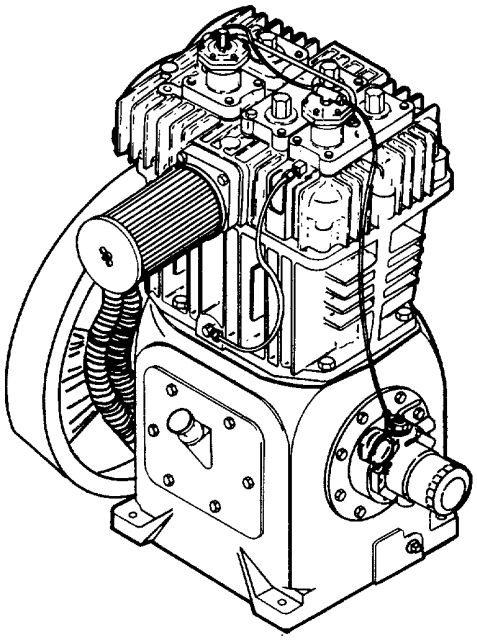
This copy is a reprint which includes current pages from changes 1 and 2.

TECHNICAL MANUAL

UNIT, INTERMEDIATE DIRECT SUPPORT AND INTERMEDIATE GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

AIR COMPRESSOR FOR LANDING CRAFT UTILITY (LCU) NSN 1905-01-154-1191



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17 JANUARY 1989

CHANGE
NO. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 29 April 1994

**Unit, Intermediate Direct Support,
and Intermediate General Support
Maintenance Instructions
AIR COMPRESSOR
for
LANDING CRAFT UTILITY (LCU)
NSN 1905-01-154-1191**

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Unit, Intermediate Direct Support and Intermediate General Support Maintenance Instructions

AIR COMPRESSOR
FOR
LANDING CRAFT UTILITY (LCU)
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Unit, Intermediate Direct Support and Intermediate General Support Maintenance Instructions

AIR COMPRESSOR
FOR
LANDING CRAFT UTILITY (LCU)
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2-17 and 2-18	2-17 and 2-18
2-21 and 2-22	2-21 and 2-22
2-25 through 2-28	2-25 through 2-28
2-33 and 2-34	2-33 and 2-34
2-39 and 2-40	2-39 and 2-40
2-45 and 2-46	2-45 and 2-46
2-49 through 2-52	2-49 through 2-52
2-55 and 2-56	2-55 and 2-56
3-5 and 3-6	3-5 and 3-6
3-13 and 3-14	.3-13 and 3-14
3-23 and 3-24	3-23 and 3-24
3-27 and 3-28	3-27 and 3-28
3-33 and 3-34	3-33 and 3-34
3-37 through 3-42	3-37 through 3-42
B-5 through B-8	B-5 through B-8

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WARNING

MODIFICATION HAZARD

Unauthorized modifications, alterations or installations of or to this equipment are prohibited and are in violation of AR 750-10. Any such unauthorized modifications, alterations or installations could result in death, injury or damage to the equipment.

HIGH PRESSURE
HYDRAULIC SYSTEM HAZARDS

Hydraulic systems can cause serious Injuries if high pressure lines or equipment fail.

Never work on hydraulic systems or equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment, and who can give first aid. A second person should stand by controls to turn off hydraulic pumps in an emergency. When the technicians are aided by the operators, the operators must be warned about dangerous areas.

MOVING MACHINERY HAZARDS

Be very careful when operating or working near moving machinery.

Running engines, rotating shafts, and other moving machinery parts could cause personal injury or death.

For Artificial Respiration, refer to FM 21-11.

TECHNICAL MANUAL

No.55-1905-223-24-8

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 17 January 1989

UNIT, INTERMEDIATE DIRECT SUPPORT, AND INTERMEDIATE GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

AIR COMPRESSOR FOR LANDING CRAFT UTILITY (LCU) NSN 1905-01-154-1191

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: Commander, US Army Aviation and Troop Command, ATTN: AMSAT-I-MP, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be furnished directly to you.

TABLE OF CONTENTS

TABLE OF CONTENTS - Continued

CHAPTER 1

INTRODUCTION

SECTION I. GENERAL INFORMATION

1-1. Scope. The scope of this manual is as follows:

a. Type of Manual. Unit, intermediate direct support, and intermediate general support maintenance manual.

b. Model Number and Equipment Name. Model D340 QR-25, Air Compressor Unit.

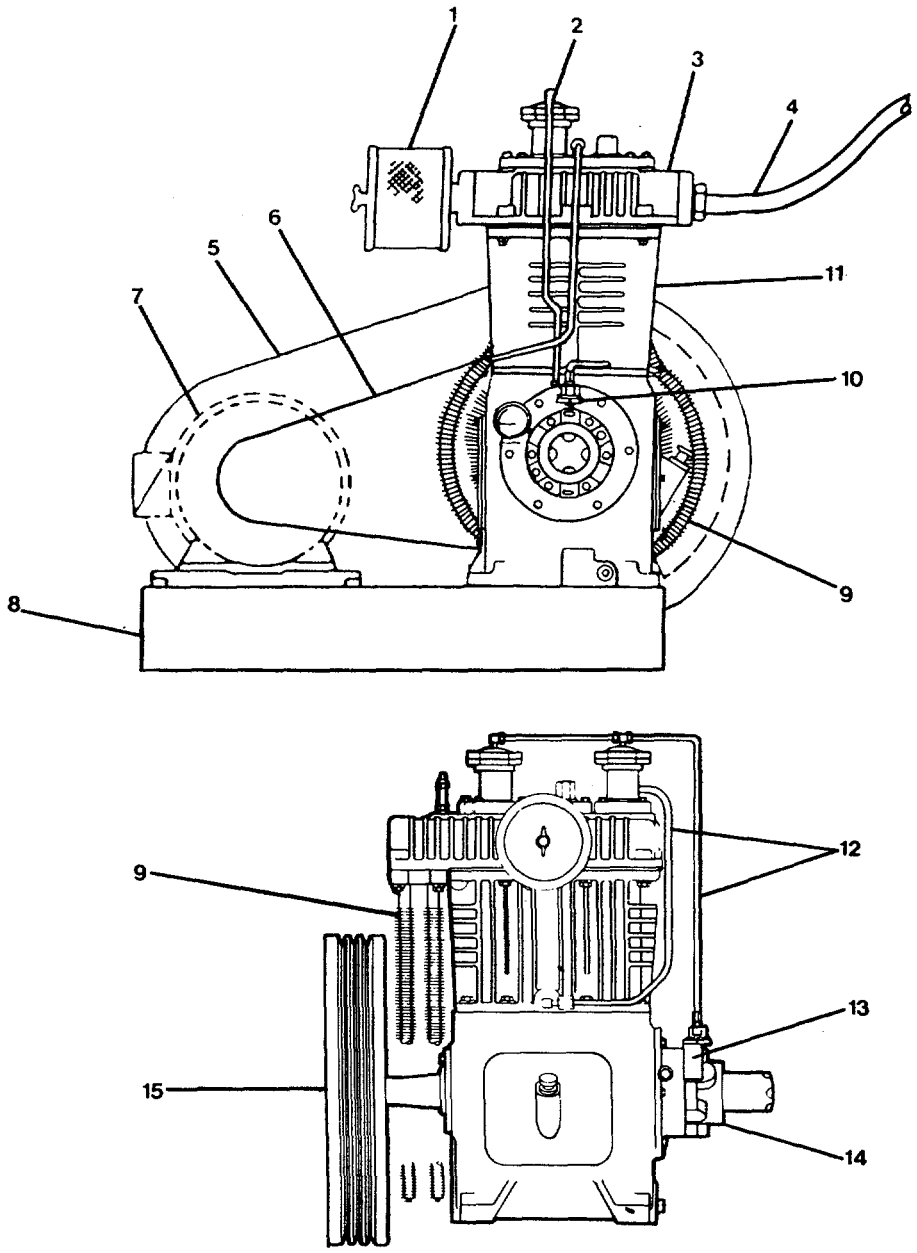
c. Purpose of Equipment. To supply compressed air to the air receiver tank. Used for starting engines; also provides low pressure air to run pneumatic tools.

1-2. Maintenance Forms, Records, and Reports. Department of the Army forms and procedures used for equipment maintenance are prescribed by DA Pam 738-750, the Army Maintenance Management System.

1-3. Destruction of Army Materiel. Refer to TM 750-244-3 for instructions covering the destruction of Army materiel to prevent enemy use.

1-4. Reporting Equipment Improvement Recommendations. If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, U.S. Army Troop Support Command; ATTN: AMSTR-QX; 4300 Goodfellow Blvd.; St. Louis, Missouri 63120-1798. We'll send you a reply.

1-5. Preparation for Storage or Shipment. Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the Preventive Maintenance Checks and Services (PMCS) charts before storing. When removing the equipment from administrative storage, the PMCS should be performed to assure operational readiness. Preparation of equipment for shipment or short term storage is covered in paragraph 2-29.



LEGEND

1. AIR FILTER
2. UNLOADER
3. CYLINDER HEAD
4. OUTLET PIPE
5. BELT GUARD
6. VEE BELT
7. ELECTRIC MOTOR
8. BASE MOUNT
9. INTERCOOLER
10. HYDRAULIC UNDERLOADER ASSEMBLY
11. CYLINDER BLOCK
12. PIPING
13. OIL GAGE
14. BEARING CASE
15. PULLEY

8460A

FIGURE 1-1. Air Compressor Assembly (External View).

SECTION II. EQUIPMENT DESCRIPTION AND DATA

1-6. Characteristics, Capabilities, and Features. A very broad view of the air compressor unit is as follows:

a. Characteristics.

(1) Single-acting, two-stage, belt-driven, two cylinder, electric-driven.

(2) Air cooled.

(3) Controlled at the pilothouse or engine room console.

b. Capabilities and Features.

(1) Capable of delivering required air pressure (200 psi) at lower temperatures than a single-stage air compressor.

(2) The pulley is finned to also act as a fan and move air over the intercooler to lower output air temperature.

(3) Lubricated by means of a positive displacement rotary type oil pump.

1-7. Location and Description of Major Components. See FIGURE 1-1. The QR-25, Model 340 air compressor is a single-acting, two-stage, belt-driven, two cylinder, air cooled unit. The compressor is mounted on a separate base that includes the air compressor and electric motor. The motor drives two vee belts, which in turn drive a pulley attached to the compressor crankshaft. The air compressor unit includes a base, an electric motor, vee belts, belt guard, intercooler, hydraulic unloader, and the air compressor.

a. Air Compressor (FIGURE 1-1). Crankcase, cylinder block and head, containing crankcase, connecting rods, and pistons to generate air pressure.

b. Bearing Carrier (14). Contains the crankshaft bearing ring and oil pump.

c. Hydraulic Unloader (10). Allows excessive pressure to be unloaded.

d. Intercooler (9). Cools air between compressor stages.

e. Electric Motor (7). Provides the drive power.

f. Vee Belt (6). Provides belt drive.

g. Pulley (15). Rotates crankshaft and cools the intercooler.

1-8. Equipment Data. Characteristics and reference data are provided in Table 1-1. Also see the equipment data given in the operator's manual TM 55-1905-223-10.

Table 1-1. Equipment Data

Characteristics	Reference Data
Air Compressor	Model 340, two stage, belt driven
Hydraulic Unloader	0-350 psi
Electric Motor	10 hp, 60 Hz, 240/460 Vac

1-9. Safety, Care, and Handling. Safety precautions must be observed at all times while performing maintenance. General WARNINGS and first-aid data appear in the front of this manual. Review all safety information before starting any task. Carefully read through an entire maintenance procedure before performing any maintenance function. Make sure the task can be done safely. All WARNINGS, CAUTIONS, and NOTES are of great importance to your safety and the safety of the equipment.

SECTION III. PRINCIPLES OF OPERATION

Overview.

The Principles of Operation will give you basic information about how these two compressors work.

1-10. General. There are two QR-25, Model D340 air compressors, which are intended to supply air to the storage tanks. The two air compressors are mounted one over the other on the port side aft end of the engine room. The air pressure from each compressor is controlled by an individual pressure switch mounted near each compressor which is set to cut out at 200 psi (±5 psi). The bottom air compressor is set to start and operate at a minimum of 180 psi (±5 psi) and the top air compressor is set to start and operate at a minimum of 160 psi (±5 psi). The system pressure relief valves are set at 240 psi (±5 psi). The air compressors are controlled by a local start-stop switch located at the air compressor in the engine room. An emergency run switch is located at the motor controller located on the forward bulkhead of the engine room. The pilot house and engine room control consoles each have an air pressure gauge which displays system air pressure.

a. Air Compressor. The following is a brief summary of the QR-25, Model D340 air compressor assembly and the drive system, and a description of controls that are separate from the compressor assembly and drive system. Refer to FIGURE 1-2.

b. Air Cooling System. Refer to FIGURE 1-3.

(1) Drive Sheave (Pulley). The drive sheave (pulley) has cast iron fan blades that direct a blast of air across a finned intercooler, then across the finned cylinders and heads.

(2) Intercooler. The intercooler is an integral design of the air-cooled two-stage compressor. The intercooler consists of finned tubes connecting the first stage and the second stage. The tubes cool and condense the air.

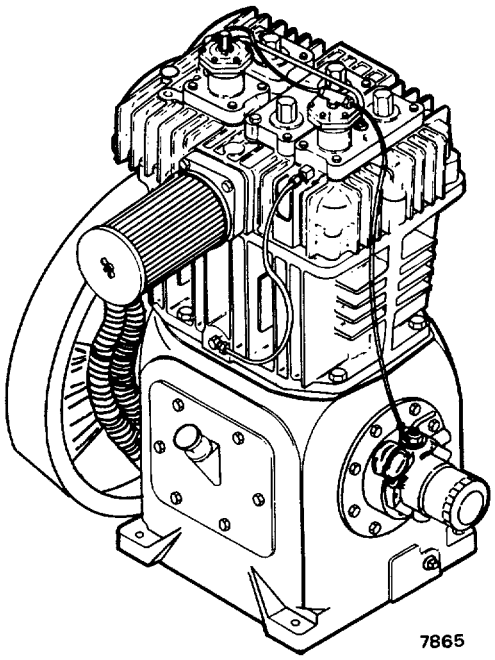


FIGURE 1-2. Air Compressor.

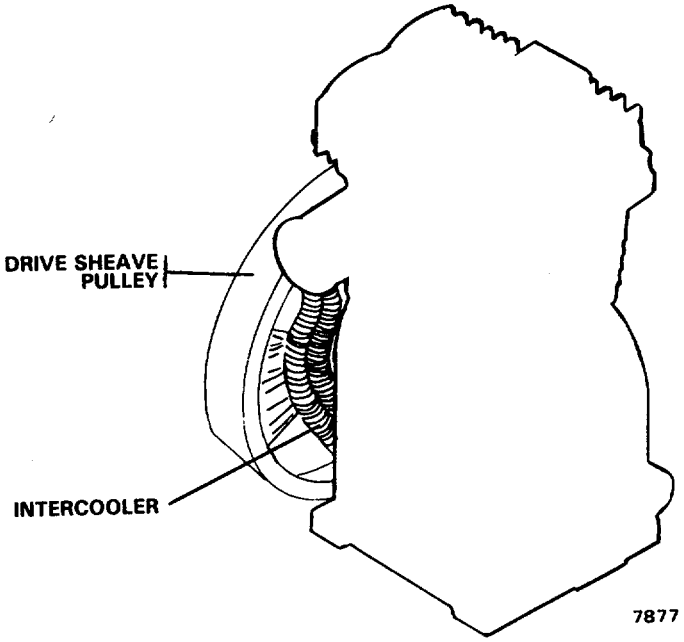


FIGURE 1-3. Air Cooling System.

c. Lubricating System. The crankcase rotating and reciprocating parts are lubricated by a positive displacement rotary gear type oil pump. Refer to FIGURE 1-4. Oil is drawn up from the crankcase oil sump through an oil strainer to the oil pump. The pump forces oil, under pressure, through the crankshaft and connecting rods to lubricate the crankpin journals, the main journals, the wrist pin bearings, and the cylinder walls.

(1) Oil Pump. The oil pump is an integral gear type pump with an adjustable pressure relief valve. Refer to FIGURE 1-5. It is flange-mounted, piloted to the oil pump housing, and direct driven by the crankshaft.

(2) Oil Pressure Gauge. Normal oil pressure is between 18 and 20 psig.

d. Drive Power. A motor pulley diameter is selected to obtain the pressure and air delivery without overloading the motor or operating the compressor beyond or below the designed speed range. The motor pulley is coupled to the compressor sheave using vee belts. Refer to FIGURE 1-6.

e. Hydraulic Unloader Valve. The hydraulic unloader valve permits the driving unit and compressor to attain full rated speed, and assures that oil pressure has been established before the compression of air begins. The hydraulic unloader valve is considered an integral part of the air compressor. Refer to FIGURE 1-7.

f. Mode of Control. Receiver or plant air system pressure is controlled within limits by automatically stopping and starting the compressor as the air pressure reaches a maximum preset pressure and then drops to a minimum preset pressure.

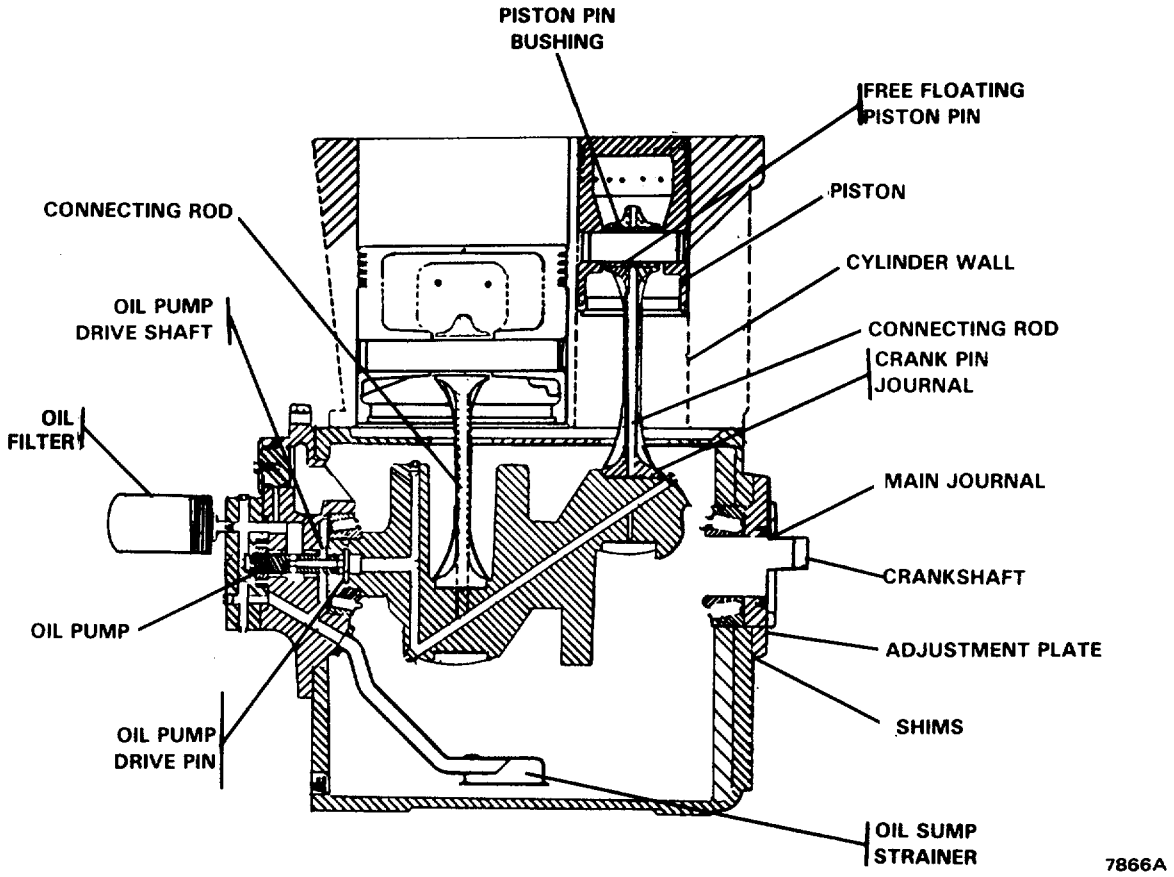


FIGURE 1-4. Lubricating System.

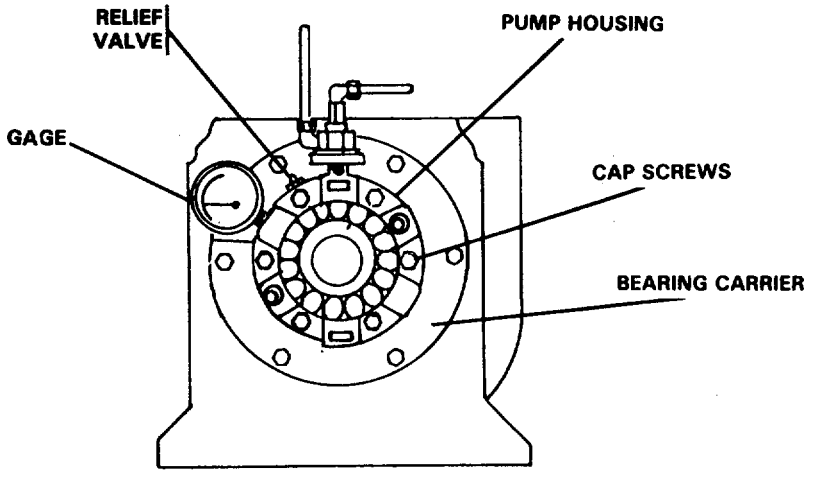


FIGURE 1-5. Crankcase Oil Pump Assembly.

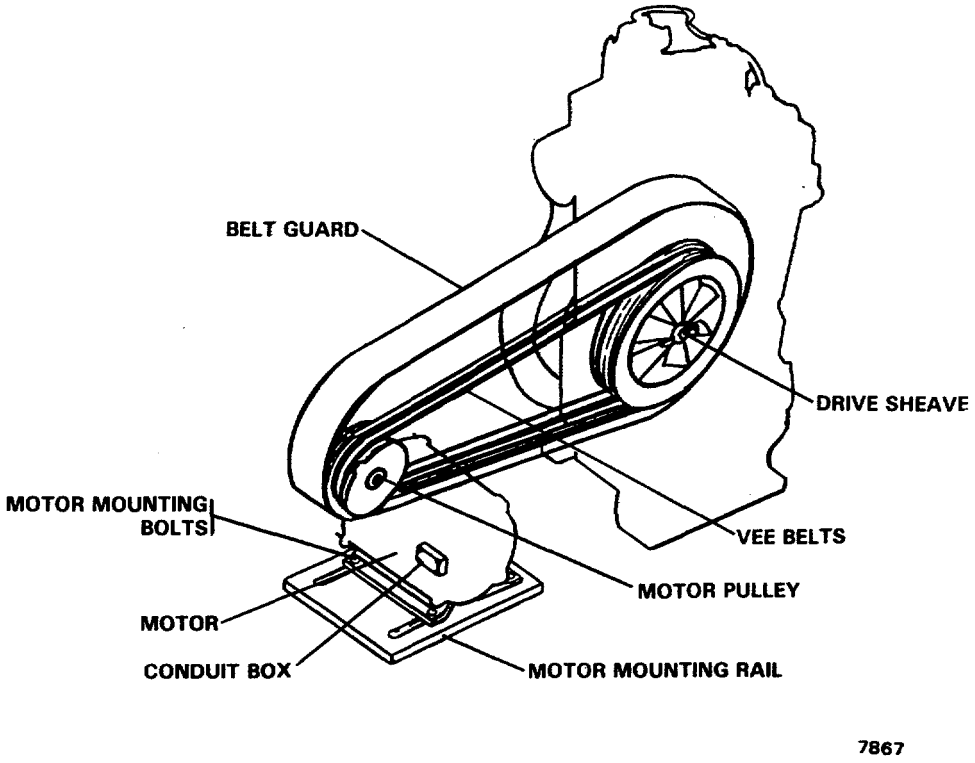


FIGURE 1-6. Drive Power.

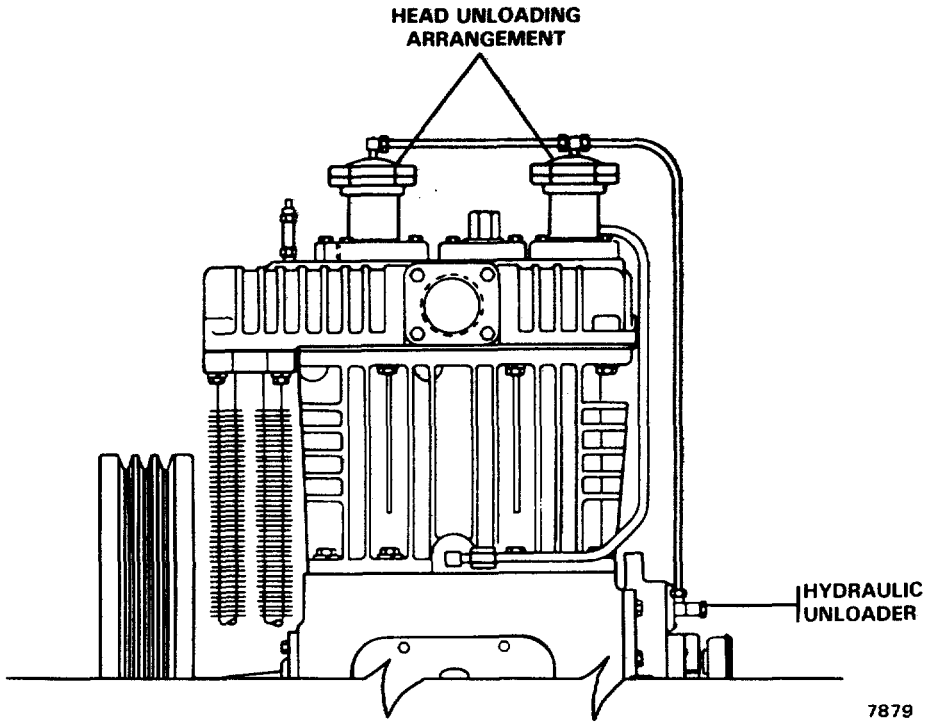


FIGURE 1-7. Hydraulic Unloader Valve.

CHAPTER 2

UNIT MAINTENANCE INSTRUCTIONS

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

2-1. Common Tools and Equipment. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your organization.

2-2. Special Tools, TMDE, and Support Equipment. Special tools; test, measurement, and diagnostic equipment; and support equipment requirements are listed and illustrated in the Repair Parts and Special Tools List (RPSTL), TM 55-1905-223-24P. These items are also listed in the Maintenance Allocation Chart (MAC), Appendix B of this manual.

2-3. Repair Parts. Repair parts are listed and illustrated in the Repair Parts and Special Tools List (RPSTL), TM 55-1905-223-24P.

SECTION II. SERVICE UPON RECEIPT

2-4. Checking Unpacked Equipment.

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage in accordance with the instructions of DA Pam 738-750.

b. Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA Pam 738-750.

c. Check to see whether the equipment has been modified.

d. Remove protective caps, plugs, inserts, wrappings, and tape when inspection/inventory is completed. Inspect piping openings for damage. Wipe off dirt, grease, or protective films at time of installation.

e. Remove chocks from resilient mounted components.

2-5. Initial Setup Procedure. Includes operational checks and inspections that are not performed for a routine startup. Direct support maintenance personnel will perform initial setup in accordance with the operator's manual, TM 55-1905-223-10.

2-6. Normal Startup. Refer to operator's manual, TM 55-1905-223-10.

2-7. Shutdown Procedure (Usual or Unusual). Refer to operator's manual, TM 55-1905-223-10.

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

2-8. Explanation of PMCS Table. PMCS is designed to keep the equipment in good working condition. This is accomplished by performing certain tests, inspections, and services. Table 2-1 lists items to be serviced and the procedures needed to accomplish the PMCS. The "Interval" column tells you when to perform a check or service. If needed, PMCS may be performed more frequently than the indicated interval. The "Procedures" column tells you how to perform the required checks and services. If your equipment does not perform as required, see Table 2-2, Troubleshooting. Report any malfunctions or failures on DA Form 2404. In the Item Number column on DA Form 2404, record the appropriate Item Number from the PMCS table.

Table 2-1. Preventive Maintenance Checks and Services

D - Daily W - Weekly M - Monthly Q - Quarterly S - Semiannually A - Annually

Item No.	Interval						Items To Be Checked / Serviced	Procedures
	D	W	M	Q	S	A		
1	•						Oil Tank	Caution DO NOT OVERFILL! Maintain between high and low level marks on liquid level red cap gauge.
2	•						Air Receiver	Drain moisture accumulation.
3	•						Air Distribution System	Drain moisture separator and traps.
4	•						Air Compressor	Give Compressor an overall visual inspection and ensure that safety guards are in place.
5	•						Oil Pressure	Check oil pressure when hot. Maintain 18 to 20 psig.
6	•						Air Compressor / Motor	Check for any unusual noise or vibration.
7	•						Air Compressor	Check oil for leaks
8	•						Valves	Operate the safety valves to be certain they are functioning.
9	•						Coolers	Clean the cooling surfaces of the intercooler and compressor.
10	•						Filter	Replace or clean air intake filter. Check more often if dirty conditions exist
11	•						Air Distribution System	Check the system for leaks.
12	•						Crankcase	Inspect oil for contamination and change if necessary. Check more often under dirty conditions. To change, place drain pan under compressor and remove drain plug (refer to LO 55-1905-223-12.

Table 2-1. Preventive Maintenance Checks and Services

D - Daily W - Weekly M - Monthly Q - Quarterly S - Semiannually A - Annually

Item No.	Interval						Items To Be Checked / Serviced	Procedures
	D	W	M	Q	S	A		
13		•					Belts	Check belt tension
14			•				Pulleys	Check pulley and pulley clamp screws or set screws for tightness.
15			•				Filters	Inspect felt filters in unloader pilot and hydraulic unloader.
16				•			Oil and Oil Filter	Change oil and oil filter.
17					•		Valves	Inspect compressor valves.
18					•		Motor	Inspect for excessive dirt or vibration.
19			•				Pressure Switch	Inspect pressure switch diaphragm and contacts for operation.
20						•	Points	Inspect contact points in motor starter.
21						•	Bearings	Check motor bearings for sufficient grease. Refer to LO 55-1905-223-12.

SECTION IV. UNIT MAINTENANCE TROUBLESHOOTING

2-9. Troubleshooting. Both a symptom index and a troubleshooting table are provided. The symptom index will help you locate the information you need for troubleshooting.

SYMPTOM INDEX

Table 2-2 lists the common fault conditions that may be found during operation or maintenance of the equipment. Look for causes and do corrective actions in the order listed. This manual cannot list every symptom that may show up, and it cannot list all the possible causes and corrective actions. If a symptom is not listed, or if it keeps up after you have performed the corrective actions, notify your supervisor.

Table 2-2. Troubleshooting

Malfunction Test or Inspection Corrective Action

1. Air receiver pressure excessive.

   STEP 1. Check for inaccurate air pressure gauge (TM55-1905-223-24-18).
   Replace gauge (TM 55-1905-223-24-18).

   STEP 2. Check for defective pressure switch.
   Replace switch (TM 55-1905-223-24-18).

2. Compressor knocks.

   STEP 1. Check for loose compressor valve assemblies.
   Secure if needed.

   STEP 2. Check for a loose pulley (sheave).
   Secure if needed.

   STEP 3. Check for inadequate crankcase lubrication.
   Add oil if needed.

3. Compressor loads and unloads excessively (RPMs fluctuate).

   STEP 1. Incorrect speed due to belt slipping.
   Tighten V-belt as required (paragraph 2-12).

   STEP 2. Check for excessive system air leakage from fittings, piping, or air tank.
   Locate air leaks and correct as required.

   STEP 3. Check for defective unloaders.
   Replace diaphragm and diaphragm disk (paragraph 3-16) or replace unloaders (paragraph 2-15).

Table 2-2. Troubleshooting - CONT

Malfunction Test or Inspection Corrective Action

4. Compressor overheats.

STEP 1. Check for excessive system leakage.
Secure all fittings and connections.

STEP 2. Check for inadequate lubrication.
Add oil (Table 2-1, PMCS, Item 1.)

STEP 3. Check for inadequate ventilation.
Remove any ventilation obstructions.

STEP 4. Check for wrong pulley rotation/installation.
Correct rotation.

STEP 5. Check for defective compressor valves.
Replace valves (paragraph 2-16).

5. Excessive belt wear.

STEP 1. Check for motor pulley and compressor pulley misalignment. See paragraph 2-11 for proper alignment.
Align pulleys (paragraph 2-11).

STEP 2. Check belt tension.
Adjust belts (paragraph 2-11).

STEP 3. Check to see if pulley is wobbling.
Secure or replace pulley (paragraph 2-26).

STEP 4. Check for damaged or rough pulley groove.
Replace pulley (paragraph 2-26).

6. Excessive current draw.

STEP 1. Check for loose electrical connections.
Secure all connections.

STEP 2. Check for low input voltage (less than 216 volts).
Troubleshoot switchboard and distribution circuits
(TM 55-1905-223-24-18).

STEP 3. Check for low oil pressure.
Check oil level gauge and add oil if needed (Table 2-1, PMCS, Item 1).

Table 2-2. Troubleshooting - CONT

Malfunction Test or Inspection Corrective Action

STEP 4. Check for binding internal components.
Replace pistons and crankshaft as needed (paragraphs 2-19, 2-21, and 2-26).

STEP 5. Check for defective motor. Use multimeter and check motor windings for an open or short condition.
Replace motor if either condition exists (paragraph 2-12).

7. Excessive oil consumption.

STEP 1. Check for overheating of compressor due to inadequate lubrication or loss of lubrication. Shut down and allow to cool (TM 55-1905-223-10).
Check for oil leaks and correct as required. Lubricate compressor (LO-55-1905-223-12).

STEP 2. Check for restricted air intake.
Clear air intake.

STEP 3. Check to see if oil level is too high.
Drain oil to proper level.

STEP 4. Check oil for proper viscosity.
Change oil using the correct viscosity (LO 55-1905-223-12).

8. Excessive vibration.

STEP 1. Check belt tension.
Adjust belts (paragraph 2-11).

STEP 2. Check for loose compressor or motor.
Secure all mounting bolts.

STEP 3. Check for loose pulley (sheave).
Secure pulley (paragraph 2-26).

STEP 4. Check for excessive discharge pressure.
Adjust pressure or replace valves.

9. Compressor fails to start.

STEP 1. Check to see if power is on.
Turn on power.

STEP 2. Check for loose or broken power wire.
Connect or replace wire (TM 55-1905-223-24-18).

Table 2-2. Troubleshooting - CONT

Malfunction Test or Inspection Corrective Action

STEP 3. Check if thermal overload is tripped.
Reset thermal overload.

STEP 4. Check for correct power at motor.
Restore correct power (TM 55-1905-223-24-18).

STEP 5. Check for defective motor.
Replace motor (paragraph 2-12).

10. Low discharge pressure and air delivery.

STEP 1. Check for open drain valve.
Close valve.

STEP 2. Check for leaks in the plant air system.
Secure all fittings and connections.

STEP 3. Check for leaking safety valve.
Replace valve.

STEP 4. Check for slipping belts.
Secure belts.

STEP 5. Check for restricted air inlet filter or suction line.
Remove restriction from inlet filter or suction line.

STEP 6. Check for defective pressure gauges.
Replace piping gauges (TM 55-1905-223-24-18).

STEP 7. Check for leaking head gasket.
Replace head gasket (paragraph 2-14).

STEP 8. Check for loose or defective compressor valve.
Replace valves (paragraph 2-16).

STEP 9. Check for defective unloader.
Replace unloader (paragraph 2-15).

Table 2-2. Troubleshooting - CONT

Malfunction Test or Inspection Corrective Action
11. Low oil pressure.
STEP 1. Check for low oil level in crankcase. Add oil to the proper level.
STEP 2. Check for leaks, Tighten as necessary.
STEP 3. Check for plugged oil sump strainer. Clean sump strainer and change oil.
STEP 4. Check for defective oil pressure gauge. Replace gauge (paragraph 2-23).
STEP 5. Check oil viscosity. Change oil.
12. Motor stalls.
STEP 1. Check for proper voltage to the motor with a multimeter. If low voltage is found, check voltage at motor controller (TM 55-1905-223-24-18).
STEP 2. Check for defective motor. Use multimeter and check windings for OPEN or SHORT. Replace motor (paragraph 2-12).

SECTION V. UNIT MAINTENANCE PROCEDURES

MAINTENANCE OF AIR COMPRESSOR

2-11. Replace Air Compressor Assembly.

This task covers: a. Adjust, b. Removal, c. Replacement.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273

Equipment Condition

TM 55-1905-223-10, power secured and
no pressure in system.

Materials/Parts

Tags, Item 9, Appendix C
Air compressor, P/N 40092
Pry bar, Item 7, Appendix C

ADJUST (FIGURE 2-1)

a. Remove belt guard (1).

b. Loosen alternating current motor mounting bolts (5).

c. Correct any misalignment, bend, kink in belts (3).

d. Using a pry bar, move motor (4) away from air compressor (2) to tighten belts and tighten mounting bolts (5). Use the following procedure to determine deflections.

(1) Use straight edge and measuring device to measure the distance between the center of the pulley on the air compressor and the center of the pulley on the electric motor.

(2) Divide the measurement in half to find the center.

(3) Using straight edge and measuring device centered on the belt between pulleys, depress (deflect) the belt 1/64 inch per inch of span. For example, if the span is 2 feet (24 inches), deflect the belt 24/64 or 3/8 of an inch. Measure the force required to deflect the belt.

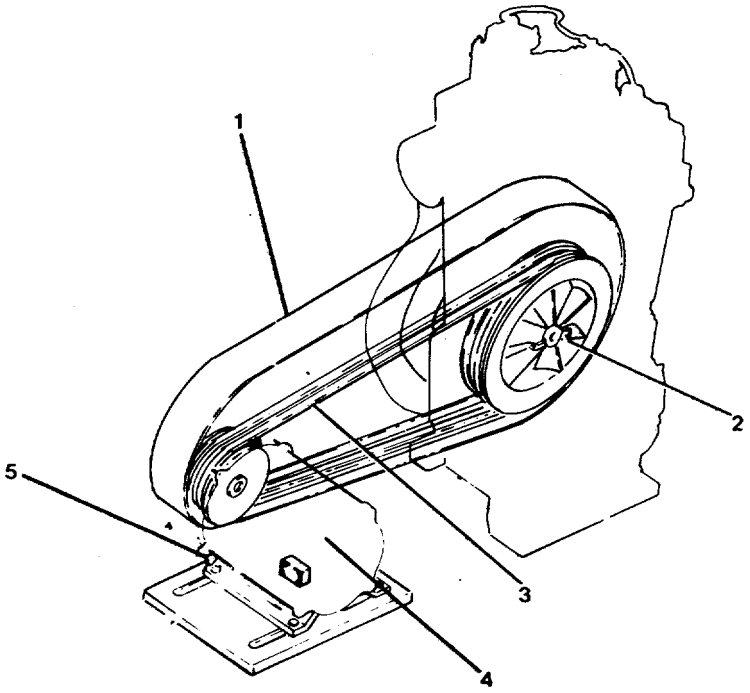


FIGURE 2-1. Belts and Guard.

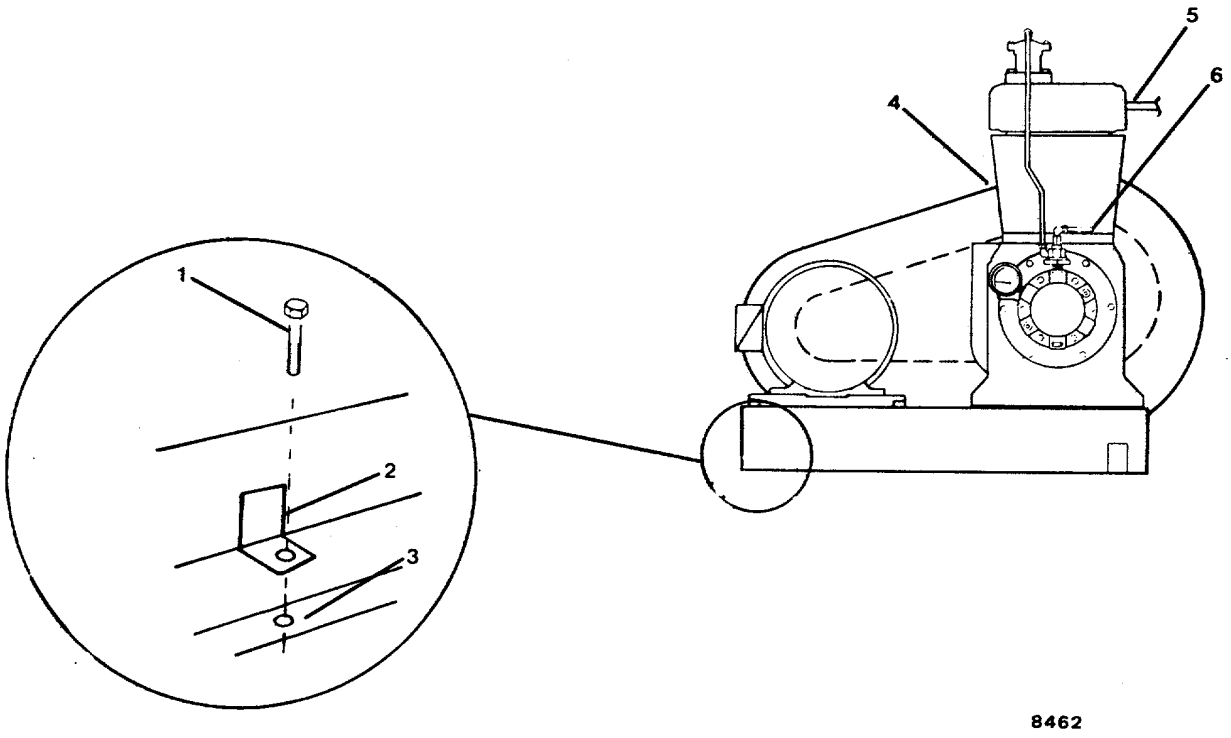


FIGURE 2-2. Air Compressor Assembly.

(4) Compare this deflection force with the ranges of forces given in Table 2-3.

(a) If the deflection force is less than the minimum, the belt should be tightened.

(b) If the deflection force is more than the maximum, the belt should be loosened.

(c) New belts should be checked frequently until their deflection stabilizes.

Table 2-3. Recommended Deflection Forces

Small Pulley Diameter Range	Recommended Deflection Force, Lbs. Minimum	Maximum
3.0" - 3.2"	2.3	3.2
3.4" - 3.6"	2.5	3.6
3.8" - 4.2"	2.9	4.2
4.6" - 7.0"	3.5	5.1
4.6"	4.0	5.9
5.0" - 5.4"	4.5	6.7
5.6" - 6.4"	5.0	7.4
6.8" - 9-4"	5.8	8.6
7.0"	7.1	10
7.5" - 8.0"	7.9	11
8.5" - 10.0"	9.3	13
10.5" - 16.0"	11	16

REMOVAL (FIGURE 2-2)

a. Tag and disconnect external electrical wiring to air compressor assembly motor (4).

b. Disconnect, air outlet line (5) and unloader air line connection (5).

c. Remove four bolts (1) from frame (3) and mounting bracket (2).

d. Remove air compressor assembly (4).

REPLACEMENT (FIGURE 2-2)

a. Set replacement air compressor assembly (4) in place.

b. Install four bolts (1) through mounting bracket (2) to frame (3).

c. Connect onloader air line connection (6) and air outlet line (5).

d. Connect electrical wiring to proper terminals on air compressor assembly motor (4).

2-12. Replace Alternating Current Motor. (FIGURE 2-3)

This task covers: a. Removal, b. Replacement.

INITIAL SETUP

Tools

Tool kit, general mechanic's, 5180-00-699-5273
Tool kit, electrician's, 5180-00-391-1087
Standard puller, P/N ST-647

Materials/Parts

Conduit box P/N P-90-A-213T-45
Motor assembly P/N P-90-A-213T
Vee belts P/N 110258B081
Gasket P/N P-90-A-213T-46

Equipment Condition

TM 55-1905-223-10, power to alternating current motor secured, tagged "Out Service - Do Not Operate."

REMOVAL

a. Remove belt guard (1) as follows.

(1) Remove bolts, nuts, and washers (2, 6) and remove upper half of guard (4).

(2) Remove bolts and washers (3, 5) and remove bottom half of guard (4).

b. Remove four acorn nuts (12) from conduit box (17) and remove cover (19) and gasket (18).

c. Disconnect electrical connections and tag.

d. Remove screw.(14) from grounding lug (15).

e. Remove four studs (13) holding the conduit box (17) to the motor frame.

f. Move conduit box away from motor frame.

g. Remove conduit box (17) and conduit box gasket (16). Discard gasket.

h. Remove four motor mounting bolts (21), nuts (22), and washers (23).

i. Slide motor (20) toward compressor drive sheave (7) and remove vee belts (8).

j. Remove motor (20) from motor mounting rail (10).

k. Remove two bolts (24) and washers (25) and remove pulley (9) from motor shaft.

l. Remove the woodruff key from spline in motor shaft.

REPLACEMENT

a. Place woodruff key in motor shaft spline and slide pulley (9) on motor shaft.

b. Secure pulley (9) on motor shaft with two bolts (24) and washers (25).

c. Set motor (20) on motor mounting rail (10).

d. Install the four motor mounting bolts (21), nuts (22), and washers (23). Do not completely tighten.

e. Install vee belts (8).

f. Adjust vee belt tension by sliding motor (20) away from compressor drive sheave (7). Use adjust procedure in paragraph 2-11.

NOTE

New belts should be frequently monitored, as some new belts have a tendency to stretch.

g. Tighten the four motor mounting bolts (21) and nuts (22) firmly.

h. Place conduit box gasket (16) against motor frame.

i. Place motor leads through hole in replacement conduit box (17).

j. Align conduit box holes with those in motor frame and fasten conduit box (17) to motor with four studs (13).

k. Install screw (14) in grounding lug (15).

1. Remove tags and make electrical connections.

m. Install conduit box gasket (18) and cover (19) with four acorn nuts (12).

n. Install belt guard (1) as follows:.

(1) Mount lower half of guard (4) with bolts and washers (3, 5). Do not tighten screws until guard is adjusted.

(2) Install upper half of guard (4) with bolts, nuts and washers.(2, 6).

(3) Adjust the guard by sliding it up or down as required to keep it clear of belts and pulleys. Tighten bolts and washers (3, 5) firmly.

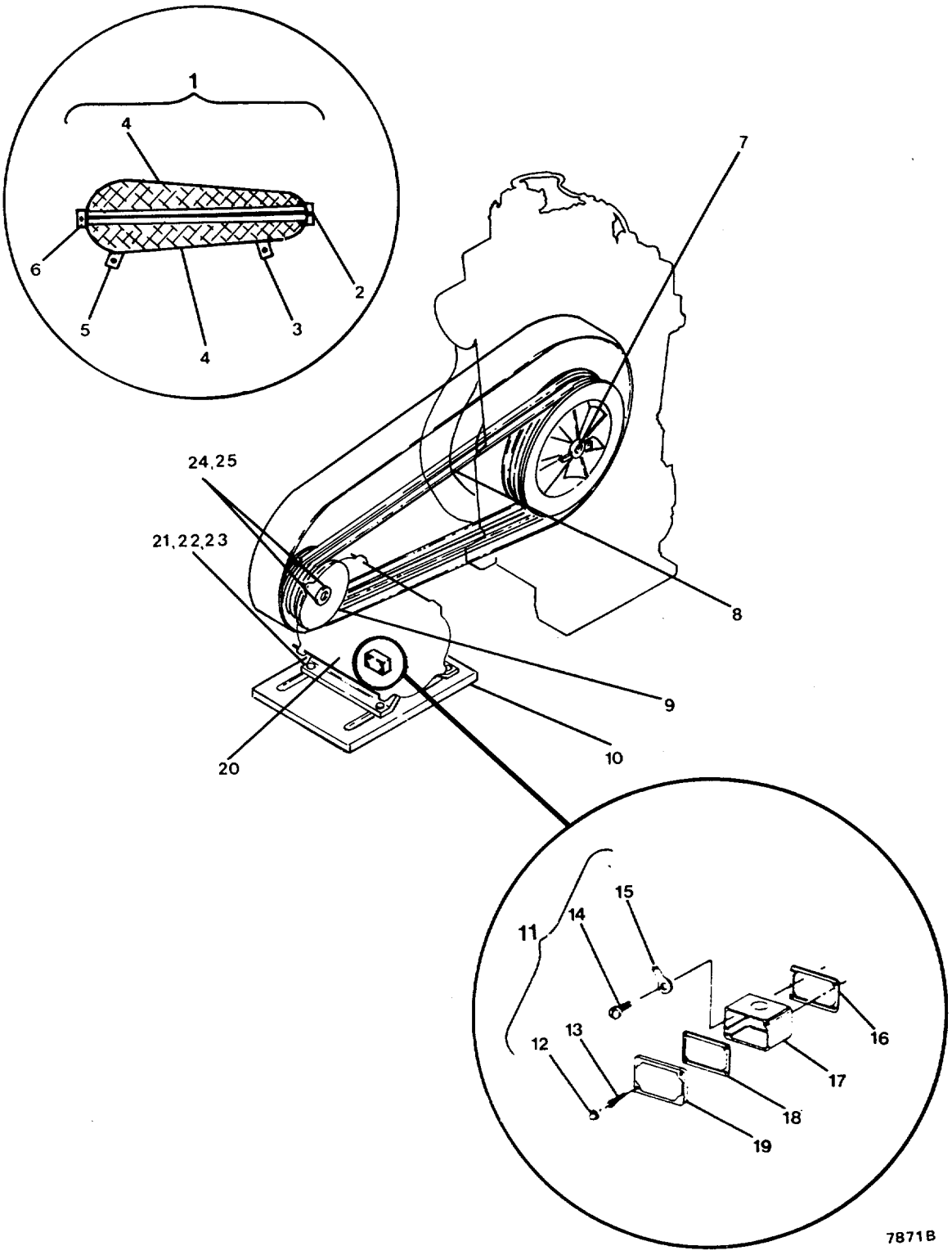


FIGURE 2-3. Motor Assembly.

2-13. Replace Hydraulic Unloader Assembly. (FIGURE 2-4)

This task covers: a. Removal, b. Replacement.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273

Equipment Condition

TM 55-1905-223-10, shut down with discharge air valve to compressed air system closed.
Electrical power secured and tagged "Out of Service - Do Not Operate".

Materials/Parts

Hydraulic unloader assembly
P/N 110827-001

WARNING

Bleed compressed air from system prior to performing any maintenance. Compressed air systems can cause serious injury.

REMOVAL

a. Disconnect outlet air pipe (1) from elbow (4).

b. Disconnect inlet air pipe (2) from elbow (4).

c. Remove hydraulic unloader assembly (3) by turning counterclockwise.

d. Place hydraulic unloader assembly (3) in vise.

e. Remove two elbows (4) from hydraulic unloader assembly (3).

f. Remove hydraulic unloader assembly (3) from vise.

REPLACEMENT

a. Place new hydraulic unloader assembly (3) in vise.

b. Install two elbows (4) in replacement hydraulic unloader assembly (3).

c. Remove replacement hydraulic unloader assembly (3) from vise and install on air compressor.

d. Connect air pipe (2) to elbow (4).

e. Connect air pipe (l) to elbow (4).

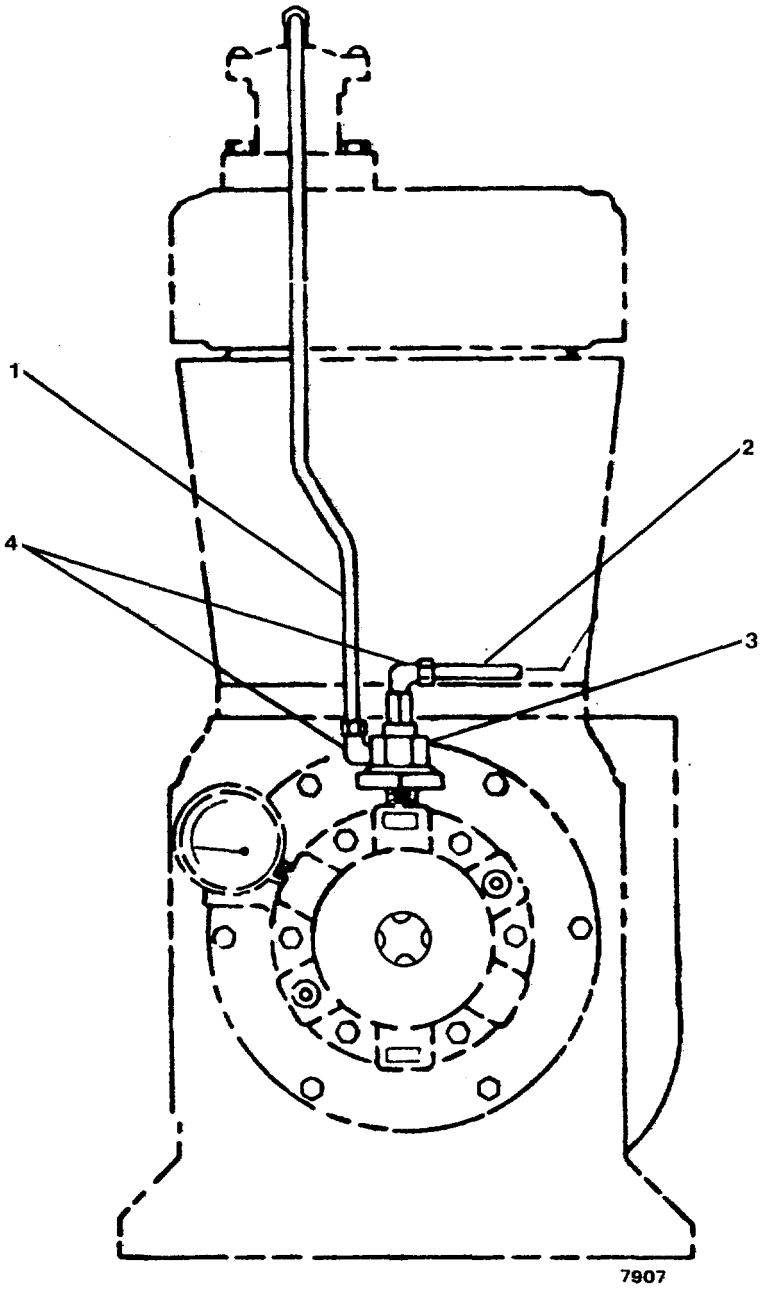


FIGURE 2-4. Hydraulic Unloader Assembly.

2-14. Replace Cylinder Block and Head Assembly. (FIGURES 2-5 and 2-6)

This task covers: a. Removal, b. Replacement.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273
Torque wrench kit
P/N 3377216
Piston compressor
5120-00-116-7676

Equipment Condition

TM 55-1905-223-10, power OFF,
system drained.
Crankcase oil drained (PMCS
Table 2-1, Item 12).

Materials/Parts

Head assembly P/N 6661X31L
Gaskets P/N 1315, 5827
Lubricating oil, Item 5, Appendix C

REMOVAL

a. Remove unloader and valve assemblies and tubing (paragraph 2-13).

b. Remove 12 hex head screws (4) and inspection plates (3) from crankcase housing (1). Remove gaskets (2) and discard.

c. Inside crankcase housing, remove four locknuts (12) and washers (13) from connecting rod assembly bolts (7).

d. Remove lower connecting rod caps (11) and bearing sleeves (10) from crankshaft (9).

e. Remove eight hex head screws (18) and washers (19) from cylinder block (20).

f. Remove cylinder block and head assembly (20, 23) by lifting up and off of the crankcase housing (1).

g. Remove gasket (21) and discard.

h. Remove upper bearing sleeves (8) from crankshaft (9).

i. Remove seven counterbore screws (16) and washers (17) that secures the cylinder block to the head assembly.

j. Remove five counterbore screws (14) and washers (15). Separate the cylinder block from the head assembly.

k. Remove gasket (22) and discard.

l. Remove piston assemblies (5, 6) with connecting rod bolts (7) from inside cylinder block (20) by pushing up and out top of cylinder block.

REPLACEMENT

a. Pre-lube the piston assemblies by coating with clean lubricating oil and install piston assemblies (5, 6) with connecting rod bolts (7) by pushing down through the top of the cylinder block (20) using ring compressor.

b. Place gasket (22) on top of the cylinder block.

c. Place head assembly (23) on top of the cylinder block (20) and secure with five counterbore screws (14) and washers (15). Install seven counterbore screws (16) and washers (17) to secure the cylinder block to the head assembly.

d. Torque all screws as shown in torque sequence (FIGURE 2-6) to 65 ft-lbs.

e. Install upper bearing sleeves (8) on crankshaft (9).

f. Place gasket (21) on top of crankcase housing (1).

g. Place cylinder block and head assembly (20, 23) on top of crankcase housing (1).

h. Secure to crankcase housing with eight hex head screws (18) and washers (19). Torque to 75 ft-lbs.

i. Install lower bearing sleeves (10) and connecting rod caps (11).

j. Secure to connecting rod bolts (7) with four washers (13) and locknuts (12). Torque to 40 ft-lbs.

k. Replace gaskets (2) and secure inspection plates (3) to crankcase housing (1) with 12 hex head screws (4). Tighten screws firmly.

l. Install unloader and valve assemblies and tubing (paragraph 2-13).

m. Fill crankcase with oil, refer to LO 55-1905-223-12.

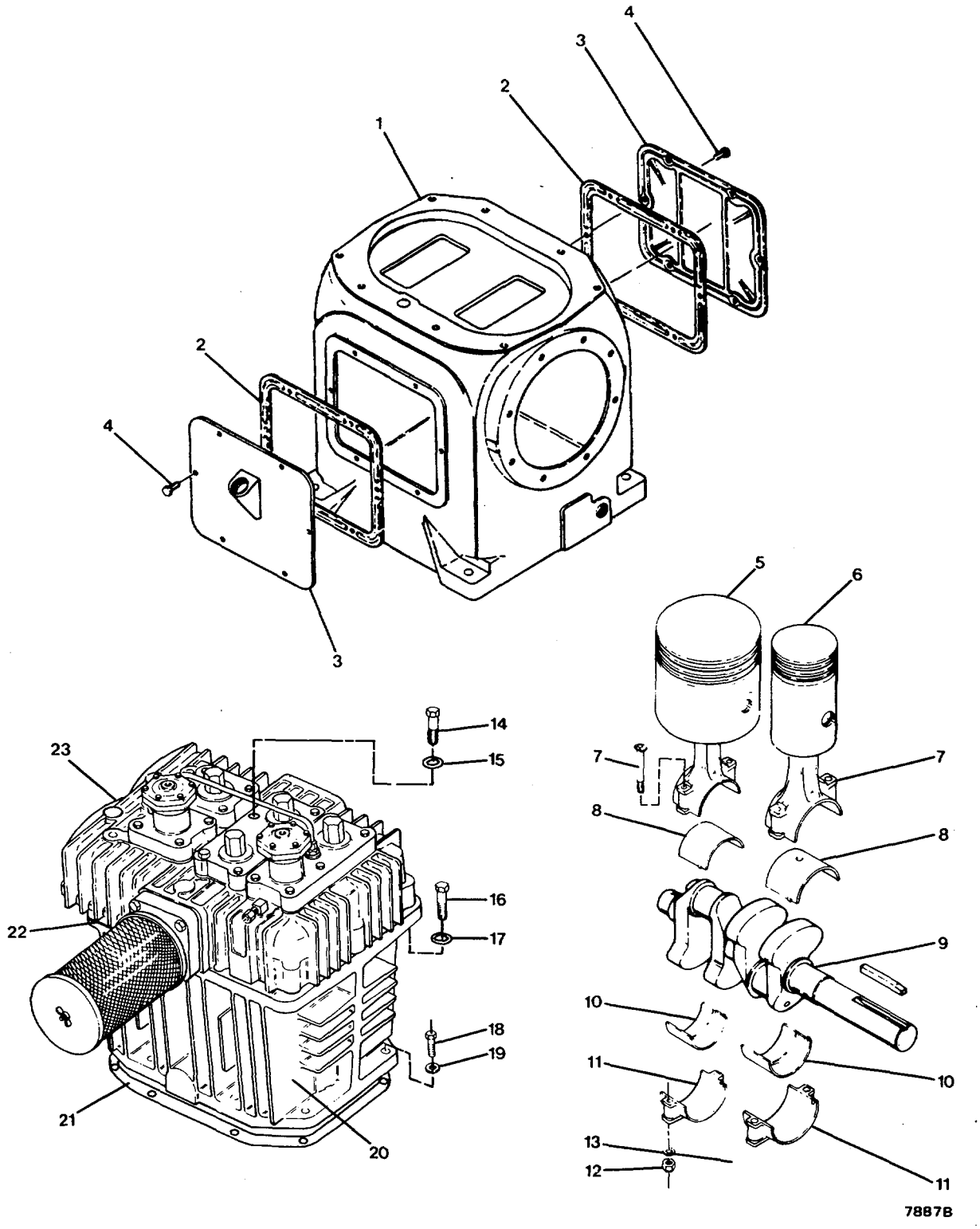


FIGURE 2-5. Cylinder Block and Head Assembly.

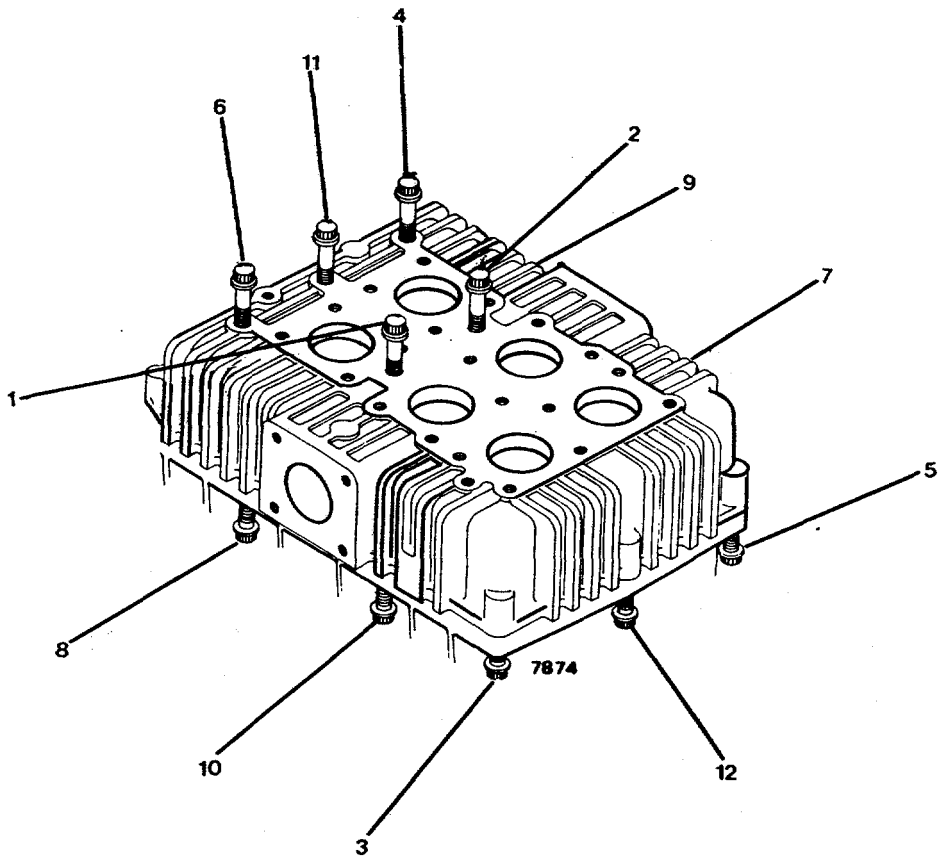


FIGURE 2-6. Screw Tightening Sequence

2-15. Replace Unloader Body Assembly. (FIGURE 2-7)

This task covers: a. Removal, b. Replacement.

INITIAL SETUP

Tools

Tool kit, general mechanic's, 5180-00-699-5273
Torque wrench kit P/N 3377216

Equipment Condition

TM 55-1905-223-10, power OFF, system drained.

Materials/Parts

Unloader body assembly P/N 40055, 40192

REMOVAL

a. Disconnect tubing connections (1) from unloader body assembly (2) and valve cover plate (3).

b. Remove pipe to tube elbow (8) from compressor unloader body (9).

c. Remove six hex head capscrews (5) from cover (6).

d. Remove cover (6) and flat valve diaphragm (7).

e. Unscrew compressor unloader body (9) from self-locking screw (11) which is seated in high pressure plate (4).

f. Remove compressor unloader body (9), being careful not to extract the piston unloader (10) from the valve assembly.

REPLACEMENT

a. Place compressor unloader body (9) on self-locking screw (11) and screw into high pressure plate (4) by turning counterclockwise. Torque to 60 ft-lbs. Make sure that piston unloader (10) is centered inside compressor unloader body.

b. Replace flat valve diaphragm (7) and cover (6). Secure with six hex head capscrews (5). Torque to 6 ft-lbs.

c. Screw pipe to tube elbow (8) into side of compressor unloader body (9).

d. Connect tubing connections (1) to covers (2, 6) and valve cover plate (3).

e. Restore air pressure to the compressor, refer to TM 55-1905-223-10.

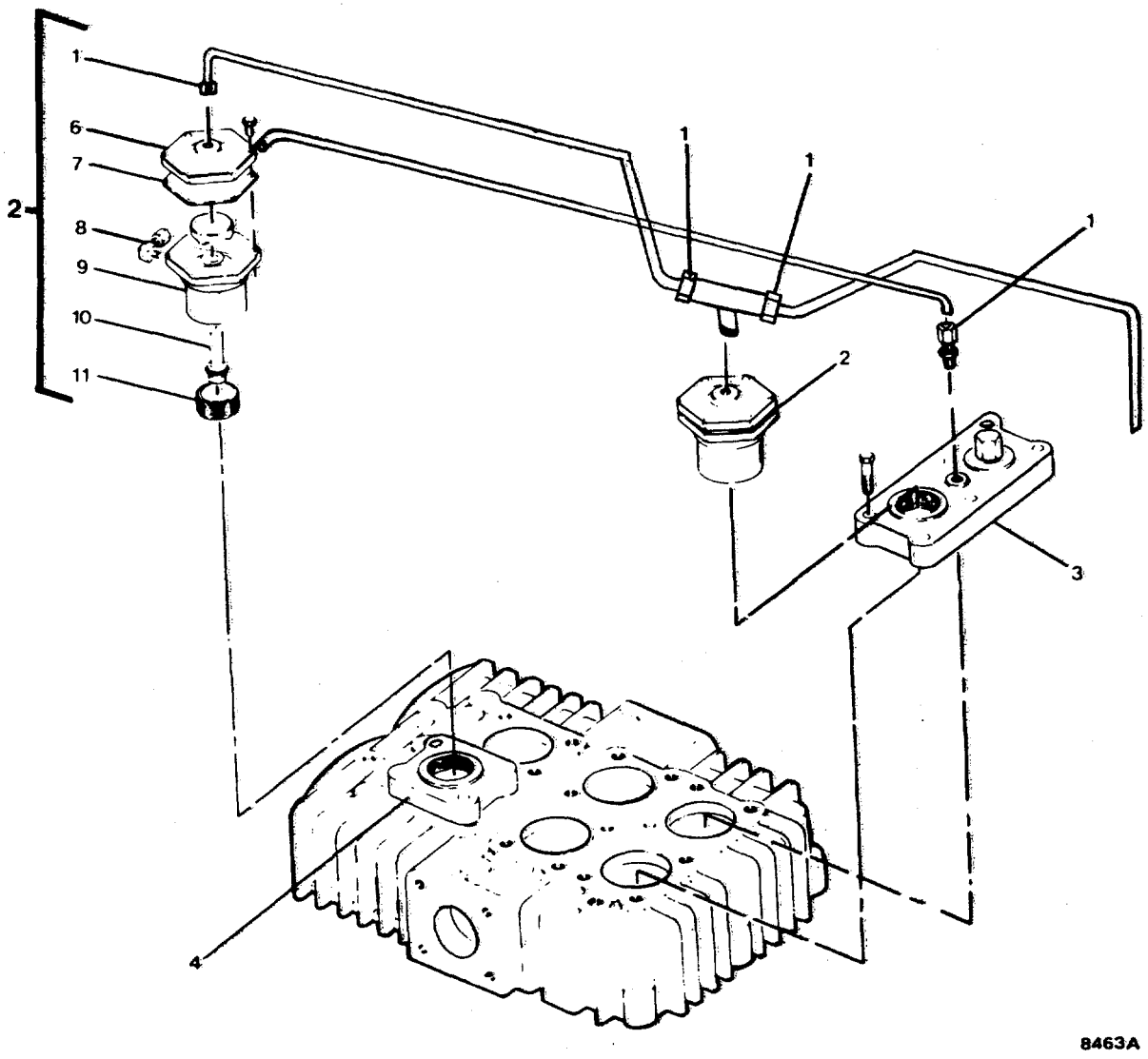


FIGURE 2-7. Replace Unloader Body Assembly.

2-16. Replace Valve Assembly.

This task covers: a. Removal, b. Replacement.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273
Torque wrench kit
P/N 3377216

Equipment Condition

Unloader body removed (para. 2-15).
Tubing disconnected (para. 2-15).

Materials/Parts

Valve assembly-suction P/N 7277X
Spacer ring P/N 1848
Valve assembly-discharge P/N 7271X
Gaskets P/N 1852, 6682

REMOVAL

a. Remove unloader body assemblies and tubing (paragraph 2-15).

b. Extract unloader pistons (10, FIGURE 2-7) from valve covers (3, 4). Remove self-lock screws (11).

c. Remove sleeve nuts (22, 23, FIGURE 2-8) and setscrews (21) for cover plate(37).

d. Remove sleeve nut (13) and setscrew (21) from cover plate (12).

e. Remove sleeve nut (39) and setscrew (21) from cover plate (40).

f. Remove cover plates and gaskets as follows:

(1) Remove four capscrews (2) and remove valve cover (1) and gasket (3). Discard gasket.

(2) Remove four capscrews (14) and remove valve cover (12) and gasket (15). Discard gasket.

(3) Remove six capscrews (20) and remove valve cover (37) and gasket (24). Discard gasket.

(4) Remove six capscrews (38) and remove valve cover (40) and gasket (41). Discard gasket.

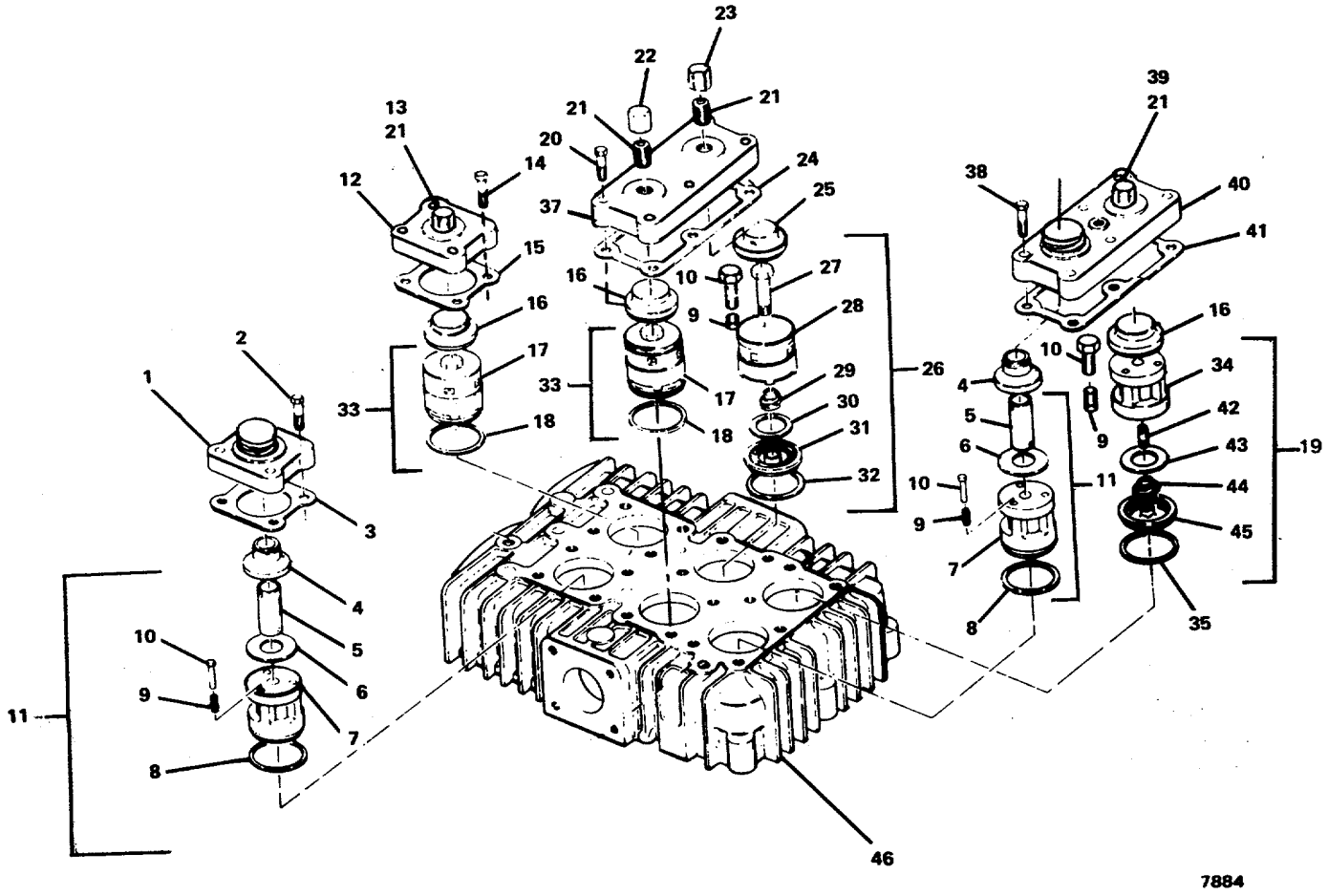


FIGURE 2-8. Replace Valve Assembly.

g. Remove suction (compressor) valve assemblies as follows:

(1) Remove the two suction valve assemblies (11).

(a) Remove valve retainer (4) from each valve assembly (11).

(b) Remove pin (5) and unloader platform (6) from each valve assembly (11).

(c) Remove straight head pin (10) and helical compression spring (9) from each valve bumper (7).

(d) Remove valve bumper (7) and ring spacer (8) from compressor head (46).

(2) Remove the discharge (compressor) valve (26).

(a) Remove straight head pin (10) and helical compression spring (9) from valve bumper (28).

(b) Remove valve bumper (28) and spacer ring (32) from compressor head (46).

(3) Disassemble discharge valve bumper (28) as follows:

(a) Remove retainer valve (25).

(b) Remove shoulder bolt (27).

(c) Remove valve seat (31), thrust washer bearing (30), and helical spring (29).

h. Remove suction (intake) valve assembly (19) as follows:

(1) Remove retainer valve (16).

(2) Remove pin (10) and helical compression (9) from each valve seat (34).

(3) Remove valve seat (34) and ring spacer (35) from compressor head (46).

(4) Disassemble suction valve seat (34) as follows:

(a) Remove reed valve plate (45).

(b) Remove helical springs (44), thrust washer bearing (43), and plain stud (42).

(5) Remove ring spacer (35) from compressor head (46).

i. Remove two discharge assemblies as follows:

(1) Remove valve retainer (16) from each valve assembly (33).

(2) Remove valve (17) from each assembly (33).

(3) Remove valve (17) and ring spacer (18) from compressor head (46).

REPLACEMENT

CAUTION

Ensure that intake valves open toward the cylinder and discharge valves away.

a. Install suction (intake) valves (11, 19) as follows:

(1) Install ring spacers (8, 35) inside compressor head (46).

(2) Assemble all three valve seat assemblies as follows:

(a) Seat helical compression spring (44) in reed valve plate (45). Place on top of ring spacer (35).

(b) Screw plain stud (42) clockwise into reed valve plate (45). Place thrust washer bearing (43) on top of reed valve plate (45).

(c) Screw valve seat (34) clockwise onto top half of plain stud (42).

(d) Place suction valve assembly (19) on top of ring spacer (35).

(e) Install helical compression spring (9) and straight head pin (10). Install valve spacer (16).

(f) Install helical compression spring (9) and straight head pin (10) into valve bumper (7).

(g) Install unloader platforms (6) and pins (5).

(h) Install valve retainers (4).

(i) Place valve assemblies (11) on top of ring spacers (8).

b. Install discharge (compressor) valve assemblies as follows:

(1) Install valve assembly (26):

(a) Install ring spacer (32) inside compressor head (46).

(b) Assemble valve bumper assembly (28) as follows:

(1) Install compression spring (9) and straight head pin (10).

(2) Seat helical compression spring (29) in valve seat (31). Place on top of ring spacer (32).

(3) Place thrust washer bearing (30) on top of valve seat (31).

(4) Install shoulder bolt (27) through valve bumper (28). Screw valve seat (31) clockwise onto threads of shoulder bolt (27).

(c) Place discharge valve assembly (26) on top of ring spacer (32).

(d) Install valve spacer (25).

(2) Install discharge (compressor) valve assemblies (33) as follows:

(a) Install ring spacers (18) inside compressor head (46).

(b) Place discharge valve assemblies (33) on top of ring spacers (18).

(c) Place valve retainers (16) on top of valve assemblies (33).

c. Install all valve covers and gaskets as follows:

(1) Place new gasket (41) on compressor head (46) and install valve covers (40) with six capscrews (38). Torque to 50 ft-lbs.

(2) Place new gasket (24) on compressor head (46) and install valve covers (37) with six capscrews (20). Torque to 50 ft-lbs.

(3) Place new gasket (14) on compressor head (46) and install valve covers (12) with four capscrews (14). Torque to 50 ft-lbs.

(4) Place new gasket (3) on compressor head (46) and install valve covers (1) with four capscrews (2). Torque to 50 ft-lbs.

d. Install set screw (21) in cover plate (40). Torque to 60 ft-lbs. Install sleeve nut (39) and tighten until snug.

e. Install set screw (21) in cover plate (12). Torque to 60 ft-lbs. Install sleeve nut (13) and tighten until snug.

f. Install two set screws (12) in cover plate (37). Torque to 60 ft-lbs. Install two sleeve nuts (22, 23) and tighten unit snug.

g. Install self-locking screws (11, FIGURE 2-7) in cover plates (3, 4). Seat unloader pistons (10) in openings of cover plates (3, 4).

h. Install unloader body assemblies and tubing (paragraph 2-15).

2-17. Replace Valve Assembly, Compressor.

Replacement of compressor (discharge) valve assemblies is included in paragraph 2-16.

2-18. Replace Unloader Assembly.

Replacement of the unloader (piston) assembly is included in paragraph 2-16.

2-19. Replace Connecting Rod and Low Pressure Piston Assembly.

This task covers: a. Removal, b. Replacement.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273
Piston compressor,
5120-00-116-7676

Equipment Condition

Cylinder head and block assembly removed
(para. 2-14).

Materials/Parts

Connecting rod and low pressure
Piston assembly P/N 110749
Wiping rags, Item 3, Appendix C
Lubricating oil, Item 5, Appendix C

REMOVAL

Pull low pressure piston and connecting rod assembly (2, FIGURE 2-9) from bottom of cylinder block assembly (1).

REPLACEMENT

CAUTION

Exercise care while inserting connecting rod and piston to avoid scratching cylinder wall.

a. Insert piston (2) into cylinder (1) using the following procedure:

(1) Coat all parts with clean lubricating oil before installing. Stagger rings and pre-lube pistons.

(2) Cover connecting rod with rag to prevent scratching cylinder lining.

(3) Make sure the gaps in the rings are staggered around the piston when installing.

(4) Place piston compressor (3, FIGURE 2-10) around piston (4).

(5) Insert piston with connecting rod (5) into cylinder (6).

(6) Wrap a rag (1) around hammer or mallet handle (2) (from tool kit) and push piston into cylinder. Do not hammer or drive piston into position. Recheck and ensure piston is placed directly over cylinder. If it still does not go into position, remove and check piston rings on piston for cracks. Replace as needed. See para. 3-19.

b. When piston is seated in cylinder, pull downward to ensure piston edge is below top of cylinder block.

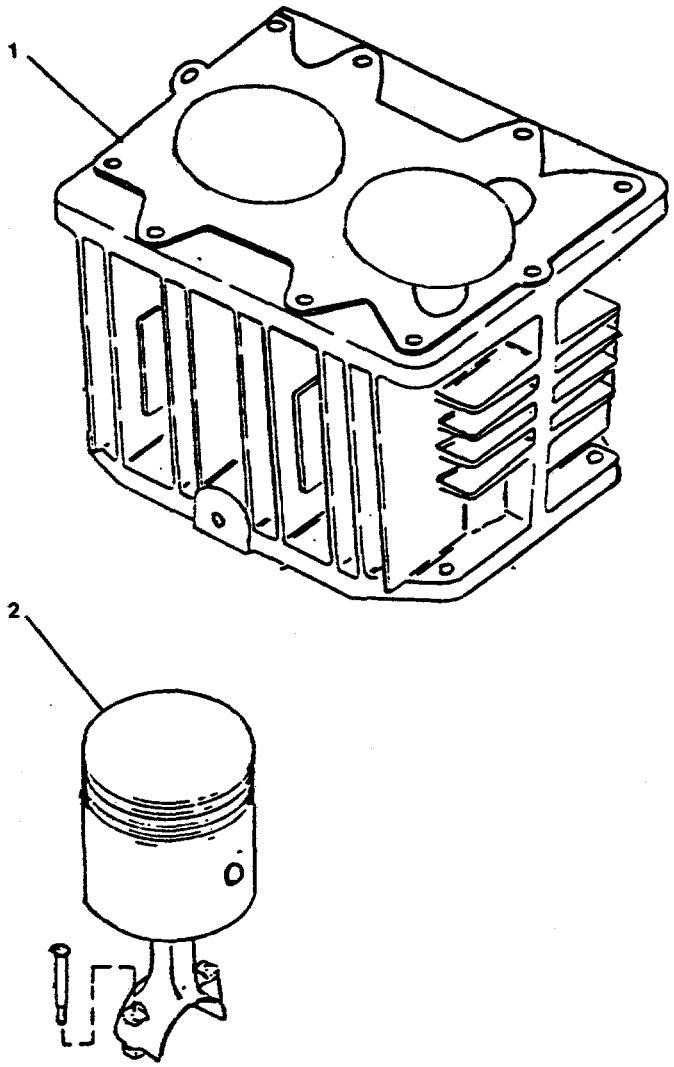


FIGURE 2-9. Piston Rod and Low Pressure Piston Assembly

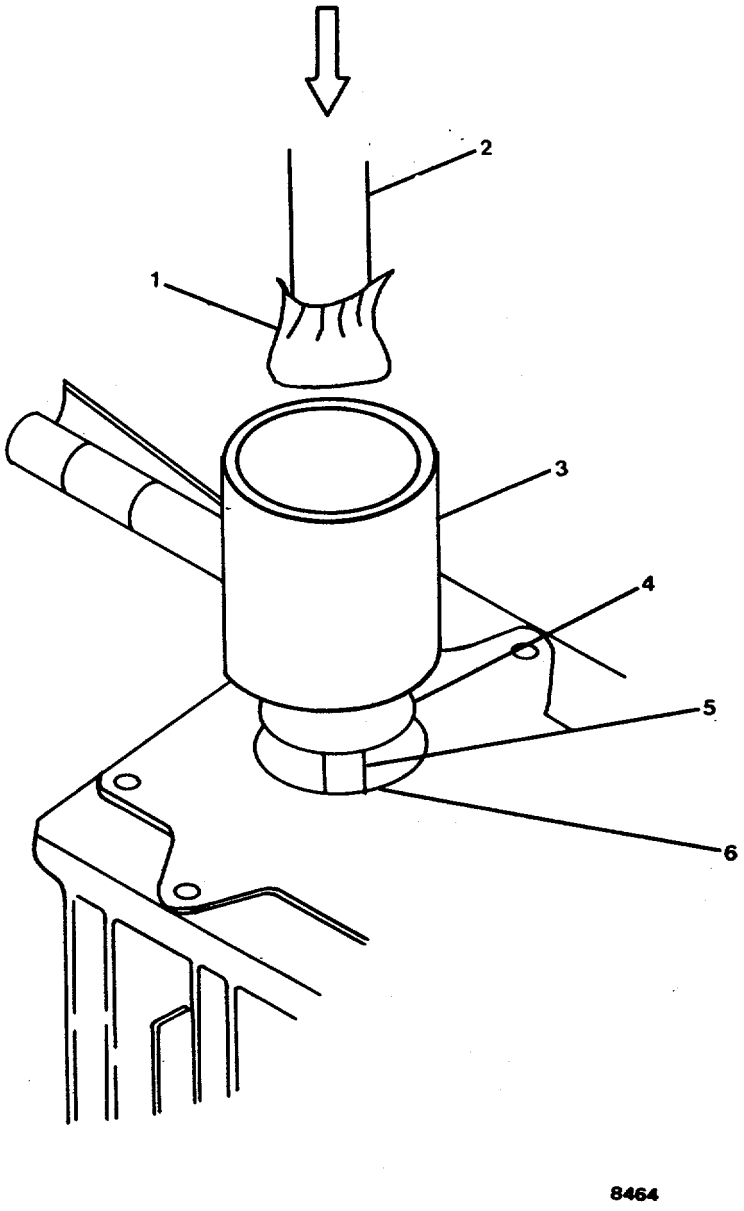


FIGURE 2-10. Installing Piston.

2-20. Replace Connecting Rod Assembly Low Pressure and Piston Assembly.

This task covers: a. Removal, b. Replacement.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273

Equipment Condition

Connecting rod and low pressure
piston assembly removed (para. 2-19).

Materials/Parts

Connecting rod assembly,
P/N 40081
Lubricating oil, Item 5, Appendix C

REMOVAL

a. Remove retaining ring (2, 5) from piston (3).

b. Remove piston pin (4).

c. Pull connecting rod (6) from piston, and remove bushing (1).

REPLACEMENT

a. Install bushing (1) in connecting rod and connecting rod in piston.

b. Install pre-lubed piston pin (4).

c. Install retaining ring (2, 5) into piston (3).

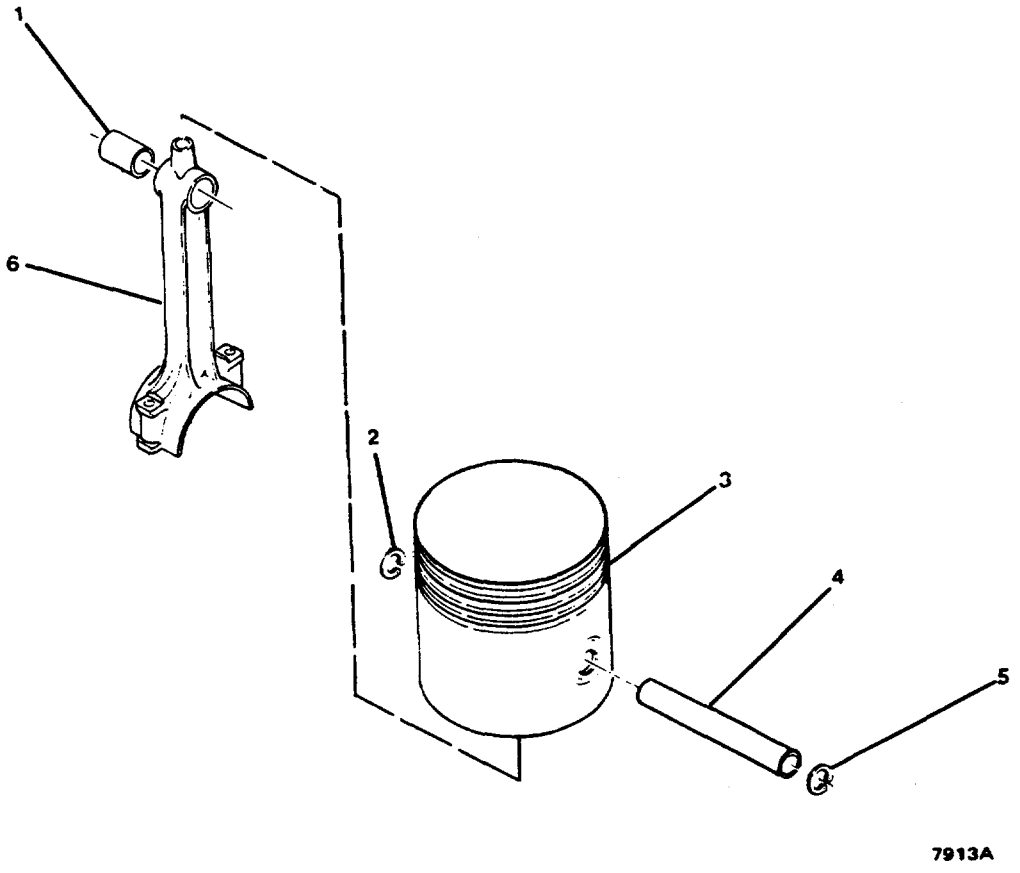


FIGURE 2-11. Connecting Rod of Low Pressure Piston

2-21. Replace Connecting Rod and High Pressure Piston Assembly.

This task covers: a. Removal, b. Replacement.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273
Piston compressor,
5120-00-116-7676

Equipment Condition

Cylinder head and block assembly removed
(para. 2-14).

Materials/Parts

Connecting rod and high pressure
piston assembly P/N 110750
Wiping rags, Item 3, Appendix C
Lubricating oil, Item 5, Appendix C

REMOVAL

Pull high pressure piston and connecting rod (2, FIGURE 2-12) from bottom of cylinder block assembly (1).

REPLACEMENT

CAUTION

Exercise caution while inserting connecting rod and piston to avoid scratching cylinder wall.

a. Install piston (2) into cylinder (1) using procedures described here:

(1) Coat all parts with clean lubricating oil before installing.

(2) Cover connecting rod with rag to prevent scratching cylinder lining. Stagger rings and pre-lube the piston.

(3) Make sure the gaps in the rings are staggered around piston when installing.

(4) Place piston compressor (3, FIGURE 2-13) around piston (4).

(5) Insert piston with connecting rod (5) into cylinder (6).

(6) Wrap a rag (1) around hammer or mallet handle (2) (from tool kit) and push piston into cylinder. Do not hammer or drive piston into position. Recheck and ensure piston is placed directly over cylinder. If it still does not go into position, remove and check piston rings on piston for cracks. Replace as needed. See para. 3-21.

b. When piston is seated in cylinder, pull downward to ensure piston is below the top of cylinder block.

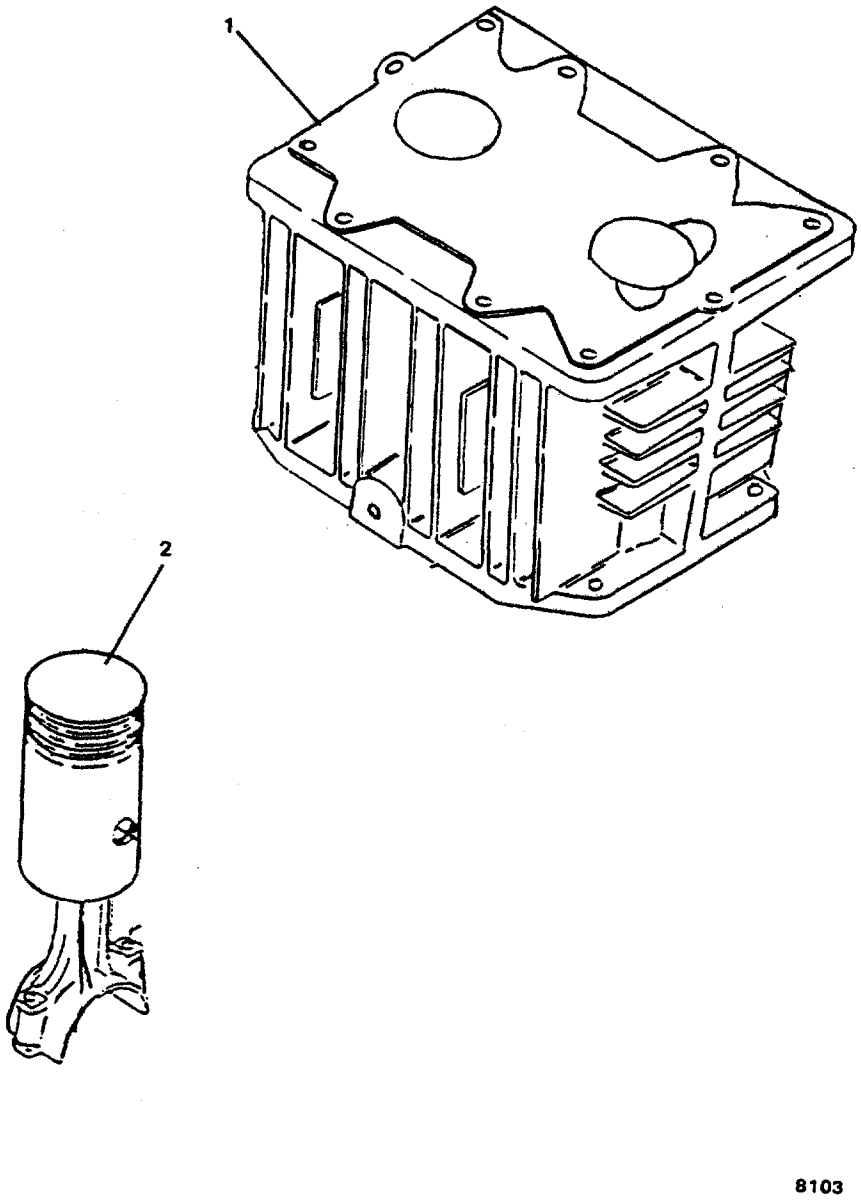


FIGURE 2-12. Connecting Rod and High Pressure Piston Assembly

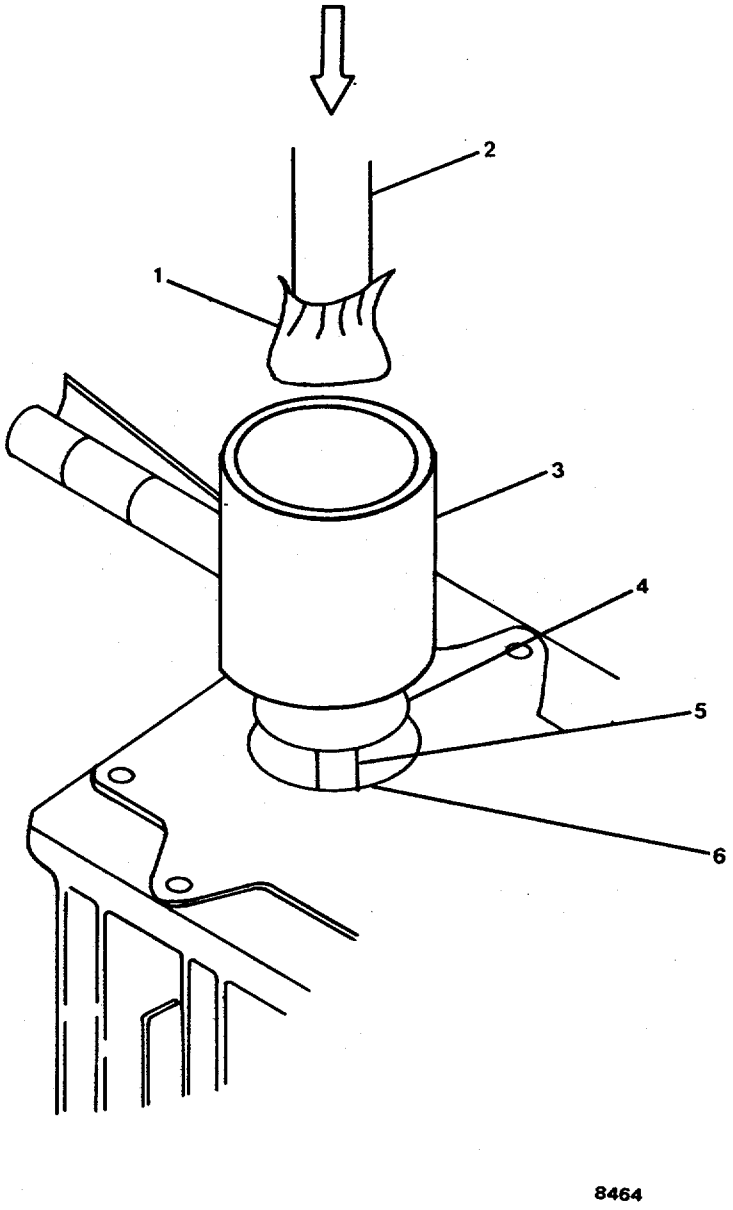


FIGURE 2-13. Installing Piston.

2-22. Replace Connecting Rod Assembly (High Pressure). (FIGURE 2-14)

This task covers: a. Removal, b. Replacement.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273

Equipment Condition

Connecting rod and high pressure
piston assembly removed (para. 2-21).

Materials/Parts

Connecting rod assembly
P/N 110804
Lubricating oil, Item 5, Appendix C

REMOVAL

a. Remove retaining ring (3, 6) from piston (4).

b. Remove piston pin (5).

c. Pull connecting rod (1) from piston and remove bushing (2).

REPLACEMENT

a. Install bushing (2) in connecting rod and connecting rod (1)in piston.

b. Install pre-lubed piston pin (5).

c. Install retaining ring (3, 6) into piston (4).

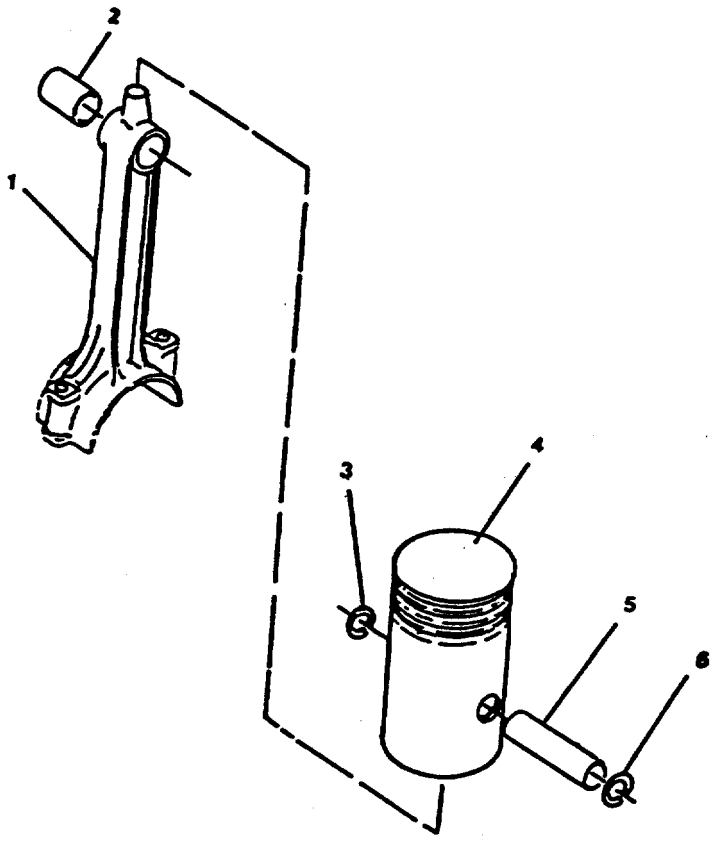


FIGURE 2-14. Connecting Rod and High Pressure Piston

2-23. Replace/Repair Bearing Carrier Group. (FIGURE 2-15)

This task covers: a. Removal, b. Repair, c. Replacement.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273
Torque wrench kit,
P/N 3377216

Equipment Condition

TM 55-1905-223-10, compressor shut down, tagged, "Out of Service-Do Not Operate."
Unloader assembly removed paragraph 2-13).

Materials/Parts

Oil gauge P/N 110822
Bearing carrier group
P/N 160065
Gasket P/N 6679
Fluid filter element P/N 110814-001
Wiping rag, Item 3, Appendix C

REMOVAL

a. Remove the eight 3/8-inch hex bolts (8) from the bearing carrier group (1).

b. Pull bearing carrier group (1) out and then upward to clear the oil pickup tube (6). Bearing carrier gasket (2) will fall free.

c. Bearing sleeve (3) will remain in bearing carrier group (1).

REPAIR

Repair consists of replacing the oil gauge (11), fluid filter element (9), and oil tube gasket (7).

a. Replace oil gauge (11).

(1) Remove oil gauge (11) from oil pump housing (10).

(2) Install new oil gauge (11) in oil pump housing (10).

b. Replace fluid filter element (9):

(1) Unscrew filter element (9) from oil pump housing (6) counterclockwise.

(2) Clean gasket sealing surface of oil pump housing (6) with clean rag.

(3) Install new filter element (9) by turning clockwise until sealing surface of element makes contact with oil pump housing (6). Tighten filter element and additional 1/2 to 3/4 turn.

c. Replace oil tube gasket (7):

(1) Remove two screws (5) and lockwashers (4).

(2) Remove metal oil tube assembly (6) and gasket (7).

(3) Install new gasket (7) and metal oil tube assembly (6) with two screws (5) and lockwashers (4) and torque to 25 ft. lbs.

REPLACEMENT

a. Ensure bearing sleeve (3) is set in bearing carrier group (1).

b. Slide bearing carrier gasket (2) over oil pickup tube (6).

c. Insert oil pickup tube (6) into crankcase and fit bearing carrier group on end of drive shaft.

d. Align gasket holes with bearing carrier group holes and install eight 3/8-inch hex bolts (8).

e. Align bolts with crankcase bolt holes and tighten the eight bolts (8) to 15 ft-lbs torque.

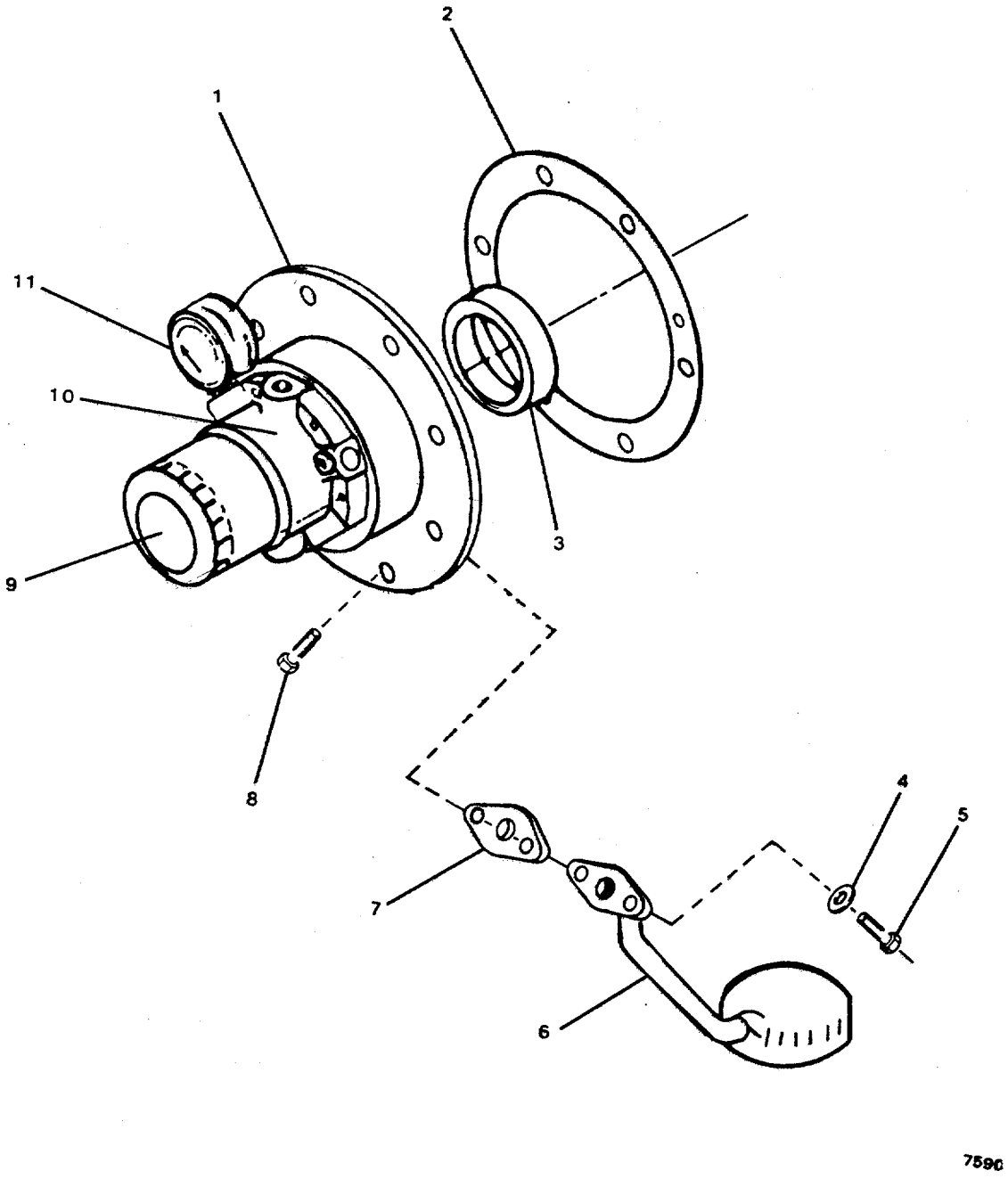


FIGURE 2-15. Bearing Carrier Group.

2-24. Repair Bearing Carrier. (FIGURE 2-16)

This task covers: a. Removal, b. Repair, c. Replacement.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273
Torque wrench kit,
P/N 3377216

Equipment Condition

Bearing carrier group removed
(para. 2-23).

Materials/Parts

Gear rotor set P/N 160003
Bearing carrier (assembly)
P/N 110812-003
Bearing Carrier P/N 110812

REMOVAL

a. Remove six 1/4-inch hex bolts (8) from oil pump housing (1) separate from bearing carrier (2).

b. Remove two 3/8-inch counterbore screws (6) and washers (5) from oil pickup tube (4), remove gasket (3).

REPAIR

a. Remove the gear rotor set (7) from the shaft on bearing carrier (2).

b. Install gear rotor set (7) on bearing carrier (2) shaft.

REPLACEMENT

a. Attach oil pickup tube (4), oil inlet bracket gasket (3) to bearing carrier (2) with two 3/8-inch counterbore screws (6) and washers (5). Torque to 25 ft-lbs.

b. Attach oil pump housing (1) with six 1/4 inch-hex bolts (8). Torque to 15 ft-lbs.

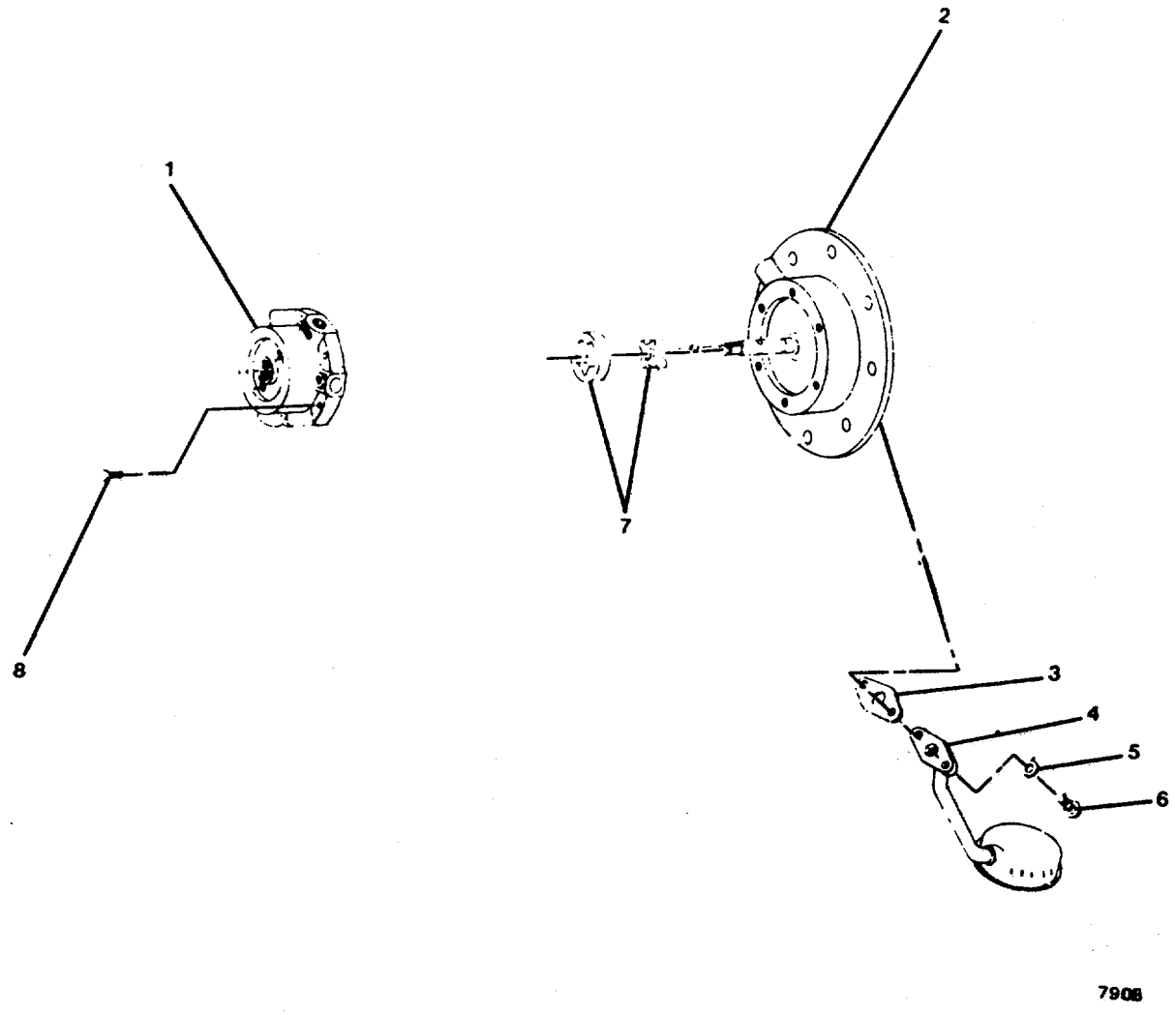


FIGURE 2-16. Bearing Carrier.

2-25. Replace Bearing Carrier.

Replacement of the bearing carrier is included in paragraph 2-24.

2-26. Replace/Repair Crankshaft Group. (FIGURE 2-17)

This task covers: a. Removal, b. Repair, c. Replacement.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273
Torque wrench kit,
P/N 3377216

Equipment Condition

Cylinder block and head assembly removed para. 2-14).
Connecting rod and low pressure piston assembly removed (para. 2-19).
Connecting rod and high pressure piston assembly removed (para. 2-21).

Materials/Parts

Pulley assembly P/N 110523X
Crankshaft assembly P/N 110519
Pry bar, Item 7, Appendix C

REMOVAL

a. Remove belt guard (6).

b. Loosen motor mounting bolts (9) and allow motor (8) to slide toward compressor (5) and loosen belts.

c. Remove belts (7).

d. Remove two 1/2-inch bolts (2) and 1/2-inch square nuts (16) on pulley assembly hub.

e. Slide pulley (1) off crankshaft (4).

f. Remove key (3).

g. Remove bearing carrier group (paragraph 2-23).

h. Remove four hex head screws (14) and remove bearing adjustment plate (13) shims (11), spacer plate (12), and bearing cup (10).

i. Remove crankcase inspection plate in accordance with procedures in paragraph 2-14.

j. Reach in crankcase and pull crankshaft from pulley side and remove through bearing carrier group hole.

REPAIR

Repair consists of replacing the pulley and crankshaft assemblies. Refer to Removal and Replacement steps in this procedure.

REPLACEMENT

a. Fit crankshaft (4) into crankcase and slide crankshaft end out hole on pulley side of crankcase. Make sure bearing (15) seats properly in crankcase.

b. Install bearing cup (10), spacer plate (12), shim (11), and bearing adjustment plate (13).

c. Attach bearing adjustment plate with four hex head screws (14).

d. Install bearing carrier group (paragraph 2-23).

e. Install key (3).

f. Slide pulley (1) into crankshaft (4).

g. Install two 1/2-inch bolts (2) and attach a 1/2-inch nut (16) to each bolt. Tighten to 90 ft-lbs torque.

h. Place belts (7) over large pulley (1) and smaller motor pulley.

i. Pull motor away from compressor with a pry bar to tighten belts and tighten motor mounting bolts (9).

j. Attach and install belt guard (6).

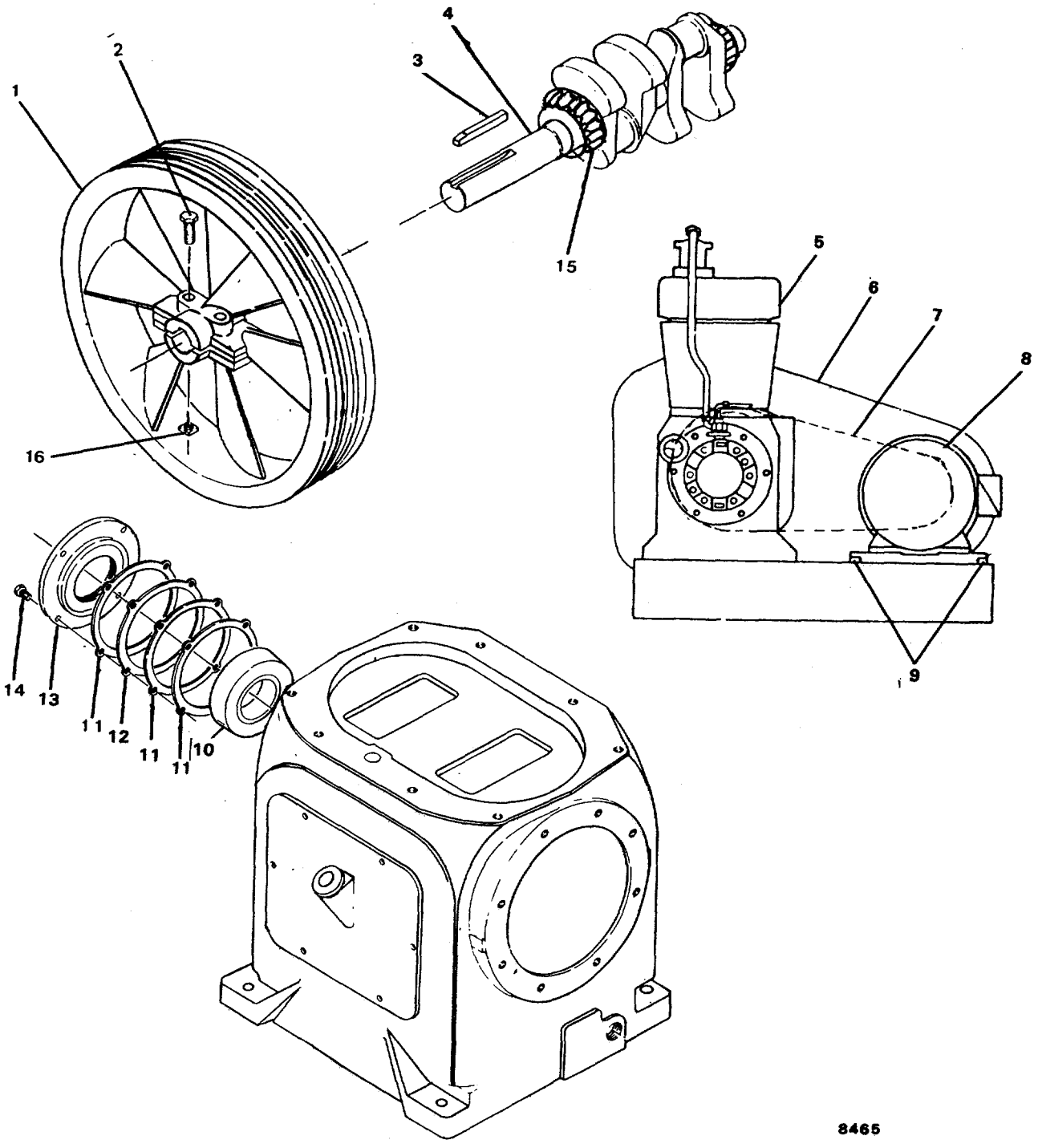


FIGURE 2-17. Replace Crankshaft Group

2-27. Repair Crankcase Assembly. (FIGURE 2-18)

This task covers: a. Removal, b. Repair, c. Replacement.

INITIAL SETUP

Tools

Tool kit, general mechanic's, 5180-00-699-5273
Torque wrench kit, P/N 3377216

Equipment Condition

Cylinder block and head removed (para. 2-14).
Crankshaft group removed (para. 2-26).

Materials/Parts

Crankcase assembly P/N 110628
Gaskets P/N 1315
Headless straight pins P/N 5932
Bearing ball P/N 5783
Cleaning solvent, Item 4, Appendix C

REMOVAL

a. Remove cylinder block and head assembly in accordance with paragraph 2-14.

b. Remove pulley and belts in accordance with paragraph 2-26.

c. Remove four 1/2-inch mounting bolts (6).

d. Lift crankcase assembly (2) from mount.

REPAIR

a. Replace gaskets (3, 9):

(1) Remove six capscrews (5) and remove access cover (4) and gaskets (3). Discard gasket.

(2) Remove six capscrews (8) and remove gauge boss plate (7) and gasket (9). Discard gasket.

(3) Use new gasket (3) and install access cover (4) with six capscrews (6). Torque to 12 ft-lbs.

(4) Use new gasket (9) and install gauge boss plate (7) with six capscrews (8). Torque to 12 ft-lbs.

b. Replace headless straight pin (10) and bearing ball (1).

(1) Remove headless straight pin (10) from crankcase (2).

(2) Remove bearing ball (1) from socket in top of crankcase (2).

(3) Clean pin and bearing ball sockets in crankcase with cleaning solvent.

(4) Insert new bearing ball (1) in crankcase (2).

(5) Install headless straight pin (10) in crankcase (2).

REPLACEMENT

a. Align crankcase assembly with mounting bolt holes.

b. Secure with four mounting bolts (6).

c. Replace crankshaft group (paragraph 2-26).

d. Replace the cylinder block and head assembly in accordance with paragraph 2-14.

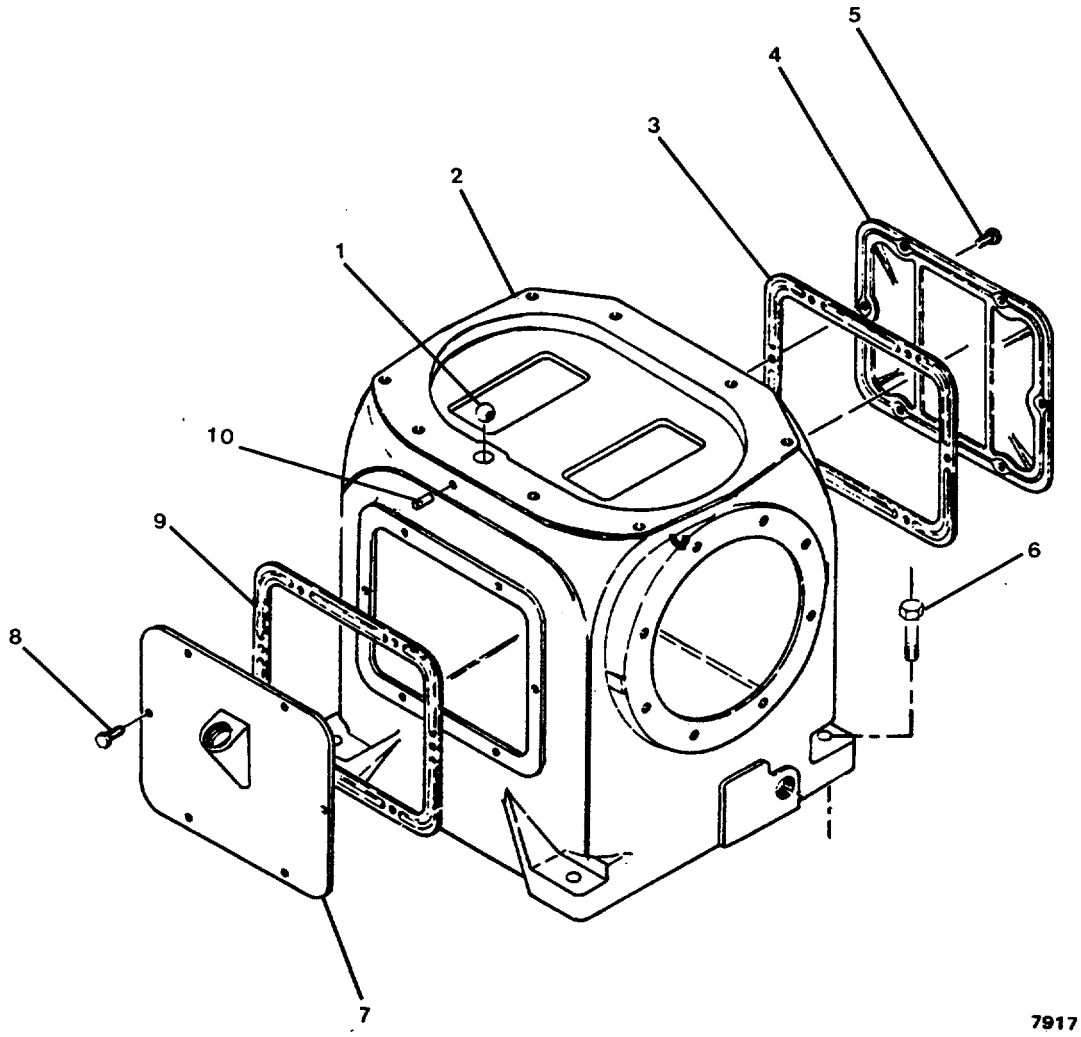


FIGURE 2-18. Crankcase Assembly.

2-28. Replace/Repair Liquid Level Rod-Cap Gauge Assembly. (FIGURE 2-19)

This task covers: a. Removal, b. Repair, c. Replacement.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273

Equipment Condition

TM 55-1905-223-10, compressor
shut down, tagged "Out of Service-
Do Not Operate."

Materials/Parts

Gage assembly P/N 6726X
Liquid level gauge rod P/N 5488
Filler opening cap P/N 6726
Preformed packing P/N 123157-210

REMOVAL

Unscrew gauge assembly by hand and pull from crankcase hole (4).

DISASSEMBLY

a. Pull preformed packing (3) from cap (1) bottom.

b. Pull rod (2) from cap (1).

REPAIR

a. Inspect preformed packing for worn or torn areas; rod for rust, chips, or bends; inspect cap for rust, corrosion, or disfigured threads.

b. Replace as necessary.

c. Clean preformed packing.

d. Clean cap and rod.

ASSEMBLY

a. Snap rod (2) into cap (1).

b. Place preformed packing (3) on bottom of cap (1) and push until seated.

REPLACEMENT

Screw gauge assembly into crankcase fitting (4).

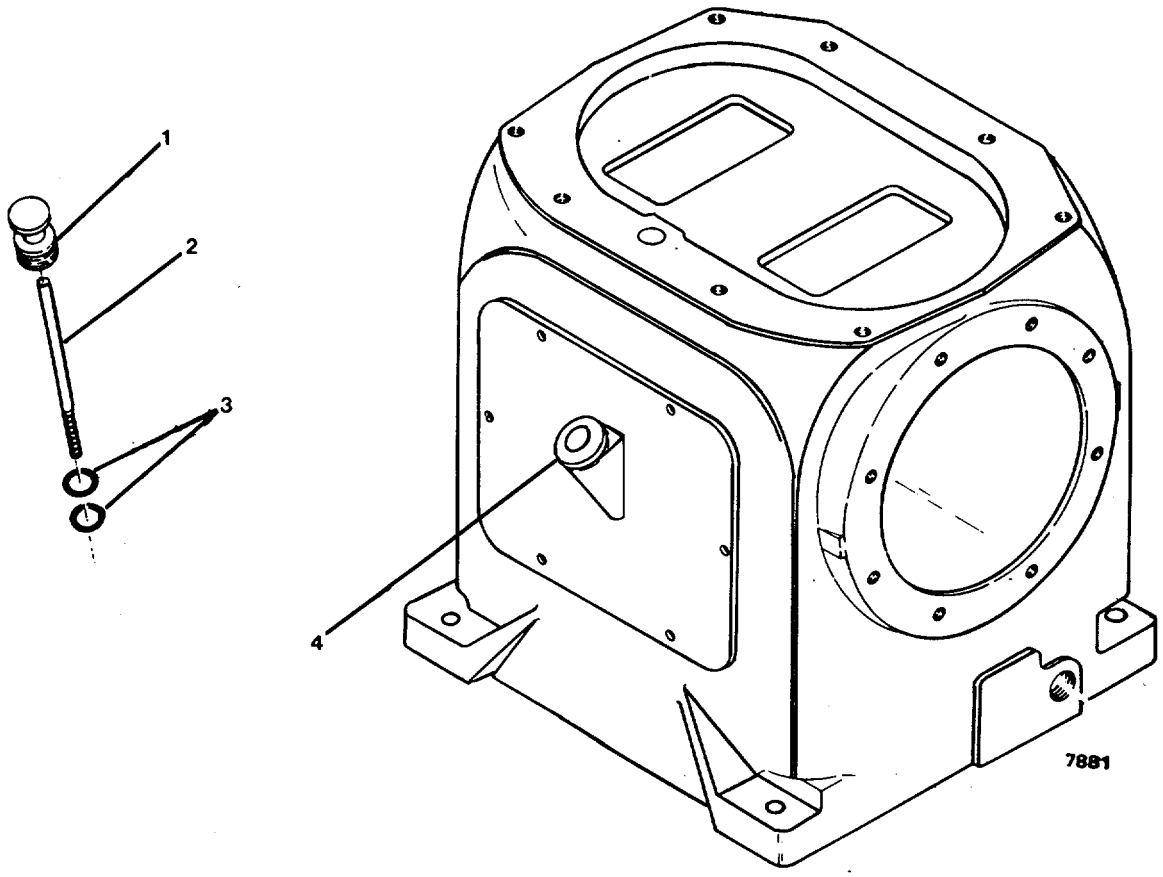


FIGURE 2-19. Oil Gauge Repair.

SECTION VI. PREPARATION FOR STORAGE OR SHIPMENT

2-29. Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the Preventive Maintenance Checks and Services (PMCS) charts before storing. When removing the equipment from administrative storage, the PMCS should be performed to ensure operational readiness. Removal of the air compressor and components for shipment or limited storage is covered in paragraphs 2-11 thru 2-26. Use the following steps for repacking the compressor or components for shipment or storage.

a. Place all loose items in a plastic bag and secure the bag to the component removed.

b. Place protective connector covers on all connectors.

c. Securely crate the component to prevent damage during movement.

d. Do not store with or near corrosive materials.

CHAPTER 3

INTERMEDIATE DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

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

3-1. Common Tools and Equipment. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your organization.

3-2. Special Tools, TMDE, and Support Equipment. Special tools; test, measurement, and diagnostic equipment; and support equipment requirements are listed and illustrated in the Repair Parts and Special Tools List (RSPTL), TM 55-1905-223-24P. These items are also listed in the Maintenance Allocation Chart (MAC), Appendix B of this manual.

3-3. Repair Parts. Repair parts are listed and illustrated in the Repair Parts and Special Tools List (RPSTL), TM 55-1905-224-24P.

SECTION II. SERVICE UPON RECEIPT

3-4. Checking Unpacked Equipment.

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage in accordance with the instructions of DA Pam 738-750.

b. Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of DA Pam 738-750.

c. Check to see whether the equipment has been modified.

d. Remove protective caps, plugs, inserts, wrappings, and tape when inspection/inventory is completed. Inspect piping openings for damage. Wipe off dirt, grease, or protective films at time of installation.

e. Remove chocks from resilient mounted components.

3-5. Initial Setup Procedure. Includes operational checks and inspections that are not performed for a routine startup. Direct support maintenance personnel will perform initial setup in accordance with the operator's manual, TM 55-1905-223-10.

3-6. Normal Startup. Refer to operator's manual, TM 55-1905-223-10.

3-7. Shutdown Procedure (Usual or Unusual). Refer to operator's manual, TM 55-1905-223-10.

SECTION III. INTERMEDIATE DIRECT SUPPORT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

3-8. PMCS. There are no preventive maintenance checks and services required at the direct support level. Refer to Chapter 2, Section III.

SECTION IV. INTERMEDIATE DIRECT SUPPORT TROUBLESHOOTING

3-9. Troubleshooting. Both a symptom index and a troubleshooting table are provided. The symptom index will help you locate the information you need for troubleshooting.

SYMPTOM INDEX

	Troubleshooting Procedure (Table 2-2)
COMPRESSOR	
Knocks	Item 1
Overheats	Item 2
DISCHARGE PRESSURE AND AIR DELIVERY	
Low	Item 5
OIL CONSUMPTION	
Excessive	Item 3

SYMPTOM INDEX - CONT

	Troubleshooting Procedure (Table 2-2)
OIL PRESSURE	
Low	Item 6
VIBRATION	
Excessive	Item 4

Table 2-2. Troubleshooting

Malfunction Test or Inspection Corrective Action

1. Compressor knocks.

   STEP 1. Check for worn connecting rod bearings.
   Replace connecting rod bearings (paragraph 3-19).

   STEP 2. Check for worn main bearings.
   Replace bearings (paragraph 3-23).

   STEP 3. Check for worn piston pin bushing.
   Replace piston pin bushing (paragraph 3-20 or 3-21).

2. Compressor overheats.

   STEP 1. Check for clogged intercooler.
   Replace intercooler (paragraph 3-14).

3. Excessive oil consumption.

   STEP 1. Check for worn piston rings.
   Replace rings (paragraph 3-19 or 3-20).

   STEP 2. Check for bent or twisted connecting rod (paragraph 3-19 or 3-21).

4. Excessive vibration.

   STEP 1. Check for faulty compressor valves.
   Replace valves (paragraph 3-18).

Table 2-2. Troubleshooting - Continued

Malfunction Test or Inspection Corrective Action

5. Low discharge pressure and air delivery.

STEP 1. Check for worn piston rings or loose pistons.
Replace rings and/or pistons (paragraph 3-19 or 3-21).

STEP 2. Check for clogged intercooler.
Replace intercooler (paragraph 3-14).

6. Low oil pressure.

STEP 1. Check for incorrect assembly of bearing carrier.
Remove bearing carrier and reassemble (paragraph 2-23).

SECTION V. INTERMEDIATE DIRECT SUPPORT MAINTENANCE PROCEDURES

3-10. Procedures. The following maintenance procedures provide a step-by-step guide to removing and assembling the QR-25, D340, Air Compressor Unit. Illustrations are provided for each assembly.

3-11. Repair of Air Compressor Assembly.

REPAIR

Repair of the air compressor assembly consists of maintenance procedures in paragraphs 3-12 through 3-27.

3-12. Repair of Alternating Current Motor. (FIGURE 3-1)

This task covers: a. Disassembly, b. Repair, c. Assembly.

INITIAL SETUP

Tools

Tool kit, general mechanic's, 5180-00-699-5273
Tool kit, electrician's, 5180-00-391-1087
Digital multimeter 6625-01-139-2512
Bearing driver, P/N 3375138

Equipment Condition

TM 55-1905-223-10, electric motor power secured, tagged "Out of Service - Do Not Operate."
Refer to the following paragraph in this maintenance manual:
Electric motor removed (para. 2-12).

Materials/Parts

Rubber slingers P/N P-90-A-213T-37 and P-90-A-213T-26
Lubricating grease, Item 1, Appendix C
Blind end bearing P/N P-90-A-213T-35
Shaft end bearing P/N P-90-A-213T-25
Fine emory cloth, Item 6, Appendix C
Rotor and shaft P/N P-90-A-213T-29
Stator P/N P-90-A-213T-41

DISASSEMBLY

a. Remove four hex nuts (1) from the fan shroud (2).

b. Remove fan shroud (2).

c. Remove fan (3) and slinger (4). Discard slinger.

d. Remove the blind end bracket (5).

e. Remove spring washer (17) and blind end bearing (18), discard the bearing.

f. Pull the rotor and shaft (10) from the stator (9).

g. Remove the four hex nuts (16) and the four bolts (8).

h. Remove the slinger (15) and shaft end bracket (14). Discard slinger.

i. Remove the shaft end bearing (12) from the rotor (10), being careful not to lose the key (11) and discard the bearing.

j. Remove motor stator (9).

REPAIR

a. Use a multimeter and check stator windings for "open" or "short" condition. Replace stator if either condition exists.

b. Polish the rotor using a fine emory cloth.

c. Polish the inside of the stator using a fine emory cloth.

d. Ensure all old grease is removed from the shaft end bracket (14).

ASSEMBLY

a. Install motor stator (9).

b. Install new shaft end bearing (12) on rotor shaft (10) using key (11).

c. Install shaft end bracket (14) and slinger (15) on shaft.

d. Place four bolts (8) through the bracket (14) and fasten with four hex nuts (16).

e. Install new blind end bearing (18) using press and spring washer (17) on shaft.

f. Slide rotor assembly into stator (9).

g. Install blind end bracket (5) and slinger (4) on shaft.

h. Mount the fan (3) on the shaft.

i. Place the fan shroud (2) on the bolts (8) and secure with the four hex nuts (1).

j. Lubricate, using the grease fitting (13). Refer to LO 55-1905-223-12.

k. Replace the motor using the directions in paragraph 2-12.

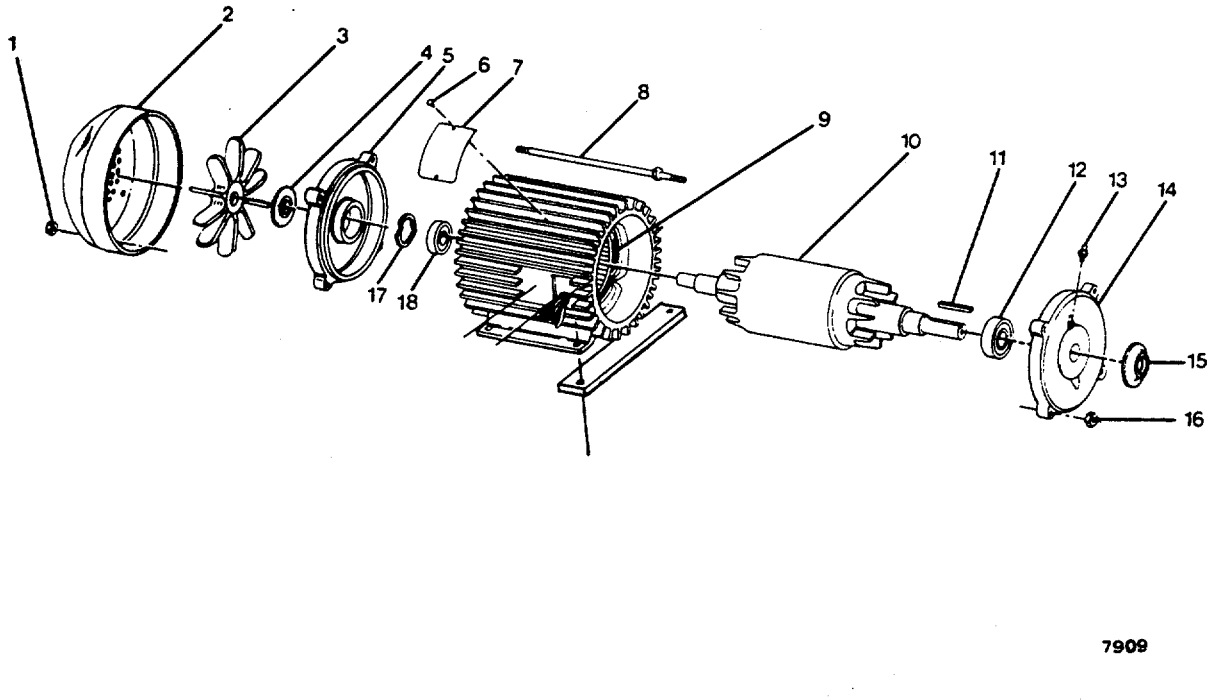


FIGURE 3-1. Motor Assembly

3-13. Repair Hydraulic Unloader Assembly. (FIGURE 3-2)

This task covers: a. Disassembly, b. Repair, c. Assembly.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273

Equipment Condition

Hydraulic unloader assembly removed
(para. 2-13).

Materials/Parts

Hydraulic unloader assembly P/N 110827-001
Cleaning solvent, Item 4, Appendix C

DISASSEMBLY

a. Unscrew filter assembly (7) from unloader body (4). Spring (6) and stem assembly (3, 5) can be pulled out.

b. Remove unloader base (1) to gain access to diaphragm (2).

REPAIR

a. From the filter assembly (7), remove and clean the filter (8).

b. Inspect the diaphragm (2), spring (6), stem assembly (4, 5), filter and assembly (7) for rust, corrosion, cracks, or bent parts.

c. Clean with cleaning solvent and replace hydraulic unloader assembly if necessary.

ASSEMBLY

a. Insert diaphragm (2) into unloader base (1).

b. Attach and secure unloader stem and body assembly (3, 4, 5) by screwing body (4) into base (1).

c. Place spring (6) over stem (5).

d. Attach and secure filter assembly (7).

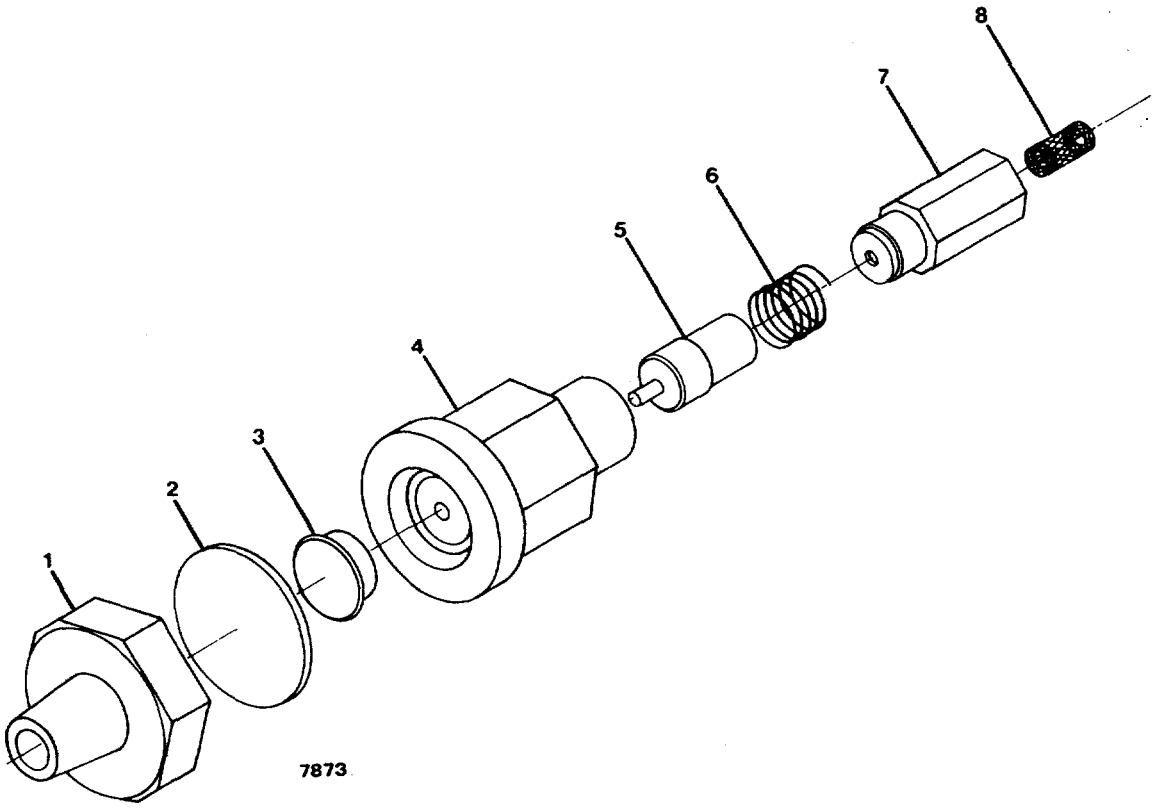


FIGURE 3-2. Hydraulic Unloader Assembly.

3-14. Repair Cylinder Block and Head Assembly. (FIGURE 3-3)

This task covers: a. Test b. Disassembly, c. Repair, d. Assembly.

INITIAL SETUP

Tools

Tool kit, general mechanic's, 5180-00-699-5273
Torque wrench 5120-01-092-3278
Torque wrench 5120-01-125-5190

Equipment Condition

TM 55-1905-223-10, compressor OFF, no air pressure in system.
Cylinder block and head assembly removed (para. 2-14).

Materials/Parts

Cylinder block and head assembly P/N 110752
Intake air cleaner and filter element. P/N 110377E150
Gasket P/N 5828
Intercooler P/N 2030
Gasket P/N 5702
Gasket P/N 5827
Gasket P/N 6680

Overview of repair to cylinder block and head assembly.

In this procedure you will always discard and replace the gaskets. You will only replace the block and head assembly if you see that it is cracked. Cracks will normally occur between webs, fins, drill holes, and valves.

TEST

Test for cracks in block and head assembly by cleaning block and head assembly down to bare metal and visually inspecting. Cracks may also be detected using water pressure testing method.

DISASSEMBLY

a. Remove wing nut, cover (24) and filter element (25).
b. Remove seven counterbore head bolts (11) and seven lockwashers (10).
c. Remove five counterbore bolts (2) and washers (3) from the top of the head assembly.
d. Remove six hex screw bolts (27) and lockwashers (28) from the intercooler (29).

e. Remove four hex screw bolts (6) from the discharge flange (5).

f. Remove four hex screw bolts (26) from the inlet flange (18).

g. Lift head (7) from the cylinder block.

h. Remove hex nut (23) and intercooler bracket clamp (22) and lift intercooler from cylinder block (9).

REPAIR

a. Discard and replace the cylinder block gasket (14), head gasket (8), two flange gaskets (4, 19) and two intercooler gaskets (1).

NOTE

Check intercooler by tying nut (slightly smaller than inside diameter of intercooler) on wire; snake wire through intercooler; pull nut through.

b. If the intercooler (29) is bad, replace it.

c. If the block (9) and head assembly (7) is cracked, replace it.

ASSEMBLY

a. Place head (7) and head gasket (8) on cylinder block (9).

b. Attach five counterbore bolts (2) and washers (3) in-top and seven counterbore head bolts (11) and lockwashers (10) on bottom of head. Tighten in the order specified in FIGURE 2-6 and torque to 65 ft-lbs.

c. Place intercooler (29) into bracket (17). Place clamp (22) over intercooler and attach and tighten hex nut (23).

d. Place gasket (1) over intercooler head fitting.

e. Feed hex screw bolt (27) through lockwasher (28) and intercooler fitting and attach to head. Tighten hex screw bolts to 17 ft-lbs.

f. Feed hex screw bolt (6) through discharge flange (5) and gasket (4) and attach to head. Tighten bolt to 50 ft-lbs.

g. Feed hex screw bolt (26) through inlet flange (18) and gasket (19). Tighten bolt to 50 ft-lbs torque.

h. Replace in accordance with paragraph 2-14.

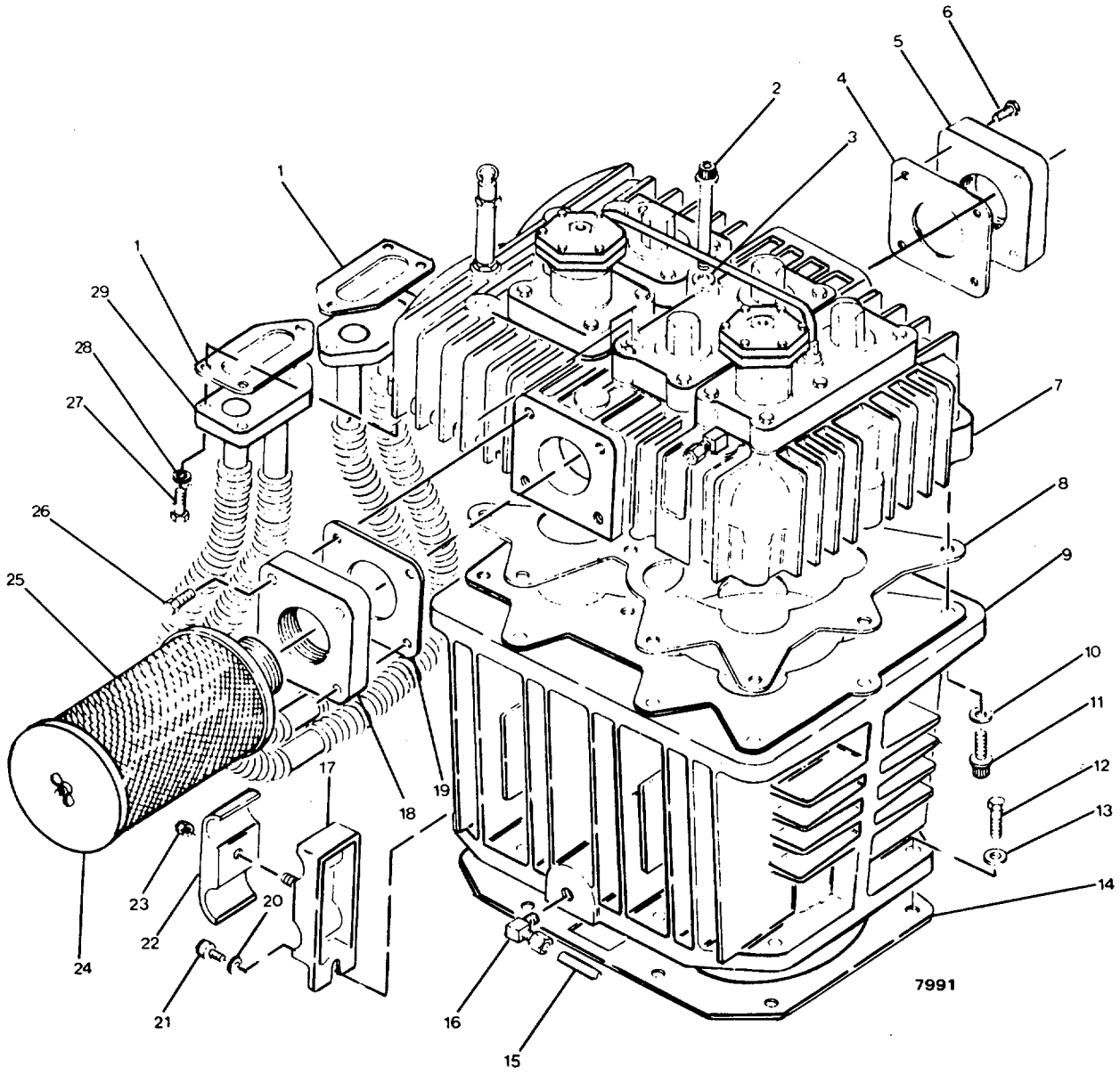


FIGURE 3-3. Repair of Cylinder Block and Head Assembly.

3-15. Repair of Cylinder Head Assembly. (FIGURE 3-4)

This task covers: a. Disassembly, b. Repair, c. Assembly.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273
Torque wrench kit,
P/N 3377216

Equipment Condition

Head cylinder assembly removed (para. 2-14).

Materials/Parts

Compressor head P/N 6661
Safety relief valve P/N 2961-100
Ring spacer P/N 1556
Gasket P/N 1852
Helical compression spring P/N 6910
Ring spacer P/N 1848
Gasket P/N 6682
Cleaning solvent, Item 4, Appendix C

DISASSEMBLY

a. Unscrew and remove the safety valve (16).

b. Remove unloader body assemblies (1) (paragraph 2-15).

c. Remove 20 valve cover bolts (2).

d. Remove valve covers (3, 7) and gaskets (4, 8).

e. Remove ring spacer (17) from top of valves with unloader assemblies.

f. Remove suction (intake) valves (9) and ring spacers (6). Remove pin (11) and helical spring (12) (see paragraph 2-16).

g. Remove discharge (compressor) valves (13) and ring spacers(6). Remove pin (11) and helical spring (12) (see paragraph 2-16).

REPAIR

a. Clean all metal parts in a cleaning solvent. Inspect for rust, corrosion, or broken parts.

b. Replace all gaskets (4, 8). Replace safety relief valve (16), ring spacers (6,17), and helical springs (12).

c. If the head (14) is cracked, replace it.

ASSEMBLY

a. Install pin (11) and helical spring (12) in suction valves (9) and discharge valves (13).

b. Install ring spacers (6) and valves (9, 13) into head (14) (paragraph 2-16).

c. Place ring spacer (17) into valves with unloader assemblies (13).

d. Place gaskets (4, 8) and valve covers (3, 7) over valves and align bolt holes.

e. Install 20 valve cover bolts (2) and tighten to 50 ft-lbs torque.

f. Install unloader assemblies (1) (paragraph 2-15).

g. Install safety valve (16).

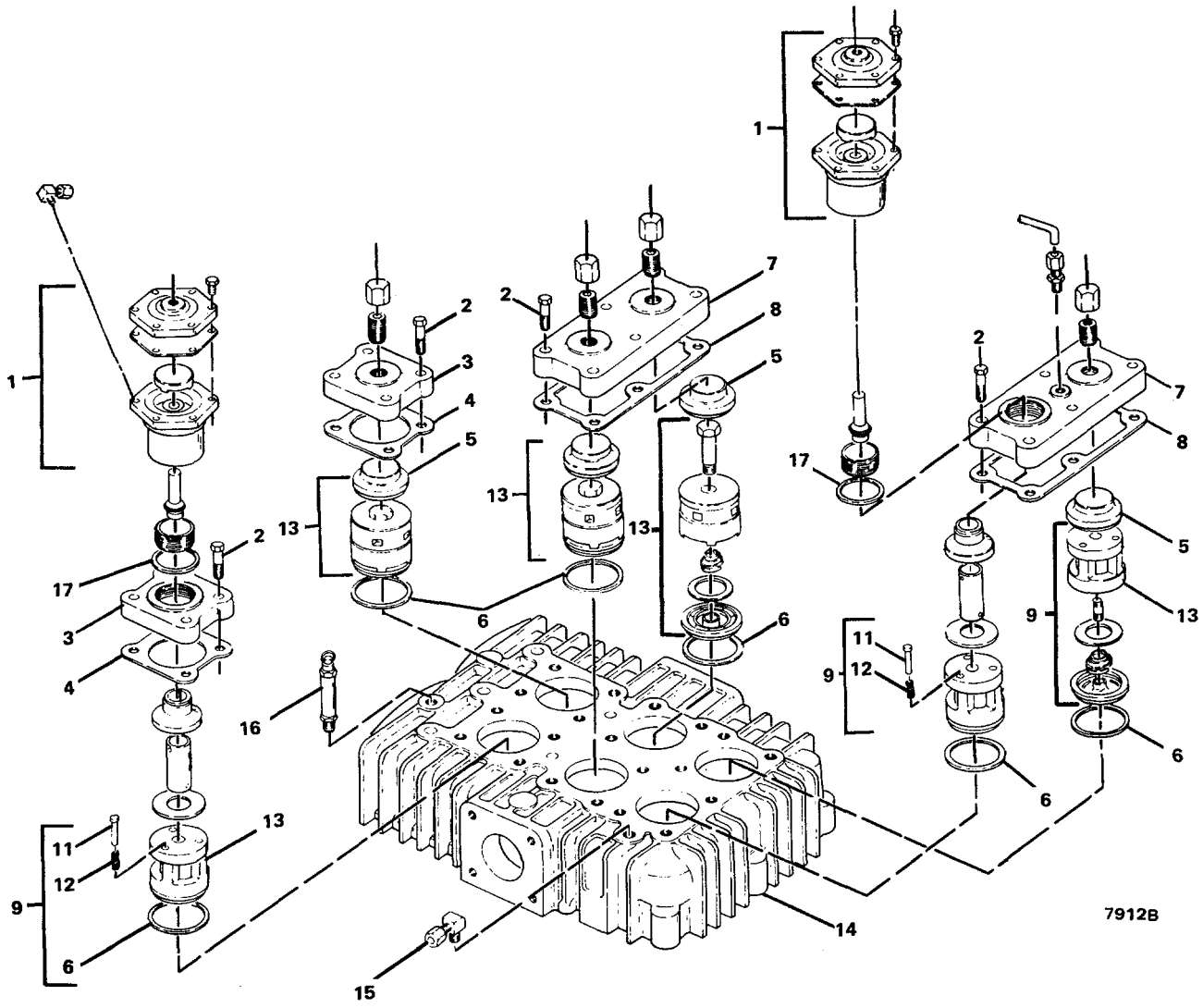


FIGURE 3-4. Repair Cylinder Head Assembly.

3-16. Repair Unloader Body Assembly. (FIGURE 3-5)

This task covers: a. Disassembly, b. Repair, c. Assembly.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273

Equipment Condition

TM 55-1905-223-10, power OFF, system drained, no air pressure in system, and tubing disconnected.

Materials/Parts

Unloader body assembly P/N 40055 or 40192
Flat valve diaphragm P/N 1855
Diaphragm disk P/N 5910
Cleaning solvent, Item 4, Appendix C
Rags, wiping, Item 3, Appendix C

DISASSEMBLY

a. Remove elbow tube fitting (8) from unloader on single valve cover (9).

b. Remove unloader body assembly (5).

c. Remove six hex screw bolts (1).

(1) Lift off and remove plate (2) and diaphragm (3).

(2) Remove diaphragm disk (4).

REPAIR

a. Discard and replace valve diaphragm (3) and diaphragm disk (4).

b. Inspect cover plate, body and hex screws for rust, corrosion or broken parts. Clean with a solvent and clean rag.

ASSEMBLY

a. Place diaphragm disk (4) in top of unloader body assembly.

b. Place cover plate (2) and diaphragm (3), on top and align bolt holes.

c. Insert and tighten six hex screw bolts (1) to 6 ft-lbs torque.

d. Install elbow tube fitting (8) to unloader on single valve cover (9) and install unloader body assembly (5) to head assembly.

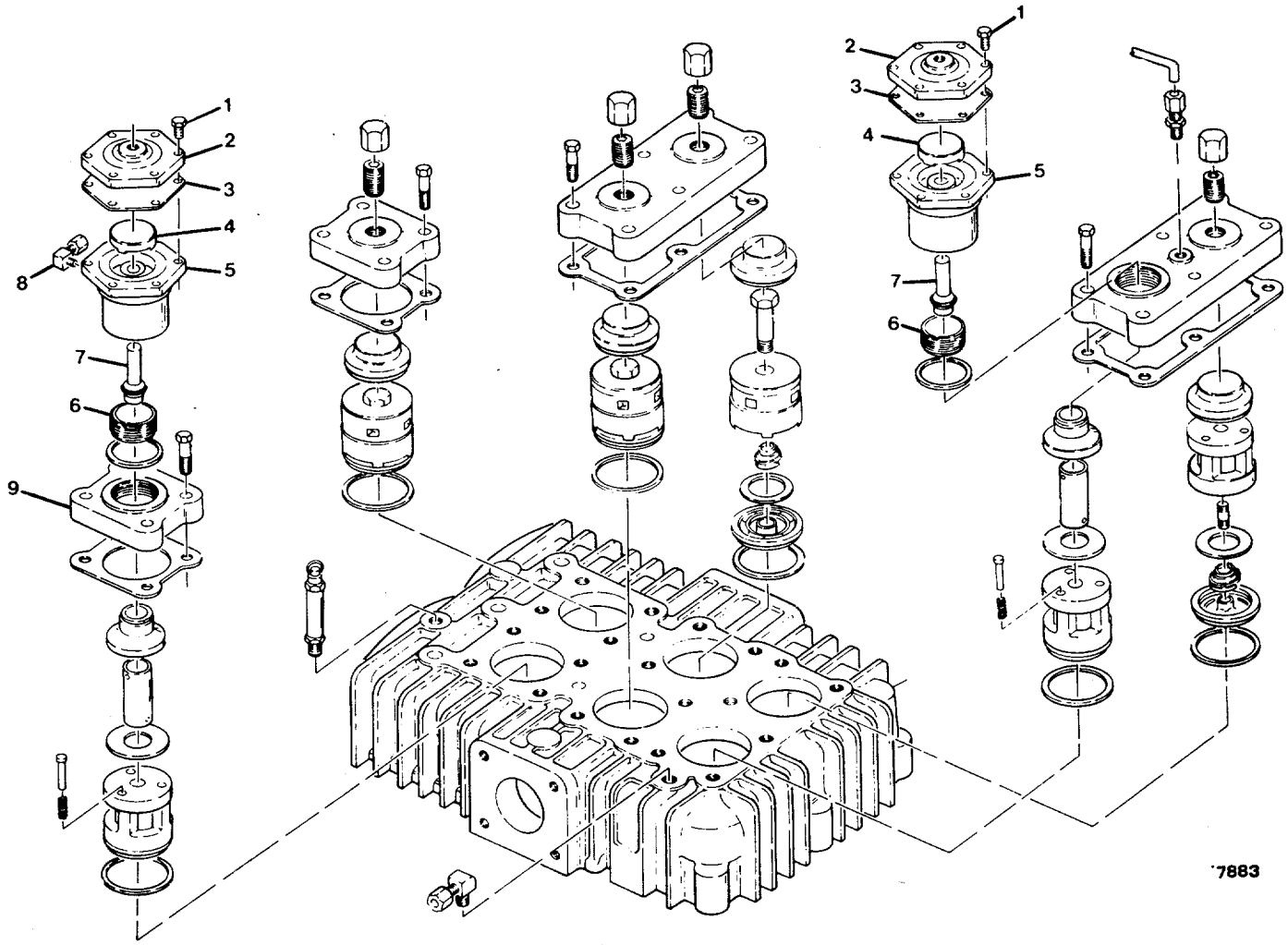


FIGURE 3-5. Repair Unloader Body Assembly

3-17. Repair Valve Assembly, Suction. (FIGURE 3-6)

This task covers: a. Disassembly, b. Repair, c. Assembly.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273

Equipment Condition

Valve removed (para. 2-16).

Materials/Parts

Valve disk P/N 1815
Thrust bearing washer P/N 1846
Helical compression spring P/N 7270
Cleaning solvent, Item 4, Appendix C

DISASSEMBLY

a. Unscrew valve seat (1) from reed valve plate (5).

b. Springs (4) and thrust bearing washer (3) will fall free when valve seat (1) is removed.

c. Remove stud (2) from valve seat (1).

REPAIR

a. Discard and replace helical compression spring (4), thrust bearing washer (3), and valve seat (1).

b. With cleaning solvent, clean the reed valve plate (5) and plain stud (2).

ASSEMBLY

a. Place spring (4) and thrust bearing washer (3) on plain stud (2).

b. Attach reed valve plate (5) to bottom of stud (2) and secure hand tight

c. Place stud (2) into valve seat (1) and secure until hand tight.

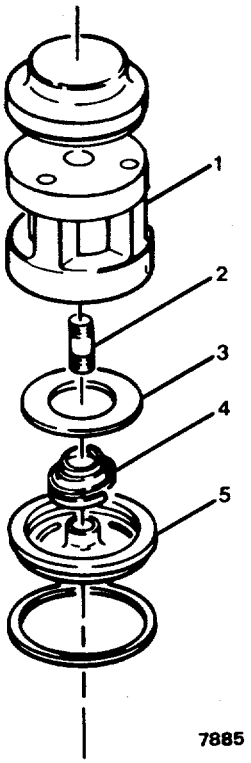


FIGURE 3-6. Suction Valve Repair.

3-18. Repair Valve Assembly, Discharge. (FIGURE 3-7)

This task covers: a. Disassembly, b. Repair, c. Assembly.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273

Equipment Condition

Valve removed (para. 2-16).

Materials/Parts

Thrust washer bearing P/N 1846
Compression helical spring P/N 7270
Cleaning solvent, Item 4, Appendix C

DISASSEMBLY

a. Remove shoulder bolt (1).

b. Valve seat (5), spring (3), and thrust washer bearing (4) will come apart.

REPAIR

a. Discard and replace the spring (3) and thrust washer bearing (4).

b. Clean with cleaning solvent valve body (2) valve seat (5) and shoulder bolt (1).

ASSEMBLY

a. Place valve seat (5), thrust washer bearing (4), and spring (3) into discharge valve body (2).

b. Insert shoulder bolt (1) through discharge valve body (2) and through the spring (3) and thrust washer bearing (4).

c. Attach to valve seat (5) and secure hand tight.

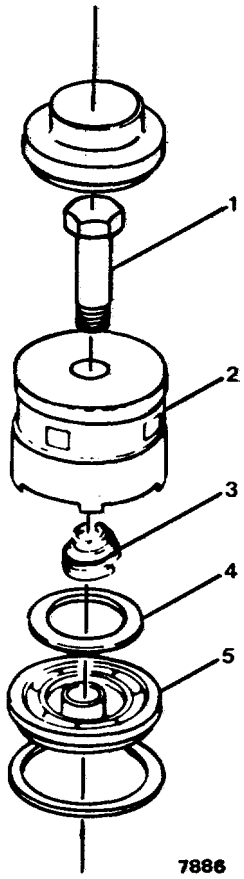


FIGURE 3-7. Discharge Valve Assembly Repair.

3-19. Repair Connecting Rod and Low Pressure Piston Assembly. (FIGURE 3-8)

This task covers: a. Disassembly, b. Repair, c. Assembly.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273
Piston ring expander P/N ST-763

Equipment Condition

Valve removed (para. 2-16).
Connecting rod and low pressure piston assembly removed (para. 2-19).

Materials/Parts

Cleaning solvent, Item 4, Appendix C
Connecting rod assembly P/N 1110749
Sleeve bearing half P/N 6656
Retaining ring P/N 8648
Piston pin P/N 110146
Piston ring P/N 6989
Ring expander P/N 6988, 6987, 9666, 2033
Low pressure compressor piston P/N 8642
Wiping rags, Item 3, Appendix C
Lubricating oil, Item 5, Appendix C

DISASSEMBLY

a. Remove bolt (4), locknut (16), and washer (15).

NOTE

The upper and lower bearing sleeves (1) are not the same.

b. Remove connecting rod (2), rod cap (17), and bearing sleeves (1).

c. Remove retaining ring (5) and (12) and push piston pin (13) out of piston (14) and remove piston.

d. Pull bushing (3) out of connecting rod (2).

e. Using a ring expander, remove piston rings (6 through 11). Note the position of the beveled edges. New rings must be assembled with beveled edges in same position.

REPAIR

a. Clean all parts with cleaning solvent and clean rag.

b. Inspect for rust, corrosion, excessive wear, and broken parts. Replace connecting rod (2) and cap (17), sleeve bearing halves (1), retaining rings (5 and 2), piston pin (13), and piston (14).

c. Discard and replace piston rings (6 through 11).

ASSEMBLY

a. Pre-lube all parts with clean lubricating oil.

b. Place bushing (3) in connecting rod (2).

c. Place piston (14) on connecting rod (2) and push piston pin (13) into the piston.

d. Insert and seat retaining rings (5 and 12).

e. Install piston rings (6 through 11) using ring expander see (FIGURE 3-8). Make sure beveled edges are facing same direction as before disassembly.

f. Ensure that ring gaps are staggered when installing piston assembly (para. 2-19).

g. Insert new bearing halves (1) between connecting rod (2) and rod cap (17). Ensure that bearing half with drilled hole faces the connecting rod (2). Install rod cap with bolt (4), washer (15), and locknut (16) to temporarily hold sleeve bearing halves in position until installed.

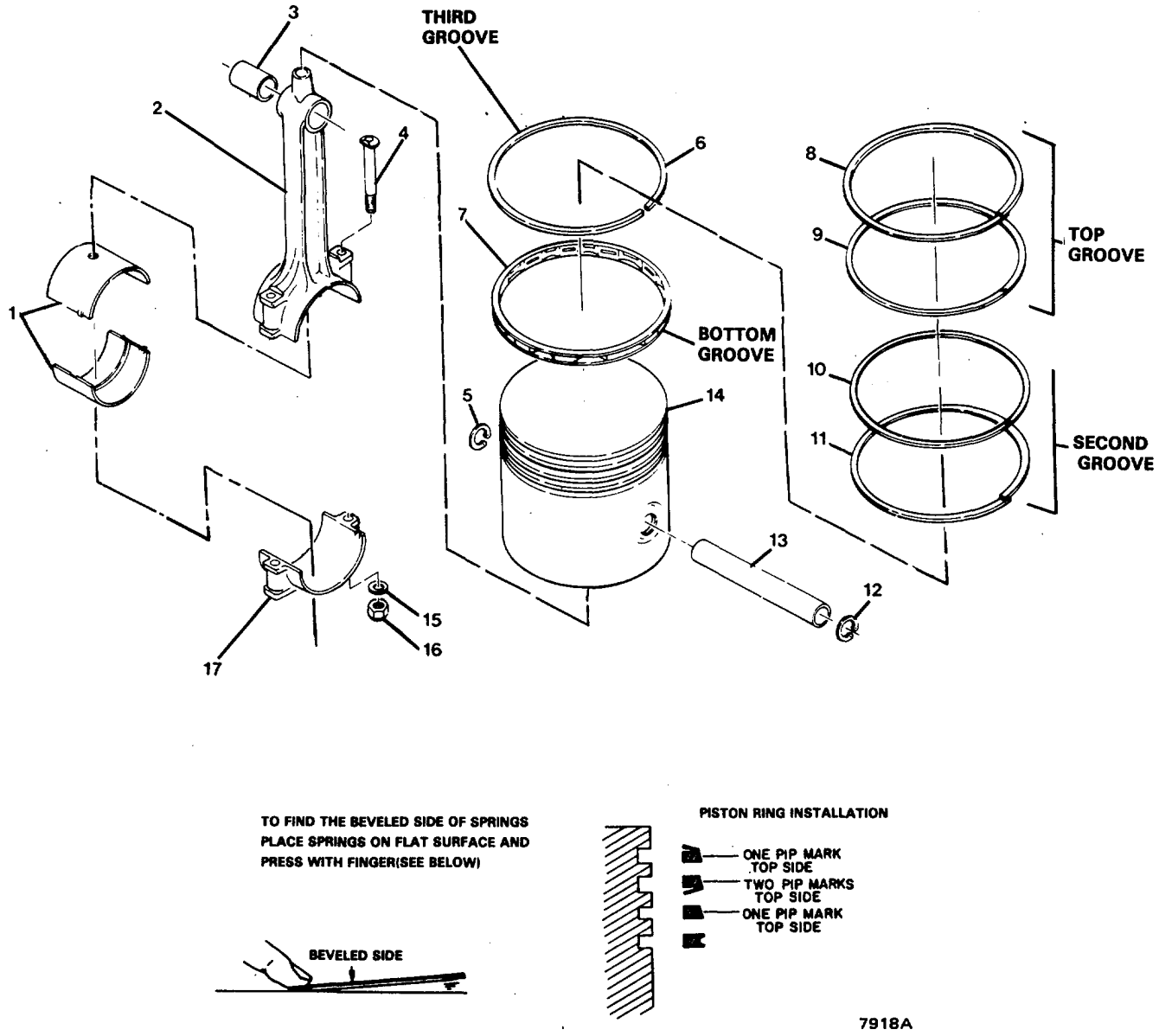


FIGURE 3-8. Repair of Low Pressure Piston Assembly.

3-20. Repair Connecting Rod Assembly (Low Pressure). (FIGURE 3-9)

This task covers: a. Disassembly, b. Repair, c. Assembly.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273

Equipment Condition

Connecting rod assembly (low pressure)
removed from crankshaft (para. 2-20).

Materials/Parts

Connecting rod assembly P/N 110803
Cleaning solvent, Item 4, Appendix C
Wiping rags, Item 3, Appendix C
Lubricating oil, Item 5, Appendix C

DISASSEMBLY

a. Remove retaining rings (3, 6).

b. Push piston pin (5) out of side of piston (4).

c. Pull piston (4) off connecting rod (1).

d. Remove bushing (2).

REPAIR

a. Clean all parts with solvent and clean rag.

b. Repair by replacing connecting rod assembly (1).

ASSEMBLY

a. Pre-lube all parts with clean oil before assembling.

b. Place piston (4) on connecting rod (1), and ensure that bushing (2) is in place.

c. Slide piston pin (5) into piston (4) through connecting rod (1).

d. Insert and seat retaining rings (3, 6).

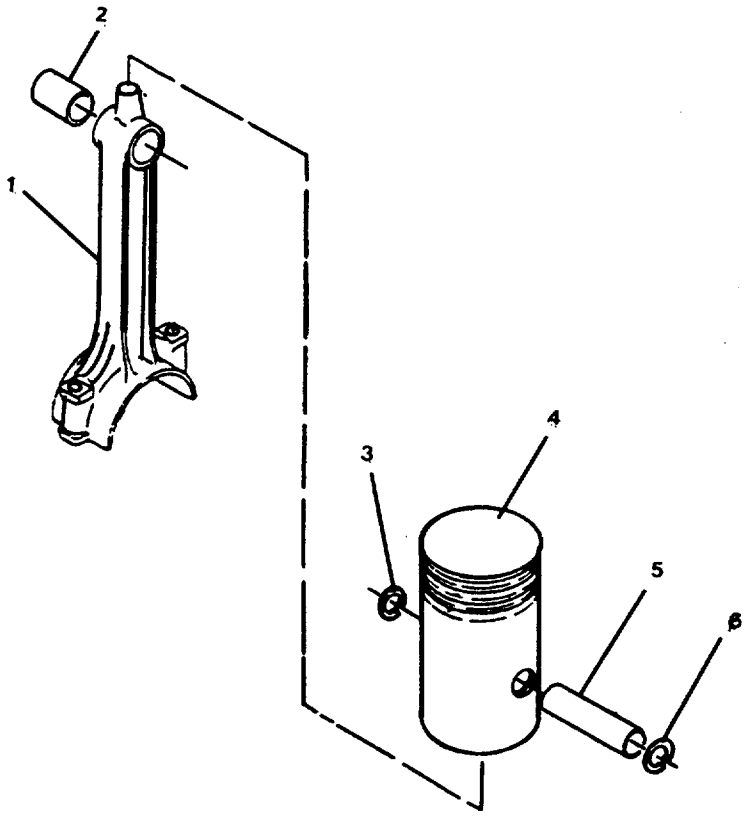


FIGURE 3-9. Repair of High Pressure Piston.

3-21. Repair Connecting Rod and High Pressure Piston Assembly. (FIGURE 3-10)

This task covers: a. Disassembly, b. Repair, c. Assembly.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273
Piston ring expander P/N ST-763

Equipment Condition

Piston, connecting rod, and crankshaft removed from crankcase (para. 2-21).

Materials/Parts

Lubricating oil, Item 5, Appendix C
Cleaning solvent, Item 4, Appendix C
Connecting rod assembly P/N 110804
Sleeve bearing half P/N 6656
Retaining ring P/N 8648
Piston ring P/N 110190-008
Piston ring expander spring P/N 6448
Piston ring P/N 6446
Piston ring P/N 6447
Piston ring PIN 1648
Piston ring P/N 6451
Piston expander ring P/N 6450
High pressure compressor piston P/N 2008-001
Wiping rags, Item 3, Appendix C

DISASSEMBLY

a. Remove bolt (11) locknut (13) and washer (12).

b. Remove connecting rod (16), rod cap (14), and bearing sleeves (15).

c. Remove retaining rings (10), push piston pin (9) out of piston (8), and remove piston.

d. Pull bushing (1) out of connecting rod (16).

e. Using a ring expander, remove piston rings (2 through 7). Note the direction that the beveled edges of piston rings are facing. New rings must be installed with beveled edges facing the same direction. See FIGURE 3-10.

REPAIR

a. Clean all parts with cleaning solvent and clean rag.

b. Repair is by replacing the piston (8), piston pin (9), retaining rings (10), bearing sleeves (15), and connecting rod (16).

c. Discard and replace rings (2 through 7).

ASSEMBLY

a. Pre-lube all parts with clean oil before assembling.

b. Place bushing (1) in connecting rod (16).

c. Place piston (8) on connecting rod (16) and push piston pin (9) into the piston.

d. Insert and seat retaining rings (10).

e. Install piston rings (2 through 7) using ring expander as follows (refer to FIGURE 3-10):

(1) Install piston (rail) rings (5) and expander ring (6) in bottom groove of piston (8).

(2) Install piston ring (4) in third groove of piston (8).

(3) Install a spring ring (3) and piston ring (2) in the second groove of piston (8).

(4) Install piston ring (7) and a spring ring (3) in the top groove of piston (8).

f. Insert bearing sleeves (15) between connecting rod (16) and rod cap (14) and install two bolts (11), washers (12), and locknuts (13). Hand tighten bolts and nuts. This will retain bearing halves in place temporarily until they are installed.

NOTE

Ensure that the bearing sleeve half with drilled oil hole is facing the connecting rod body upon installation.

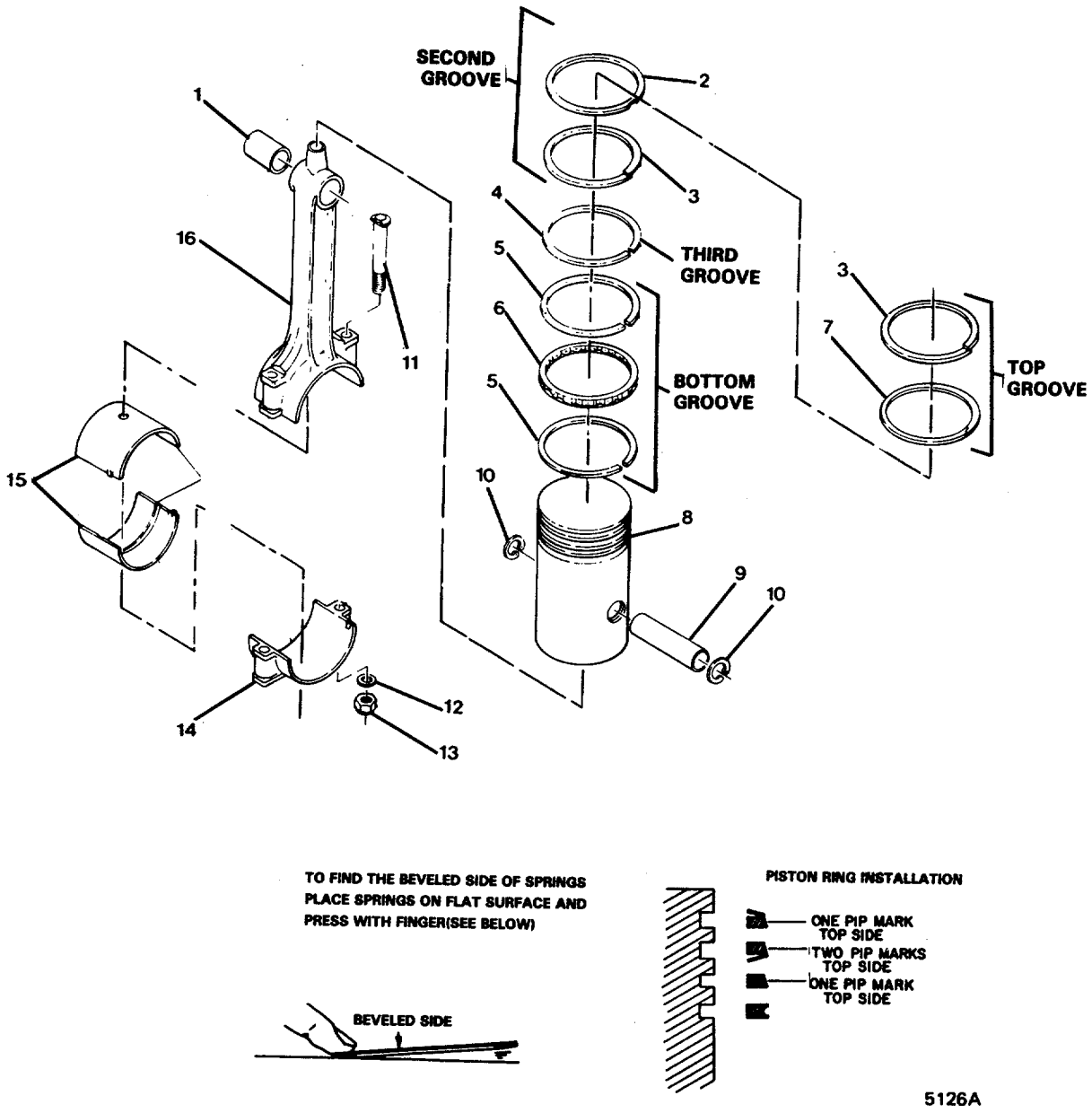


FIGURE 3-10. Repair of Connecting Rod of High Pressure Piston Assemblies.

3-22. Repair Connecting Rod Assembly (High Pressure). (FIGURE 3-11)

This task covers: a. Disassembly, b. Repair, c. Assembly.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273

Equipment Condition

Connecting rod assembly (high pressure)
removed (para. 2-22).

Materials/Parts

Cleaning solvent, Item 4, Appendix C
Connecting rod assembly P/N 110804
Wiping rags, Item 3, Appendix C
Lubricating oil, Item 5, Appendix C

DISASSEMBLY

a. Remove retaining rings (2, 5) and slide piston pin (4) out of piston (3).

b. Pull piston (3) from connecting rod (6).

REPAIR

a. Clean all parts with solvent and clean rags.

b. Inspect for rust, corrosion, or broken parts. Replace connecting rod assembly if necessary.

ASSEMBLY

a. Pre-lube all parts with clean oil before assembling.

b. Place piston (3) on connecting rod (6), and ensure that bushing (1) is in place.

c. Slide piston pin (4) into piston and connecting rod.

d. Insert and seat retaining rings (2 and 5).

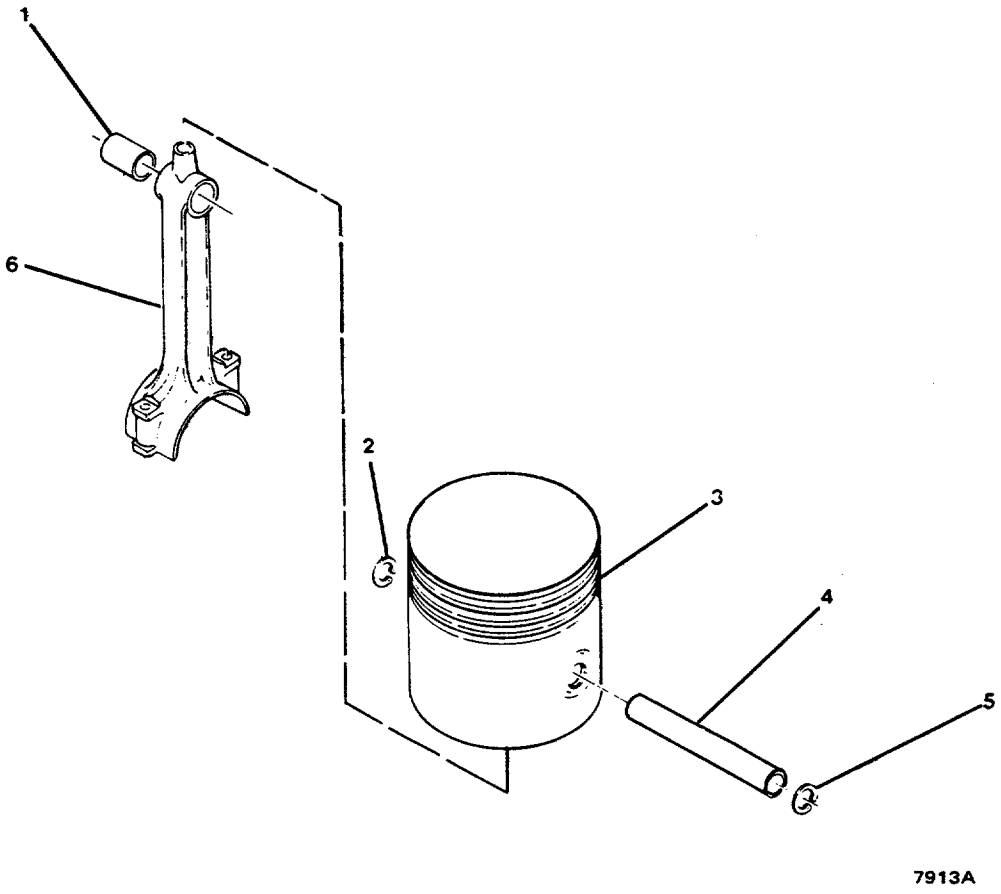


FIGURE 3-11. Repair of Connecting Rod Assembly.

3-23. Repair Bearing Carrier Group. (FIGURE 3-12)

This task covers: a. Disassembly, b. Repair, c. Assembly.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273
Torque wrench kit,
P/N 3377216

Equipment Condition

Bearing carrier group removed
(paragraph 2-23).
Fluid filter element and oil gauge removed
(paragraph 2-23).

Materials/Parts

Cleaning solvent, Item 4, Appendix C
Wiping rags, Item 3, Appendix C
Preformed packing P/N 123517-152
Preformed packing P/N 123517-112
Wearing ring P/N 1600075-001
Shouldered shaft P/N 160002-001
Retaining ring P/N 6285
Oil pump housing P/N 110813-001
Preformed packing P/N 123157-011
Hexagon self locking nut P/N 124369-R02
Compression helical spring P/N 1160
Ball bearing P/N 1281

DISASSEMBLY

a. Remove two counterbore screws (8) and lockwashers (7) to remove oil pickup tube (9) and gasket (10).

b. Remove six hex bolts (18) from oil pump housing (17).

c. Pull oil pump housing (17) off bearing carrier (6).

d. Remove retaining ring (16) and pull oil pump gear rotorset (15) from shouldered shaft (13).

e. Pull shouldered shaft (13) from bearing carrier (6).

f. Remove preformed packing (12) from shouldered shaft (13).

g. Remove preformed packing (11) from bearing carrier (6).

NOTE

Make sure that you count and record the number of turns it takes to remove screw (1). The same number of turns must be used when installing the screws.

h. Remove screw (1) and pull preformed packing (2) from screw.

i. Remove self-locking nut (3), compression helical spring (4), and ball bearing (5) from screw (1) fitting.

REPAIR

a. Clean all metal parts with cleaning solvent and wiping rag.

b. Visually inspect wearing ring (14), shouldered shaft (13), and oil pump housing (17) for cracks, dents, or breaks. Replace as required.

c. Visually inspect hex self-locking nut for cracks or thread damage. Replace as necessary.

d. Other repair consists of replacing preformed packings (2, 11, 12), retaining ring (16), compression helical spring (4), and ball bearing (5). Refer to Disassembly and Assembly steps in this procedure.

ASSEMBLY

a. Install ball bearing (5), compression helical spring (4), and self-locking nut (3).

NOTE

Install adjustment screw (1) with the same number of turns during removal.

b. Place preformed packing (2) on screw (1) and install in screw fitting. Use the same number of turns when installing screw (1) as it took to remove it.

c. Place preformed packing (11) in bearing carrier (6).

d. Place preformed packing (12) on shouldered shaft (13). Ensure wearing ring (14) is in place.

e. Fit shouldered shaft (13) in bearing carrier (6) and place gear rotorset (15) over shaft.

f. Install and seat retaining ring (16) on shouldered shaft (13).

g. Attach oil pump housing (17) on bearing carrier (6), align holes, and install six hex bolts (18). Torque to 30 ft-lbs.

h. Place gasket (10) and oil pickup tube (9) in position on bearing carrier (6) and align bolt holes.

i. Install two counter bore screws (8) and washers (7). Torque to 25 ft-lbs.

j. Install fluid filter element and oil gauge (paragraph 2-23).

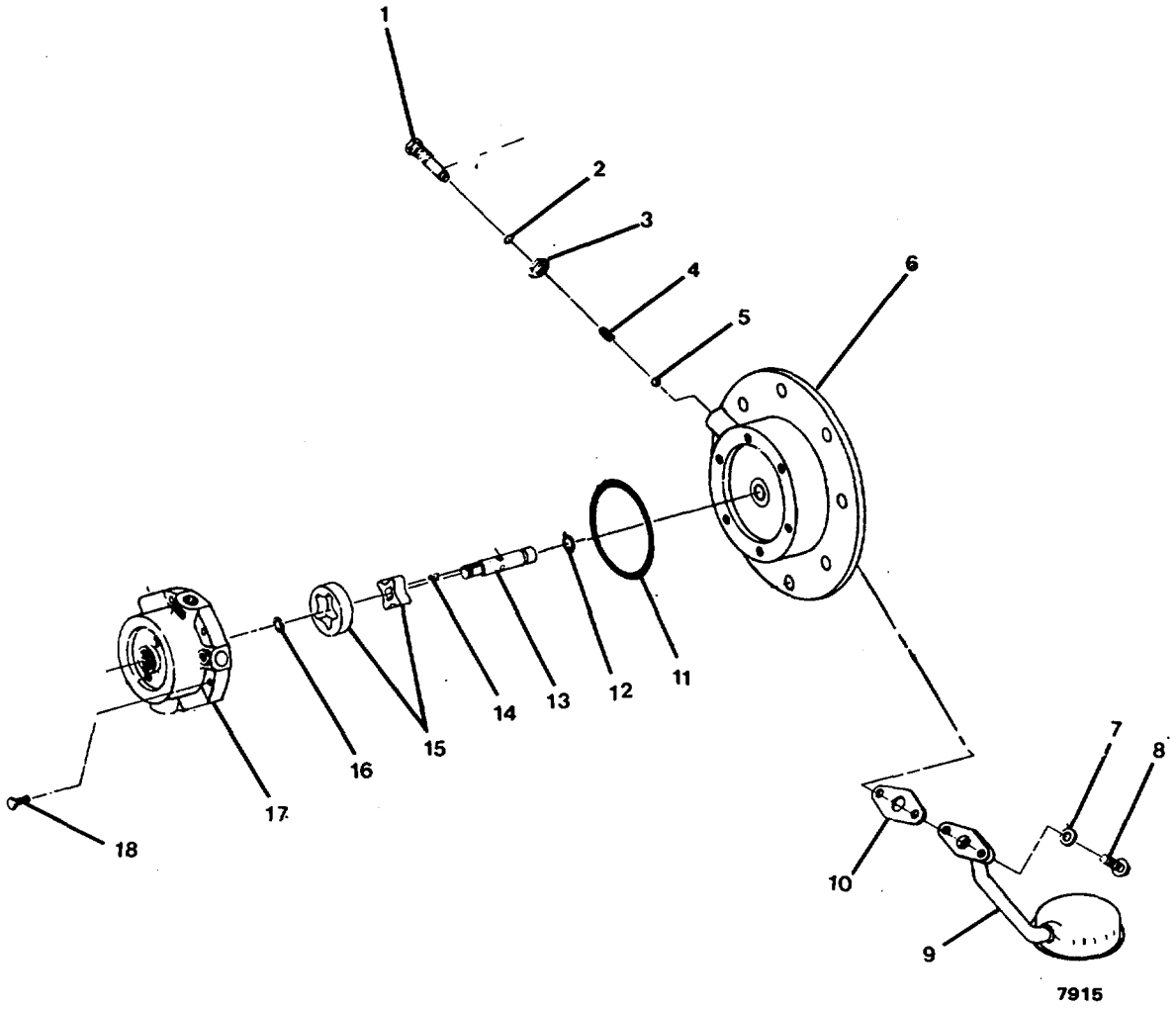


FIGURE 3-12. Repair Bearing Carrier Group.

3-24. Repair Bearing Carrier.

Repair to the bearing carrier (assembly) is covered in paragraph 3-23.

3-25. Repair Bearing Carrier. (FIGURE 3-13)

This task covers: Repair.

INITIAL SETUP

Tools

Tool kit, general mechanic's,
5180-00-699-5273

Equipment Conditions

Bearing carrier removed
(paragraph 2-24).

Materials/Parts

Bearing sleeve P/N 160005
Gasket P/N 5502

REPAIR

a. Pull the bearing sleeve (3) from bearing carrier (1).

b. Remove and discard gasket (2).

c. Insert a new bearing sleeve (3) in bearing carrier (1).

d. Use a new gasket (2) and install the bearing carrier (1) (paragraph 2-24).

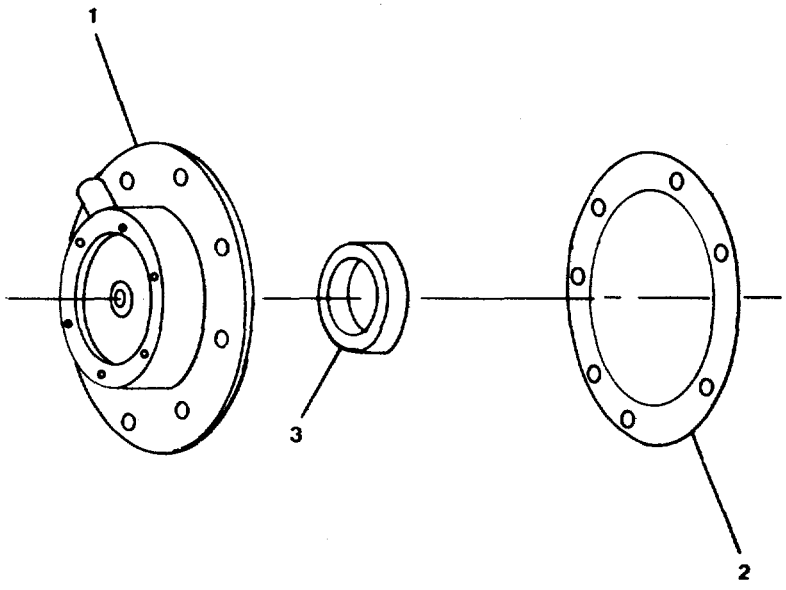


FIGURE 3-13. Repair Bearing Carrier.

3-26. Repair Crankshaft Group. (FIGURE 3-14)

This task covers: Repair.

INITIAL SETUP

Tools

Tool kit, general mechanic's, 5180-00-699-5273
Bearing puller, P/N ST-1249

Equipment Condition

Crankshaft assembly removed (paragraph 2-27).

Materials/Parts

Tapered cone and rollers P/N 6652
Bearing cone P/N 2788
Lubricating grease, Item 1, Appendix C

REPAIR

a. Use a mechanical bearing puller and remove tapered cone and rollers (1) from crankshaft (2). Ensure rollers rotate freely. Inspect for rust, corrosion or broken parts.

b. Replace if necessary.

c. Apply a thin coat of grease and install tapered cone and rollers (1) on crankshaft (2).

d. Remove bearing cone (3) from shaft. Ensure bearings rotate freely; inspect for rust, corrosion, or cracks.

e. Replace if necessary.

f. Apply a thin coat of grease and install bearing cone (3) on crankshaft (2).

g. Use magnaflux test method to inspect crankshaft (2) for cracks or broken parts. Replace if necessary.

NOTE

Repair consists of replacing pulley assembly. Refer to paragraph 2-26.

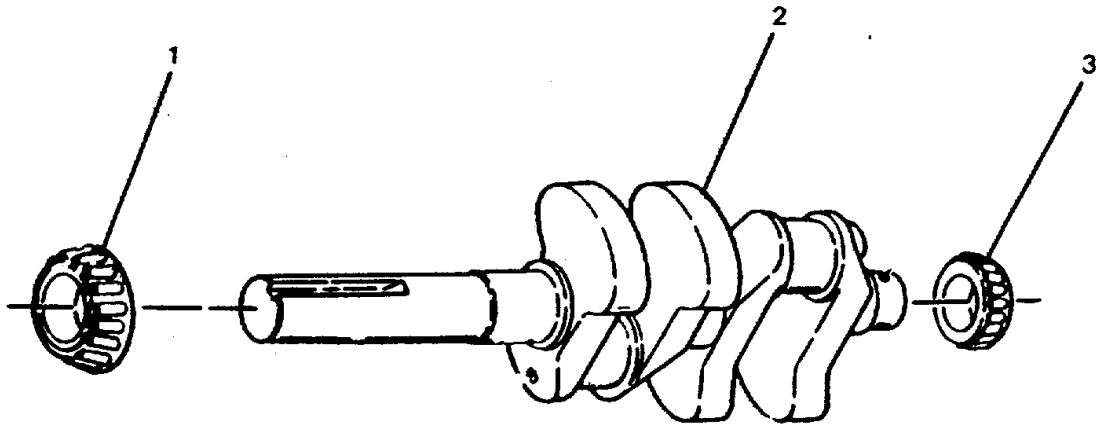


FIGURE 3-14. Repair Crankshaft Group.

3-27. Repair Crankshaft Assembly.

Repair to the crankshaft assembly is accomplished in crankshaft group (paragraph 3-26).

3-28. Repair Crankcase Assembly. (FIGURE 3-15)

This task covers: Repair.

INITIAL SETUP

Tools

Tool kit, general mechanic's
5180-00-699-5273
Torque wrench kit,
P/N 3377216

Materials/Parts

Cleaning solvent, Item 4, Appendix C
Spacer plate P/N 1383 B
Shims P/N 1383, 1383A, and 1383D

Equipment Condition

Cylinder block and head removed
(para. 2-14).
Bearing carrier group removed
(para. 2-23)
Crankshaft group removed
(para. 2-26).
Crankcase assembly removed
(para. 2-27).

REPAIR

Repair to crankcase assembly consists of replacing plate spacer (7) and shims (5, 6, 8).

a. Remove four capscrews (1) and remove bearing adjustment plate (2).

b. Remove shim (8), plate spacer (7), and shims (6, 5).

c. Remove bearing cup (4).

d. Clean bearing cup (4) and bearing adjustment plate (2) with cleaning solvent.

e. Install bearing cup (4).

f. Install new shims (5, 6), plate spacer (7), and shim (8).

g. Install bearing adjust plate (2) with four capscrews (1). Torque to 30 ft-lbs.

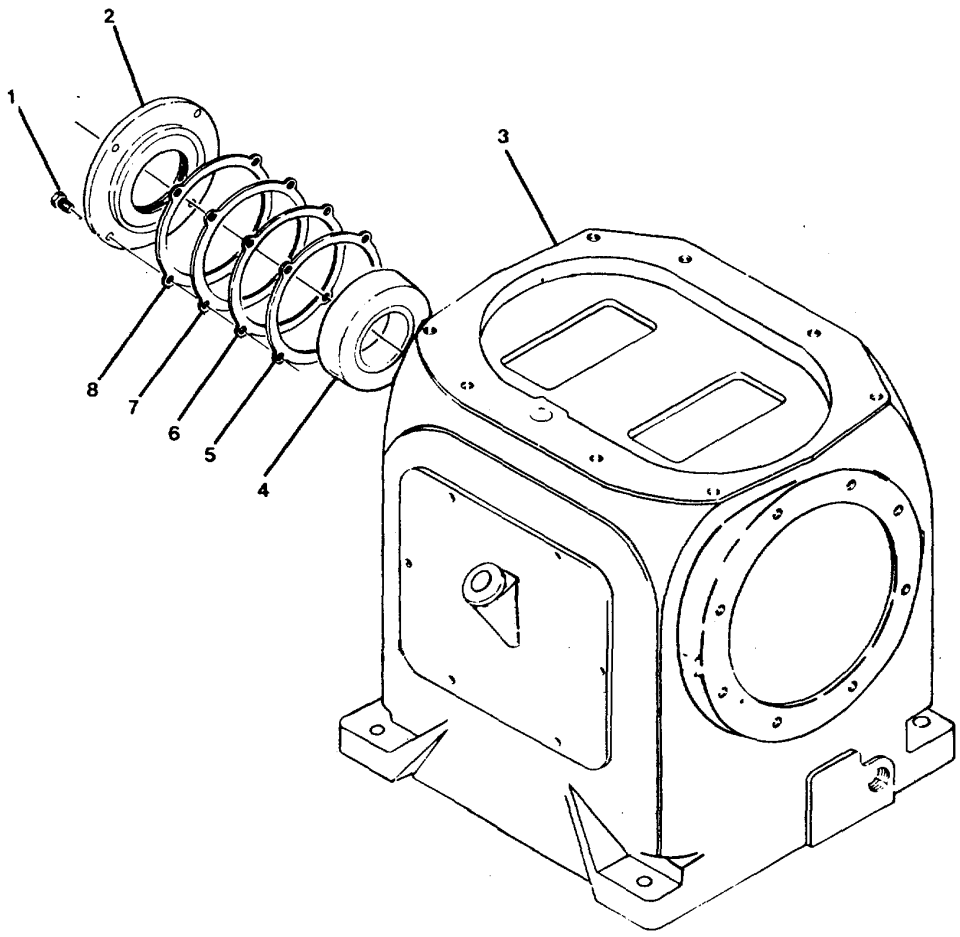


FIGURE 3-15. Repair Crankcase Assembly.

SECTION VI. PREPARATION FOR STORACE OR SHIPMENT

3-26. See Chapter 2, Section VI.

CHAPTER 4

INTERMEDIATE GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

There is no intermediate general support maintenance directed by the Maintenance Allocation Chart for the air compressor.

APPENDIX A

REFERENCES

A-1. Scope. This paragraph lists the manuals, bulletins, specifications, and miscellaneous publications referenced in this manual or required for maintenance activities.

A-2. Field Manuals.

FM 21-11	First Aid for Soldiers
FM 31-70	Basic Cold Weather Manual
FM 55-501	Marine Crewman's Handbook

A-3. Technical Manuals.

TM 43-0139	Painting Instructions for Field Use
TM 55-1905-223-10	Operator's Manual for Landing Craft, Utility (LCU)
TM 55-1905-223-24-18	LCU 2000 Class Basic Craft Maintenance Manual
TM 55-1905-223-24P-1	Repair Parts and Special Tools List for the LCU 2000 Class Watercraft
TM 750-244-3	Destruction of Army Materiel to Prevent Enemy Use

A-4. Technical Bulletins.

TB 43-0144	Painting of Vessels
TB 55-1900-207-24	Treatment of Cooling Water in Marine Diesel Engines
TB 740-97-4	Preservation of Vessels for Storage

A-5. Military Specifications.

MIL-C-16173C	Rust Preventive, Type P-1
MIL-L-644	Preservative Oil, Type P-9
MIL-L-21260	Preservative Oil, Type P-10

A-6. Miscellaneous Publications.

DA Pam 738-750	The Army Maintenance Management System
LO 55-1905-223-12	Lubrication Order for the LCU 2000 Class Watercraft
*AMC-R 750-11	Use of Lubricants, Fluids, and Associated Products

A-7. Forms.

DA Form 2028 and 2028-2	Recommended Changes to Publications and Blank Forms
DA Form 2404	Equipment Maintenance and Inspection Worksheet
DA Form 2408-16	Logsheet
DA Form 2410	Logsheet
SF Form 368	Quality Deficiency Report

*Supersedes Darcom-R 750-11

APPENDIX B. MAINTENANCE ALLOCATION CHART (MAC)

SECTION I. INTRODUCTION

B-1 THE ARMY MAINTENANCE SYSTEM MAC.

a This introduction (Section I) provides a general explanation of all maintenance and repair functions authorized at various maintenance levels under the standard Army Maintenance System concept.

b The Maintenance Allocation Chart (MAC) in Section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance levels, which are shown in the MAC in column (4) as:

Unit - includes two subcolumns: C (operator/crew) and O (unit) maintenance.
Direct Support - includes an F subcolumn.
General Support - includes an H subcolumn.
Depot - includes a D subcolumn.

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

d Section IV contains supplemental instructions and explanatory notes for a particular maintenance function as referenced from Section II.

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

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

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

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

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

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

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

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

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

i Repair. The application of maintenance services[1] including fault location/trouble-shooting[2], removal/installation, and disassembly/assembly[3] procedures, and maintenance actions[4] to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), and item, or system.

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

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

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

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

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

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

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

C Operator or Crew
O Unit Maintenance
F Direct Support Maintenance (DS)
H General Support Maintenance (GS)
D Depot Maintenance

---

[1]Service - Inspect, test, service, adjust, align, calibrate, and/or replace.
[2]Fault location/troubleshooting - The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or unit under test (UUT).
[3]Disassembly/assembly - The step-by-step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e., identification as maintenance significant).
[4]Actions - Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

e Column 5 - Tools and Equipment. Column 5 specifies, by number code, those common tool sets (not individual tools); special tools; Test, Measurement, and Diagnostic Equipment (TMDE); and support equipment required to perform the designated function, which shall be keyed to the tools listed in Section III.

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

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

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

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

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

d Column 4 - National Stock Number. The National stock number (NSN) of the tool or test equipment.

e Column 5 - Tool Number. The manufacturer's part number.

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

a Column 1 - Reference Code. The letter code recorded in Column 6, Section II.

b Column 2 - Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

SECTION II. MAINTENANCE ALLOCATION CHART FOR AIR COMPRESSOR ASSEMBLY

GROUP NUMBER	COMPONENT ASSEMBLY	MAINTENANCE FUNCTION	MAINTENANCE LEVEL					TOOLS AND EQUIP	REMARKS
			UNIT		INTERMEDIATE DEPOT				
			C	O	F	H	D		
08	AIR COMPRESSOR ASSEMBLY	INSPECT	0.5						C, D, E
		TEST	0.2						
		SERVICE	0.8						
		ADJUST	0.3						E
		REPLACE		5.0				1	
		REPAIR	0.4	1.0	12.0			1-10	
		OVERHAUL					*		A
0801	MOTOR, ALTERNATING CURRENT	TEST		0.2					
		REPLACE		0.5				1, 2, 4	B
		REPAIR		0.5	1.5			1, 2, 7, 8	
080101	CONDUIT BOX ASSEMBLY	REPLACE		0.5				1, 2	F
0802	HYDRAULIC UNLOADER ASSEMBLY	REPLACE		0.5				1, 5	B
		REPAIR			1.2			1	
0803	CYLINDER BLOCK AND HEAD ASSEMBLY	TEST		0.2					
		REPLACE		1.0				1, 3, 6	
		REPAIR		0.5	6.0			1, 3	
080301	CYLINDER HEAD ASSEMBLY	REPLACE		0.6				1, 3	
		REPAIR		0.5	1.0			1, 3	
08030101	UNLOADER BODY ASSEMBLY	REPLACE		0.4				1, 3	
		REPAIR			0.7			1	
08030102	VALVE ASSEMBLY	REPLACE		0.5				1, 3	
		REPAIR			1.0			1	
08030103	VALVE ASSEMBLY, COMPRESSOR	REPLACE		0.5				1, 3	
		REPAIR			1.0			1	

SECTION II. MAINTENANCE ALLOCATION CHART FOR AIR COMPRESSOR ASSEMBLY (Cont.)

GROUP NUMBER	COMPONENT ASSEMBLY	MAINTENANCE FUNCTION	MAINTENANCE LEVEL					TOOLS AND EQUIP	REMARKS
			UNIT		INTERMEDIATE DEPOT				
			C	O	F	H	D		
08030104	UNLOADER ASSEMBLY	REPLACE		0.4				1, 3	
		REPAIR			0.7			1	
0804	CONNECTING ROD AND LOW PRESSURE PISTON ASSEMBLY	REPLACE		0.7				1, 6	
		REPAIR		1.0	1.5			1, 9	
080401	CONNECTING ROD ASSEMBLY	REPLACE		1.0				1	
		REPAIR			2.0			1	
0805	CONNECTING ROD AND HIGH PRESSURE PISTON ASSEMBLY	REPLACE		0.8				1, 6	
		REPAIR		1.0	1.5			1, 9	
080501	CONNECTING ROD ASSEMBLY	REPLACE		1.0				1	
		REPAIR			2.0			174	
0806	BEARING CARRIER GROUP	INSPECT	0.3						
		SERVICE	0.5						
		REPLACE		1.5				1, 3	
		REPAIR		0.7	2.5			1, 3	
080601	BEARING CARRIER ASSEMBLY	INSPECT	0.3						
		SERVICE	0.5						
		REPLACE		1.0				1, 3	
		REPAIR		0.5	1.5			1	
080602	CARRIER, BEARING	REPLACE		0.5				1, 3	
		REPAIR			1.0			1	
0807	CRANKSHAFT GROUP	REPLACE		0.5				1, 3	
		REPAIR		0.5	0.5			1, 10	
080701	PULLEY ASSEMBLY	REPLACE		0.3				1, 3	
		REPAIR			0.3			1, 10	

SECTION II. MAINTENANCE ALLOCATION CHART FOR AIR COMPRESSOR ASSEMBLY (Cont.)

GROUP NUMBER	COMPONENT ASSEMBLY	MAINTENANCE FUNCTION	MAINTENANCE LEVEL					TOOLS AND EQUIP	REMARKS
			UNIT		INTERMEDIATE DEPOT				
			C	O	F	H	D		
080702	CRANKSHAFT ASSEMBLY	REPLACE		0.6				1, 3	
		REPAIR			0.8			1, 10	
0808	CRANKCASE ASSEMBLY	INSPECT	0.3					1	
		SERVICE	0.5						
		REPLACE		1.3				1	
		REPAIR	0.4	1.0	2.0			1, 3	
080801	GAGE ROD-CAP, LIQUID LEVEL	REPLACE	0.4					1	
		REPAIR	0.4	0.1				1	

SECTION III. TOOLS AND TEST EQUIPMENT REQUIREMENTS

TOOL OR TEST EQUIP-MENT REF CODE	MAINTE-NANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	C, O, F	Tool Kit, General Mechanics	5180-00-699-5273	(50980) SC-5180-90-CL-N05
2	F	Tool Kit, Electricians	5180-00-391-1087	(80064) 9000S6202-73125ALT2
3	0, F	Torque Wrench Kit		3377216
4	C, O	Standard Puller		ST-647
5	C, O	Vise Clamp	5120-00-529-3424	
6	C, O	Piston Compressor	5120-00-116-7676	
7	F	Digital Multimeter	6625-01-139-2512	
8	F	Bearing Driver		3375138
9	F	Piston Ring Expander		ST-763
10	F	Bearing Puller		ST-1249

SECTION IV. REMARKS

REFERENCE CODE	REMARKS
A	DEPOT LEVEL REPAIR / MAINTENANCE WILL BE PERFORMED ON A CASE BY CASE BASIS SUBJECT TO APPROVAL AND FUNDING BY THE NATIONAL MAINTENANCE POINT (NMP).
B	THIS ITEM RECOMMENDED FOR DIRECT EXCHANGE.
C	OPERATION TEST PRIOR TO MISSION, TO INSURE OPERATIONAL CAPABILITIES.
D	INSPECT FOR DAMAGE; LOOSE, BROKEN, OR LEAKING CONNECTIONS.
E	INSPECT, ADJUST AND ALIGN BELTS AS NEEDED.
F	REPAIR IS BY REPLACEMENT.

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APPENDIX C

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

SECTION I. INTRODUCTION

C-1. Scope. This appendix lists expendable supplies and materials needed to operate and maintain the LCU 2000 Class Watercraft. These items are authorized by CTA 50-970, Expendable/Durable Items (except Medical, Class V, Repair Parts and Heraldic Items), or CTA 8-100, Army Medical Department Expendable Items.

C-2. Explanation of Columns.

a. Column (1) - Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (for example, "Use cleaning compound, Item 5, App. C").

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

As applicable:

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 Federal Supply Code for Manufacturers (FSCM) in parentheses followed by the part number.

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

SECTION II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	F	6850-00-880-7616	Grease, ball & roller bearing	tu
2	F			
3	F	7920-00-205-1711	Wiping rags	50 lbs
4	F	6850-00-110-4498	Cleaning solvent (PD 680)	gal.
5	F	9150-00-240-2251	Lubricating oil	cn.
6	C, O		Fine emory cloth	ea.
7	C, O		Pry bar	ea.
8	C, O		Vise	ea.
9	C, O	8135-00-292-2351	Tag, electrical wire	ea.

APPENDIX D

TORQUE LIMITS

The following are Torque Limits for the bolts and screws in the air compressor.

All values are in ft-lb.

Connecting Rod Bolt	40
Bearing Carrier Mounting Bolt	30
Adjustment Plate Bolt	30
Inspection Plate Bolt	12
Crankcase to Cylinder Bolt	75
Cylinder to Head Bolt	65
Valve Cover Plate Bolt	50
Valve Clamp Screw	60
Valve Clamp Screw Locknut	50
Unloader Diaphragm Cap Screw	8
Compressor Pully Bolts	90
Inter Cooler Bolts	17

GLOSSARY

Blind End	AC motor shaft end that is on the side of the fan assembly.
Corrosion	A substance, such as rust, resulting from the act or process of dissolving or wearing away metals.
Corrosive	Substances capable of producing corrosion.
Damage	A physical deficiency to a part or component, such, as cracks, bends, breaks, tears, or broken parts.
Flammable	Easily ignitable and burning with great rapidity.
Journals	The part of a shaft or axle supported by a bearing.
Reciprocating	A device having a crankshaft turned by linearly reciprocating pistons.
Sheave	A wheel or disk with a grooved rim, especially one used as a pulley.
Toxic	Poisonous.

ALPHABETICAL INDEX

ALPHABETICAL INDEX - CONT

By Order of the Secretary of the Army:

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

Official:

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

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The Metric System and Equivalents

Linear Measure

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

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

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

PIN: 065758 000