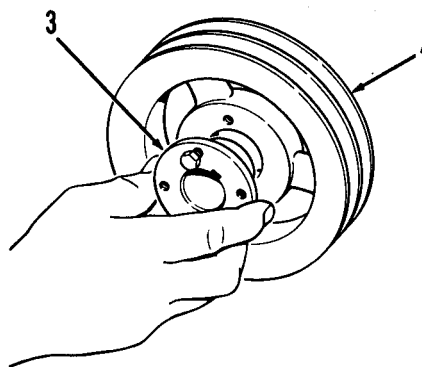


Figure 4-49. Drive pulley removal

## 4-29. DRIVE PULLEY INSTALLATION

This task covers:

The installation of the drive pulley.

### INITIAL SETUP

Tools:

T1 5180-00-177-7033

T4 4910-00-754-0654

Equipment Condition:

Compressor unit OFF

Main power OFF

Materials/Parts:

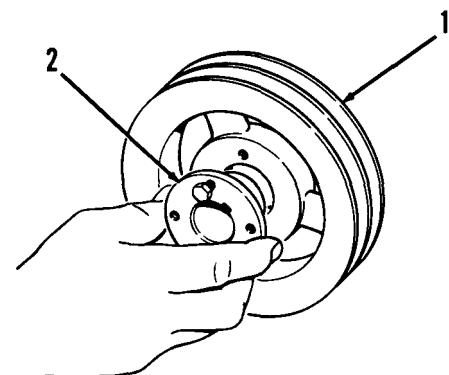
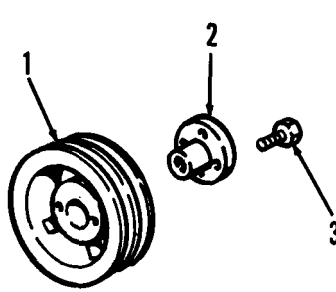
As required

Personnel Required:

1 Mechanic

Approximate Time Required (minutes):

15

LOCATION/ITEM	ACTION	REMARKS
<div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 10px;"><b>INSTALLATION</b></div> <div> <p>1. Drive pulley (1)</p> <p>2. Bushing (2)</p> <p>3. Bushing (2)</p> <p>4. Capscrews (3)</p> <p>5. Capscrews (3)</p> </div>	Place into position over motor shaft.	 <p>Figure 4-50. Drive pulley installation</p>  <p>Figure 4-51. Drive pulley assembly</p>
	Align unthreaded holes in bushing (2) to threaded holes in pulley (1).	
	Press into pulley (1) only far enough for capscrews (3) to thread.	
	Thread into pulley (1).	
	Tighten evenly until bushing (2) is seated and pulley (1) is secure.	

**COMPRESSOR ASSEMBLY**

MAINTENANCE SUMMARY. This task covers:

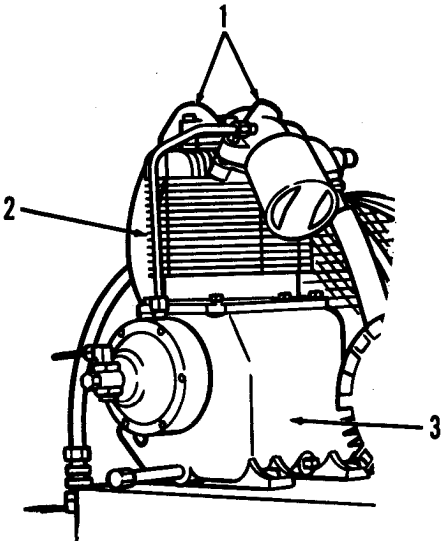
The inspection, removal and installation of the compressor assembly.

## INITIAL SETUP

Personnel Required	General Safety Instructions
1	Disconnect electrical power before beginning maintenance procedure.

## TASK SUMMARY

NO.	TASK	REFERENCE	REMARKS
1	Compressor assembly inspection	Para 4-30	
2	Compressor assembly removal	Para 4-31	
3	Compressor assembly installation	Para 4-32	
4	Flywheel inspection, removal and installation	Para 4-33	
5	Tube assemblies, inspection, removal and installation	Para 4-34	
6	Intake and exhaust valves removal	Para 4-35	
7	Intake and exhaust valves installation	Para 4-36	
8	Intake and exhaust valves inspection, cleaning	Para 4-37	
9	Centrifugal unloader removal	Para 4-38	
10	Centrifugal unloader installation	Para 4-39	
11	Centrifugal unloader inspection	Para 4-40	

4-30. COMPRESSOR ASSEMBLY INSPECTION		
<p>This task covers:</p> <p>The inspection of the compressor assembly.</p>		
<p>INITIAL SETUP</p> <p>Tools:</p> <p>T1 5180-00-177-7033</p> <p>Equipment Condition:</p> <p>Compressor unit OFF</p> <p>Main power OFF</p> <p>Materials/Parts:</p> <p>None</p> <p>Personnel Required:</p> <p>1 Mechanic</p> <p>Approximate Time Required (minutes):</p> <p>10</p>		
LOCATION/ITEM	ACTION	REMARKS
1. Manifolds (1)	Inspect for cracks.	Notify direct support.
2. Cylinder (2)	Inspect for cracks, broken cooling fins.	Notify direct support.
3. Crankcase (3)	Inspect for cracks.	Notify direct support.
		
Figure 4-52. Compressor		



## 4-31. COMPRESSOR ASSEMBLY REMOVAL

This task covers:

The removal of the compressor assembly.

## INITIAL SETUP

## Tools:

T1 5180-00-177-7033

## Equipment Condition:

Compressor unit OFF

Main power OFF

## Materials/Parts:

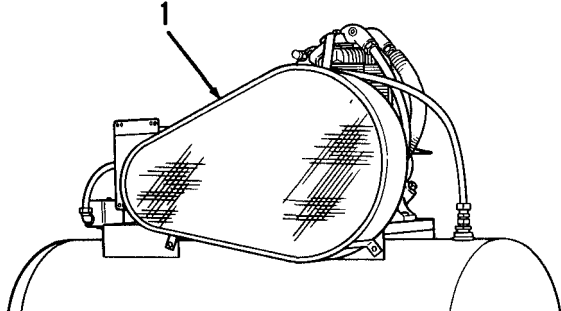
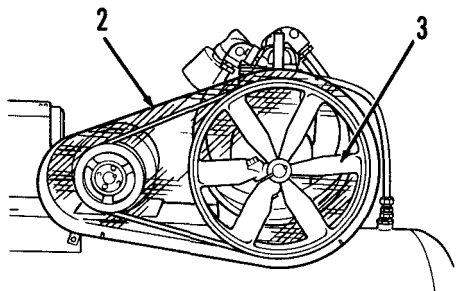
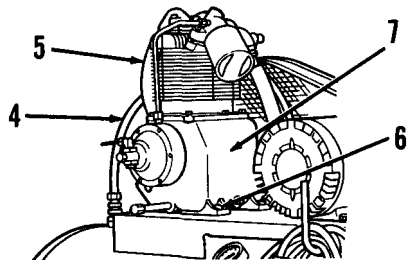
As required

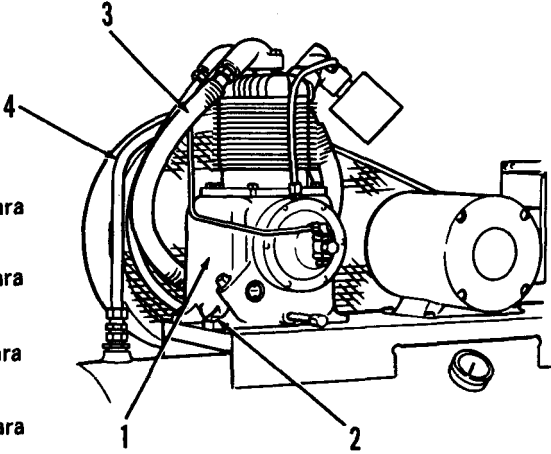
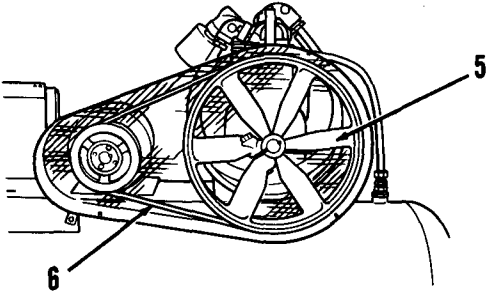
## Personnel Required:

1 Mechanic

## Approximate Time Required (minutes):

60

LOCATION/ITEM	ACTION	REMARKS
1. Main power	Disconnect.	 <p>Figure 4-53. Compressor assembly, top view</p>
2. Draincock at bottom of tank	Open to release air.	
	<p>NOTE</p> <p>Leave draincock open to insure all moisture is drained from tank.</p>	
3. Belt guard cover (1)	Remove.	See para 4-23.
4. V-belts (2)	Remove.	See para 4-25.
5. Flywheel (3)	Remove.	See para 4-33.
6. Aftercooler (4)	Remove.	See para 4-34.
8. Intercooler (5)	Remove.	See para 4-34.
9. Compressor mounting bolts, washers, lock-washers and nuts (6)	Remove.	 <p>Figure 4-54. Drive system</p>
10. Compressor (7)	Lift off base.	
		 <p>Figure 4-55. Compressor assembly removal</p>

4-32. COMPRESSOR ASSEMBLY INSTALLATION		
This task covers:  The installation of the compressor assembly.		
<div>INITIAL SETUP</div> <div>Tools: T1 5180-00-177-7033</div> <div>Materials/Parts: As Required</div> <div>Personnel Required: 1 Mechanic</div> <div>Equipment Condition: Main power OFF Compressor drive disassembled</div> <div>Approximate Time Required (minutes): 60</div>		
LOCATION/ITEM	ACTION	REMARKS
<div>INSTALLATION</div> <div>1. Compressor (1)</div> <div>2. Compressor (1)</div> <div>3. Intercooler (3)</div> <div>4. Aftercooler (4)</div> <div>5. Flywheel (5)</div> <div>6. V-belts (6)</div>	<div>Place into position on base.</div> <div>Attach to base with bolts, washers, lockwashers and nuts (2). Tighten.</div> <div>Install.</div> <div>Install.</div> <div>Install.</div> <div>Install.</div> <div>NOTE</div> <div>Turn compressor over by hand to insure proper alignment.</div> <div>Install.</div> <div>Close.</div> <div>Connect.</div>	<div><p>See para 4-34.</p><p>See para 4-34.</p><p>See para 4-33.</p><p>See para 4-26.</p><p>Figure 4-56. Compressor assembly installation</p><p>Compressor should turn freely.</p><p>See para 4-29.</p><div></div><p>Figure 4-57. Drive system</p></div>

## 4-33. FLYWHEEL/INSPECTION/REMOVAL/INSTALLATION

This task covers:

The inspection, removal and installation of the flywheel.

## INITIAL SETUP

## Tools:

T1 5180-00-177-7033

T4 4910-00-754-0654

## Equipment Condition:

Compressor unit OFF

Main power OFF

## Materials/Parts:

Lubricating Oil, Engine  
OE-30, or equivalent

## Personnel Required:

1 Mechanic

## Approximate Time Required (minutes):

50

LOCATION/ITEM	ACTION	REMARKS
<div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 10px;"><b>INSPECTION</b></div>		
1. Main power	Disconnect.	
2. Belt guard cover	Remove.	See para 4-23.
3. V-belts	Remove	See para 4-25.
4. Flywheel (3)	Inspect.	Look for cracks, damaged blades, loose mounting bolt (1) and nut (2). Replace if defective.
<div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 10px;"><b>REMOVAL</b></div>		
1. Bolt (1), nut (2)	Remove.	
2. Flywheel hub	Tap wedge in slot of flywheel hub carefully to loosen flywheel.	
3. Flywheel (3)	Remove.	
4. Key (4)	Remove.	

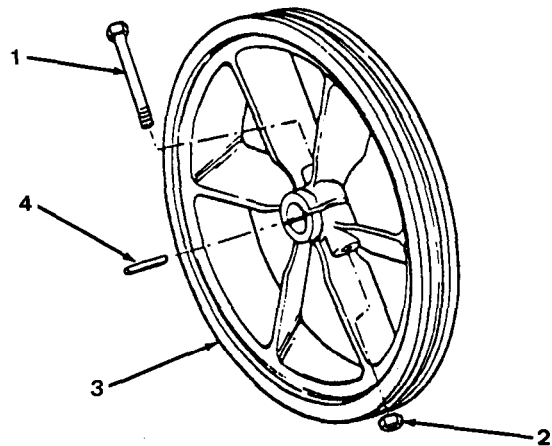


Figure 4-58. Flywheel removal



4-34. TUBE ASSEMBLIES, INSPECTION/REMOVAL/INSTALLATION

This task covers:  
The inspection, removal and installation of the tube assemblies.

INITIAL SETUP

Tools: T1 5180-00-177-7033	Equipment Condition: Compressor unit OFF Main power OFF
Materials/Parts: Soap Solution	
Personnel Required: 1 Mechanic	Approximate Time Required (minutes): 50

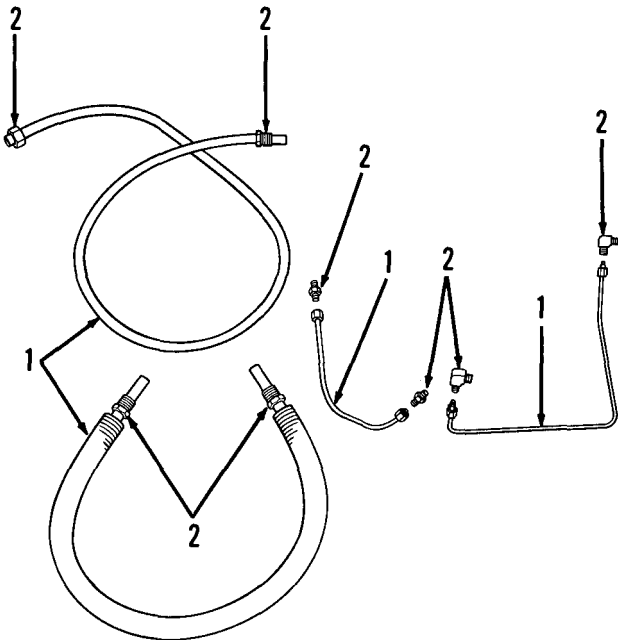
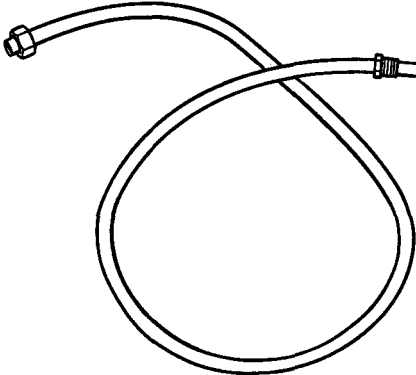
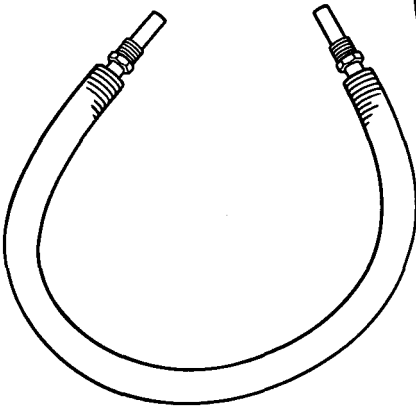
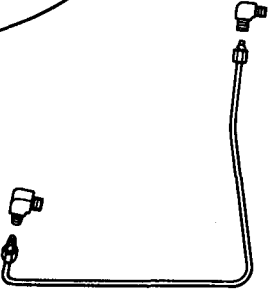
LOCATION/ITEM	ACTION	REMARKS
<div>INSPECTION</div> <div>1. Air compressor tubing (1)</div> <div>2. Tube fittings (2)</div>	<div>a. Inspect for leaks.</div> <div>b. Inspect tubing for kinks or cracks.</div> <div>c. Inspect tubing nuts.</div> <div>Inspect for thread damage.</div>	<div>Use soap solution. Check for leaks. Replace or repair as necessary.</div> <div>Replace if damaged.</div> <div></div>

Figure 4-60. Tubing assemblies

LOCATION/ITEM	ACTION	REMARKS
4-34. TUBE ASSEMBLIES, INSPECTION/REMOVAL/INSTALLATION – continued		
<div>REMOVAL</div> <ol style="list-style-type: none"> <li>1. Main power</li> <li>2. Belt guard housing</li> <li>3. Aftercooler</li> <li>4. Intercooler</li> <li>5. Unloader tube</li> <li>6. Breather tube</li> <li>7. Fitting, elbow</li> <li>8. Fitting, elbow</li> <li>9. Fitting straight</li> <li>10. Fitting straight</li> </ol>	Disconnect.	
	Remove.	See para 4-23.
	<div>CAUTION</div>	
	Be careful not to bend tubing when removing.	Tubing will be difficult to install if bent from original position.
	Remove.	
	Remove.	
	Remove.	
	Remove.	
	Remove.	
	Remove.	
<div>INSTALLATION</div> <ol style="list-style-type: none"> <li>1. Fitting straight</li> <li>2. Fitting straight</li> <li>3. Fitting elbow</li> <li>4. Fitting elbow</li> <li>5. Breather tube</li> <li>6. Unloader tube</li> <li>7. Intercooler</li> <li>8. Aftercooler</li> <li>9. Belt guard housing</li> <li>10. Main power</li> </ol>	<div>CAUTION</div>	
	Be careful not to strip threads when installing tubing.	
	Install.	
	Install.	
	Install.	
	Install	
	Install.	
	Install.	
	Install.	
	Install.	
	Install.	
	Connect.	

See para 4-24.

Figure 4-61. Tubing assemblies

## 4-35. INTAKE AND EXHAUST VALVE REMOVAL

This task covers:

The removal of the intake and exhaust valves.

## INITIAL SETUP

Tools:  
T1 5180-00-177-7033

Equipment Condition:  
Compressor unit OFF  
Main power OFF

Materials/Parts:  
As required

Personnel Required:  
1 Mechanic

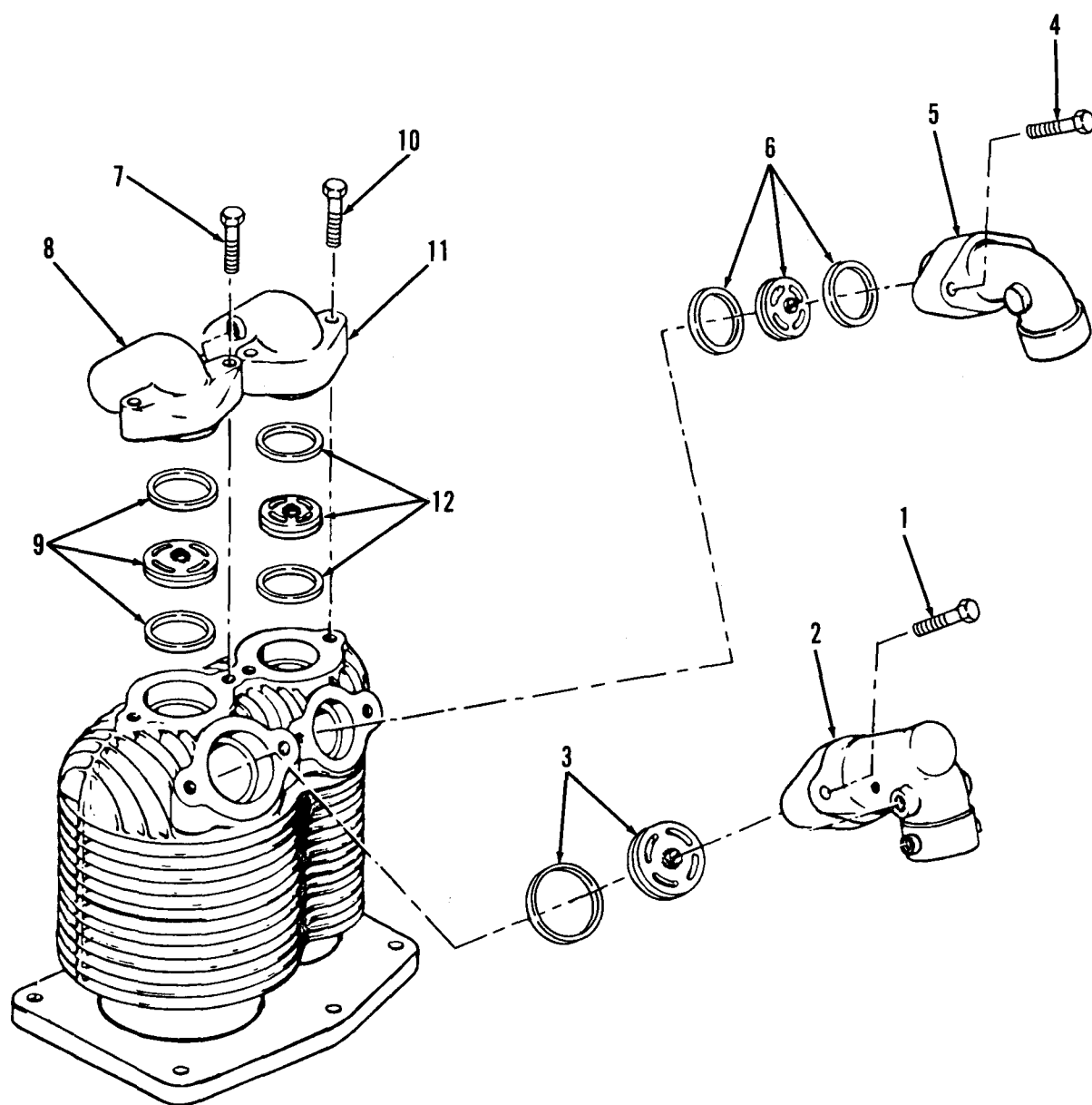
Approximate Time Required (minutes):  
15

LOCATION/ITEM	ACTION	REMARKS
<div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>REMOVAL</b></div>		
1. Main power	Disconnect.	
2. Air muffler	Remove.	See para 3-6.
3. Tube assemblies	Disconnect from manifolds.	See para 4-34.
<div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>INTAKE VALVES</b></div>		
4. Capscrews (1)	Remove.	See Figure 4-62.
5. Manifold, low pressure intake (2)	Remove.	The low pressure intake manifold does not have a gasket.
6. Valve assembly, low pressure intake (3)	Remove.	If necessary, tap valve assemblies with a piece of wood to work them loose from cylinder.
7. Capscrews (4)	Remove.	
8. Manifold, high pressure intake (5)	Remove.	
9. Valve assembly, high pressure intake (6)	Remove.	Valve assemblies are not repairable. They must be replaced if defective.
	<p style="text-align: center;"><b>NOTE</b></p> <p>Do not mix up low pressure and high pressure intake valve assemblies. They are not interchangeable.</p>	Valve assembly gaskets may be either copper or aluminum. They are interchangeable.

LOCATION/ITEM	ACTION	REMARKS
4-35. INTAKE AND EXHAUST VALVE REMOVAL – continued		
<b>REMOVAL</b>		
<u>EXHAUST VALVES</u>		
10. Capscrews (7)	Remove.	
11. Manifold, low pressure exhaust (8)	Remove.	
12. Valve assembly, low pressure exhaust (9)	Remove.	If necessary, tap valve assemblies with a piece of wood to work them loose from cylinder.
13. Capscrews (10)	Remove.	Valve assembly gaskets may be either copper or aluminum. They are interchangeable.
14. Manifold, high pressure exhaust (11 )	Remove.	Valve assemblies are not repairable. They must be replaced if defective.
15. Valve assembly, high pressure exhaust (12)	Remove.	
	NOTE	
	Keep separate low and high pressure exhaust valve assemblies. They are not interchangeable.	



## 4-35. INTAKE AND EXHAUST VALVE REMOVAL – continued



1. Capscrew
2. Manifold, low pressure intake
3. Valve assembly, low pressure intake
4. Capscrew
5. Manifold, high pressure intake
6. Valve assembly, high pressure intake

7. Capscrew
8. Manifold, low pressure exhaust
9. Valve assembly, low pressure exhaust
10. Capscrew
11. Manifold, high pressure exhaust
12. Valve assembly, high pressure exhaust

Figure 4-62. Intake and exhaust valve, removal

4-36. INTAKE AND EXHAUST VALVE INSTALLATION		
<p>This task covers:</p> <p>The installation of the intake and exhaust valves.</p>		
<p><b>INITIAL SETUP</b></p> <p>Tools : T1 5180-00-177-7033</p> <p>Materials/Parts: As required</p> <p>Personnel Required: 1 Mechanic</p> <p>Equipment Condition: Valves removed Main power OFF</p> <p>Approximate Time Required (minutes): 15</p>		
LOCATION/ITEM	ACTION	REMARKS
<div>INSTALLATION</div> <div>INTAKE VALVES</div>		
	1. Valve seats	Clean.
	2. Valve assembly, low pressure intake (1)	Install.
		NOTE
		Valve assemblies are not interchangeable.
	3. Manifold, low pressure intake (2)	Install.
	4. Capscrews (3)	Install.
	5. Valve assembly, high pressure intake (4)	Install.
	6. Manifold, high pressure intake (5)	Install.
	7. Capscrews (6)	Install.

See para 4-37.

Valve assemblies must be installed with screw facing up.

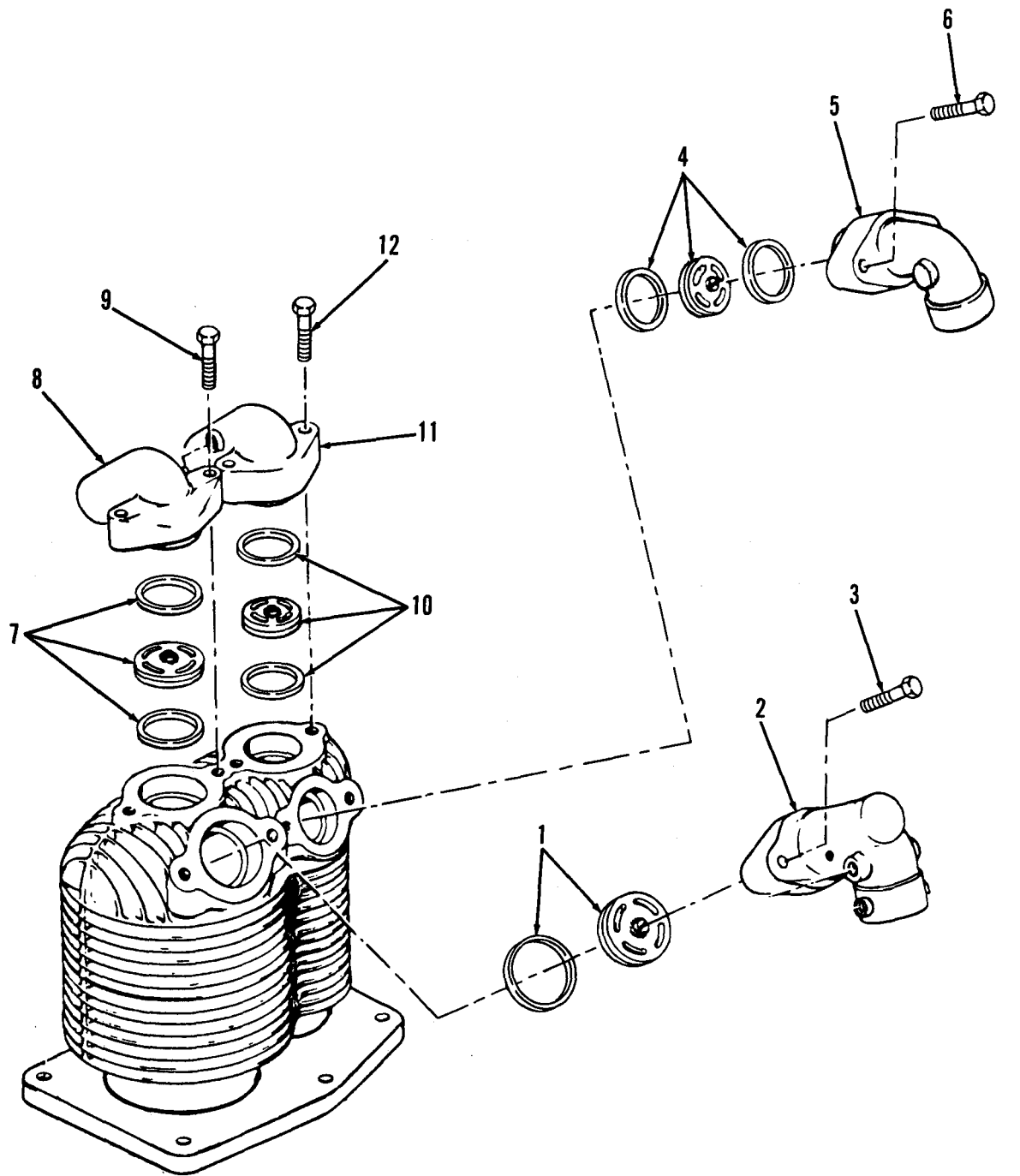
Valve assembly gaskets may be either copper or aluminum. They are interchangeable.

Tighten screws evenly.

Tighten screws evenly.

LOCATION/ITEM	ACTION	REMARKS
4-36. INTAKE AND EXHAUST VALVES INSTALLATION – continued		
<div>INSTALLATION</div> <div>EXHAUST VALVES</div> <ol style="list-style-type: none"> <li>Valve seats</li> <li>Valve assembly, low pressure exhaust (7)</li> <li>Manifold, low pressure exhaust (8)</li> <li>Capscrew (9)</li> <li>Valve assembly, high pressure exhaust (10)</li> <li>Manifold, high pressure exhaust (11)</li> <li>Capscrews (12)</li> <li>Tube assemblies</li> <li>Air muffler</li> </ol>	Clean.  <div>NOTE</div> Valve assemblies are not interchangeable.	See para 4-37.  Valve assemblies must be installed with screw facing up.  Valve assembly gaskets may be either copper or aluminum. They are interchangeable.  Tighten capscrews evenly.
	Install.	
	Install.	
	Install.	
	Install.	
	Install.	
	Install.	
	Connect.	
	Install.	

4-36. INTAKE AND EXHAUST VALVES INSTALLATION – continued



1. Valve assembly, low pressure intake
2. Manifold, low pressure intake
3. Capscrew
4. Valve assembly, high pressure intake
5. Manifold, high pressure intake
6. Capscrew

7. Valve assembly, low pressure exhaust
8. Manifold, low pressure exhaust
9. Capscrew
10. Valve assembly, high pressure exhaust
11. Manifold, high pressure exhaust
12. Capscrew

Figure 4-63. Intake and exhaust valve, installation

# 4-37. INTAKE AND EXHAUST VALVES INSPECTION/CLEANING

This task covers:

The inspection and cleaning of intake and exhaust valves.

## INITIAL SETUP

Tools:

T1 8150-00-177-7033

Equipment Condition:

Valves removed

Main power OFF

Materials/Parts:

Clean rag

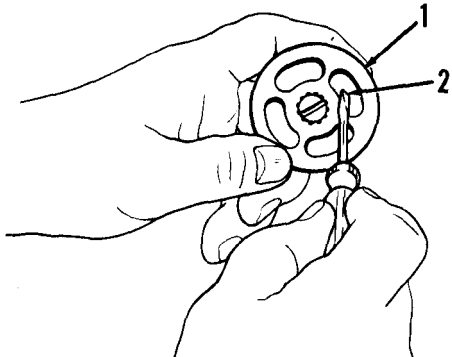
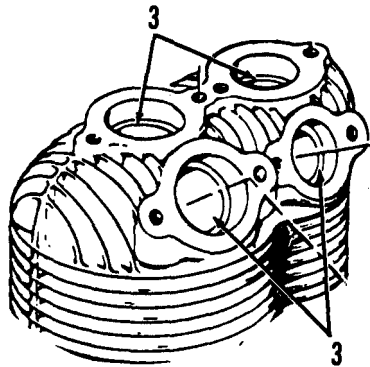
As required

Personnel Required:

1 Mechanic

Approximate Time Required (minutes):

15

LOCATION/ITEM	ACTION	REMARKS
<b>INSPECTION/CLEANING</b>	<p><b>WARNING</b></p> <p>Clean with compressed air no greater than 30 psi.</p> <p><b>WARNING</b></p> <p>Protective eyewear must be worn when using compressed air.</p>	<p>Valve assemblies are not repairable. If defective, replace.</p>  <p>Figure 4-64. Valve assembly</p>
1. Valve assembly (1)	<p>a. Clean with compressed air.</p> <p>b. Insert small tool in slot (2) and push up and down.</p>	
2. Valve seats (3)	<p>a. Blow out with compressed air.</p> <p>b. Wipe clean with rag.</p> <p>c. Inspect for cracks. If cracked, notify direct support.</p>	<p>Valve parts should move freely up and down. If sticky, replace valve assembly.</p>  <p>Figure 4-65. Valve seats</p>

## 4-38. CENTRIFUGAL UNLOADER REMOVAL

This task covers:

The removal of the centrifugal unloader assembly.

## INITIAL SETUP

Tools:

T1 5180-00-177-7033

Equipment Condition:

Compressor unit OFF

Main power OFF

Materials/Parts:

As required

Personnel Required:

1 Mechanic

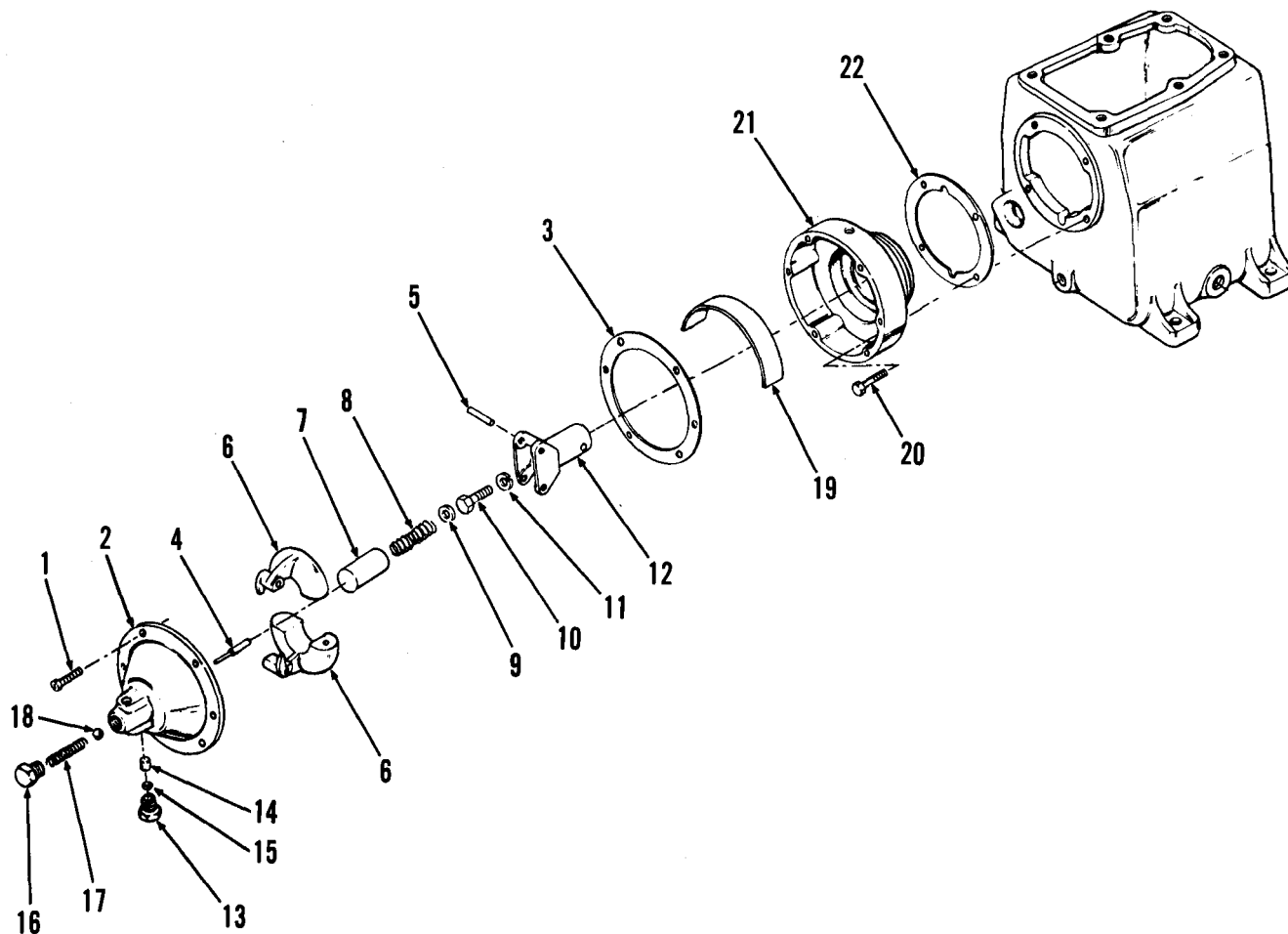
Approximate Time Required (minutes):

30

LOCATION/ITEM	ACTION	REMARKS
<div>REMOVAL</div> <ol style="list-style-type: none"> <li>1. Main power</li> <li>2. Breather tube and fittings</li> <li>3. Unloader tube and fittings</li> <li>4. Screws (1)</li> <li>5. Cover (2)</li> <li>6. Gasket (3)</li> <li>7. Plunger (4)</li> </ol>	Disconnect.	
	Remove.	See para 4-34.
	Remove.	See para 4-34.
	Remove.	See Figure 4-66.
	Remove.	
	Remove and discard.	Used gaskets do not seal properly.
	Remove.	
<div>WARNING</div> <p>You must use safety glasses when using a hammer. A chip from the hammer could strike an eye.</p>		
8. Pin (5)	Drive out using drift punch and hammer.	
9. Weights (6)	Remove.	
10. Sleeve (7)	Remove.	
11. Spring (8)	Remove.	
12. Washer, flat (9)	Remove.	

LOCATION/ITEM	ACTION	REMARKS
4-38. CENTRIFUGAL UNLOADER REMOVAL – continued		
13. Capscrew (10)	Remove.	
14. Washer lock (11)	Remove.	
15. Spindle (12)	Remove from crankshaft.	
	NOTE	
	Place governor housing cover (2) flat on workbench for next operations to prevent damage.	
16. Unloader body (13)	Unscrew.	
17. Felt (14)	Remove and discard.	Old felt may cause unloader not to operate properly.
18. Screen (15)	Remove.	
19. Release valve body (16)	Unscrew.	
20. Spring (17)	Remove.	
21. Ball (18)	Remove.	
	NOTE	
	Lay governor housing cover (2) aside.	
22. Baffle (19)	Remove.	
23. Capscrews (20)	Remove.	
24. Governor housing (21)	Remove.	
25. Gasket (22)	Remove and discard.	See para 4-39.
	NOTE	
	There may be more than one gasket (22).	

4-38. CENTRIFUGAL UNLOADER REMOVAL – continued



1. Screw
2. Cover
3. Gasket
4. Plunger
5. Pin
6. Weights
7. Sleeve

8. Spring
9. Washer, flat
10. Cap screw
11. Washer, lock
12. Spindle
13. Unloader body
14. Felt
15. Screen

16. Release valve body
17. Spring
18. Ball
19. Baffle
20. Cap screw
21. Housing
22. Gasket

Figure 4-66. Centrifugal unloader, removal



## 4-39. CENTRIFUGAL UNLOADER INSTALLATION

This task covers:

The installation of the centrifugal unloader assembly.

## INITIAL SETUP

## Tools:

T1 5180-00-177-7033

## Equipment Condition:

Centrifugal unloader removed

## Materials/Parts:

Grease, GAA, or equivalent; Gasket; and felt

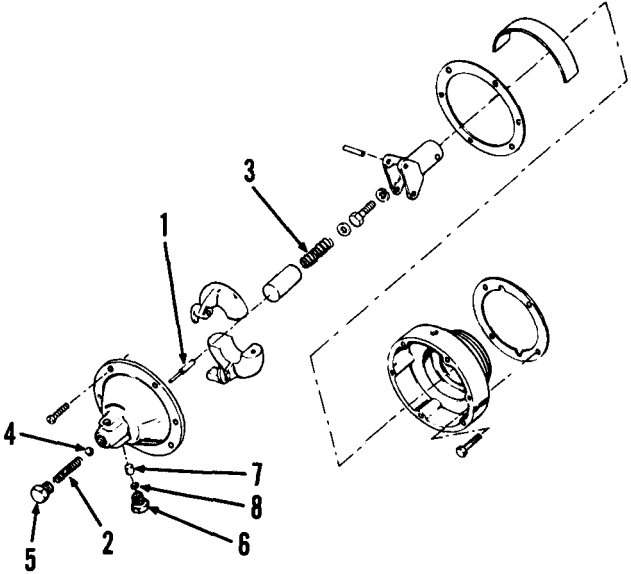
Approximate Time Required (minutes):

30

LOCATION/ITEM	ACTION	REMARKS
<b>INSTALLATION</b>		
1. Gasket (1)	Place into position on crankcase.	Coat with grease to hold in position on crankcase. See Figure 4-67.
	NOTE	
	Gasket (1) is available in 4 different thicknesses.	(See step 3.c)
2. Governor housing (2)	Align to holes in gasket and install.	
3. Capscrews (3)	a. Install and tighten.	
	b. Turn crankshaft over by hand.	Crankshaft should spin in bearings without end play.
	c. If crankshaft is too tight or too loose, remove housing (2) and use a gasket of different thickness.	Crankshaft that is too loose will cause noisy operation. Crankshaft that is too tight will bind and bearings will wear out.
4. Baffle (4)	Install.	
5. Cover (21)	Lay flat on workbench.	Small parts will be easier to install with cover on workbench.
6. Ball (5)	Install.	
7. Spring (6)	Install.	

LOCATION/ITEM	ACTION	REMARKS
4-39. CENTRIFUGAL UNLOADER INSTALLATION – continued		
8. Release valve body (7)	a. Screw into cover (21) while pushing against spring (6).  b. Tighten.	New felt should be used.
9. Screen (8)	Install.	
10. Felt (9)	Install.	
11. Unloader body (10)	Install.	
12. Cover (21)	Lay aside.	Be sure pins are secured firmly and are flush with spindle.
13. Spindle (11)	Install over crankshaft and secure with lock washer (12) and capscrew (13).	
14. Sleeve (16)	a. With one hand press against spring (15) and washer (14) and hold.  b. Align weights (17) to spindle (11) and insert pins (18) far enough to hold assembly together.  <b><u>WARNING</u></b>  Eye protective equipment must be worn when using the hammer.  c. Secure pins with drift punch and hammer.	
15. Plunger (19)	Install in cover (21).	
16. Cover (21)	Place in position over gasket (20) and secure with screws (22).	



4-40. CENTRIFUGAL UNLOADER/INSPECTION/CLEANING		
This task covers:  The inspection and cleaning of the centrifugal unloader assembly.		
<div> <div>INITIAL SETUP</div> <div> <div>Tools:</div> <div>T1 5180-00-177-7033</div> </div> <div> <div>Equipment Condition:</div> <div>Centrifugal unloader removed</div> </div> </div> <div> <div>Materials/Parts:</div> <div>Compressed Air</div> <div>Drycleaning Solvent P-D-680</div> </div> <div> <div>Personnel Required:</div> <div>1 Mechanic</div> </div> <div> <div>Approximate Time Required (minutes):</div> <div>15</div> </div>		
LOCATION/ITEM	ACTION	REMARKS
<div>INSPECTION</div>		 <p>Figure 4-68. Centrifugal unloader assembly</p>
1. All metal parts	Inspect for cracks.	Replace if cracked.
2. Plunger (1)	Inspect for free movement.	Replace if cleaning is not effective.
3. Springs (2) and (3)	Inspect for lost tension or broken.	Replace if defective.
4. Ball (4)	Inspect for pitting.	Replace if pitted.
5. Body (5) and (6)	Inspect for thread damage.	Replace if damaged.
6. Felt (7)	Replace.	See para 4-38.
7. Screen (8)	Inspect for plugged holes or corrosion.	Replace if necessary.

LOCATION/ITEM	ACTION	REMARKS
4-40. CENTRIFUGAL UNLOADER/INSPECTION/CLEANING – continued		
<b>CLEANING</b>	<p><b>WARNING</b></p> <p>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.</p> <p>Clean with solvent.</p> <p><b>WARNING</b></p> <p>Air pressure must not exceed 30 psi when being used to clean unloader parts.</p> <p>Blow out all valve openings with compressed air.</p>	
8. All parts of unloader		
9. Cover (7)		

**ELECTRIC MOTOR**

MAINTENANCE SUMMARY. This task covers:

The testing, removal and installation of the electric motor.

## INITIAL SETUP

Personnel Required	General Safety Instructions
1	Disconnect electrical power before beginning maintenance procedure.

## TASK SUMMARY

NO.	TASK	REFERENCE	REMARKS
1	Motor electric test	Para 4-41	
2	Motor electric removal	Para 4-42	
3	Motor electric installation	Para 4-43	

## 4-41. MOTOR ELECTRIC/TEST

This task covers:

The testing of the electric motor for open and short circuits.

## INITIAL SETUP

## Tools:

T1 5180-00-177-7033

T4 4910-00-754-0654

## Equipment Condition:

Compressor unit OFF

Main power OFF

## Materials/Parts:

None

## Personnel Required:

1 Mechanic

## Approximate Time Required (minutes):

30

LOCATION/ITEM	ACTION	REMARKS
<b>TEST FOR CONTINUITY</b>  1. Main power 2. Motor leads 3. Multimeter 4. Multimeter test leads	<b><u>WARNING</u></b>  Be sure main power is disconnected before doing any work on electrical systems. Voltages present in this equipment can cause injury or death.	
	Disconnect.	
	Disconnect from starter.	See para 4-14.
	Set to OHMS x 1 scale.	
<b>TEST FOR SHORT CIRCUIT</b>  1. Multimeter 2. Multimeter test leads	Connect as shown in Figure 4-69.	If TESTS show open windings, notify direct support.
	Set to OHMS x 1000 scale.	
	Connect as shown in Figure 4-70.	If TESTS show short circuited windings, notify direct support.

4-41. MOTOR ELECTRIC/TEST – continued

TEST FOR CONTINUITY

Set multimeter to OHMS x 1 scale

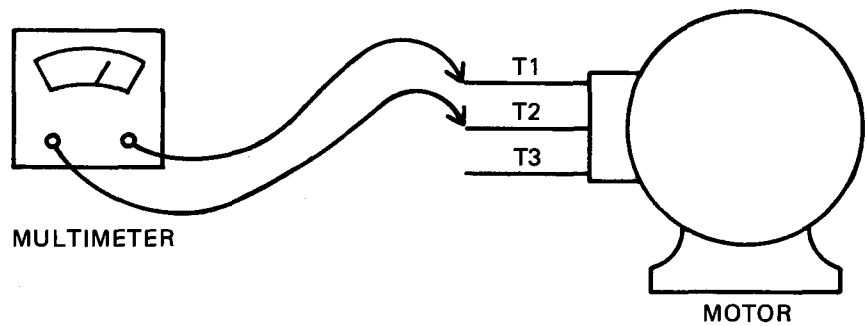


Figure 4-69. Test for continuity

STEP	CONNECT TEST LEADS TO	METER SHOULD READ
1	T1 and T2	0 or near 0
2	T1 and T3	0 or near 0
3	T2 and T3	0 or near 0

If meter reading is  $\infty$  infinity in any of the steps, windings are open. Notify direct support.

TEST FOR SHORT CIRCUIT

Set multimeter to OHMS x 1000 scale

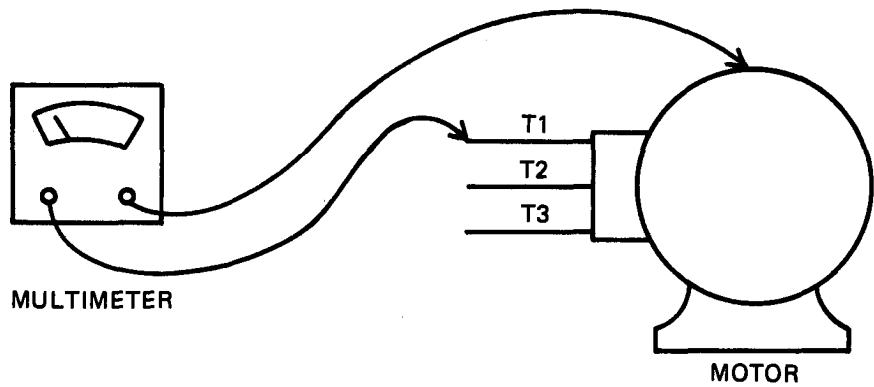
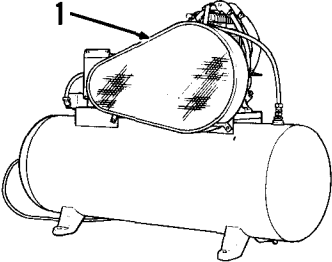
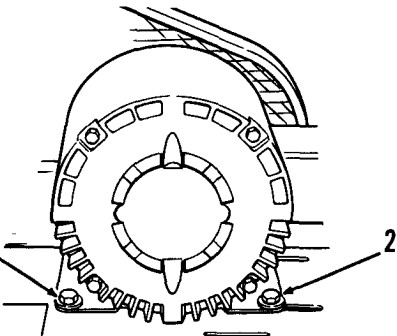
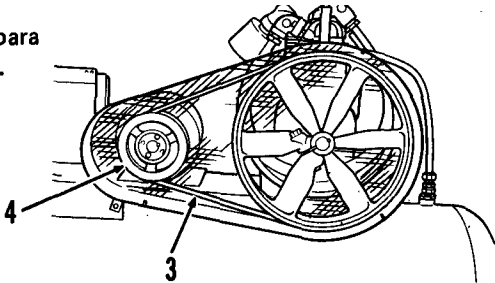


Figure 4-70. Test for short circuit

STEP	CONNECT TEST LEADS TO	METER SHOULD READ
1	T1 and motor frame	$\infty$
2	T2 and motor frame	$\infty$
3	T3 and motor frame	$\infty$

If meter reading is 0 in any of the steps, windings are short circuited. Notify direct support.



4-42. MOTOR, ELECTRIC/REMOVAL		
This task covers:  The removal of the electric motor.		
<div>INITIAL SETUP</div> <div>Tools: T1 5180-00-177-7033</div> <div>Materials/Parts: As required</div> <div>Personnel Required: 1 Mechanic</div> <div>Equipment Condition: Compressor unit OFF Main power OFF</div> <div>Approximate Time Required (minutes): 40</div>		
LOCATION/ITEM	ACTION	REMARKS
<div>REMOVAL</div> <div><div>1. Main power</div><div>2. Belt guard cover (1)</div><div>3. Nuts, washers, lock washers and bolts (2)</div><div>4. Drive belts (3)</div><div>5. Pulley and key (4)</div><div>6. Motor leads</div><div>7. Motor conduit box screws (5)</div></div>	<div><div><div>WARNING</div><div>Be sure main power is disconnected before doing any work on electrical systems. Voltages present in this equipment can cause injury or death.</div></div><div><div>Disconnect.</div><div>Remove.</div><div>Remove 4 each.</div><div>Remove 2 belts.</div><div>Remove.</div><div>Tag and disconnect from starter terminals T1, T2, T3.</div><div>Remove 2 top screws and loosen 2 bottom screws.</div></div></div>	<div><div><div></div><div>Figure 4-71. Compressor unit, belt guard side</div></div><div><div><div></div><div>See para 4-23.</div><div>See para 4-25.</div><div>Figure 4-72. Motor mounting bolts</div></div><div><div><div></div><div>See para 4-28.</div><div>Figure 4-73. Drive pulley and V-belts</div></div></div></div></div>

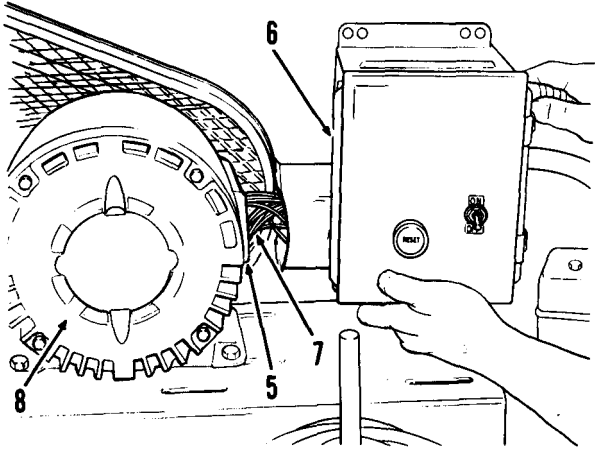
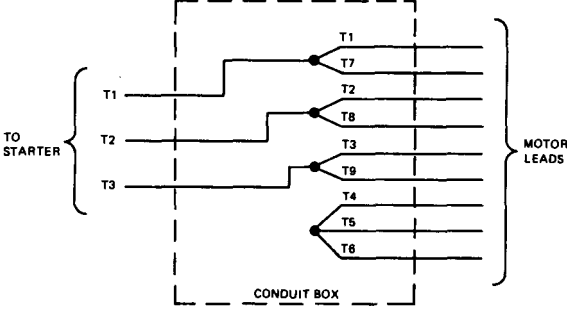
LOCATION/ITEM	ACTION	REMARKS
4-42. MOTOR ELECTRIC/REMOVAL – continued		
8. Motor starter and conduit box (6)	Separate from motor by lifting and pulling away from motor far enough to remove motor leads (7).	
9. Motor (8)		
	Lift off base.	

Figure 4-74. Motor conduit box

Figure 4-75. External wiring of motor

## 4-43. MOTOR ELECTRIC/INSTALLATION

This task covers:

The installation of the electric motor.

## INITIAL SETUP

Tools:

T1 5180-00-177-7033

Equipment Condition:

Electric motor removed

Main power OFF

Materials/Parts:

As required

Personnel Required:

1 Mechanic

Approximate Time Required (minutes):

50

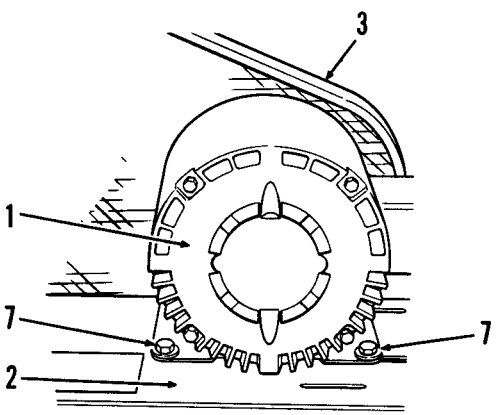
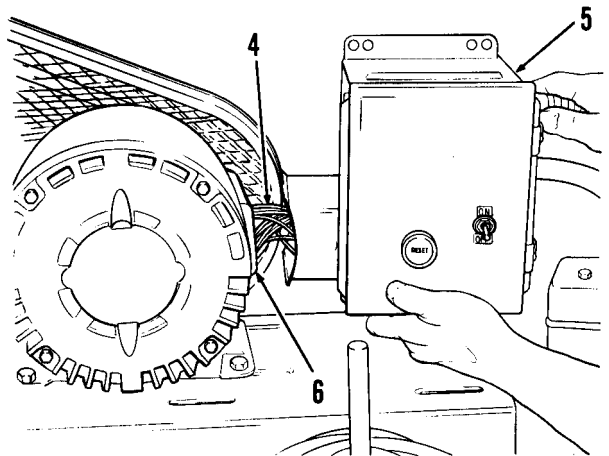
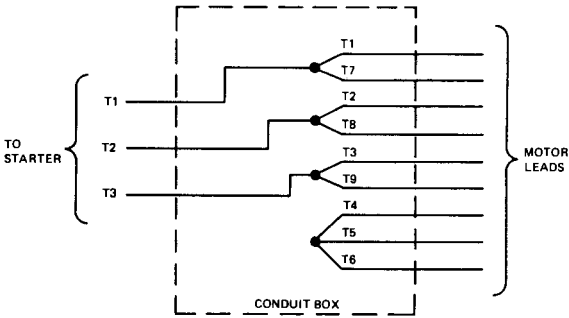
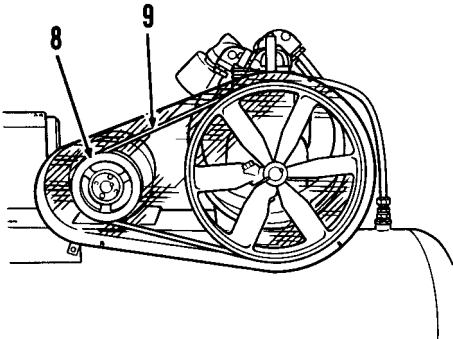
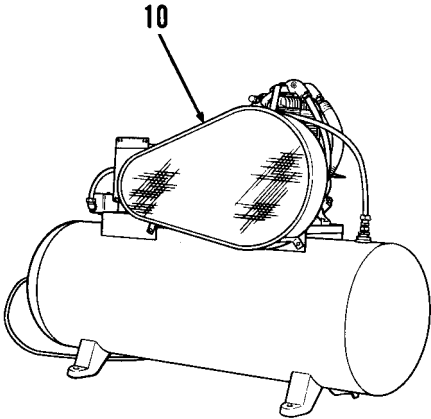
LOCATION/ITEM	ACTION	REMARKS
<div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>INSTALLATION</b></div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>WARNING</b></div> Be sure main power is disconnected before doing any work on electrical systems. Voltages present in this equipment can cause injury or death.	
1. Motor (1)	Position onto base (2) with shaft into belt guard (3).	
2. Motor leads (4)	Push through hole in conduit box and starter enclosure.	
3. Motor conduit box and starter enclosure (5)	Attach to motor with screws (6).	
4. Bolts, washers (7), lock-washers and nuts	Install but do not tighten each.	
		

Figure 4-76. Motor mounting

Figure 4-77. Motor leads

LOCATION/ITEM	ACTION	REMARKS
4-43. MOTOR ELECTRIC/INSTALLATION – continued		
5. Motor leads (4)	Connect to starter terminals as tagged.	
6. Pulley and key (8)	Install.	See para 4-29.
7. Drive belts (9)	Install.	See para 4-26.
8. Drive belts (9)	Adjust	See para 4-27.
9. Belt guard cover (10)	Install.	See para 4-24.
<div>CAUTION</div> <p>Before connecting main power, be sure motor wiring is correct and all connections are secure.</p>		
10. Main power	Connect.	
		
		Figure 4-80. Belt guard cover

**AIR TANK SYSTEM**

MAINTENANCE SUMMARY. This task covers:

The inspection, removal and installation of the safety valve, safety interstage valve, check valve, pressure gage, drain cock, and shutoff valve. This test also includes the removal and installation of the air tank.

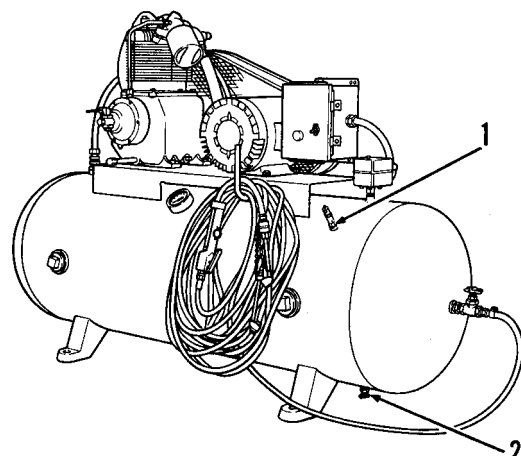
**INITIAL SETUP**

Personnel Required	General Safety Instructions
1	Discharge air in tank before removal of components. Disconnect main power.

**TASK SUMMARY**

NO.	TASK	REFERENCE	REMARKS
1	Safety valve, inspection, removal, installation	Para 4-44	
2	Safety interstage valve, inspection, removal, installation	Para 4-45	
3	Check valve, inspection, removal, disassembly, assembly, installation.	Para 4-46	
4	Pressure gage, inspection, removal, installation	Para 4-47	
5	Drain cock, inspection, removal, installation	Para 4-48	
6	Shutoff valve, inspection, removal, installation	Para 4-49	
7	Air tank removal, installation	Para 4-50	



LOCATION/ITEM	ACTION	REMARKS
4-44. SAFETY VALVE, INSPECTION/REMOVAL/INSTALLATION – continued		
<div data-bbox="159 294 405 348" style="border: 1px solid black; padding: 2px; margin-bottom: 10px;"><b>INSTALLATION</b></div> <div data-bbox="159 362 367 507"> <p>1. Safety valve (1)</p> <p>2. Drain cock (2)</p> <p>3. Main power</p> </div>	<div data-bbox="510 362 782 507"> <p>Install in tank and tighten.</p> <p>Close.</p> <p>Connect.</p> </div>	<div data-bbox="861 362 1340 393"> <p>Be careful not to strip threads when installing.</p> </div> <div data-bbox="893 486 1412 942">  </div> <div data-bbox="997 984 1348 1011"> <p>Figure 4-82. Safety valve location</p> </div>

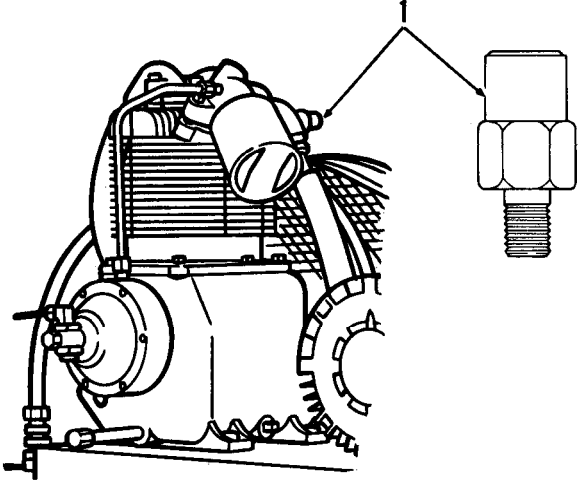
4-45. SAFETY INTERSTAGE VALVE, INSPECTION/REMOVAL/INSTALLATION		
<p>This task covers:</p> <p>The inspection, removal and installation of the safety interstage valve.</p>		
<div>INITIAL SETUP</div> <div><div>Tools: T1 5180-00-177-7033</div><div>Equipment Condition: As noted in procedure</div><div>Materials/Parts: As required</div><div>Personnel Required: 1 Mechanic</div><div>Approximate Time Required (minutes): 10</div></div>		
LOCATION/ITEM	ACTION	REMARKS
<div>INSPECTION</div> <p>Safety interstage valve (1)</p>	<div>NOTE</div> <p>During course of operation if valve malfunctions, replace valve. (See table 4-2 item 5)</p>	
<div>REMOVAL</div> <p>1. Main power</p> <p>2. Drain cock</p> <p>3. Safety interstage valve (1)</p>	<div>WARNING</div> <p>Air pressure in tank must be discharged before removal of safety interstage valve. Removal under pressure could cause serious injury.</p> <p>Disconnect.</p> <p>Open to discharge all air in tank.</p> <p>Remove by unscrewing from manifold.</p>	
<div>INSTALLATION</div> <p>1. Safety interstage valve (1)</p> <p>2. Drain cock</p> <p>3. Main power</p>	<p>Install in manifold and tighten.</p> <p>Close.</p> <p>Connect.</p>	

Figure 4-83. Safety interstage valve



## 4-46. CHECK VALVE INSPECTION/REMOVAL/DISASSEMBLY/ASSEMBLY/INSTALLATION

This task covers:

The inspection, removal, disassembly, assembly and installation of the check valve.

## INITIAL SETUP

## Tools:

T1 5180-00-177-7033

## Equipment Condition:

As noted in procedure

## Materials/Parts:

As required

## Personnel Required:

1 Mechanic

## Approximate Time Required (minutes):

20

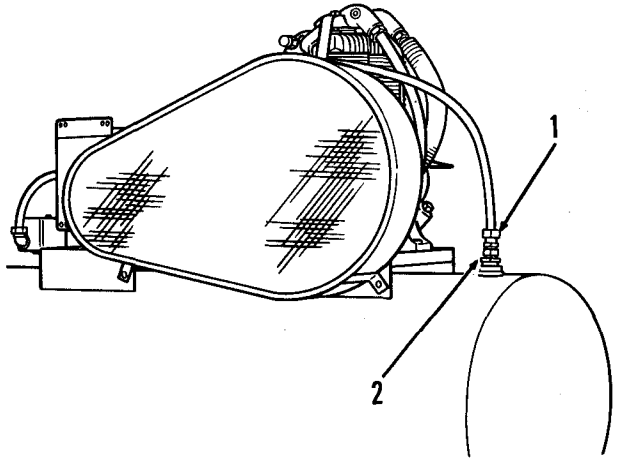
LOCATION/ITEM	ACTION	REMARKS
<div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>INSPECTION</b></div>	NOTE	
	Air tank should be under pressure to check action of check valve.	
	Disconnect after compressor has built up pressure in tank.	
	a. Loosen.	To bleed air from compressor only.
1. Main power		
2. Aftercooler fittings (1)	<div style="text-align: center;"><b>CAUTION</b></div> <p>Loosen fittings slowly. Do not remove until air has escaped.</p> <p>b. Remove fittings and aftercooler.</p>	
3. Check valve (2)	Apply soap solution.	If bubbles appear, check valve leaks and should be replaced.
		

Figure 4-84. Check valve location

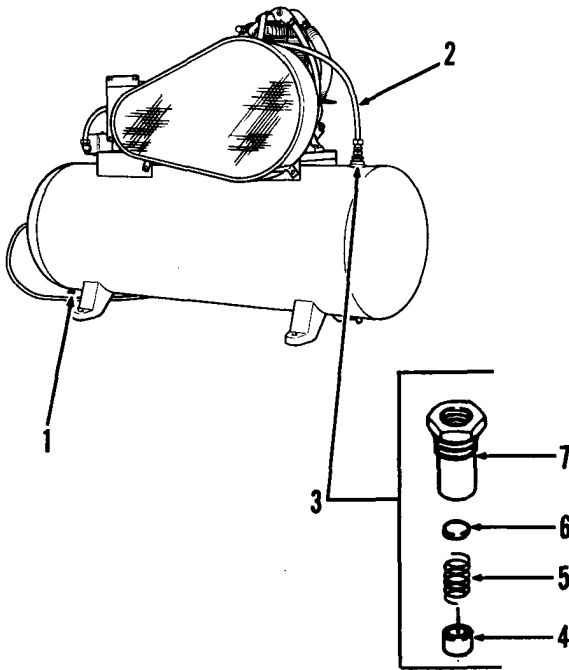
LOCATION/ITEM	ACTION	REMARKS
4-46. CHECK VALVE INSPECTION/REMOVAL/DISASSEMBLY/ASSEMBLY/INSTALLATION - continued		
<div>REMOVAL</div> <ol style="list-style-type: none"> <li>1. Main power</li> <li>2. Drain cock (1)</li> <li>3. Aftercooler (2)</li> <li>4. Check valve (3)</li> </ol>	<div>WARNING</div> <p>Air pressure in tank must be discharged before removal of check valve. Removal under pressure could cause serious injury.</p> <p>Disconnect.</p> <p>Open to discharge all air in tank.</p> <p>Disconnect from check valve.</p> <p>Remove by unscrewing from tank.</p>	
<div>DISASSEMBLY</div> <ol style="list-style-type: none"> <li>1. Cage (4)</li> <li>2. Spring (5)</li> <li>3. Disk (6)</li> </ol>	<p>Remove by unscrewing from body (7).</p> <p>Remove.</p> <p>Remove.</p>	
<div>ASSEMBLY</div> <ol style="list-style-type: none"> <li>1. Disk (6)</li> <li>2. Spring (5)</li> <li>3. Cage (4)</li> </ol>	<p>Install.</p> <p>Install and hold in position.</p> <p>Screw into body (7) and tighten.</p>	
<div>INSTALLATION</div> <ol style="list-style-type: none"> <li>1. Drain cock (1)</li> <li>2. Check valve (3)</li> <li>3. Aftercooler (2)</li> <li>4. Main power</li> </ol>	<p>Close.</p> <p>Install in tank and tighten.</p> <p>Connect to check valve and tighten.</p> <p>Connect.</p>	

Figure 4-85. Check valve replace

Be careful not to strip threads.

## 4-47. PRESSURE GAGE INSPECTION/REMOVAL/INSTALLATION

This task covers:

The inspection, removal and installation of the pressure gage.

## INITIAL SETUP

Tools:

T1 5180-00-177-7033

Equipment Condition:

As noted in procedure

Materials/Parts:

As required

Personnel Required

1 Mechanic

Approximate Time Required (minutes):

15

LOCATION/ITEM	ACTION	REMARKS
<div>INSPECTION</div> <p>1. Pressure gage (1)</p>	<p>NOTE</p> <p>Air tank should be under pressure to check action of pressure gage.</p> <ol style="list-style-type: none"> <li>Apply soap solution at base of gage.</li> <li>Inspect for cracked glass, bent needle or unreadable face.</li> </ol>	<p>If bubbles appear at base of gage it should be replaced.</p> <p>Replace gage if defective.</p>
	<div>REMOVAL</div> <p>1. Main power</p> <p>2. Drain cock (2)</p> <p>3. Pressure gage (1)</p>	<div>WARNING</div> <p>Air pressure in tank must be discharged before removal of pressure gage. Removal under pressure could cause serious injury.</p> <p>Disconnect.</p> <p>Open to discharge all air in tank.</p> <p>Remove by unscrewing from tank.</p>

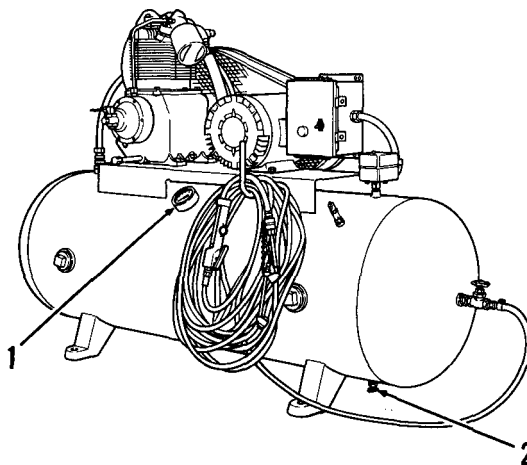


Figure 4-86. Pressure gage replace

LOCATION/ITEM	ACTION	REMARKS
4-47. PRESSURE GAGE INSPECTION/REMOVAL/INSTALLATION – continued		
<div>INSTALLATION</div> <div>1. Pressure gage (1)</div> <div>2. Drain cock (2)</div> <div>3. Main power</div>	<div>Install by screwing into tank and tighten.</div> <div>Close.</div> <div>Connect.</div>	

## 4-48. DRAIN COCK INSPECTION/REMOVAL/INSTALLATION

This task covers:

The inspection, removal and installation of the drain cock.

## INITIAL SETUP

Tools:

T1 5180-00-177-7033

Equipment Condition:

As noted in procedure

Materials/Parts:

As required

Personnel Required:

1 Mechanic

Approximate Time Required (minutes):

20

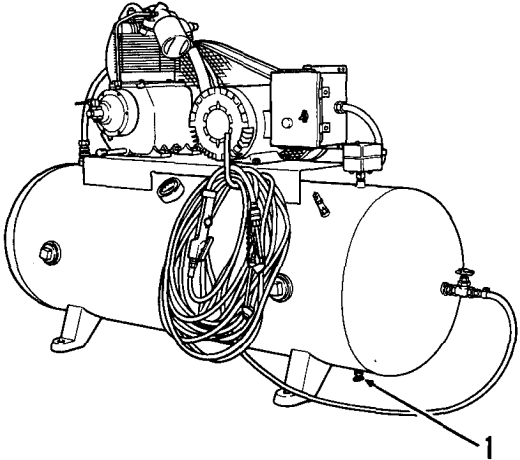
LOCATION/ITEM	ACTION	REMARKS
<b>INSPECTION</b>  1. Drain cock (1)	<b>NOTE</b>  Air tank should be under pressure to check drain cock for leaks.	
	a. Apply soap solution.  b. Inspect for corrosion or damage.	Be sure drain cock is closed tightly. If bubbles still appear, drain cock is defective and should be replaced.  Replace if corroded or damaged.
<b>REMOVAL</b>  1. Main power  2. Drain cock (1)	Disconnect.  a. Open to discharge all air in tank.  b. Remove by unscrewing from tank.	
<b>INSTALLATION</b>  1. Drain cock (1)  2. Main power	Install by screwing into tank.	Be sure drain cock is closed.
	Connect.	

Figure 4-87. Drain cock replace



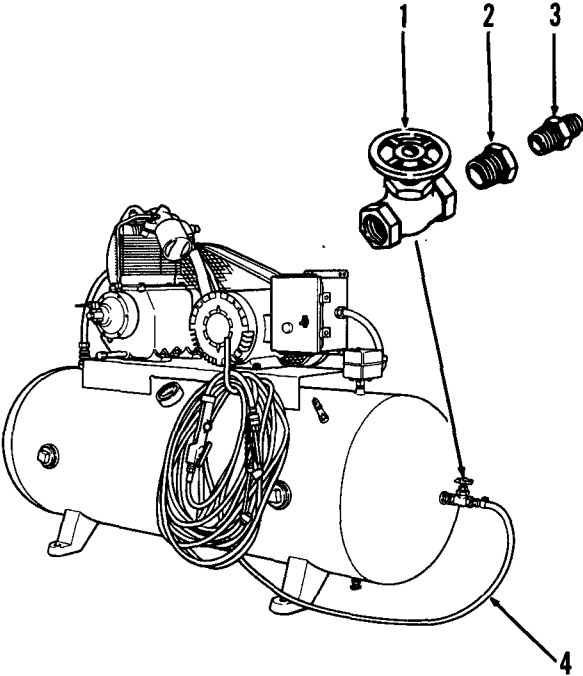
LOCATION/ITEM	ACTION	REMARKS
4-49. SHUTOFF VALVE INSPECTION/REMOVAL/INSTALLATION – continued		
<div>REMOVAL</div> <div>4. Fitting (3) and bushing (2)</div>	Remove.	
<div>INSTALLATION</div> <div>1. Shutoff valve (1)</div> <div>2. Bushing (2) and fitting (3)</div>	Install and tighten. Install and tighten.	
		
3. Air hose (4)	Install.	See para 4-51.
4. Drain cock	Close.	
5. Main power	Connect.	

Figure 4-89. Shutoff valve replace

## 4-50. AIR TANK REMOVAL/INSTALLATION

This task covers:

The removal and installation of the air tank.

## INITIAL SETUP

## Tools:

T1 5180-00-177-7033

## Equipment Condition:

Main power OFF

Air in tank discharged

## Materials/Parts:

As required

## Personnel Required:

1 Mechanic

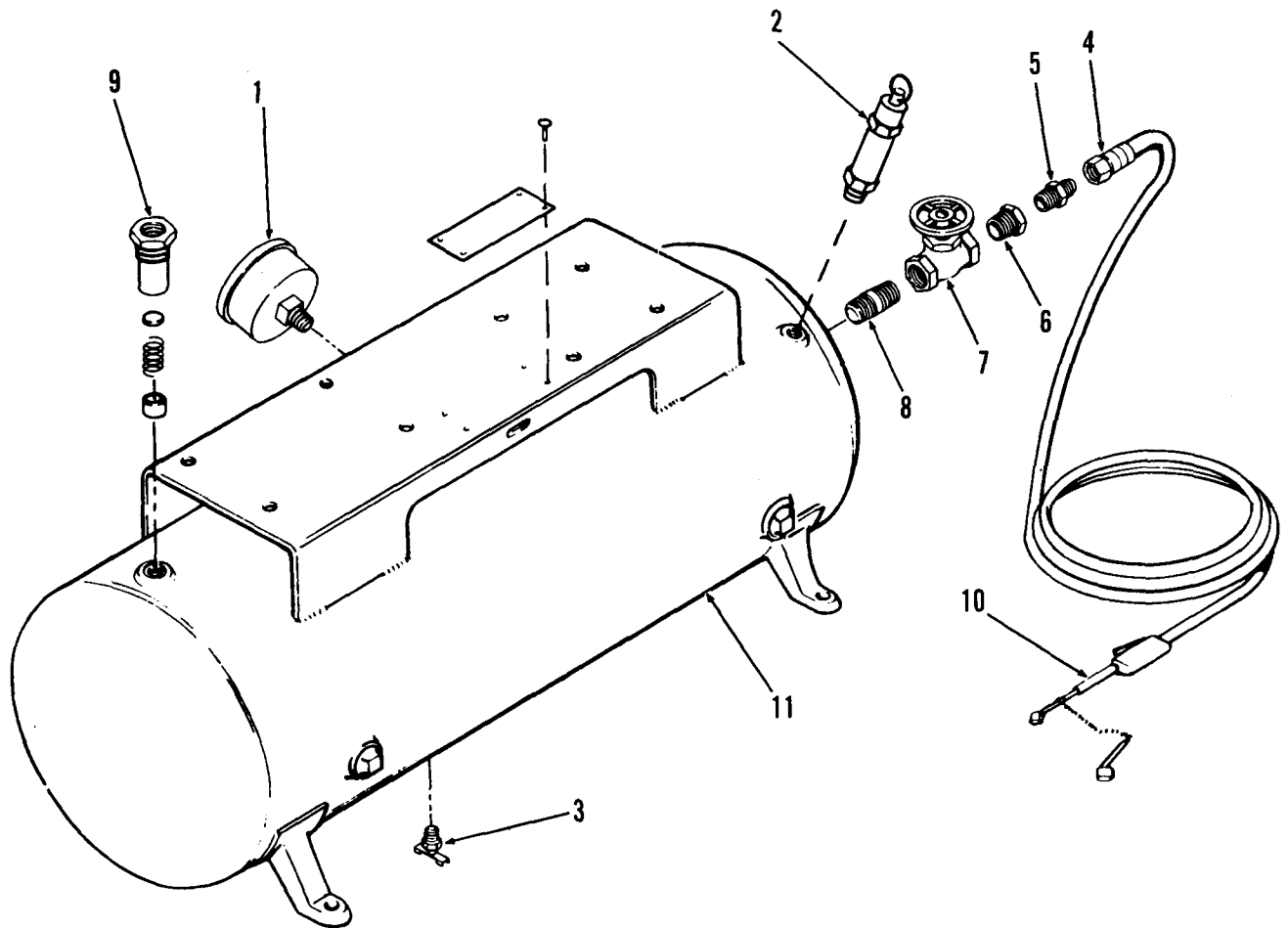
## Approximate Time Required (minutes):

120

LOCATION/ITEM	ACTION	REMARKS
<div>REMOVAL</div> <ol style="list-style-type: none"> <li>1. Main power</li> <li>2. Drain cock (3)</li> <li>3. Belt guard assembly</li> <li>4. Motor starter</li> <li>5. Motor</li> <li>6. Tubing assemblies</li> <li>7. Compressor</li> <li>8. Pressure switch</li> <li>9. Pressure gage (1)</li> <li>10. Safety valve (2)</li> <li>11. Drain cock (3)</li> <li>12. Air hose (4)</li> <li>13. Pipe fitting (5)</li> <li>14. Bushing (6)</li> <li>15. Shutoff valve (7)</li> <li>16. Nipple (8)</li> <li>17. Check valve (9)</li> </ol>	Disconnect.	Figure 4-90 will aid you in locating components that are directly attached to air tank.
	Open.	
	Remove.	See para 4-23.
	Remove.	See para 4-14.
	Remove.	See para 4-42.
	Remove.	See para 4-34.
	Remove.	See para 4-31.
	Remove.	See para 4-19.
	Remove	See para 4-47
	Remove.	See para 4-44.
	Remove.	See para 4-48.
	Remove.	See para 4-51.
	Remove.	See para 4-49.
	Remove.	See para 4-49.
	Remove	See para 4-49.
	Remove.	Be careful not to damage threads.
	Remove.	See para 4-46.



4-50. AIR TANK REMOVAL/INSTALLATION – continued



- 1. Pressure gage
- 2. Safety valve
- 3. Drain cock
- 4. Air hose

- 5. Pipe fitting
- 6. Bushing
- 7. Shutoff valve
- 8. Nipple

- 9. Check valve
- 10. Inflator gage
- 11. Air tank

Figure 4-90. Air tank and fittings

LOCATION/ITEM	ACTION	REMARKS
4-50. AIR TANK REMOVAL/INSTALLATION – continued		
<b>INSTALLATION</b>		
1. Check valve (9)	Install.	See para 4-46.
2. Nipple (8)	Install and tighten.	Be careful not to damage threads.
3. Shutoff valve (7)	Install.	See para 4-49.
4. Bushing (6)	Install and tighten.	
5. Pipe fitting (5)	Install and tighten.	
6. Air hose (4)	Install.	See para 4-51.
7. Drain cock (3)	Install.	See para 4-48.
8. Safety valve (2)	Install.	See para 4-44.
9. Pressure gage (1)	Install.	See para 4-47.
10. Pressure switch	Install.	See para 4-20.
11. Compressor	Install.	See para 4-32.
12. Tubing assemblies	Install.	See para 4-34.
13. Motor install	Install.	See para 4-43.
14. Motor starter	Install.	See para 4-15.
15. Belt guard assembly	Install.	See para 4-24.
16. Drain cock (3)	Close.	
	<b>CAUTION</b>	
	Before operating compressor:	
	a. Be sure all components and fittings are secure and tight.	
	b. Wiring is correct.	
	c. Tools and objects are clear of unit.	
17. Main power	Connect.	

**AIR DISCHARGE SYSTEM**

MAINTENANCE SUMMARY. This task covers:

The removal and installation of the air hose and inflator gage.

## INITIAL SETUP

Personnel Required	General Safety Instructions
1	Turn shutoff valve OFF or discharge air in tank before removal of air hose or inflator gage. Turn main power OFF.

## TASK SUMMARY

NO.	TASK	REFERENCE	REMARKS
1	Hoses, removal, installation	Para 4-51	
2	Inflator gage, removal, installation	Para 4-52	

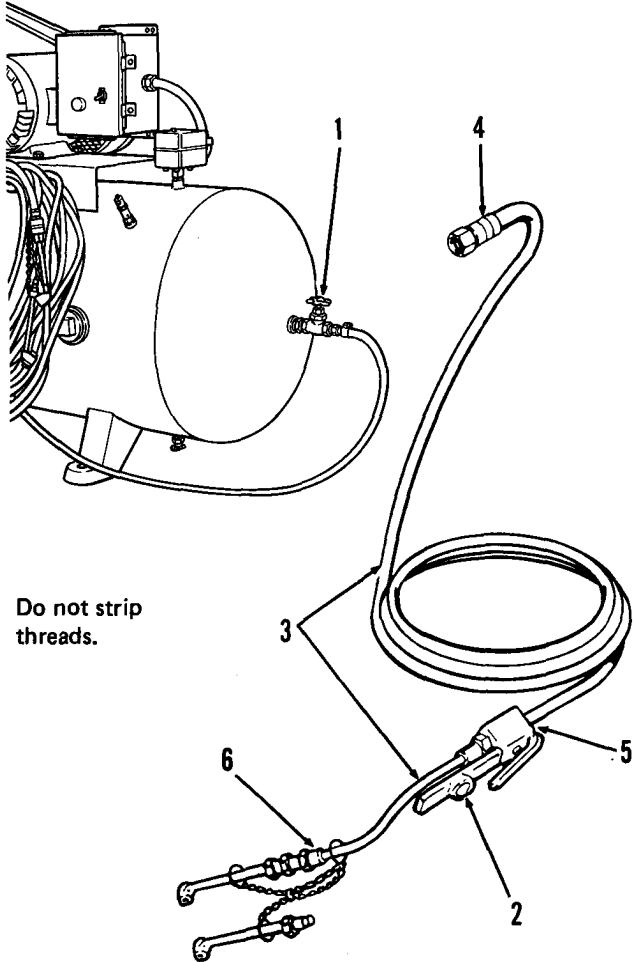
4-51. HOSES, REMOVAL/INSTALLATION		
<p>This task covers:</p> <p>The removal and installation of hoses.</p>		
<div>INITIAL SETUP</div> <div><div>Tools: T1 5180-00-177-7033</div><div>Materials/Parts: As required</div><div>Personnel Required: 1 Mechanic</div></div> <div><div>Equipment Condition: Compressor unit OFF Shutoff valve closed or air in tank discharged</div><div>Approximate Time Required (minutes): 15</div></div>		
LOCATION/ITEM	ACTION	REMARKS
<div>REMOVAL</div> <div><div>1. Shutoff valve (1)</div><div>2. Inflator gage (2)</div><div>3. Hoses (3)</div></div> <div>INSTALLATION</div> <div><div>1. Hoses (3)</div><div>2. Shutoff valve (1)</div></div>	<div><div>WARNING</div><p>Shutoff valve must be closed or air in tank must be discharged before removal of hoses. Removal under pressure could cause serious injury.</p><p>Close.</p><p>Depress lever to discharge remaining air in hoses.</p><p>Remove by disconnecting couplings at 4, 5, and 6.</p><div><div>a. Install by connecting couplings at 4, 5, and 6.</div><div>b. Tighten.</div></div><p>Open.</p></div>	<div></div>

Figure 4-91. Air hose replace

#### 4-52. INFLATOR GAGE/REMOVAL/INSTALLATION

This task covers:

The removal and installation of the inflator gage.

## INITIAL SETUP

Tools:

T1 5180-00-177-7033

Equipment Condition:

Compressor unit OFF

Shutoff valve closed or air in tank discharged

Materials/Parts:

As required

Personnel Required:

## 1 Mechanic

Approximate Time Required (minutes):

15

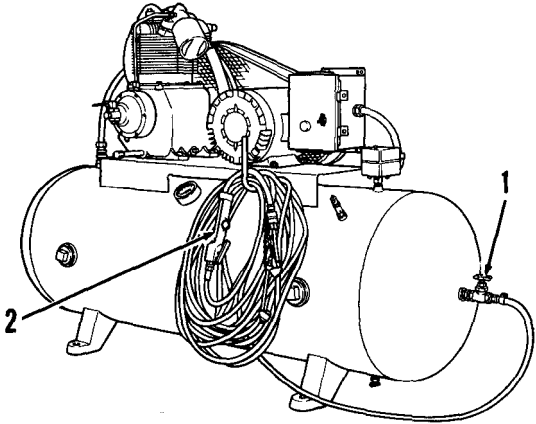
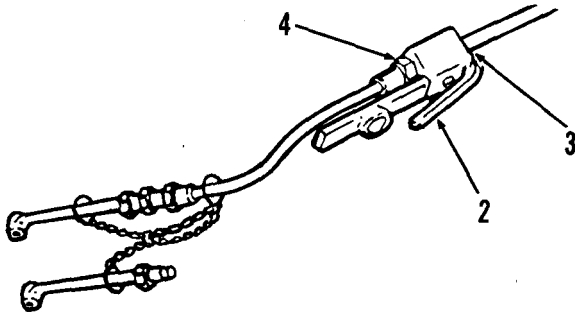
LOCATION/ITEM	ACTION	REMARKS
<div style="border: 1px solid black; padding: 5px; text-align: center;"><b>REMOVAL</b></div> <ol style="list-style-type: none"> <li>1. Shutoff valve (1)</li> <li>2. Inflator gage (2)</li> </ol>	<div style="text-align: center;"><b><u>WARNING</u></b></div> <p>Shutoff valve must be closed, or air in tank must be discharged before removal of inflator gage. Removal under pressure could cause serious injury.</p> <p>Close.</p> <ol style="list-style-type: none"> <li>a. Depress lever to discharge remaining air in hose and gage.</li> <li>b. Remove from long hose by disconnecting coupling (3).</li> <li>c. Remove from short hose by disconnecting coupling (4).</li> </ol>	 <p style="text-align: center;">Figure 4-92. Shutoff valve and inflator gage</p>
<div style="border: 1px solid black; padding: 5px; text-align: center;"><b>INSTALLATION</b></div> <ol style="list-style-type: none"> <li>1. Inflator gage (2)</li> <li>2. Shutoff valve (1)</li> </ol>	<ol style="list-style-type: none"> <li>a. Attach to long hose by connecting coupling (3).</li> <li>b. Attach to short hose by connecting coupling (4).</li> </ol> <p>Open.</p>	

Figure 4-92. Shutoff valve and inflator gage

Figure 4-93. inflator gage assembly



## CHAPTER 5

### DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

5-1. CHAPTER OVERVIEW. This chapter contains maintenance that will be performed by direct and general support maintenance personnel.

#### Section i. REPAIR PARTS, SPECIAL TOOLS, TMDE AND SUPPORT EQUIPMENT

5-2. COMMON TOOLS AND EQUIPMENT. For authorized common tools and equipment refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

5-4. SPARES AND REPAIR PARTS. Spares and repair parts are listed and illustrated in the repair parts and special tools list covering organizational DS and GS maintenance for this equipment (TM 5-4310-373-24P).

5-3. SPECIAL TOOLS. Not applicable.

**Section ii. DIRECT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS**

This section contains disassembly, assembly, inspection and cleaning of:

- a. Compressor assembly
- b. Electric motor

**COMPRESSOR ASSEMBLY MAINTENANCE**

MAINTENANCE SUMMARY. This task covers:

The disassembly/assembly and inspection/cleaning of the compressor and its related components.

**INITIAL SETUP**

Personnel Required	General Safety Instructions
1	

**TASK SUMMARY**

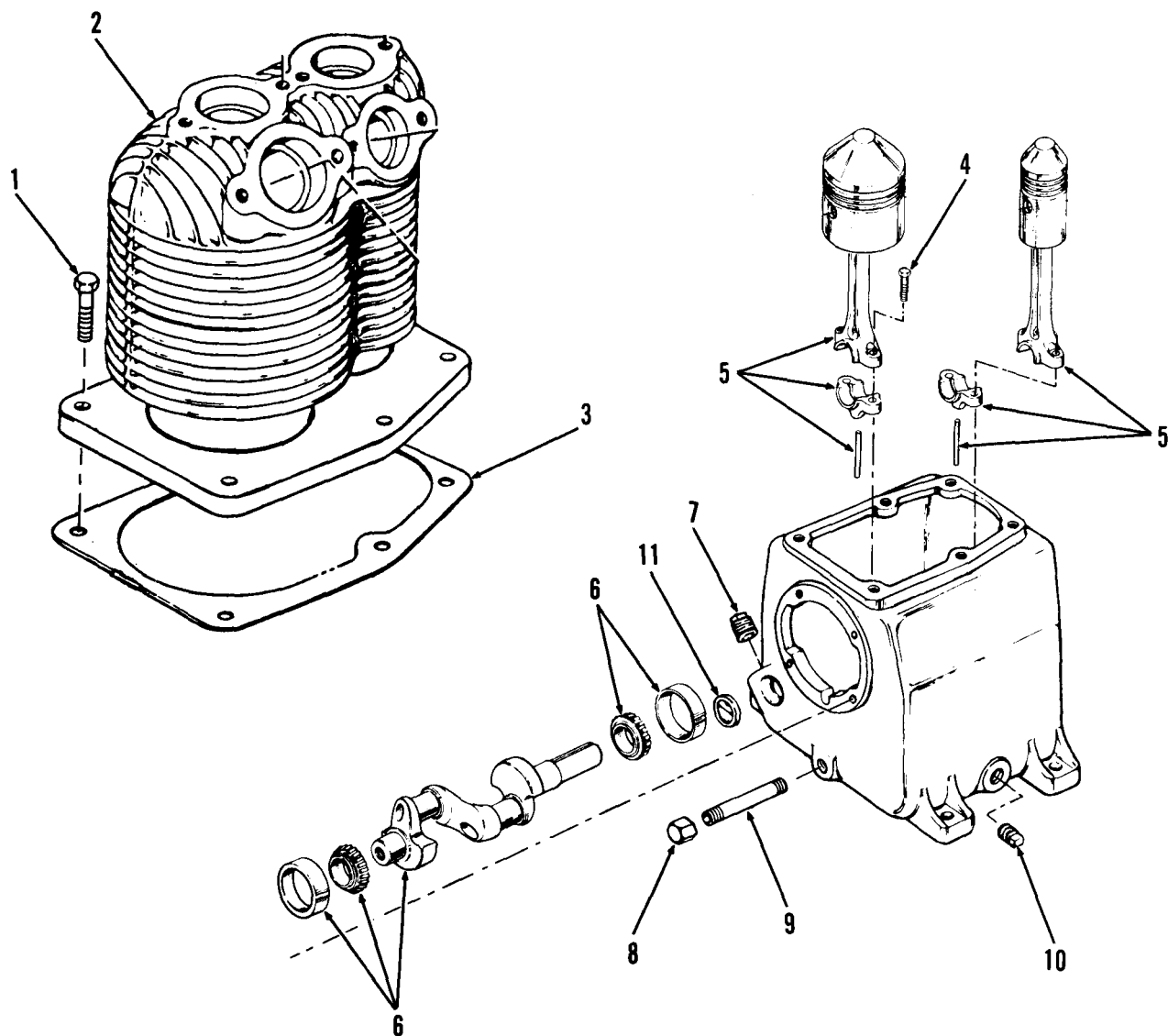
NO.	TASK	REFERENCE	REMARKS
1	Compressor disassembly	Para 5-1	
2	Compressor assembly	Para 5-2	
3	Pistons, connecting rods disassembly	Para 5-3	
4	Pistons, connecting rods assembly	Para 5-4	
5	Crankshaft, bearings, oil seals disassembly	Para 5-5	
6	Crankshaft, bearings, oil seals assembly	Para 5-6	
7	Compressor assembly inspection, cleaning	Para 5-7	



5-1. COMPRESSOR/DISASSEMBLY		
<p>This task covers:</p> <p>The disassembly of the compressor.</p>		
<p>INITIAL SETUP</p> <p>Tools:</p> <p>T1 5180-00-177-7033</p> <p>T2 4910-00-754-0705</p> <p>Equipment Condition:</p> <p>Compressor removed and on workbench</p> <p>Materials/Parts:</p> <p>As required</p> <p>Personnel Required:</p> <p>1 Mechanic</p> <p>Approximate Time Required (minutes):</p> <p>60</p>		
LOCATION/ITEM	ACTION	REMARKS
<div>DISASSEMBLY</div> <p>1. Compressor</p> <p>2. Compressor</p> <p>3. Intake and exhaust valves</p> <p>4. Capscrews (1)</p>	Drain oil.	See para 3-2.
	Remove from unit	See para 4-31.
	Remove.	See para 4-35.
	Remove.	See Figure 5-1.
	<p><b>CAUTION</b></p> <p>Pistons and connecting rods may be damaged by hitting crankcase when cylinder is removed. Support pistons when removing cylinder.</p>	
	Remove by twisting slightly back and forth while pulling upward.	
5. Cylinder (2)		
6. Gasket (3)	Discard.	Used gaskets do not seal.

LOCATION/ITEM	ACTION	REMARKS
5-1. COMPRESSOR DISASSEMBLY - continued		
	<p style="text-align: center;"><u>CAUTION</u></p> <p>Pistons, connecting rods and caps are matched parts and seat with the operation of the compressor. They must keep their original positions at re-assembly. 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.</p>	
7. Crankshaft (6)	Turn until pistons are at top dead center.	Connecting rods will be easier to remove.
8. Bolts (4)	Remove from connecting rods (5).	Place hand under connecting rods to prevent caps from falling to bottom of crankcase.
9. Connecting rod assembly (5)	Remove from crankshaft (6).	
10. Connecting rod caps (5)	Attach to connecting rods with bolts.	Be sure connecting rods and caps mate as marked.
11. Centrifugal unloader	Remove.	See para 4-38.
12. Crankshaft and bearings (6)	Remove from crankcase.	
13. Plug (7)	Remove.	
14. Cap (8)	Remove.	
15. Pipe (9)	Remove.	
16. Plug (10)	Remove.	
17. Oil gage (11)	Do not remove.	
	<p style="text-align: center;"><u>CAUTION</u></p> <p>Oil gage will be damaged if it is removed. Remove only if gage is defective. Remove by driving out from inside of crankcase with hard wood form.</p>	

## 5-1. COMPRESSOR/DISASSEMBLY – continued



- 1. Capscrew
- 2. Cylinder
- 3. Gasket
- 4. Bolt

- 5. Connecting rod assembly
- 6. Crankshaft and bearings
- 7. Plug

- 8. Cap
- 9. Pipe
- 10. Plug
- 11. Oil gage

Figure 5-1. Compressor disassembly

5-2. COMPRESSOR/ASSEMBLY		
This task covers:  The assembly of the compressor.		
<div>INITIAL SETUP</div> <div>Tools: T1 5180-00-177-7033 T2 4910-00-754-0705</div> <div>Materials/Parts: Gasket 5330-00-450-4130 Sealant Oil OE-30</div> <div>Personnel Required: 1 Mechanic</div> <div>Equipment Condition: Compressor removed and disassembled</div> <div>Approximate Time Required (minutes): 60</div>		
LOCATION/TIME	ACTION	REMARKS

ASSEMBLY

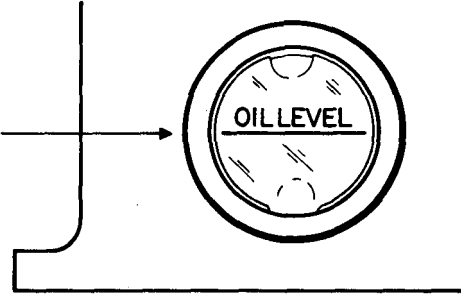
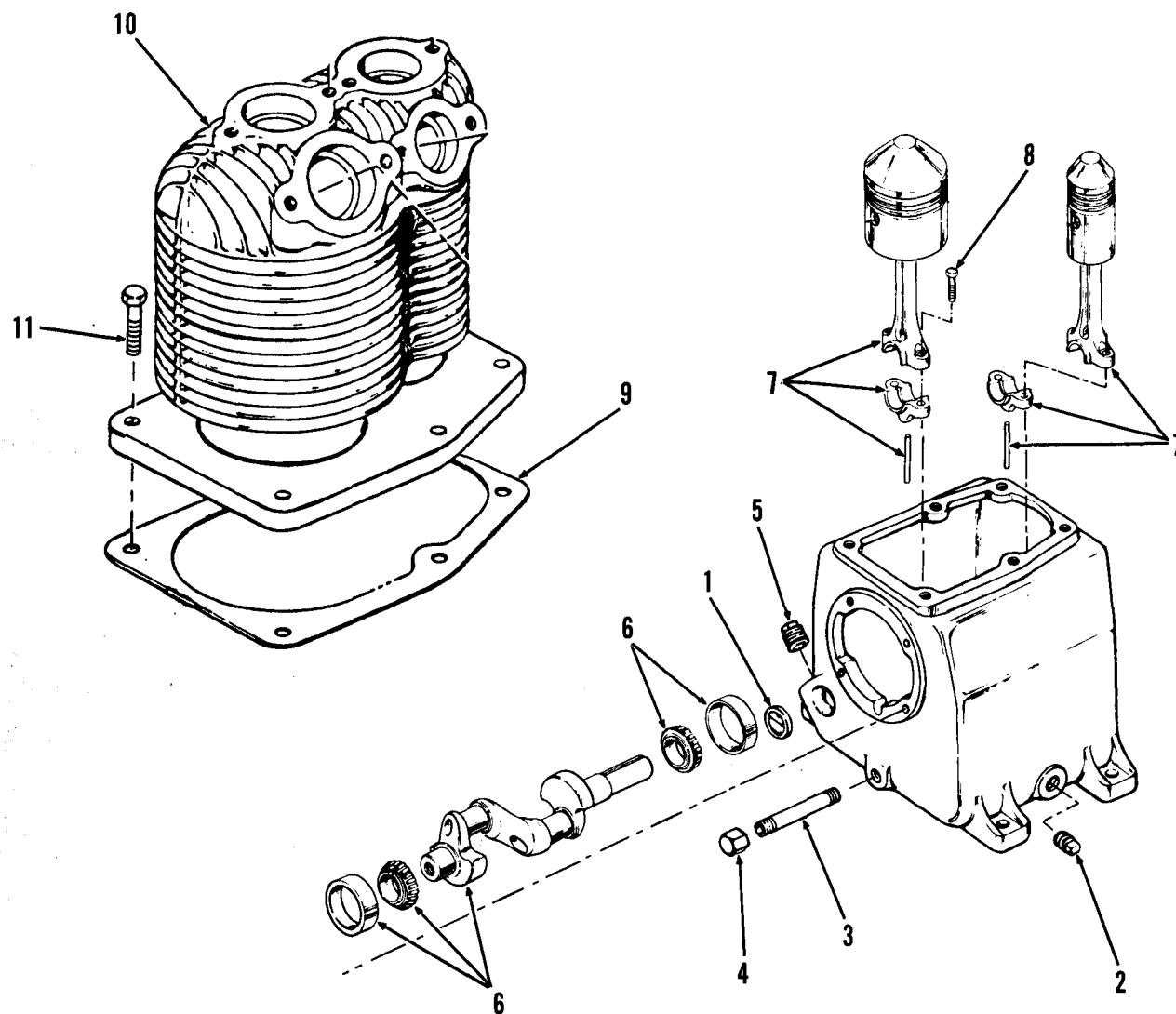
	NOTE	
	Oil gage is to be replaced only if it was noted to be defective in disassembly procedure.	See para 5-1.
1. Oil gage (1)	Coat edges with sealant and press into crankcase with a block of wood.	Indicating mark on gage must be horizontal to crankcase. See Figure 5-3.
2. Plug (2)	Install.	
3. Pipe (3)	Install.	
4. Cap (4)	Install.	
5. Plug (5)	Install.	

Figure 5-2. Oil level gage

LOCATION/ITEM	ACTION	REMARKS
5-2. COMPRESSOR/ASSEMBLY - continued		
	<p style="text-align: center;"><u>CAUTION</u></p> <p>Coat all components with oil before assembly.</p>	
6. Crankshaft and bearings (6)	Install in crankcase.	
7. Centrifugal unloader	Install.	See para 4-39.
8. Connecting rod caps (7)	Remove from connecting rods.	
9. Connecting rod assembly (7)	Attach to crankshaft with caps and bolts (8) and tighten.	Be sure connecting rods and caps mate as marked.
	<p style="text-align: center;">NOTE</p> <p>Turn rings on pistons so that ring gaps are not in line with each other.</p>	To prevent air from leaking past pistons when compressor is operating.
10. Gasket (9)	Place into position on crankcase.	
11. Cylinder (10)	Install by placing over pistons with rings compressed and push down.	Use suitable ring compressor to compress rings on pistons.
12. Capscrews (11)	Install and tighten.	
	Install.	See para 4-36.
	Install on unit.	See para 4-32.
	Fill with oil	See para 3-2.

5-2. COMPRESSOR/ASSEMBLY - continued



- 1. Oil gage
- 2. Plug
- 3. Pipe
- 4. Cap

- 5. Plug
- 6. Crankshaft and bearings
- 7. Connecting rod assembly

- 8. Bolt
- 9. Gasket
- 10. Cylinder
- 11. Capscrew

Figure 5-3. Compressor assembly

## 5-3. PISTONS, CONNECTING RODS/DISASSEMBLY

This task covers:

The disassembly of the pistons and connecting rods.

## INITIAL SETUP

## Tools:

T1 5180-00-177-7033

T2 4910-00-754-0705

## Equipment Condition:

Compressor disassembled

## Materials/Parts:

As required

## Personnel Required:

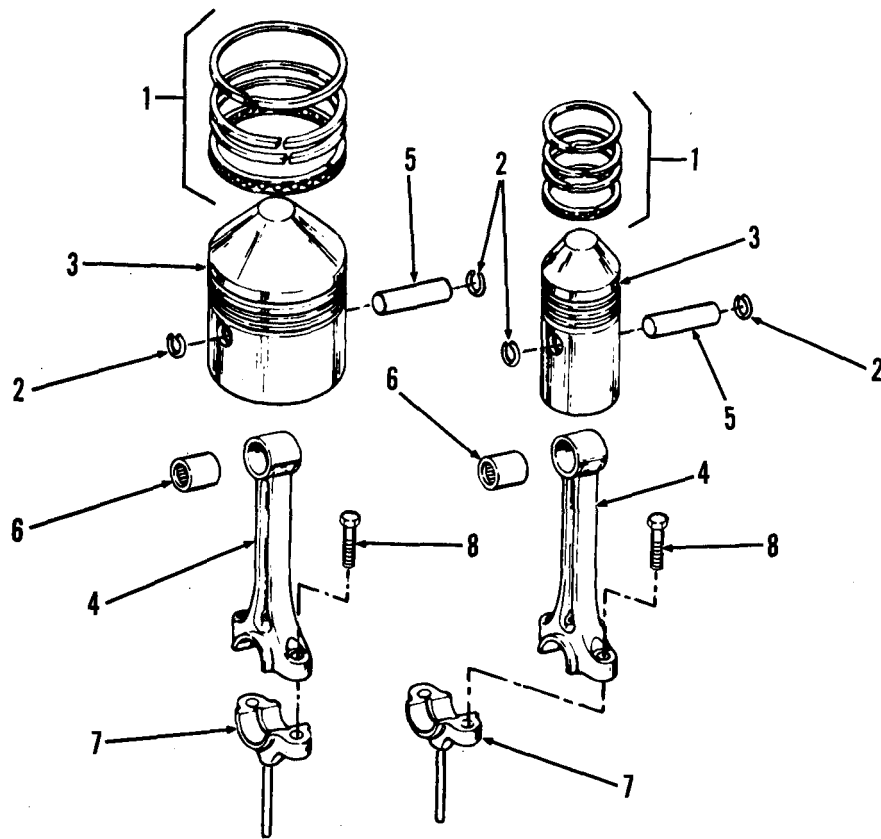
1 Mechanic

## Approximate Time Required (minutes):

25

LOCATION/ITEM	ACTION	REMARKS
<b>DISASSEMBLY</b>	<b>CAUTION</b>  Pistons, connecting rods and caps are matched parts and seat with the operation of the compressor. They must keep their original positions at re-assembly. Mark each connecting rod and cap, piston, and bearing component to be sure they match when they are reassembled.	
1. Piston, connecting rod assembly	Clamp in vise or suitable fixture.	See Figure 5-4.  Be careful not to score pistons.
2. Piston rings (1)	Remove from pistons (3)	Be careful not to break rings.
3. Retaining rings (2)	Remove from pistons (3) by squeezing with pliers and pull out.	
4. Pistons (3)	Remove from connecting rods (4) by pushing out piston pins (5).	
5. Bearings (6)	Remove by pressing out of connecting rods (4).	
6. Connecting rods (4)	Separate from caps (7) by removing bolts (8).	
	<b>NOTE</b>  Do not remove dipper from connecting rod caps. See para 5-7.	

5-3. PISTONS, CONNECTING RODS/DISASSEMBLY – continued



- 1. Piston rings
- 2. Retaining ring
- 3. Piston
- 4. Connecting rod

- 5. Piston pin
- 6. Bearing
- 7. Connecting rod cap and dipper
- 8. Bolt

Figure 5-4. Pistons connecting rods, disassembly



## 5-4. PISTONS, CONNECTING ROD/ASSEMBLY

This task covers:

The assembly of the pistons and connecting rods.

## INITIAL SETUP

## Tools:

T1 5180-00-177-7033

T2 4910-00-754-0705

## Equipment Condition:

Compressor disassembled

## Materials/Parts:

Oil OE-30

As required

## Personnel Required:

1 Mechanic

## Approximate Time Required (minutes):

30

LOCATION/ITEM	ACTION	REMARKS
<b>ASSEMBLY</b>	<p><b>CAUTION</b></p> <p>Pistons, connecting rods and caps are matched parts and seat with the operation of the compressor. They must keep their original positions at re-assembly. Mark each connecting rod and cap, piston, and bearing component to be sure they match when they are reassembled.</p> <p><b>CAUTION</b></p> <p>Coat all parts with oil before assembly.</p>	
1. Connecting rod cap (1)	Attach to connecting rod (2) with bolt (3) finger tight.	See Figure 5-5.
2. Bearing (4)	Press into connecting rod (2).	
3. Connecting rod (2)	Clamp in vise or suitable fixture.	
4. Piston (5)	Place in position over connecting rod (2) and attach by pushing piston pins (6) through holes in pistons (5).	Be sure piston pins are centered in pistons.

LOCATION/ITEM	ACTION	REMARKS
5-4. PISTONS, CONNECTING ROD/ASSEMBLY – continued		
5. Retaining rings (7)	<p>Piece into position in piston grooves with pliers and secure.</p> <p><u>CAUTION</u></p> <p>Piston rings must be installed correctly. The oil ring must be in the lowest groove.</p>	Be sure retaining rings are seated in piston grooves.
6. Piston rings (8)	Install over pistons (5).	Be careful not to break rings.

5-4. PISTONS, CONNECTING RODS/ASSEMBLY – continued

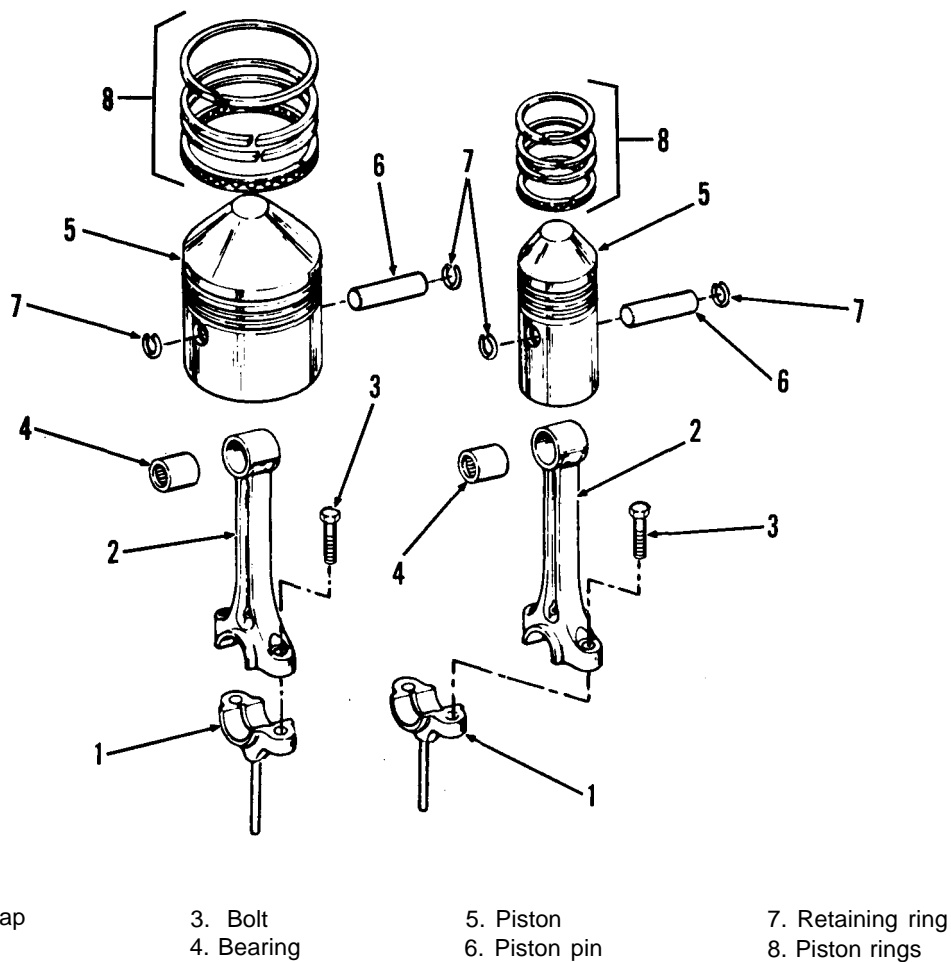
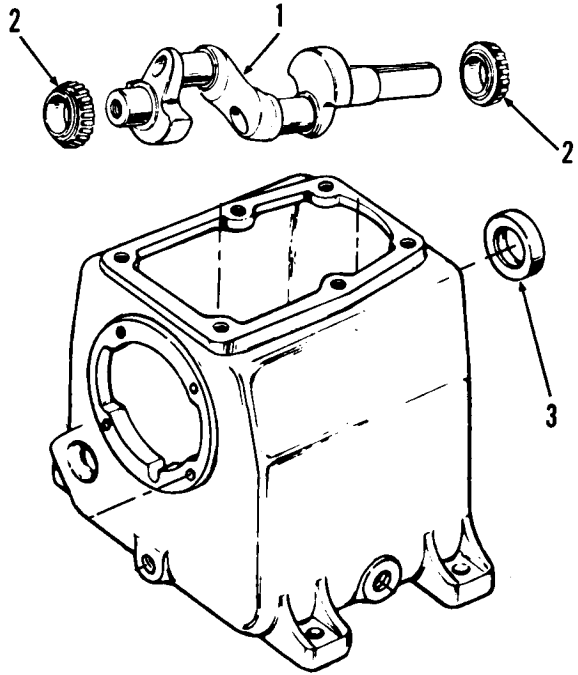


Figure 5-5. Pistons, connecting rods, assembly

5-5. CRANKSHAFT BEARINGS, OIL SEALS/DISASSEMBLY		
<p>This task covers:</p> <p>The disassembly of bearings from the crankshaft and oil seal from the crankcase.</p>		
<p>INITIAL SETUP</p> <p>Tools:</p> <p>T1 5180-00-177-7033</p> <p>T2 4910-00-754-0705</p> <p>Equipment Condition:</p> <p>Compressor disassembled</p> <p>Materials/Parts:</p> <p>As required</p> <p>Personnel Required:</p> <p>1 Mechanic</p> <p>Approximate Time Required (minutes):</p> <p>30</p>		
LOCATION/ITEM	ACTION	REMARKS
<div>DISASSEMBLY</div> <div><div>1. Crankshaft (1)</div><div>2. Bearings (2)</div><div>3. Oil seal (3)</div></div>	<div>CAUTION</div> <div><div>Crankshaft must be supported in a suitable fixture when removing bearings to prevent damage to crankshaft.</div><div>Clamp in suitable fixture.</div><div>Remove from crankshaft with suitable bearing puller.</div><div>Drive out of crankcase and discard.</div></div>	<div></div> <div>Figure 5-6. Crankshaft bearings, oil seals, disassembly</div>

## 5-6. CRANKSHAFT BEARINGS, OIL SEAL/ASSEMBLY

This task covers:

The assembly of bearings to the crankshaft and oil seal to the crankcase.

## INITIAL SETUP

## Tools:

T1 5180-00-177-7033

T2 4910-00-754-0705

## Equipment Condition:

Compressor disassembled

## Materials/Parts:

Sealant

Oil seal 5330-00-724-0793

## Personnel Required:

1 Mechanic

## Approximate Time Required (minutes):

30

LOCATION/ITEM	ACTION	REMARKS
<div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>ASSEMBLY</b></div>		
	1. Oil seal (1)	Apply sealant to outside edges of oil seal.
	2. Oil seal (1)	Install in crankcase by driving squarely with block of wood and hammer.
		<div style="text-align: center;"><u>CAUTION</u></div> <p>Crankshaft must be supported in a suitable fixture when installing bearings to prevent damage to crankshaft.</p>
	3. Crankshaft (2)	Clamp in suitable fixture.
		<div style="text-align: center;"><u>NOTE</u></div> <p>Bearings should be immersed in mineral oil heated to a temperature of 600° fahrenheit prior to installing.</p>
4. Bearings (3)	Press onto crankshaft	

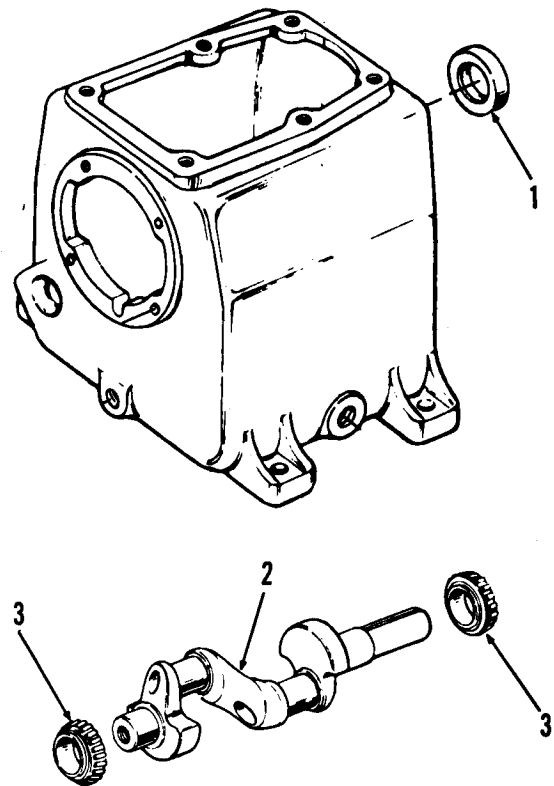


Figure 5-7. Crankshaft bearings, oil seals, assembly

5-7. COMPRESSOR ASSEMBLY/INSPECTION/CLEANING		
<p>This task covers:</p> <p>The inspection and cleaning of all components in the compressor.</p>		
<p>INITIAL SETUP</p> <p>Tools: T1 5180-00-177-7033 Compressed air</p> <p>Equipment Condition: Compressor disassembled</p> <p>Materials/Parts: Clean lint-free rag Piston rings</p> <p>Personnel Required: 1 Mechanic</p> <p>Approximate Time Required (minutes): 30</p>		
LOCATION/ITEM	ACTION	REMARKS
<div>INSPECTION</div> <p>1. Cylinder</p> <p>2. Pistons</p> <p>3. Piston rings</p>	<p>Inspect for cracks, broken cooling fins, scored cylinders.</p> <p>Inspect for cracks, broken ring lands or scoring.</p> <p>NOTE</p> <p>Used piston rings should not be used as they will not seat themselves in the cylinder bore in the same position as they originally were in.</p>	<p>Replace if necessary.</p> <p>Replace if necessary.</p> <p>Replace with new piston rings.</p>

LOCATION/ITEM	ACTION	REMARKS
5-7. COMPRESSOR ASSEMBLY/INSPECTION/CLEANING – continued		
4. Connecting rods	<p>Inspect for scored bearing surfaces and loose fit.</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>Crankshaft bearings, roller and cone are matched sets. Do not use a new roller with an old cone. If bearing replacement is necessary, replace both roller and cone.</p>	Replace if necessary.
5. Crankshaft and bearings	Inspect for scored journals or pitted bearings.	Replace if necessary.
6. Oil seal	Inspect for evidence of leaking, cuts or cracks.	Replace if necessary.
7. Oil gage	Inspect for cracked glass or unreadable face.	Replace only if defective. See para 5-1 and 5-2.
8. Crankcase	Inspect for cracks, damaged pipe plug threads.	Replace if cracked. Re-tap threads if necessary.

LOCATION/ITEM	ACTION	REMARKS
5-7. COMPRESSOR ASSEMBLY/INSPECTION/CLEANING - continued		
<div>CLEANING</div>	<div><div>WARNING</div><p>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.</p><div>WARNING</div><p>Clean with compressed air no greater than 30 psi.</p><div>WARNING</div><p>Protective eyeware must be worn when using compressed air.</p><div>1. All parts of compressor assembly</div><div><div>a. Clean with solvent</div><div>b. Blow out with compressed air.</div><div>c. Dry with clean rag.</div></div></div>	



**MOTOR, ELECTRIC MAINTENANCE**

MAINTENANCE SUMMARY. This task covers:

The disassembly/assembly and inspection/cleaning of the electric motor.

## INITIAL SETUP

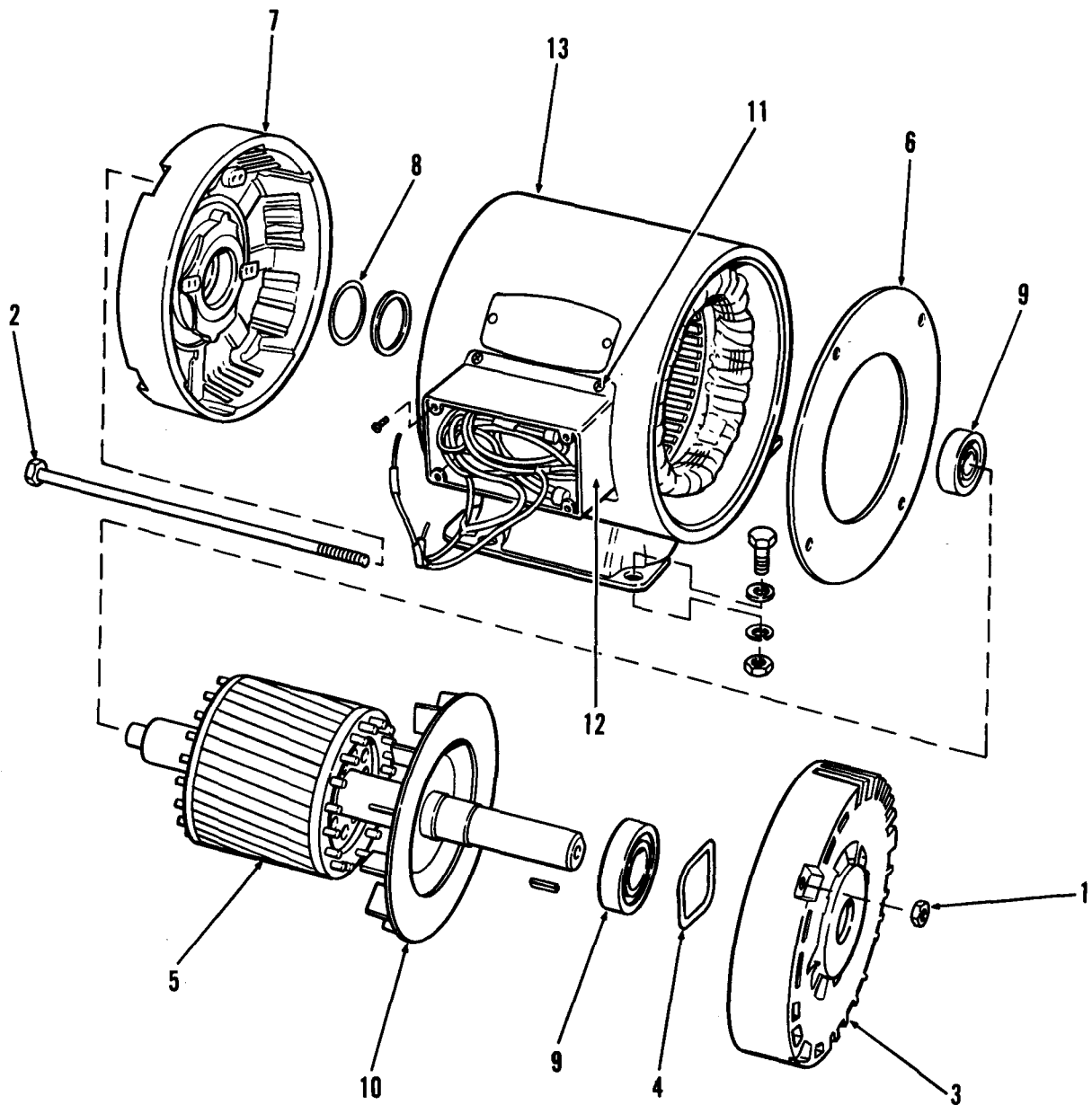
Personnel Required	General Safety Instructions
1	

## TASK SUMMARY

NO.	TASK	REFERENCE	REMARKS
1	Motor, electric disassembly	Para 5-8	
2	Motor, electric assembly	Para 5-9	
3	Motor, electric, inspection cleaning	Para 5-10	

5-8. MOTOR, ELECTRIC/DISASSEMBLY		
<p>This task covers:</p> <p>The disassembly of the electric motor.</p>		
<p>INITIAL SETUP</p> <p>Tools:</p> <p>T1 5180-00-177-7033</p> <p>T2 4910-00-754-0705</p> <p>Equipment Condition:</p> <p>Electric motor removed from unit</p> <p>Materials/Parts:</p> <p>As required</p> <p>Personnel Required:</p> <p>1 Mechanic</p> <p>Approximate Time Required (minutes):</p> <p>45</p>		
LOCATION/ITEM	ACTION	REMARKS
<div>DISASSEMBLY</div> <ol style="list-style-type: none"> <li>Motor</li> <li>Nuts (1)</li> <li>End bells (3) and (7)</li> <li>Thru bolts (2)</li> <li>End bell (3)</li> <li>Wavy washer (4)</li> <li>Rotor assembly (5)</li> <li>Baffle (6)</li> <li>End bell (7)</li> <li>Shim (8)</li> <li>Bearings (9)</li> <li>Fan (10)</li> <li>Screws (11)</li> <li>Conduit box (12)</li> </ol>	Remove from unit.	See para 4-42.
	Remove 4 each.	See Figure 5-8.
	Mark them.	So they can be correctly positioned during assembly.
	Remove.	
	Remove by prying loose with thin tool.	
	Remove.	
	Remove.	
	Remove.	
	Remove by prying loose with thin tool.	
	Remove.	
	Remove from rotor assembly with bearing puller.	
	NOTE	Fan will be damaged if attempt is made to remove it.
	Fan is not removable.	
	Remove.	
	Remove from motor frame (13).	

## 5-8. MOTOR, ELECTRIC/DISASSEMBLY – continued



1. Nuts
2. Thru bolt
3. End bell
4. Wavy washer

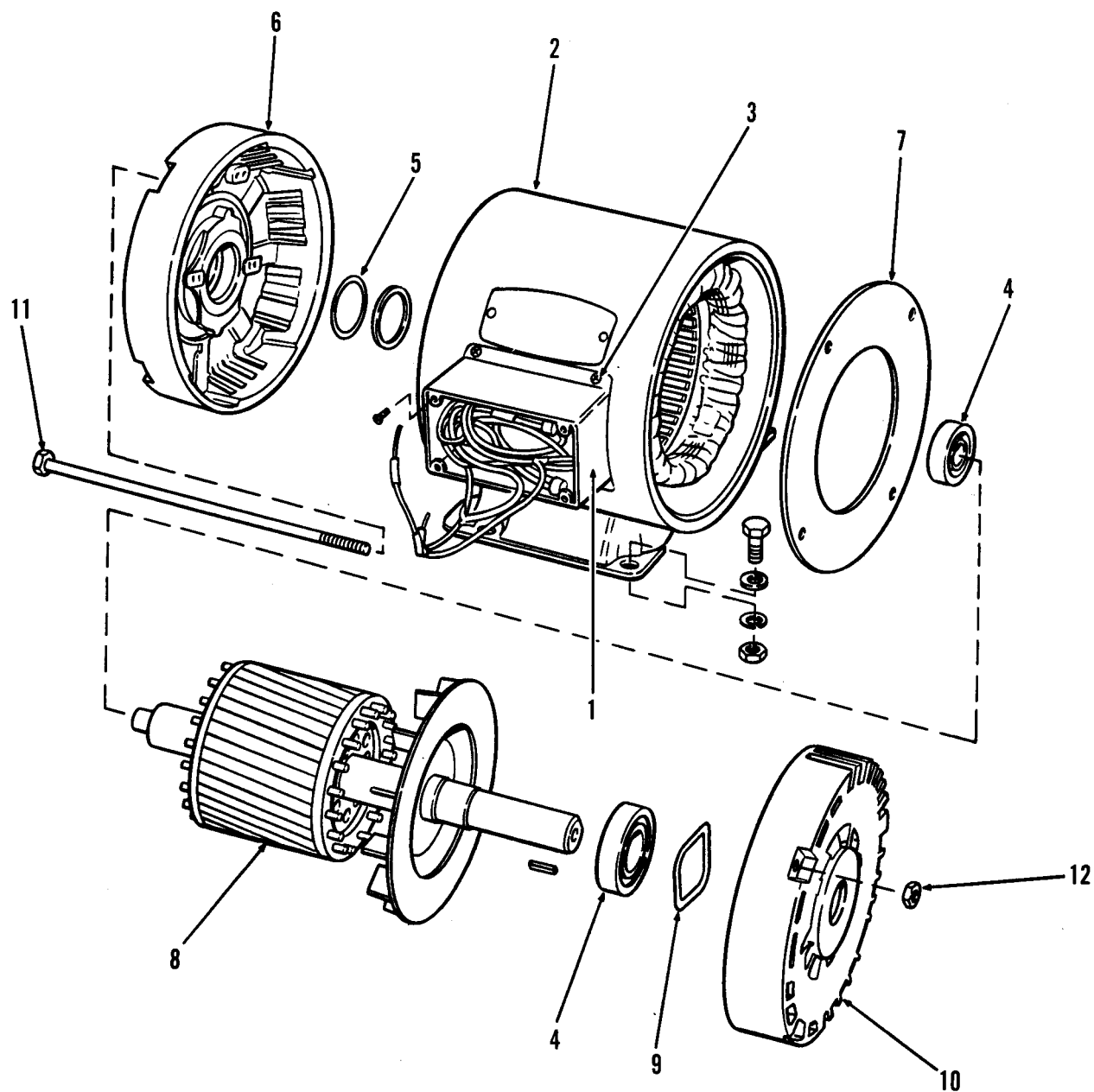
5. Rotor assembly
6. Baffle
7. End ball
8. Shim
9. Bearings

10. Fan
11. Screws
12. Conduit box
13. Motor frame

Figure 5-8. Motor,electric, disassembly

<b>5-9. MOTOR, ELECTRIC/ASSEMBLY</b>																																
<p>This task covers:</p> <p style="margin-left: 40px;">The assembly of the electric motor.</p>																																
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><b>INITIAL SETUP</b></p> <p><b>Tools:</b></p> <p style="margin-left: 20px;">T1 5180-00-177-7033</p> <p style="margin-left: 20px;">T2 4910-00-754-0705</p> <p><b>Materials/Parts:</b></p> <p style="margin-left: 20px;">Mineral Oil</p> <p><b>Personnel Required:</b></p> <p style="margin-left: 20px;">1 Mechanic</p> </div> <div style="width: 45%;"> <p><b>Equipment Condition:</b></p> <p style="margin-left: 20px;">Electric motor disassembled</p> <p><b>Approximate Time Required (minutes):</b></p> <p style="margin-left: 20px;">45</p> </div> </div>																																
<b>LOCATION/ITEM</b>	<b>ACTION</b>	<b>REMARKS</b>																														
<div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 10px;"><b>ASSEMBLY</b></div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; vertical-align: top; padding: 5px;">1. Conduit box (1)</td> <td style="width: 25%; vertical-align: top; padding: 5px;">           Attach to motor frame (2) with screws (3).           <div style="text-align: center; margin: 10px 0;"><b>NOTE</b></div>           Bearings should be immersed in mineral oil heated to a temperature of 600° fahrenheit prior to installing.         </td> <td style="width: 50%; vertical-align: top; padding: 5px;">Heat will expand the bearings making them easier to install.</td> </tr> <tr> <td style="vertical-align: top; padding: 5px;">2. Bearings (4)</td> <td style="vertical-align: top; padding: 5px;">Press onto rotor assembly (8).</td> <td></td> </tr> <tr> <td style="vertical-align: top; padding: 5px;">3. Shim (5)</td> <td style="vertical-align: top; padding: 5px;">Place into position in end bell (6).</td> <td></td> </tr> <tr> <td style="vertical-align: top; padding: 5px;">4. End bell (6)</td> <td style="vertical-align: top; padding: 5px;">Attach to motor frame (2).</td> <td style="vertical-align: top; padding: 5px;">Be sure end bell and motor frame line up as marked in disassembly procedure. See para 5-8.</td> </tr> <tr> <td style="vertical-align: top; padding: 5px;">5. Baffle (7)</td> <td style="vertical-align: top; padding: 5px;">Install.</td> <td></td> </tr> <tr> <td style="vertical-align: top; padding: 5px;">6. Rotor assembly (8)</td> <td style="vertical-align: top; padding: 5px;">Install in motor frame (2).</td> <td></td> </tr> <tr> <td style="vertical-align: top; padding: 5px;">7. Wavy washer (9)</td> <td style="vertical-align: top; padding: 5px;">Install on shaft.</td> <td></td> </tr> <tr> <td style="vertical-align: top; padding: 5px;">8. End bell (10)</td> <td style="vertical-align: top; padding: 5px;">Attach to motor frame (2).</td> <td></td> </tr> <tr> <td style="vertical-align: top; padding: 5px;">9. Thru bolts (11)</td> <td style="vertical-align: top; padding: 5px;">Install.</td> <td></td> </tr> <tr> <td style="vertical-align: top; padding: 5px;">10. Nuts (12)</td> <td style="vertical-align: top; padding: 5px;">Fasten to thru bolts (11) and tighten.</td> <td style="vertical-align: top; padding: 5px;">Motor shaft should spin freely when turned by hand.</td> </tr> </table>			1. Conduit box (1)	Attach to motor frame (2) with screws (3). <div style="text-align: center; margin: 10px 0;"><b>NOTE</b></div> Bearings should be immersed in mineral oil heated to a temperature of 600° fahrenheit prior to installing.	Heat will expand the bearings making them easier to install.	2. Bearings (4)	Press onto rotor assembly (8).		3. Shim (5)	Place into position in end bell (6).		4. End bell (6)	Attach to motor frame (2).	Be sure end bell and motor frame line up as marked in disassembly procedure. See para 5-8.	5. Baffle (7)	Install.		6. Rotor assembly (8)	Install in motor frame (2).		7. Wavy washer (9)	Install on shaft.		8. End bell (10)	Attach to motor frame (2).		9. Thru bolts (11)	Install.		10. Nuts (12)	Fasten to thru bolts (11) and tighten.	Motor shaft should spin freely when turned by hand.
1. Conduit box (1)	Attach to motor frame (2) with screws (3). <div style="text-align: center; margin: 10px 0;"><b>NOTE</b></div> Bearings should be immersed in mineral oil heated to a temperature of 600° fahrenheit prior to installing.	Heat will expand the bearings making them easier to install.																														
2. Bearings (4)	Press onto rotor assembly (8).																															
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5. Baffle (7)	Install.																															
6. Rotor assembly (8)	Install in motor frame (2).																															
7. Wavy washer (9)	Install on shaft.																															
8. End bell (10)	Attach to motor frame (2).																															
9. Thru bolts (11)	Install.																															
10. Nuts (12)	Fasten to thru bolts (11) and tighten.	Motor shaft should spin freely when turned by hand.																														

## 5-9. MOTOR, ELECTRIC/ASSEMBLY – continued



1. Conduit box  
2. Motor frame  
3. Screws

4. Bearings  
5. Shim  
6. End bell

7. Baffle  
8. Rotor assembly  
9. Wavy washer

10. End bell  
11. Thru bolts  
12. Nuts

Figure 5-9. Motor, electric, assembly

5-10. MOTOR, ELECTRIC/INSPECTION/CLEANING		
<p>This task covers:</p> <p>The inspection and cleaning of the electric motor.</p>		
<p>INITIAL SETUP</p> <p>Tools: T1 5180-00-177-7033</p> <p>Equipment Condition: Electric motor disassembled</p> <p>Materials/Parts: Clean rags As required</p> <p>Personnel Required: 1 Mechanic</p> <p>Approximate Time Required (minutes):</p>		
LOCATION/ITEM	ACTION	REMARKS
<div>INSPECTION</div> <p>1. Stator and frame assembly</p> <p>2. Rotor assembly</p> <p>3. End bells</p> <p>4. Grommets</p>	<p>Inspect leads and stator windings for evidence of cracked insulation or burning.</p> <p>a. Inspect rotor for loose or burned conducting bars.</p> <p>b. Inspect bearings for wear.</p> <p>c. Inspect keyway slot for burrs or sharp edges.</p> <p>Inspect for cracks, plugged vent holes.</p> <p>Inspect for missing, cracked or loose grommets.</p>	<p>Replace stator and frame assembly if windings and leads are cracked or burned.</p> <p>Replace rotor assembly if conducting bars are loose or show evidence of overheating;</p> <p>Replace if worn.</p> <p>File sharp edges.</p> <p>Replace end balls if cracked. Clean if vent holes are plugged.</p> <p>Replace as necessary.</p>

LOCATION/ITEM	ACTION	REMARKS
5-10. MOTOR, ELECTRIC/INSPECTION/CLEANING – continued		
<b>CLEANING</b>	<b><u>WARNING</u></b>	
	Clean motor components with compressed air no greater than 30 psi.	
<b><u>WARNING</u></b>	<b><u>WARNING</u></b>	
	Eye protective wear must be worn when cleaning with compressed air or scraping paint.	
1. Stator and frame assembly	a. Scrape loose paint from frame with wire brush.  b. Blow out stator and windings with compressed air.  c. Prime and paint frame where necessary.	
2. Rotor assembly	Wipe off with clean rag.	
3. End balls	Clean vent holes with compressed air.	





## 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.

Organizational, DS, and GS Maintenance Repair

Parts and Special Tools List, Compressor

Unit, Reciprocating Air, Electric Motor

Driven, Model 20-912 . . . . . TM 5-4310-373-24P

The Army Maintenance Management

System (TAMMS) . . . . . TM 38-750

Hand Portable Fire Extinguishers Approved

for Army Users . . . . . TB5-4200-200-10

Painting Instructions for Field Use . . . . . TM 43-0139

Hand Receipt Manual . . . . . TM5-4310-373-14-HR

Administrative Storage of Equipment . . . . TM-740-90-1

Procedures for Destruction of Equip-

ment to Prevent Enemy Use . . . . . TM 750-244-3

Inspection and Test of Air

and other Gas Compressors . . . . . TB 43-0151

#### A-4. MISCELLANEOUS PUBLICATIONS.

Fuels, Lubricants, Oils & 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 levels.
- b. The Maintenance Allocation Chart (MAC) in Section II designates overall responsibility for the performance of maintenance functions on the identified end item or component. The implementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.
- c. Section III lists the special tools and test equipment required for each maintenance function as referenced from Section II.
- d. Section IV contains supplemental instructions on explanatory notes for a particular maintenance function.

## B-2. MAINTENANCE FUNCTIONS.

- a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical and/or electrical characteristics with established standards through examination.
- b. Test. To verify serviceability and detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.
- c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.
- d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.
- e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.
- f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.
- g. Install. The act of emplacing, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.
- h. Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.
- 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 serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.
- j. Overhaul. That maintenance effort (services/actions) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.
- k. Rebuilt. 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 equipments/components.

B-3. COLUMN ENTRIES USED IN THE MAC.

- a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify 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 Functions. Column 3 lists the functions to be performed on the item listed in Column 2. (For detailed explanation of these functions, see paragraph B-2.)
- d. Column 4, Maintenance Level. Column 4 specifies, by the listing of a "work time" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform the maintenance function at the indicated level of maintenance. If the number of complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work time figures will be shown for each level. The number of man-hours specified by 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, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance levels are as follows:

- C . . . . . Operator or crew
- O . . . . . Organizational maintenance
- F . . . . . Direct support maintenance
- H . . . . . General support maintenance
- D . . . . . Depot maintenance
- e. Column 5, Tools and Equipment. Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.
- f. Column 6, Remarks. This column contains a letter code in alphabetic order which is keyed to the remarks contained in Section IV.

B-4. COLUMN ENTRIES USED IN TOOL AND TEST EQUIPMENT REQUIREMENTS.

- a. Column 1, Tool or Test Equipment Reference Code. The tool and test equipment reference code correlates with a maintenance function on the identified end item or component.
- b. Column 2, Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.
- c. Column 3, Nomenclature. Name or identification of the tool or test equipment
- d. Column 4, National/NATO Stock Number. The National or NATO stock number of the tool or test equipment.
- e. Column 5, Tool Number. The manufacturer's part number.

## Section II. MAINTENANCE ALLOCATION CHART

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
01	MOTOR CONTROLS								
0101	Starter, Electric Motor and Wiring	Inspect Replace Repair		0.1 0.7 0.7				T1 T1	
0102	Pressure Switch	Inspect Adjust Replace Repair		0.1 0.2 0.5 0.5				T1	
02	COMPRESSOR DRIVE								
0201	Guard Assembly Belt	Inspect Replace Repair	0.1	1.0 0.5				T1 T1	
0202	Belts, V, Matched Set	Inspect Replace Adjust	0.1	0.3 0.2				T1	
0203	Pulley, Drive	Inspect Replace	0.1	0.5				T1, T4	
03	COMPRESSOR ASSEMBLY	Inspect Replace Repair Overhaul		0.2 2.0	2.0	4.0		T1 T1 T1, T2 T1, T3	
0301	Air Muffler	Inspect Service Replete	0.1 0.2 0.2					T1	
0302	Oil Filler, Cap, and Plugs	Inspect Replace	0.1 0.2					T1	
0303	Flywheel	Inspect Replace		0.2 0.8				T1 T1, T4	
0304	Tube Assemblies	Inspect Replace		0.2 1.7				T1 T1	
0305	Intake and Exhaust Valves	Inspect Replace		0.2 0.5				T1 T1	
0306	Centrifugal Unloader	Inspect Replace Repair		0.2 1.0 0.5				T1 T1 T1	
0307	Cylinder Block and Pistons, Connecting Rods	Inspect Replace Repair			0.3 0.5 2.0			T1, T2 T1, T2 T1, T2	
0308	Crankshaft Bearings and Oil Seals	Inspect Replace Repair			0.4 1.0 2.5			T1, T2 T1, T2 T1, T2	

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment	(6) Remarks
			C	O	F	H	D		
04	MOTOR, ELECTRIC	Inspect Service Test Replace Repair		0.1 0.2 0.5 1.5	1.0			T1 T1 T1, T4 T1 T1, T2	
05	AIR RECEIVER SYSTEM								
0501	Safety Valve	Inspect Replace		0.1 0.2				T1 T1	
0502	Safety Interstate Valve	Inspect Replace		0.1 0.2					
0503	Check Valve	Inspect Replace Repair		0.1 0.2 0.1				T1 T1 T1	
0504	Pressure Gage	Inspect Replace		0.1 0.2				T1 T1	
0505	Drain Cock	Inspect Replace		0.1 0.1				T1 T1	
0506	Globe Valve	Inspect Replace		0.1 0.2				T1 T1	
0507	Air Tank	Inspect Replace	0.1	1.3				T1	
06	AIR DISCHARGE SYSTEM								
0601	Hoses	Inspect Replace	0.1	0.2				T1	
0602	Inflator Gage	Inspect Replace	0.1	0.2				T1	

## Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) Reference Code	(2) Maintenance Level	(3) Nomenclature	(4) National/NATO Stock Number	(5) Tool Number
T1	C, O, F, H	Tool Kit, General Mechanic, Automotive	5180-00-177-7033	
T2	F	Shop Set, Automotive Repair, Field Maintenance, Basic	4910-00-754-0705	
T3	H	Shop Set, Machine: Field Maintenance, Heavy	3470-00-754-0738	
T4	O	Shop Equipment, Automotive Maintenance and Repair: Organization, Common NO. 1	4910-00-754-0654	

## APPENDIX C

## INTEGRAL COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS

## Section I. INTRODUCTION

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

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

- a. Section II. Integral 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 BII 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 item 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 Req'd). 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. INTEGRAL COMPONENTS OF END ITEM

(1) ILLUSTRATION		(2) NATIONAL STOCK NO.	(3) PART NO. & FSCM	(4) DESCRIPTION	(5) LOCATION	(6) USABLE ON CODE	(7) QTY REQD	(8) QUANTITY			
(a) FIGURE NO.	(b) ITEM NO.							RCVD	DATE	DATE	DATE
		4720-00- 874-3179	2538A (11568)	Hose Assembly, Air							
		4910-00- 204-2644	61J2-1506 (94894)	Inflator Gage, Assembly							

## Section III. BASIC ISSUE ITEMS

(1) ILLUSTRATION		(2) NATIONAL STOCK NO.	(3) PART NO. & FSCM	(4) DESCRIPTION	(5) LOCATION	(6) USABLE ON CODE	(7) QTY REQD	(8) QUANTITY			
(a) FIGURE NO.	(b) ITEM NO.							RCVD	DATE	DATE	DATE
				TM 5-4310-373-14  Operator's, Organiza- tional, Direct Support, and General Support Maintenance Manual for Compressor, Reciprocating, Air; Electric Motor Driven, 15 cfm, 175 psi			1				



## APPENDIX D

### ADDITIONAL AUTHORIZATION LIST

#### Section I. INTRODUCTION

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

be turned in with it. These items are authorized to you by CTA, MTOE, TDA or JTA.

D-2. GENERAL. This list identifies items that do not have to accompany the Air Compressor and that do not have to

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			1



## APPENDIX E

### EXPENDABLE SUPPLIES AND MATERIALS LIST

#### Section I. INTRODUCTION

E-1. SCOPE. This appendix lists expendable supplies and materials you will need to operate and maintain the Air Compressor Unit.

These items are authorized to you by CTA 50-970, Expendable Items (except Medical, Class V, Repair Parts, and Heraldic Items).

#### E-2. EXPLANATION OF COLUMNS.

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

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 it to request or requisition the item.

d. Column 4 – Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Federal Supply Code for Manufacturer (FSCM) in parentheses, if applicable.

e. Column 5 – Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

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	Drycleaning 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	9150-00-18-9858	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



## **APPENDIX F**

### **TORQUE VALUES**

#### **Section I. GENERAL**

F-1. This Appendix lists the torque values used in tightening the major components of the model # 20-912 air compressor unit. All torque values are given in inch pounds.

#### **Section II. TORQUE VALUES**

1. Connecting rod bolts. . . . . 230 inch pounds
2. Cylinder flange capscrews . . . . . 400 inch pounds
3. Manifold capscrews. . . . . 200 inch pounds
4. Governor housing capscrews . . . . . 400 inch pounds
5. Governor spindle capscrew . . . . . 470 inch pounds
6. Flywheel capscrew . . . . . 600 inch pounds



## I N D E X

Paragraph  
Number

## A

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Adjustments, Pressure Switch . . . . .	4-22
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Air, Tank, Replace . . . . .	4-50

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I

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O

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P

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S

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------------------------------	------

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W

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-------------------------	------



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TM 5-4310-373-14

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11 May 83

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Compressor, Reciprocating,  
Air: Electric Driven Motor

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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 cylinders. The engine on my set only has 4 cylinders. Change the manual to show 4 cylinders.

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

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## The Metric System and Equivalents

### Linear Measure

1 centimeter = 10 millimeters = .39 inch  
1 decimeter = 10 centimeters = 3.94 inches  
1 meter = 10 decimeters = 39.37 inches  
1 dekameter = 10 meters = 32.8 feet  
1 hectometer = 10 dekameters = 328.08 feet  
1 kilometer = 10 hectometers = 3,280.8 feet

## Weig

1 centigram = 10 milligrams = .1  
1 decigram = 10 centigrams = 1.  
1 gram = 10 decigram = .035 ounce  
1 dekagram = 10 grams = .35 ounce  
1 hectogram = 10 dekagrams = 3.  
1 kilogram = 10 hectograms = 2.  
1 quintal = 100 kilograms = 220  
1 metric ton = 10 quintals = 1.1

### **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**

### ***Square Measure***

sq. millimeters = .155 sq. inch  
 q. centimeters = 15.5 sq. inches  
 100 sq. decimeters = 10.76 sq. feet  
 100 sq. meters = 1,076.4 sq. feet  
 re) = 100 sq. dekameters = 2.47 acres  
 1. hectometers = .386 sq. mile

### ***Cubic Measure***

1 cu. millimeters = .06 cu. inch  
 2 cu. centimeters = 61.02 cu. inches  
 3 decimeters = 35.31 cu. feet

DATE DUE		BORROWER'S NAME
JAN 5 1964		...
JAN 10 1964		...
JAN 15 1964		...
JAN 20 1964		...
JAN 25 1964		...
JAN 30 1964		...
FEB 5 1964		...
FEB 10 1964		...
FEB 15 1964		...
FEB 20 1964		...
FEB 25 1964		...
FEB 28 1964		...

<i>To change</i>	<i>To</i>
inches	centimeters
feet	meters
yards	meters
miles	kilometers
square inches	square centimeters
square feet	square meters
square yards	square meters
square miles	square kilometers
acres	square kilometers
cubic feet	cubic meters
cubic yards	cubic meters
fluid ounces	milliliters
pints	liters
quarts	liters
gallons	liters
ounces	grams
pounds	kilograms
short tons	metric tons
pound-feet	newton-meters
pound-inches	newton-meters

<i>To</i>	<i>Multiply by</i>
newton-meters	.007062
inches	.394
feet	3.280
yards	1.094
miles	.621
square inches	.155
square feet	10.764
square yards	1.196
square miles	.386
acres	2.471
cubic feet	35.315
cubic yards	1.308
fluid ounces	.034
pints	2.113
quarts	1.057
gallons	.264
ounces	.035
pounds	2.205
short tons	1.102

### Temperature (max)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C
----	------------------------	----------------------------	---------------------	----

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