TECHNICAL MANUAL

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL

COMPRESSOR, RECIPROCATING; ELECTRIC, MOTOR DRIVEN; 4CFM; 3000 PSI (STEWART-WARNER MDL 12010A) FSN 4310-196-1617

HEADQUARTERS, DEPARTMENT OF THE ARMY

MAY 1971

WARNING

AIR UNDER 3000+ PSI PRESSURE

is produced by operation of this equipment.

DEATH

or severe injury may result if personnel

fail to observe safety precautions.

Do not attempt removal or disassembly of any component while the system

is pressurized. Do not tamper with any relief valves.

Do not exceed specified operating limits.

Use caution when removing spring-loaded relief valve caps or retainers.

The format of this manual is not in accordance with established Department of Army specifications because of the short leadtime involved. The technical content has been furnished by the equipment manufacturer and provides the essential data needed to operate and maintain the equipment.

TECHNICAL MANUAL

TM 5-4310-344-34

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 12 May 1971

DIRECT SUPPORT AND GENERAL SUPPORT

MAINTENANCE MANUAL

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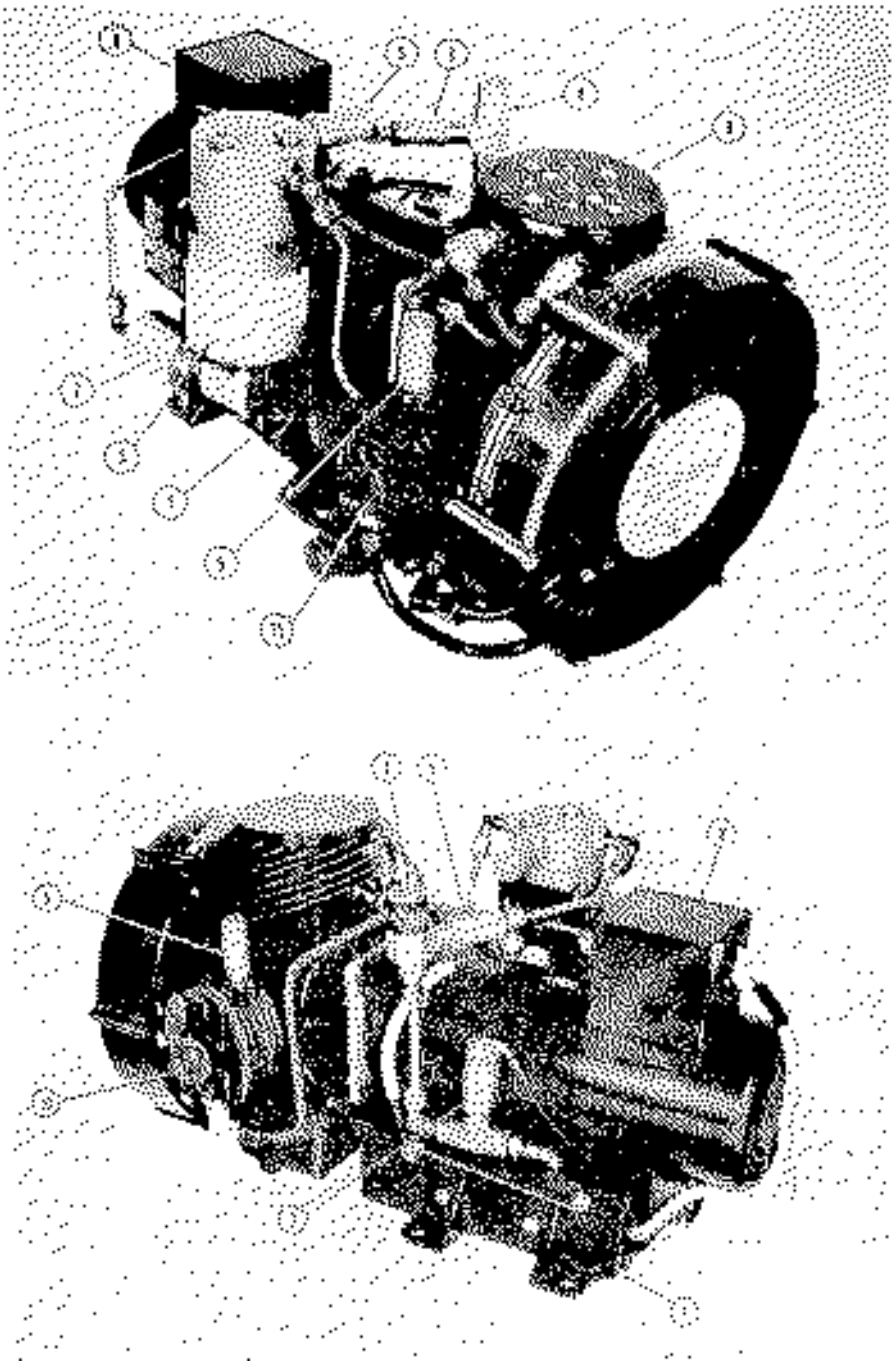

1. Control box
2. Dump valve
3. Moisture separator
4. Back pressure valve
5. Relief valve
6. Check valve
7. Pressure switch
8. Noise filter
9. 1st Stage cylinder
10. 2nd Stage cylinder
11. 3rd Stage cylinder

Figure 1. Compressor Assembly

SECTION I

DESCRIPTION

1-1. INTRODUCTION

a. Scope. These instructions are published for the information and guidance of personnel to whom the compressor is issued. Information is provided on the operation, preventive maintenance services and the direct support and general support maintenance of the equipment, accessories and components.

b. Demolition and Administrative Storage.

1. For information on the administrative storage of this equipment, refer to TM 740-90-1.

2. For information on the demolition of this equipment, refer to TM 750-244-3.

c. Direct reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded direct to: Commanding General, U. S. Army Mobility Equipment Command, ATTN: AMSME-MPP, 4300 Goodfellow Blvd., St. Louis, Missouri 63120.

1-2. DESCRIPTION (Refer to figures 1-1 and 1-2 for schematics.)

a. The compressor assembly consists basically of a radial, three-stage, reciprocating piston-type air compressor which is directly coupled to, and driven by, a direct-current electric motor.

b. The complete package includes:

1. A moisture separator assembly which removes moisture and oil vapor from the high-pressure discharge air. The condensate collecting in the moisture separator is removed periodically during compressor operation by a

dump valve installed in the bottom of the separator chamber. The moisture separator is enclosed in an electric heater that prevents ice from forming in the separator as compressed air expands. A relief valve is installed on the moisture separator. It will protect the unit if the pressure switch fails. This relief valve will open at 3950 psig (Max.) and provide rated-flow relief.

2. A pressure switch which is installed at the outlet port will stop the motor and compressor when the system pressure reaches 3200 ± 100 psig and restart the motor when the pressure drops to 2800 psig (min.).

3. A check valve, installed upstream of back pressure valve, prevents reverse air flow to the moisture separator.

4. Pressure relief valves installed in the high-pressure pneumatic line open automatically to

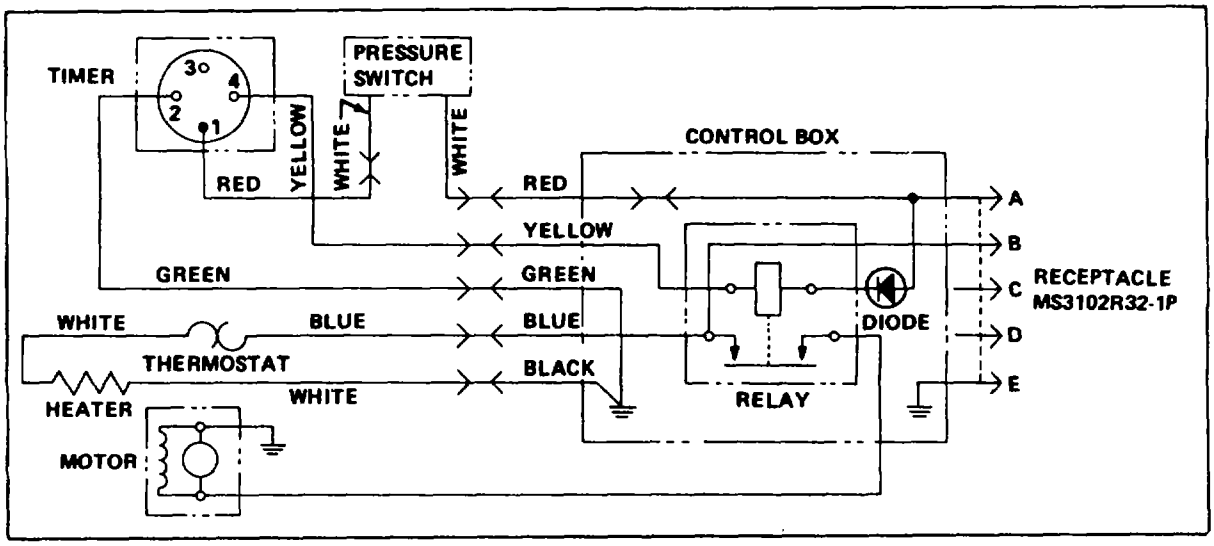

Figure 1-1. Electrical Schematic

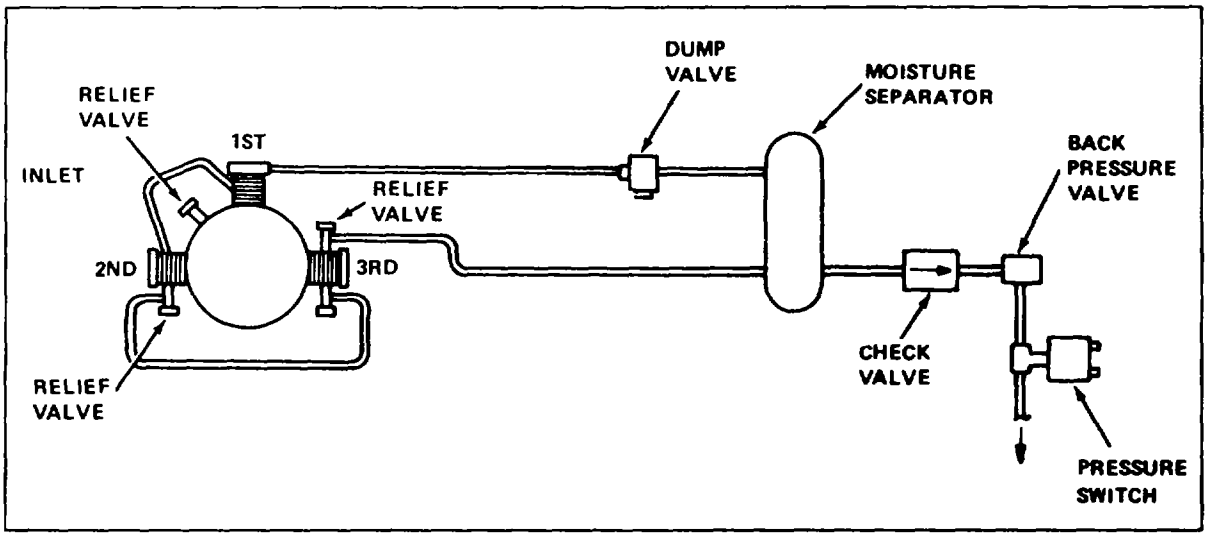

Figure 1-2. Air System Schematic

exhaust air to atmosphere if the pressure exceeds a predetermined value. The valves close (reseal) automatically, preventing the further escape of air, when normal pressures are restored.

5. The function of the timer is cause the dump valve to evacuate moisture condensate from the moisture separator at controlled intervals at standard operating pressures. At 30 minute intervals the timer will cause the motor to op. As the dump valve on the moisture separator is maintained in the closed position by compressor pressure, the dump valve will open whenever the compressor stops or pressure is lost,

6. Replaceable rupture discs installed in the cap of the moisture separator assembly and 2nd and 3rd stage cylinders provide a blowout relief factor which safeguards the pneumatic system against excessive air pressure in the event the relief valves fail to function.

1-3. RECORD AND REPORT FORMS.

a. For record and report forms applicable to operator, crew, and organizational maintenance, refer to TM 38-750.

1-4. SPECIFICATIONS.

a. Compressor Assembly.

Type..... Reciprocating piston
Number stages.....Three
Operating speed (nominal)..... 3750 rpm
Discharge air pressure (rated) ..... 3100 ± 100 psig
Air pumping capacity
(rated speed and discharge
pressure; sea level inlet).....4.0 scfm
Cooling .....Air
Lubrication:
Method .....Pressure and mist
Lubricant .....FSN 9150-753-4667
Oil sump capacity (approx).....1 U.S. pints

b. Electric Motor.

Operating voltage.....27VDC
Current draw .....150 amperes
Horsepower..... 3.5
Revolutions per minute 3750

c. Moisture Separator.

Rupture disc burst
pressure ..... 4700-to 5700 psig

Heater blanket:
Voltage.....27V
Power.....140 Watt
Thermoswitch:
Contacts open ..... 75°F ± 5°F
Contacts close..... 45°F ± 7°F

d. Pneumatic Dump Valve Assembly.

Type..... Air actuated

Operating pressure:
Low pressure .....50 psig
High pressure .....3100 psig

e. Back Pressure Valve Assembly.

Full flow inlet pressure
(zero back pressure)..... 1700 ± 100 psig
Increasing pressure leakage
(to 1450 psig) .....5 cc/min.
Decreasing pressure leakage
(to 1450 psig) .....0.15 scfm

f. Relief Valve (117B100-25)
Full flow pressure.....3950 psig (max)
Reseal pressure .....3360 psig (min)

g. Check Valve Assembly.

Opening pressure.....2 to 4 psig
Reverse flow leakage (differential) .....0 psig

h. Crankcase Pressure Relief Valve (2880100-3)

Full flow pressure 10 psig

i. 2nd Stage Pressure Relief-Valve (3260169)

Reseal pressure .....100 psig

j. 3rd Stage Pressure Relief Valve (3260179)

Reseal pressure .....700 psig

k. Electrical Timer Cycle 30 ± 4.5 minutes

l. Pressure Switch

Open..... 3100 ± 100 psig
Close .....2800 psig (min)

SECTION II
MAINTENANCE AND REPAIR

2-1. GENERAL.
This section provides information useful in preventing trouble. This section also contains information on diagnosing and correcting an unsatisfactory operation or failure of the compressor.

2-2. PREVENTIVE MAINTENANCE.

a. Check air intake on first stage cylinder for obstruction and damage-weekly.

b. Check crankcase oil level-daily. Add lubricating oil, **FSN 9150-753-4667 as required.**

c. Check all lines and fittings for tightness-weekly.

d. Drain and refill crankcase each 50 operating hours.

2-3. TROUBLESHOOTING. Each trouble symptom stated is followed by a list of probable causes. The possible remedy recommended is described opposite the probable cause.

a Insufficient Air Flow, Low Outlet Pressure, or Excessive Pump-up Time.

Probable cause	**Remedy**
Air leaks	Check all connecting tubes and fittings. Tighten connections and/or replace defective parts.
Pressure relief valve damaged or defective (open)	Check valves for escaping air. Remove, test, and repair or replace as necessary.
Leakage from pneumatic dump valve due to	Disassemble, clean, and replace parts as necessary.
Rupture discs in second or third stage cylinders leaking or blown out	Install new rupture disc(s).
Restricted air inlet to compressor first stage cylinder	Check. Remove restriction. Clean or replace intake filter.
Compressor not operating at rated speed	Electric motor not operating properly. See Appendix A
Damaged or worn air compressor	Remove air compressor. Repair or replace.

b Excessive Oil Consumption

Probable cause	**Remedy**
Oil leaks	Inspect for leakage. Repair or replace parts as necessary.
Excessive piston-to-cylinder-wall clearance in air compressor	Remove, test, and repair or replace as necessary.

c Air Compressor Overheats

Probable cause	**Remedy**
Oil supply low	Replenish supply of oil in reservoir.
Clogged fins on cylinders or tubing	Check. Clean thoroughly.

d Excessive moisture or Oil Vapor in Discharge Air

Probable Cause	**Remedy**
Timer does not cycle to actuate dump valve	Check relay in control box, replace if defective. Replace defective timer.

2-4. WEAR LIMITS. Refer to table 2-1 for allowable wear limits.

TABLE 2-1. TABLE OF LIMITS

Item	Original dimensions			Wear limit
First Stage Cylinder and Piston Assembly				
Ring to cylinder wall clearance	0.0003	to	0.0005	0.0005
Wrist pin hole	0.3754	to	0.3756	0.0005
Wrist pin diameter	0.3751	to	0.3756	0.0005
Piston head clearance	0.021	to	0.026	
Second Stage Cylinder and Piston Assembly				
Ring to cylinder wall clearance	0.0002	to	0.0004	0.0005
Wrist pin hole	0.4366	to	0.4368	0.0003
Wrist pin diameter	0.4364	to	0.4365	0.0005
Piston head clearance	0.0002	to	0.0006	
Poppet lift (nominal)	0.022			
Exhaust valve lift	0.024	to	0.030	
Third Stage Cylinder and Piston Assembly				
Ring to cylinder wall clearance	0.00020	to	0.00025	0.0002
Wrist pin hole	0.4366	to	0.4368	0.0003
Wrist pin diameter	0.4363	to	0.4365	0.0005
Piston head clearance	0.002	to	0.006	
Poppet lift (nominal)	0.034			
Exhaust valve lift	0.024	to	0.030	
Compressor Connecting Links and Master Rod				
Connecting link wrist pin bearing hole	0.5615	to	0.5620	0.0005
Master rod connecting link hole	0.4366	to	0.4368	0.0003
First stage wrist pin bearing hole	0.5590	to	0.5594	
Endbell				
Shaft seal bore diameter	1.499	to	1.500	
Bearing bore diameter	1.8502	to	1.8505	0.0002
Compressor Shaft				
Shaft seal diameter (fan end)	0.934	to	0.940	0.001
Bearing diameter (fan end)	0.9842	to	0.9845	0.0001
Master rod journal diameter	1.7711	to	1.7717	0.0005
Bearing diameter (opposite fan end)	1.1809	to	1.1811	0.0001
Shaft seal diameter (opposite fan end)	1.059	to	1.065	0.001
Oil Pump Piston				
Large spherical diameter	0.5595	to	0.5605	0.0005
Small spherical diameter	0.3790	to	0.3795	0.0005
Oil Pump Cylinder				
Inner diameter	0.360	to	0.362	0.002

2-5. REPAIR.

a. The following paragraphs describe procedures for repair of all subassemblies except the electric motor. Refer to Appendix A for motor repair.

b. Instructions for removal of wiring, tubing, fittings, and hardware are not included in this manual. Refer to the applicable exploded view illustrations in the Illustrated Parts Breakdown section for these items.

2-6. CONTROL BOX ASSEMBLY. An electric relay in the control box assembly is connected in series with the pressure valve at the outlet, the power cable, and the electric motor. When excess pressure is sensed at the back pressure valve an electric signal causes the relay to open the circuit to the electric motor.

2-7. DISASSEMBLY. (See figure 2-5).

a. Disconnect and tag all electric wires at relay (2).

b. Remove nuts (3), lockwashers (4 and 5), screws (6), and the relay.

c. Remove screws (8 and 10) and connectors (9 and 11).

2-8. CLEANING AND INSPECTION.

a. Clean the external surfaces of the relay with a clean cloth moistened with isopropyl alcohol, Federal Specification TT-I-735A. Allow to air dry.

b. Inspect connectors for bent or missing pins.

c. Check all electric wires for frayed insulation.

2-9. REASSEMBLY.

a. Attach the relay with screws (6), lockwashers (4 and 5) and nuts (3).

b. Install connectors (9 and 11) with screws (8 and 10).

c. Connect the electric wires as tagged when disconnected.

2-10. BACK PRESSURE VALVE.

The back pressure valve is installed downstream of the check valve to maintain steady pressure within the compressor pneumatic system.

2-11. DISASSEMBLY. (See figure 2-6.)

a. Remove inlet and outlet fittings (3 and 4), and tube fitting gaskets (5) from valve body (13).

b. Unscrew valve cap (6) from top of valve body (13). Remove spring plates (7) and spring (8) from inside valve body.

c. Remove piston (9) and piston seat (10) from inside valve body (13). Remove O-ring packings (11) and retainer (12) from piston and valve seat.

2-12. CLEANING AND INSPECTION.

a. Wash all parts in dry cleaning solvent, Federal Specification P-D-680, and dry thoroughly with filtered, compressed air or clean, lint-free cloths. Be sure all residue is removed from crevices and packing ring grooves.

b. Inspect parts for evidence of damage and wear such as stripped screw threads, cracking of valve body, and finished surfaces that are scratched, scored or pitted.

c. Make sure seat surface of piston is smooth and undamaged; mating surface of piston seat must be sharp and without nicks or other signs of wear or damage.

d. Check spring for signs of set or out-of-round.
Spring must be cylindrical in shape with ends closed, square and ground. Length of spring with a load of 86 pounds plus or minus 10 pounds should be 0.687 inch.

e. Discard all damaged, worn and questionable parts.

2-13. REASSEMBLY

Note

During reassembly, apply a light film of pneumatic system grease, Specification MIL-G-4343, to all gaskets, packings and male threads.

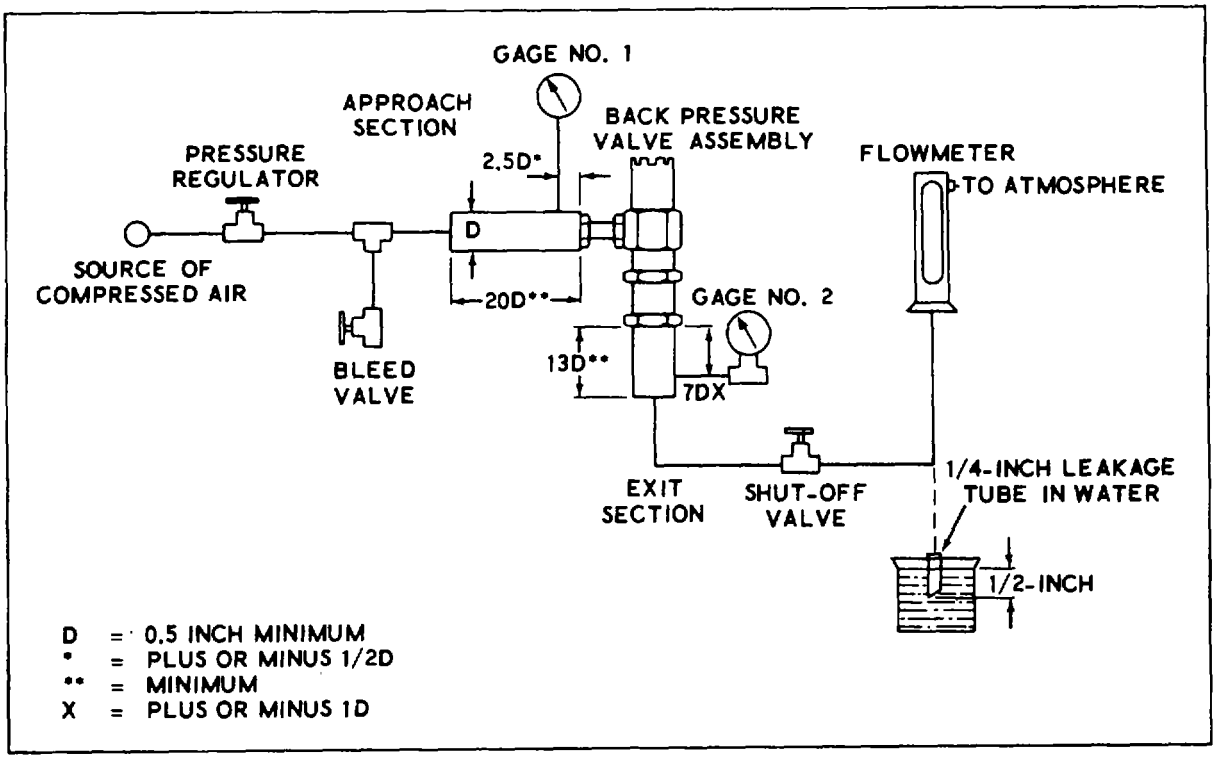

Figure 2-1. Back Pressure Valve Test Set-Up

a. Install retainer (12) and packing (11) in groove of piston (9). Install second packing (11) in groove of piston seat (10).

b. Install piston seat (10) and piston (9) in valve body (13).

c. Position tube fitting gaskets (5) in grooves of inlet and outlet fittings (3 and 4). Screw fittings into appropriate ports of valve body (13) and tighten to a torque of 45 pound-inches.

d. Place spring (8), flanked by two spring plates (7), into valve body (13). Screw valve cap (6) into valve body until top surface of cap is approximately flush with upper edge of valve body.

2-14. TEST AND ADJUSTMENT.

a. Install the back pressure valve into the test setup illustrated in figure 2-1.

b. Open the shut-off valve fully. Open the pressure regulator to gradually increase inlet pressure until the flowmeter indicates a flow of 4.0 scfm, to test for full flow pressure. With the flow as specified, the inlet pressure, gage No. 1, shall be 1600-to 1800-psig.

c. To test for full flow with back pressure, adjust the pressure regulator and the shutoff valve until the outlet pressure, gage No. 2, is 1700 ±100 psig and the flowmeter indicates a flow of 4.0 scfm. With the outlet pressure as specified the inlet pressure shall not exceed 1800 psig as indicated at gage No. 1.

d. Fully open the shutoff valve. Starting with zero inlet pressure, open the pressure regulator to gradually increase inlet pressure to 1600 psig. With the inlet pressure as specified leakage through the back pressure valve shall not exceed 5.0cc/min., as indicated by the flowmeter.

e. With the shutoff valve fully open, adjust the pressure regulator for inlet. pressure of 1800 psig. Close pressure regulator to decrease the inlet pressure to 1600 psig. With the inlet pressure decreased as specified, leakage through the back pressure valve shall not exceed 0.15 scfm as indicated by the flowmeter.

f. Close the shutoff valve and adjust the pressure

regulator to Increase inlet and outlet pressure to 4800 psig. Apply a soap solution to the back pressure valve to detect external leakage allowed.

2-15. DUMP VALVE. When the dump valve is actuated, moisture and oil vapor are purged from the air system.

2-16. DISASSEMBLY. (See figure 2-7.)

a. Unscrew bulkhead union (2). Remove and discard preformed packing (3). Drop seat (4) from body (10).

b. Remove retaining ring (6) and pull end cap (5) from the body.

c. Pull piston (8) from the body.

d. Remove and discard preformed packings (7 and 9).

2-17. CLEANING AND INSPECTION.

a. Wash all parts, in dry cleaning solvent, Federal Specification P-D-680. Dry parts thoroughly with clean, lint-free cloths and/or low-pressure compressed air.

b. Inspect parts for scoring, pitting, wear and other evidence of damage.

2-18. REASSEMBLY.

Note

Lubricate preformed packings with pneumatic system grease, MIL-G-4343.

a. Install preformed packing (9) into the groove in piston (8). Carefully slide the piston into body (10).

b. Install preformed packing (7) into the groove in end cap (5). Slide the end cap into the body and secure with retaining ring (6).

c. Insert seat (4) into the inlet end of the body.

d. Install preformed packing (3) onto bulkhead union (2). Screw the union into the body. Loosely install nut (1) onto the union.

2-19. TESTING.

a. Install the dump valve into a test set-up as shown in figure 2-2.

b. Adjust pressure regulator to apply a pressure of 60 to 65 psig to low pressure inlet port.

c. Leakage from exhaust port shall not exceed three cubic centimeters per hour (one air bubble every two minutes).

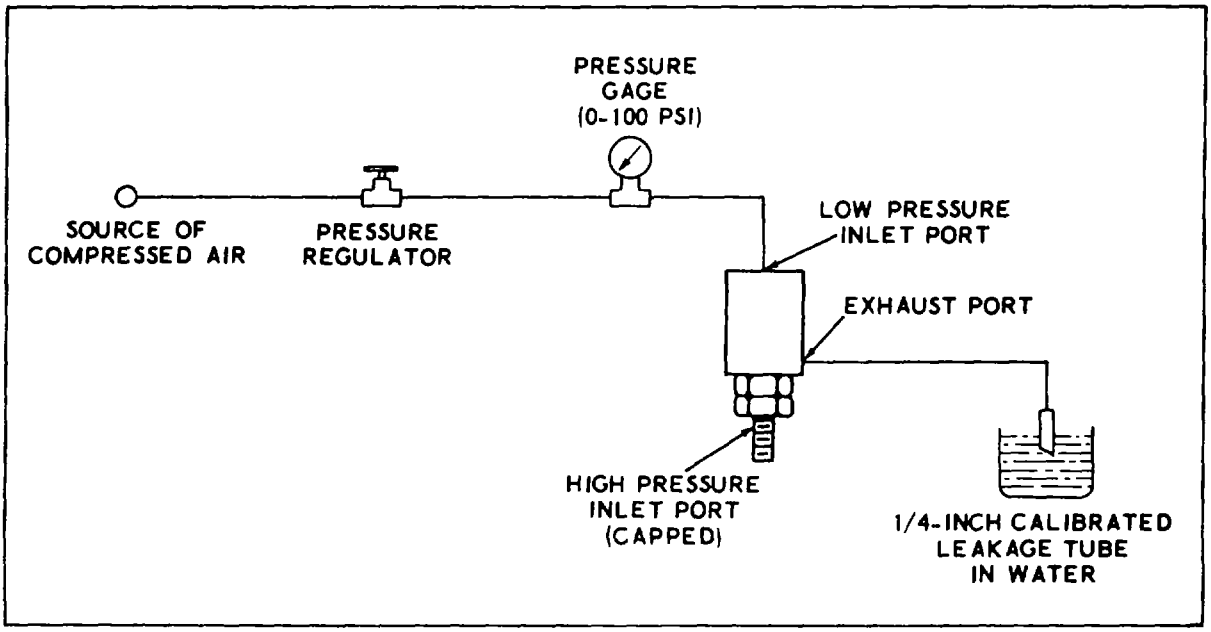

Figure 2-2. Dump Valve Test Set-Up

d. Use same test set-up as illustrated in figure 2-2, except disconnect leakage tube from exhaust port and connect an adjustable source of high pressure compressed air to high pressure inlet port of pneumatic dump valve.

e. With an air pressure of 60-to 65-psig applied to low pressure inlet port, apply a gradually increasing air pressure to high pressure inlet port. Increase pressure to 3100 ± 100 psig, then shut off high pressure air supply.

f. Piston in pneumatic dump valve should remain closed to maintain high inlet air pressure. When it is evident that piston is closed, connect a flowmeter to dump valve exhaust port. Measured leakage shall not exceed five cubic inches per minute.

g. After completing tests, relieve air pressure in test set-up, disconnect pneumatic dump valve.

2-20. PRESSURE RELIEF VALVE. The pressure relief valve is Installed at the outlet port to protect the air system from excessive back pressure. The valve exhausts air to atmosphere at a pressure of 3950 psig (max) and reseals when pressure is no less than 3350 psig.

2-21. DISASSEMBLY. (See figure 2-8.)

a. Cut safety wire and remove wire and lead seal. Unscrew adjusting screw (2) and stem (3) from body (11).

b. Remove spring (4), shim (5), spring retainer (6) and piston assembly (7) from body (11).

Note

Do not disassemble piston assembly (7). The parts are installed and crimped within the retainer and cannot be removed without destroying the assembly.

c. Remove metal ball (8), ball return spring (9) and preformed packing (10) from body (11).

2-22. CLEANING AND INSPECTION.

a. Wash all parts with dry cleaning solvent, Federal Specification P-D-680, and dry thoroughly with clean, lint-free cloths. Use filtered, compressed air to blow solvent and residue from all crevices, springs, and air passages.

b. Inspect parts for damaged screw threads, cracks, breaks or worn areas in anodized surfaces, and other obvious indications of wear, damage and deterioration.

c. Inspect finished surfaces of body, stem, adjusting screw and metal ball for scoring, scratches, nicks and signs of wear.

d. Do not attempt to repair damaged or questionable parts. Discard all such items and install new parts during reassembly.

2-23. REASSEMBLY.

a. Apply a thin film of pneumatic system grease MIL-G-4343 to new preformed packing (10), packing groove in body (11), and mating surfaces of body and piston assembly (7).

b. Insert preformed packing (10) in groove in bore of body (11). Install ball return spring (9) and metal ball (8) in bore of body.

c. Install piston assembly (7) in body (11) and down over metal ball (8) and spring (9).

d. Insert spring retainer (6), cupped side against piston assembly (7).

e. Place shim (5) and spring (4) in body (11). Screw adjusting screw (2) into body. Screw stem (3) into adjusting screw.

2-24. TEST AND ADJUSTMENT.

a. Install pressure relief valve in test set-up as illustrated schematically in figure 2-3. Be sure to observe dimensions specified for approach and exit sections.

b. Close bleed valve. Adjust pressure regulator to apply a gradually increasing air pressure to approach section. Relief valve should open (i.e., air flow from leakage tube exceed three cubic centimeters per hour) before applied pressure reaches 3500-to 3800-psig.

c. If relief valve falls to open, remove collector cup, adjust stem of valve a small amount, replace collector cup, and repeat test. Repeat alternate adjustments and tests until relief valve opens, as indicated by a minimum air flow of 0.6 scfm, with an approach section pressure of 3500-to 3800psig maximum.

d. Close pressure regulator and open bleed valve slightly to slowly relieve air pressure in approach section. Pressure relief valve should close (reseal) before approach section pressure drops below 3350 psig as indicated by pressure gage.

e. If required relief valve operation cannot be obtained by adjusting stem, change setting of adjusting screw installed in valve body, and repeat complete test and adjustment procedure. Final setting of adjusting screw and stem must allow installation of 0.025 inch diameter stainless steel safety wire and lead seal as in original valve configuration.

f. Close pressure regulator, open bleed valve to relieve air pressure in test setup and disconnect pressure relief valve from test equipment.

2-25. MOISTURE SEPARATOR. High pressure air in the moisture separator causes moisture and oil vapor to condense and settle to the bottom of the shell. These impurities are removed when the dump valve is actuated, allowing the air pressure to force them from the shell. An element in the moisture separator traps particles suspended in the air. A rupture disc in the cap protects the assembly.

2-26. DISASSEMBLY. (See figure 2-9.)

a. Unscrew cap (1) and remove from shell (2).

b. Remove preformed packing (3) from the cap.

c. Remove screw (4), washer (5), and element (6). Discard gasket (7).

d. Cut the tape 'securing heater blanket (10) to the shell.

e. Remove retainers (8) and rupture discs (9).

f. Do not remove thermostat switch (11) from the shell unless a new switch is required. The switch is press fit in the shell and will be damaged if removed.

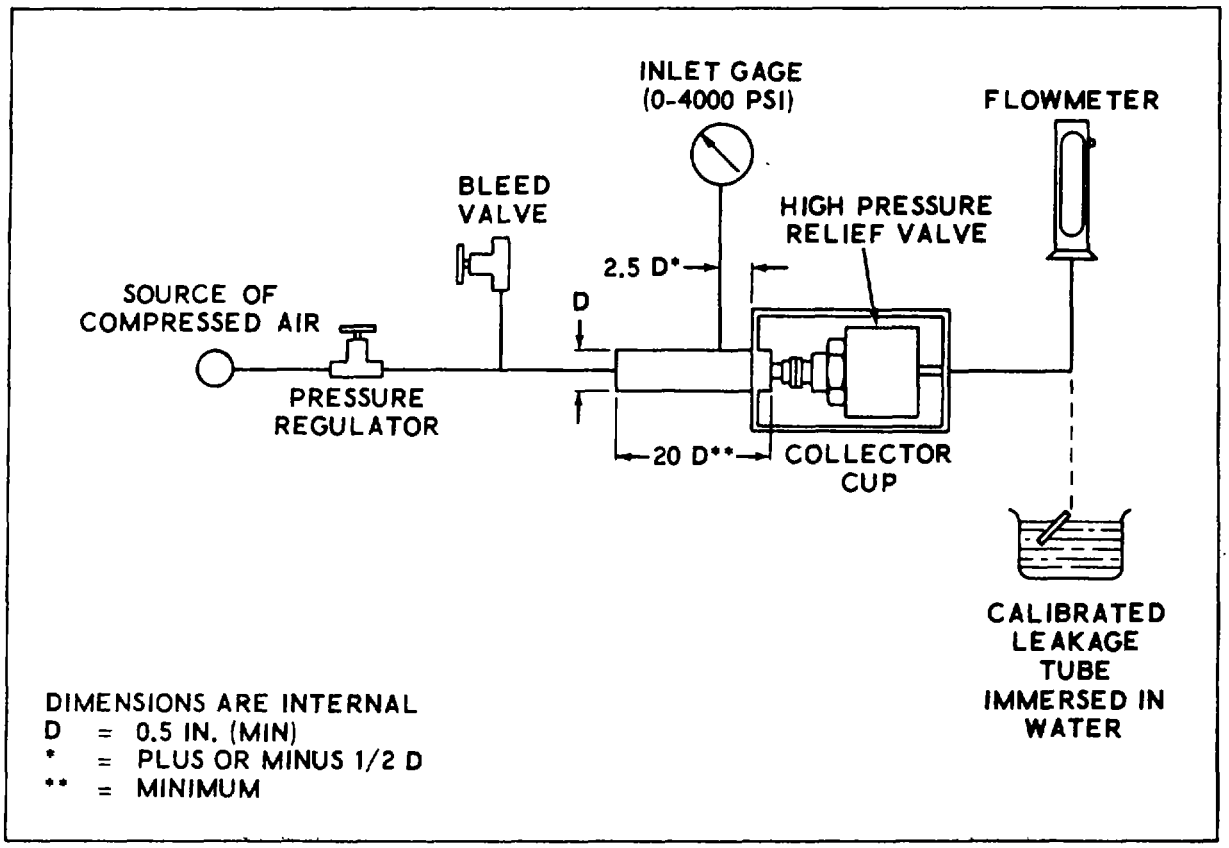

Figure 2-3. Pressure Relief Valve Test Set-Up

2-27. CLEANING AND INSPECTION.

a. Wash all parts except the element in dry cleaning solvent, Federal Specification P-D-680. Dry parts thoroughly with low pressure compressed air.

b. Inspect parts for scoring, pitting, wear, and other evidence of damage.

c. Ensure that all drilled passages are unobstructed.

2-28. REASSEMBLY.

a. Position gasket (7) and element (6) against inner surface of cap (1) and secure with washer (5) and screw (4).

b. Lubricate preformed packing (3) with pneumatic system grease, MIL-G-4343, and install in groove in the cap. Screw the cap into the shell until the seam is closed.

c. Install rupture discs (9) into the cap ports and screw retainers (8) to a torque of 350 pounds-inch.

d. Test the moisture separator as described in paragraph 2-29.

e. If removed, press a new thermostat switch (11) into shell (2).

f. If heater blanket (10) was removed wrap the blanket around the shell, with the electric leads positioned with the thermostat switch leads, and secure with electrical acetate tape.

2-29. TESTING. Test the moisture separator for leakage before attaching the heater blanket or thermostat switch, or installing the pneumatic dump valve.

Note

If thermostat switch was not removed during disassembly, it must be protected against moisture by covering with waterproof tape.

a. Install pressure plugs in all ports except one. Connect variable source of compressed air to remaining port.

b. Pressurize moisture separator to 3200 psig. While maintaining this internal pressure, brush a soap-water solution on joints of assembly. Maximum allowable leakage, as evidenced by air bubbles, is one bubble per minute.

c. If leakage rate exceeds one air bubble per minute, disassemble moisture separator and install new packing on cap.

2-30. COMPRESSOR COMPONENTS.

a. High pressure compressed air is routed from the third stage cylinder through the aftercooler assembly. Cooling fins on the tubing dissipate heat from the compressed air. The assembly is attached to the fan guard in a position to receive maximum air flow.

b. The fan is attached to the crankshaft to provide cooling air for the cylinders and the intercooler and aftercooler assemblies.

c. The two intercooler assemblies connect the first stage cylinder to the second stage cylinder, and the second stage cylinder to the third stage cylinder.

2-31. AFTERCOOLER ASSEMBLY.

2-32. REMOVAL. (See figure 2-10.)

a. Disconnect the aftercooler (7) from the third stage cylinder and the separator and filter air line.

b. Remove six screws (5) and lockwashers (6) and pull the fan guard (4) away from the air compressor endbell.

c. Remove two screws (8) and lockwashers (9) attaching each of six clamps (10).

d. Pull the aftercooler assembly (7) away from the guard (4).

2-33. CLEANING AND INSPECTION.

a. Clean the exterior surfaces of the aftercooler assembly with dry cleaning solvent, Federal Specification P-D-680. Use compressed air to clean residue from the fins.

b. Inspect for damaged threads, cracks, and missing fins.

c. Straighten bent fins.

d. Replace a damaged aftercooler assembly.

2-34. INSTALLATION.

a. Attach the aftercooler assembly (7) to the fan guard (4) with six clamps (10), and twelve screws (8) and lockwashers (9) (figure 2-10.)

b. Attach the fan guard to the compressor endbell with six screws (5) and lockwashers (6).

c. Connect the aftercooler assembly to the third stage cylinder and the separator and filter air line.

2-35. FAN ASSEMBLY

2-36. REMOVAL. (See figure 2-10.)

a. Remove the aftercooler assembly (paragraph 2-31).

b. Remove nut (12) and bolt (13). Pull the fan (11) off the crankshaft.

2-37. CLEANING AND INSPECTION.

a. Clean the fan with dry cleaning solvent, Federal Specification P-D-680.

b. Inspect the fan for bent or cracked blades.

c. Replace a defective fan.

2-38. INSTALLATION.

a. Place the fan (11) on the end of the crankshaft.

b. Install bolt (13) and nut (12).

c. Install the aftercooler assembly (paragraph 2-34).

2-39. INTERCOOLER ASSEMBLY.
(See figure 2-10.)

2-40. REMOVAL. Disconnect the intercooler assemblies (14 and 15) at the applicable cylinder ports.

2-41. CLEANING AND INSPECTION.

a. Clean the exterior surfaces with dry cleaning solvent, Federal Specification P-D-680. Clean residue from the fins with compressed air.

b. Inspect for cracks, damaged threads.

c. Replace all seals and gaskets and defective parts.

2-42. INSTALLATION. Connect the intercooler assemblies to the applicable cylinder ports.

2-43. FIRST STAGE CYLINDER, PISTONS AND VALVES.

2-44. REMOVAL. (See figure 2-11.)

a. Disconnect the intercooler assembly (paragraph 2-40).

b. Remove the attaching screws (2) and lift intake cover (1) and filter (3) from cylinder head (4).

c. Remove flat head screws (5) and lift first stage cylinder head (4), gasket (16), and complete valve mechanism (items 6 through 15) free of the first stage cylinder (17).

d. Remove valve retainer bolt (8), nut (6), and flat washer (7) and separate intake valve spring (15) intake valve (14), valve plate (13), exhaust valves (12), exhaust valve spring (11), valve stop (10), and packing (9) from the first stage cylinder head (4).

e. Unscrew four nuts (23) and slip first stage cylinder (17) over the piston. Remove and discard the cylinder gaskets (21) and shim (22).

f. Remove two retaining rings (19), and push the piston pin (20) out of the piston assembly (18) and the master rod. Identify the side of the piston toward the fan end of the crankcase to ensure proper re-installation by scribing a mark inside of the piston skirt.

Note

Do not disassemble rings from piston assembly (18). If rings are damaged, the complete piston assembly must be replaced.

2-45. CLEANING AND INSPECTION.

a. Clean all parts with dry cleaning solvent, Federal Specification P-D-680.

b. Inspect all parts for obvious indications of damage such as damaged screw threads, scratched, pitted, or worn finished surfaces, and broken cooling fins.

c. Inspect the cylinder bore, piston, piston rings, piston pin, master rod, and bearings for excessive wear, scoring, and other damage.

d. Refer to table 2-1 for wear tolerances.

2-46. REASSEMBLY. (See figure 2-11.)

a. Attach first stage piston assembly (18) to master rod and needle bearings with piston pin (20) and retaining rings (19).

b. Install shim (22) between two paper gaskets (21), against mounting flange of first stage cylinder (17).

c. Compress the piston rings and slip first stage cylinder (17) over installed piston and press into crankcase mounting hole. Cylinder must be installed with leading edge of cooling fins slanted toward fan end of compressor. Secure cylinder to crankcase with nuts (23), being sure to tighten with an equal torque.

d. Use a depth micrometer or dial indicator to measure piston-head-to-valve-plate clearance. Required clearance is 0.021-to 0.026-inch. If necessary, remove cylinder and add or remove cylinder-to-crankcase gaskets to obtain required clearance.

Note

Overall thickness of steel gaskets can be reduced in increments of 0.002 inch by peeling off laminations. At least one paper gasket must remain on each side of steel gasket in final installation.

e. Install packing (9) in groove in first stage cylinder head (4). Assemble valve stop (10), exhaust spring (11), exhaust valves (12), valve plate (13), intake valve (14), and intake valve spring (15). Attach assembled parts to cylinder head with bolt (8), flat washer (7) and nut (6).

f. Position first stage cylinder head and valve assembly and gasket (16) on first stage cylinder so that cooling fins all slanted down toward fan end of compressor. Install flat head screws (5) and tighten with a torque of 25 pound-inches.

g. Install air intake filter (3) and cover (1) with screws (2).

h. Connect the intercooler assembly to the cylinder port.

2-47. SECOND STAGE CYLINDER, PISTON, AND VALVE.

2-48. DISASSEMBLY. (See figure 2-12.)

a. Disconnect the intercooler assemblies at the second stage inlet and outlet ports (paragraph 2-40).

b. Unscrew and remove strainer and relief valve assembly (9). Remove flared nut (10), back-up ring (11), and gasket (12).

c. Remove elbow (13), flared nut (10), back-up ring (11), and gasket (12).

d. Unscrew cylinder cap (4) and remove exhaust valve (8), valve spring (7), valve spring washer (6), and preformed packing (5).

e. If the rupture disc (3) is defective, unscrew disc holddown screw (1) and remove disc retainer ring (2) and rupture disc (3), from the cylinder cap (4).

f. Remove nuts (15) and carefully slide cylinder (14) over the piston assembly (18).

g. Remove and discard gaskets (16) and (17).

h. Remove cotter pin (20) and carefully push piston pin (19) out of the piston assembly (18). Use care to prevent loss of the 25 needle bearings (22) and two washers (21) which will drop out of the piston assembly when the piston pin is removed. Scribe a small mark on the inside of the piston skirt toward the fan end of the crankcase for correct reassembly.

i. Do not disassemble the piston assembly.

2-49. CLEANING AND INSPECTION.

a. Clean all parts with dry cleaning solvent, Federal Specification P-D-680.

b. Inspect all parts for obvious indication of damage such as damaged screw threads, scratched, pitted, or worn finished surfaces, and broken cooling fins.

c. Inspect the cylinder bore, piston assembly, piston pin, connecting link and bearing for excessive wear, scoring, and other damage.

d. Refer to table 2-1 for wear tolerances.

2-50. REASSEMBLY.

a. Place 25 needle bearings (22) around the inside diameter of the piston pin hole in the connecting link. Place one washer (21) over each end of the bearings. Carefully slide piston assembly (18), with the mark scribed in disassembly toward the fan end of the crankcase, over the connecting link and press piston pin (19) through the piston, washers, bearings, and connecting link. Secure the piston pin with cotter pin (20).

Note

Assembly of the needle bearings and washers into the connecting link can be facilitated by applying a coat of Petrolatum, VV-P-236.

b. Place gasket (17) between two gaskets (16) and position the gaskets onto the crankcase mounting flange.

c. Carefully slide cylinder (14) over the piston assembly and attach to the crankcase with nuts (15). Tighten the nuts with equal torque.

d. Use a depth micrometer or dial indicator to measure piston-head-to-valve-seat clearance. Required clearance is 0.002-to 0.006-inch. If necessary, remove cylinder and add or remove cylinder-to-crankcase gaskets to obtain required clearance.

Note

Overall thickness of steel gaskets can be reduced in increments of 0.002 inch by peeling off laminations. At least one paper gasket must remain on each side of steel gasket in final installation.

e. Install rupture disc (3) into cylinder cap (4), with the red side of the disc toward the retainer end of the cap. Place disc retainer ring (2), chamfered edge toward the rupture disc, into the cylinder cap. Install disc holddown screw (1) and tighten to 60-to 90-inch-pounds torque.

f. Install exhaust valve (8), valve spring (7) and washer (6) into the cylinder.

g. Place preformed packing (5) into the groove in the cylinder cap. Screw the cylinder cap into the cylinder and tighten to 300 inch-pounds torque.

h. Apply lubricating oil FSN 9150-753-4667 to the threads of strainer and relief valve (9), back-up ring (11), and gasket (12). Install the valve assembly into the cylinder,

i. Install nut (10), gasket (12), back-up ring (11) into the cylinder. Install elbow (13) into the nut.

j. Connect the intercooler assemblies (paragraph 2-42).

2-51. THIRD STAGE CYLINDER, PISTON, AND VALVE.

2-52. DISASSEMBLY. (See figure **2-12**.).

a. Disconnect the intercooler assemblies at the third stage inlet and outlet ports (paragraph 2-40).

b. Remove the fan assembly (Paragraph 2-36).

c. Unscrew and remove strainer and relief valve assembly (23). Remove flared nut (24), back-up ring (25), and gasket (26).

d. Remove reducer bushing (27) and seal (28).

e. Unscrew cylinder cap (33) and remove exhaust valve (35) and valve spring (34).

f. If the rupture disc (32) is defective, unscrew disc retainer (29 or 31) and if applicable remove disc retainer ring (30). Remove rupture disc (32) from the cylinder cap (33).

g. Remove nuts (37) and carefully slide cylinder (36) over the piston assembly (40).

h. Remove and discard gaskets (38 and 39).

i. Remove cotter pin (42) and carefully push piston pin (41) out of the piston assembly (40). Use care to prevent loss of the 25 needle bearings (44) and two washers (43) which will drop out of the piston assembly when the piston pin is removed. Scribe a small mark on the inside of the piston skirt toward the fan end of the crankcase for correct reassembly.

j. Do not disassemble the piston assembly.

2-53. CLEANING AND INSPECTION.

a. Clean all parts with dry cleaning solvent, Federal Specification P-D-680.

b. Inspect all parts for obvious indication of damage such as damaged screw threads, scratched, pitted, or worn finished surfaces, and broken cooling fins.

c. Inspect the cylinder bore, piston assembly, piston pin, connecting link and bearing for excessive wear, scoring, and other damage.

d. Refer to table 2-1 for wear tolerances.

2-54. REASSEMBLY.

a. Place 25 needle bearings (44) around the inside diameter of the piston pin hole in the connecting link. Place one washer (45) over each end of the bearings. Carefully slide piston assembly (40), with the mark scribed in disassembly toward the fan end of the crankcase, over the connecting link and press piston pin (41) through the piston, washers, bearings, and connecting link. Secure the piston pin with cotter pin (42).

Note

Assembly of the needle bearings and washers into the connecting link can be facilitated by applying a coat of Petrolatum, VV-P-236.

b. Place gasket (39) between two gaskets (38) and position the gaskets onto the crankcase mounting flange.

c. Carefully slide cylinder (36) over the piston assembly and attach to the crankcase with nuts (37). Tighten the nuts with equal torque.

d. Use a depth micrometer or dial indicator to measure piston-head-to-valve-seat clearance. Required clearance is 0.002 to 0.006 inch. If necessary, remove cylinder and add or remove cylinder-to-crankcase gaskets to obtain required clearance.

Note

Overall thickness of steel gaskets can be reduced in increments of 0.002 inch by peeling off laminations. At least one paper gasket must remain on each side of steel gasket in final installation.

e. Install rupture disc (32) into cylinder cap (33), with the red side of the disc toward the retainer end of the cap. If applicable, place disc retainer ring (50), chamfered edge toward the rupture disc, into the cylinder cap. Install disc retainer (29 or 31) and tighten to 60 to 90 inch-pounds torque.

f. Install exhaust valve (35) and valve spring (34).

g. Screw the cylinder cap into the cylinder and tighten to 300 inch-pounds torque.

h. Apply lubricating oil FSS 9150 53-4667 to the threads of relief valve (23), back-up ring (25), and gasket (26). Install the relief valve.

i. Install reducer bushing (27) and seal (28).

j. Install the fan assembly (paragraph 2-38).

k. Connect the intercooler assemblies (paragraph 2-42).

2-55. CRANKCASE.

2-56. DISASSEMBLY. (See figure **2-13.)**

a. Remove the aftercooler assembly (paragraph 2-32).

b. Remove the fan assembly (paragraph 2-36).

c. Remove the intercooler assembly (paragraph 2-40).

d. Open drain cock (4) and allow all oil to drain from oil reservoir (1). Remove dip stick plug (8) to facilitate drainage.

e. Unscrew and remove sight plug (7), reservoir tee (6), and pipe nipple (5).

f. Unscrew and remove relief valve (40), tube assembly (41), elbow (42), and reducing bushing (43).

g. Remove six nuts (20), endbell (19), and gasket (21) from the crankcase.

h. Remove the sems screws (2) and pull oil reservoir (1) from the crankcase. The oil pump piston (15) will slide out of the pump cylinder.

i. Remove screws (10), oil pump cylinder (11), and cylinder retainer (9) from the oil reservoir.

j. Remove pin (12) and separate the cylinder from the retainer.

k. Unscrew piston retainer (13) from the master connecting rod assembly. Remove shim (14), piston (15), ball (16), rod socket (18), and ball retainer (17).

l. Remove the first stage piston (paragraph 2-44) second stage piston (paragraph 2-48) and third stage piston (paragraph 2-52).

m. Pull crankshaft (24), oil seal (22), and bearing (23) out of the crankcase.

n. Remove thrust washer (25), drive bushing (26), bearing (29), and oil seal (30) from the crankcase (47).

o. Remove cotter pin (34) and push the piston pin (35) out of the master connecting rod. Remove connecting link (36) using care to prevent loss of the 25 needle bearings (39) and two washers (38).

p. Remove cotter pin (34) and push piston pin (35) out of the master connecting rod, using care to prevent loss of the 25 needle bearings (39) and washers (38). Remove connecting link (37).

q. Pull bearings (32) from the master connecting rod.

r. Pry retainer plate (27) from the master connecting rod. Push bearing (33) out of the master connecting rod, if damaged or defective. Do not remove roll pin (28), unless defective.

2-57. CLEANING AND INSPECTION.

a. Clean all parts with dry cleaning solvent, Federal Specification P-D-680.

b. Dry with clean, lint-free cloths and compressed air. Ensure that all drilled passages are clean.

c. Inspect parts for scratches, scoring, corrosion and wear. See table for wear tolerances.

d. Replace all bearings, seals, and gaskets.

2-58. REASSEMBLY.

a. Press bearings (32) into each side of the first stage link of the master connecting rod (31).

b. Press bearing (33) into the master connecting rod crankshaft journal. If removed, press a new roll pin (28) into the master connecting rod.

c. Place 25 needle bearings (39) around the inside diameter of the piston hole in connecting link (37). Place washers (38) against each end of the bearings.

Note

Installation of the bearings and washers can be facilitated by applying a coat of Petrolatum, VV-P-236, to the parts.

d. Position connecting link (37) between the two arms on the master connecting rod and push piston pin (35) through the master connecting rod and connecting link. Secure the piston pin with cotter pin (34).

e. Repeat steps c and d to install connecting link (36).

f. Install the master connecting rod assembly onto crankshaft (24).

g. Position retaining plate (27) onto the drive end of the crankshaft. Insert thrust washer (25) arid drive brushing (26) into the crankshaft.

h. Press bearing (29) onto the motor end of the crankshaft until flush with the bearing shoulder.

i. Press bearing (23) onto the endbell end of the crankshaft until firmly seated.

j. Install a new oil seal (30) into the crankcase seal recess.

k. Install the crankshaft assembly into the crankcase until bearing (29) is firmly seated.

l. Press a new oil seal (22) into endbell (19).

m. Place gasket (21) onto the crankcase mounting flange.

n. Carefully slide the endbell (19) and oil seal over the crankshaft and attach to crankcase with six nuts (20). Tighten the nuts with equal torque.

o. Install rod socket (18) over the ball retainer (17), with the cupped side outward.

p. Place socket (18) and ball retainer (17) into the master connecting rod, with the cupped side toward the outside of the rod.

q. Place ball (16) in piston (15) and slide piston retainer (13) onto piston with the retainer threads toward the piston ball.

r. Attach the piston to the master connecting rod with the piston retainer. Install sufficient shims (14) to ensure that the piston moves freely with no end play.

s. Attach pump cylinder (11) to cylinder retainer (9) with pin (12).

t. Attach the cylinder retainer to oil reservoir (1) with screws (10). Install safety wire to the piston retainer and cylinder retainer attaching screws.

u. Place gasket (3) onto the oil reservoir mounting flange.

v. Install oil reservoir (1) onto the crankcase while guiding the oil pump piston into the oil pump cylinder. Attach the oil reservoir to the crankcase with sems screws (2).

w. Install pipe nipple (5), reservoir tee (6), and sight plug (7).

x. Close drain cock (4).

y. Install the first stage piston (paragraph 2-46), second stage piston (paragraph 2-50) and third stage piston (paragraph 2-54).

z. Install the fan assembly (paragraph 2-38).

aa. Install the intercooler assembly (paragraph 2-42).

ab. Install the aftercooler assembly (paragraph 2-34).

ac. Fill the oil reservoir with lubricating oil FSN 9150-753-4667. Install dip stick plug (8) .

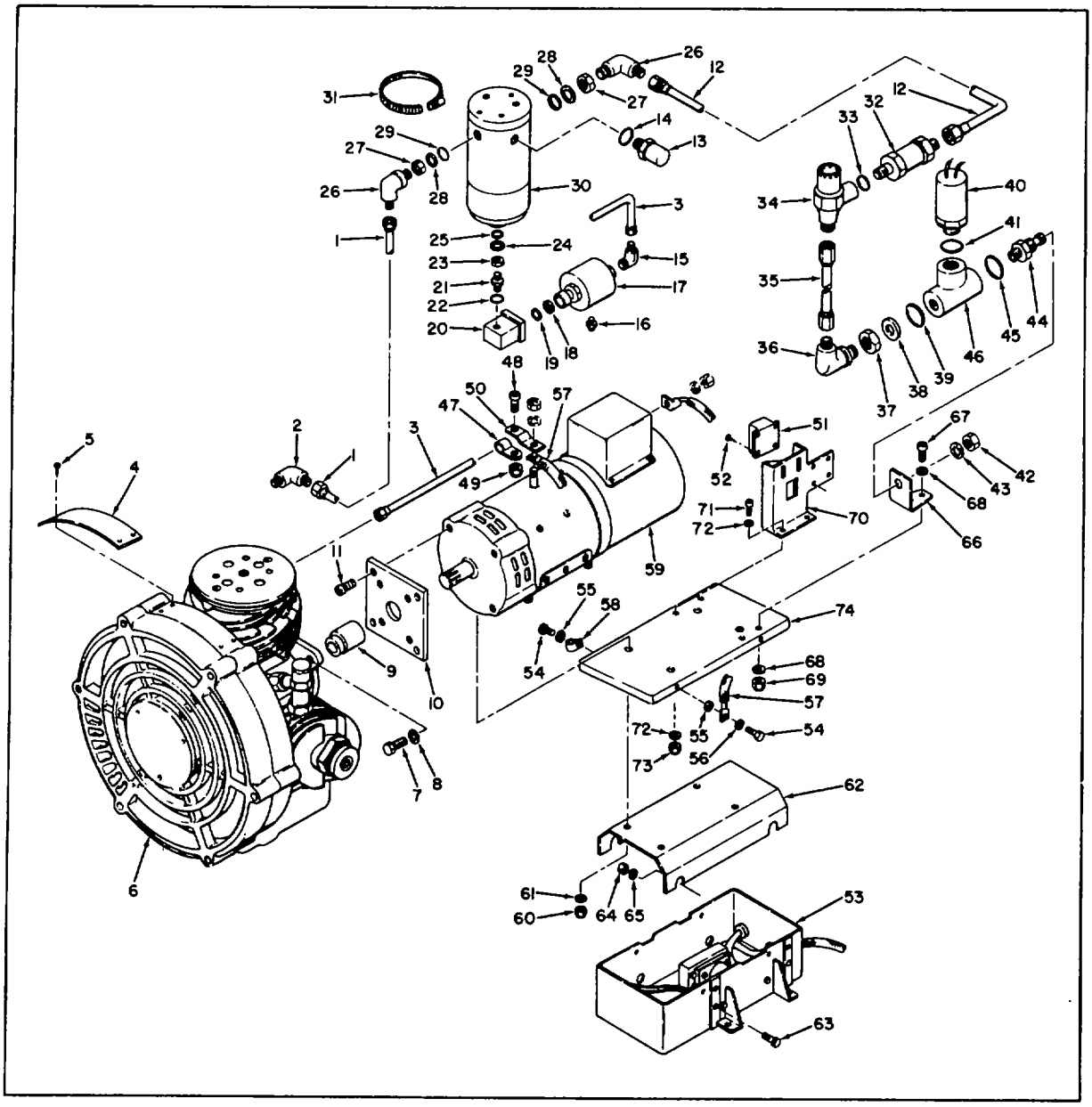

Figure 2-4. Power Driven Reciprocating Compressor

FIG. & INDEX NO.		DESCRIPTION
2-4.		COMPRESSOR ASSEMBLY ..... Reciprocating, power driven
		COMPRESSOR ASSEMBLY ..... Reciprocating, power driven
- 1		. TUBE ASSEMBLY, Aftercooler ..... to moisture separator (78385)
- 2		. ELBOW, 90° flared tube (78385) .....
- 3		. TUBE ASSEMBLY, First stage to ..... dump valve (78385)
- 4		. PLATE, Identification (78385)..... (ATTACHING PARTS)
- 5		. SCREW, Drive, rd hd (88044) ..... ---*---
- 6		. AIR COMPRESSOR ASSEMBLY (78385)..... (See figures 2-10 thru 2-13 for details) (ATTACHING PARTS)
- 7		. SCREW, Cap, hex hd (96906) .....
-8		. WASHER, Lock, ext tooth (96906) ..... ---*---
-9		. COUPLING, Spline (78385) .....
-10		. ADAPTER, Mounting (78385) ..... (ATTACHING PARTS)
-11		. SCREW, Cap, soc hd (78385).....
-12		. TUBE ASSEMBLY, Moisture separator ..... to back pressure valve (78385)
-13		. VALVE ASSEMBLY, Pressure relief ..... (78385) (See figure2-8or details)
-14		. PACKING, Preformed (96906). .....
-15		. ELBOW, 900, flared tube and pipe thd ..... (96906)
-16		. NIPPLE, Flared tube and pipe thd (88044) .....
-17		. VALVE ASSEMBLY, Dump (78385)..... (See figure 2-7 for details)
-18		. RING, Backup (96906).....
-19		. PACKING, Preformed (96906) .....
-20		. FITTING, Special (78385) .....
-21		. FITTING, Inlet (78385) .....
-22		. PACKING, Preformed (96906) .....
-23		. NUT, Universal fitting (88044).....
-24		. RING, Backup (96906)
-25		. PACKING, Preformed (96906) .....
-26		. ELBOW, 900, flared tube and ..... bulkhead (88044)
-27		. NUT, Universal fitting (88044).....
-28		. RING, Backup (96906).....
-29		. PACKING, Preformed (96906) .....

FIG. & INDEX NO.		DESCRIPTION
2-4.		
30		. MOISTURE SEPARATOR ASSEMBLY (78385)..... (See figure 2-9 for details) (ATTACHING PARTS)
-31		. CLAMP, Hose (08484) ..... ---*---
-32		VALVE, Check (78385) .....
-33		. PACKING, Preformed (96906) .....
-34		. VALVE ASSFEMBLY, Back pressure (78385) ..... (See figure 2-6for details)
-35		. TUBE ASSEMBLY, Pressure switch to back..... pressure valve (78385)
-36		. ELBOW, 90°, flared tube and bulkhead..... (88044)
-37		. NUT, Universal fitting (88044).....
-38		. RING, Backup (96906).....
-39		. PACKING, Preformed (96906) .....
-40		. SWITCH, Pressure (78385).....
-41		. PACKING, Preformed (96906) .....
-42		. NUT, Bulkhead (88044) .....
-43		. WASHER, Lock, int tooth (96906).....
-44		. UNION, Flared tube and bulkhead (88044).....
-45		. PACKING, Preformed (96906) .....
-46		. TEE, Internal thread (88044).....
-47		. CLAMP, Cushioned (96906)..... (ATTACHING PARTS)
-48		. SCREW, Mach, fil hd (88044) .....
-49		. NUT, Lock (96906)..... ---*---
-50		. BRACKET, Support (78385).....
-51		. TIMER (78385). (ATTACHING PARTS)
-52		. SCREW, Mach, fil hd (88044) ..... ---*---
-53		. CONTROL BOX ASSEMBLY (78385) ..... (See figure 2-5 for details) . CONTROL BOX ASSEMBLY (78385) ..... (See figure 2-5 for details) (ATTACHING PARTS)
-54		. BOLT, Hex hd (96906).....
-55		. WASHER, Flat (88044).....
-56		. WASHER, Lock, split (96906) ..... ---*---
-57		. CABLE, Ground (78385) .....
-58		. CLAMP (78385). .....
-59		. MOTOR, Elec, DC (77200)..... (Stewart-Warner P/N 645-0195) (See Appendix A for details) (ATTACHING PARTS)
-60		. NUT, Lock (96906).....
-61		. WASHER, Flat (88044)..... ---*---

FIG. & INDEX NO.		DESCRIPTION
2-4.		
-62		. BRACKET, Support (78385).....
		(ATTACHING PARTS)
-63		. BOLT, Hex (88044) .....
-64		. NUT, Special (78385).....
-65		. WASHER, Lock, int tooth (96906) .....
		---*---
-66		. BRACKET, Mounting (78385).....
		(ATTACHING PARTS)
-67		. SCREW, Cap, soc hd (80205).....
-68		. WASHER, Flat (88044) .....
-69		. NUT, Lock (96906).....
		---*---
-70		. BRACKET, Mounting (78385).....
		. BRACKET, Mounting (78385).....
		(ATTACHING PARTS)
-71		. SCREW, Cap, soc hd (80205).....
-72		. WASHER, Flat (88044) .....
-73		. NUT, Lock (96906).....
		---*---
-74		. COVER, Control box (78385) .....
2-5.		
		CONTROL BOX ASSEMBLY (78385) .....
		(See figure 2-5)
- 1		. CABLE ASSEMBLY, Relay to motor (78385) .....
- 2		. RELAY, 200 amp, SPST (78385) .....
		(ATTACHING PARTS)
- 3		. NUT, Jam, hex (88044).....
-4		. WASHER, Lock, split (96906)
-5		. WASHER, Lock, ext tooth (96906) .....
- 6		. SCREW, Cap, hex hd (96906) .....
		---*---

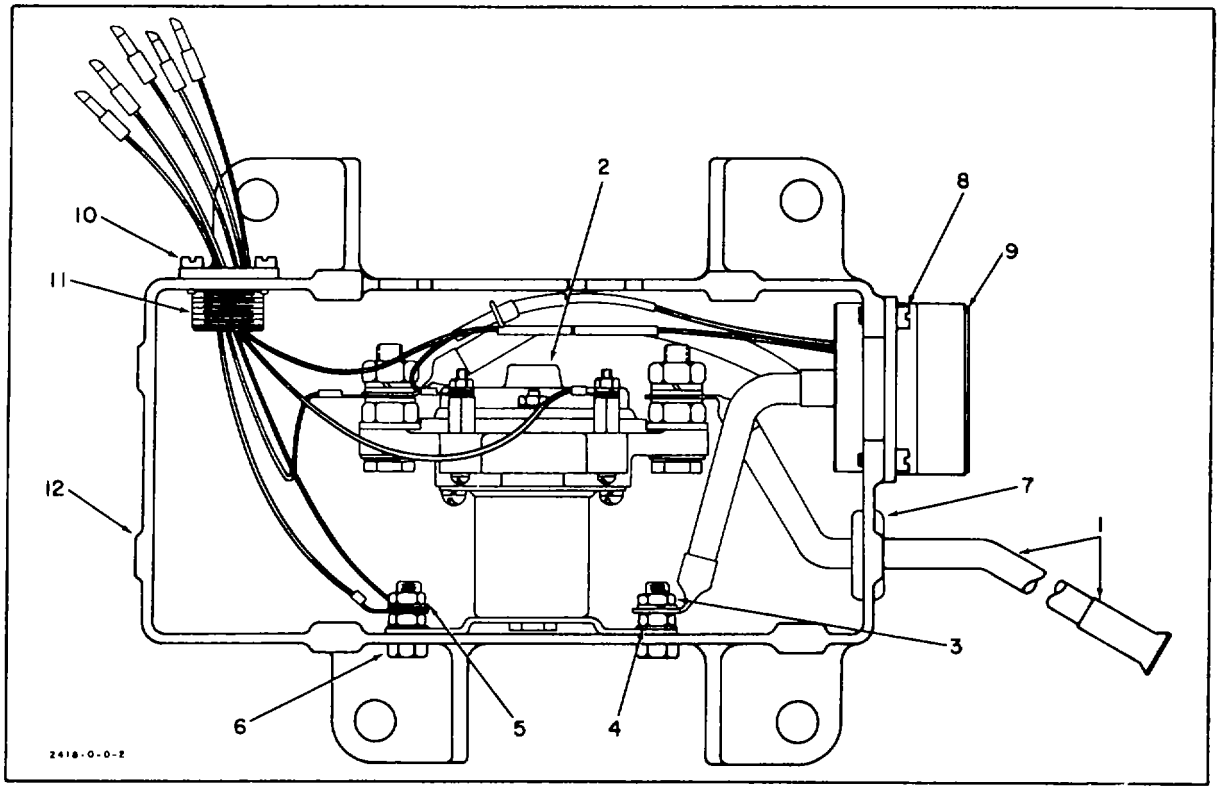

Figure 2-5. Control Box Assembly

FIG. & INDEX NO.		DESCRIPTION
2-5.7		. GROMMET, Elastic (96906).....
		. RECEPTACLE AND CABLE ASSEMBLY (78385).....
		(ATTACHING PARTS)
- 8		. SCREW, Mach, fil hd (88044) .....
		---*---
- 9		. .CONNECTOR, Receptacle, elec (78385) .....
		. .DIODE, Semiconductor (78385) .....
		. RECEPTACLE AND CABLE ASSEMBLY (78385).....
		(ATTACHING PARTS)
-10		. SCREW, Mach, fil hd (88044) .....
		---*---
-11		. CONNECTOR, Receptacle, elec (96906) .....
-12		. CONTROL BOX, Machined (78385).....
		. CONTROL BOX, Machined (78385).....

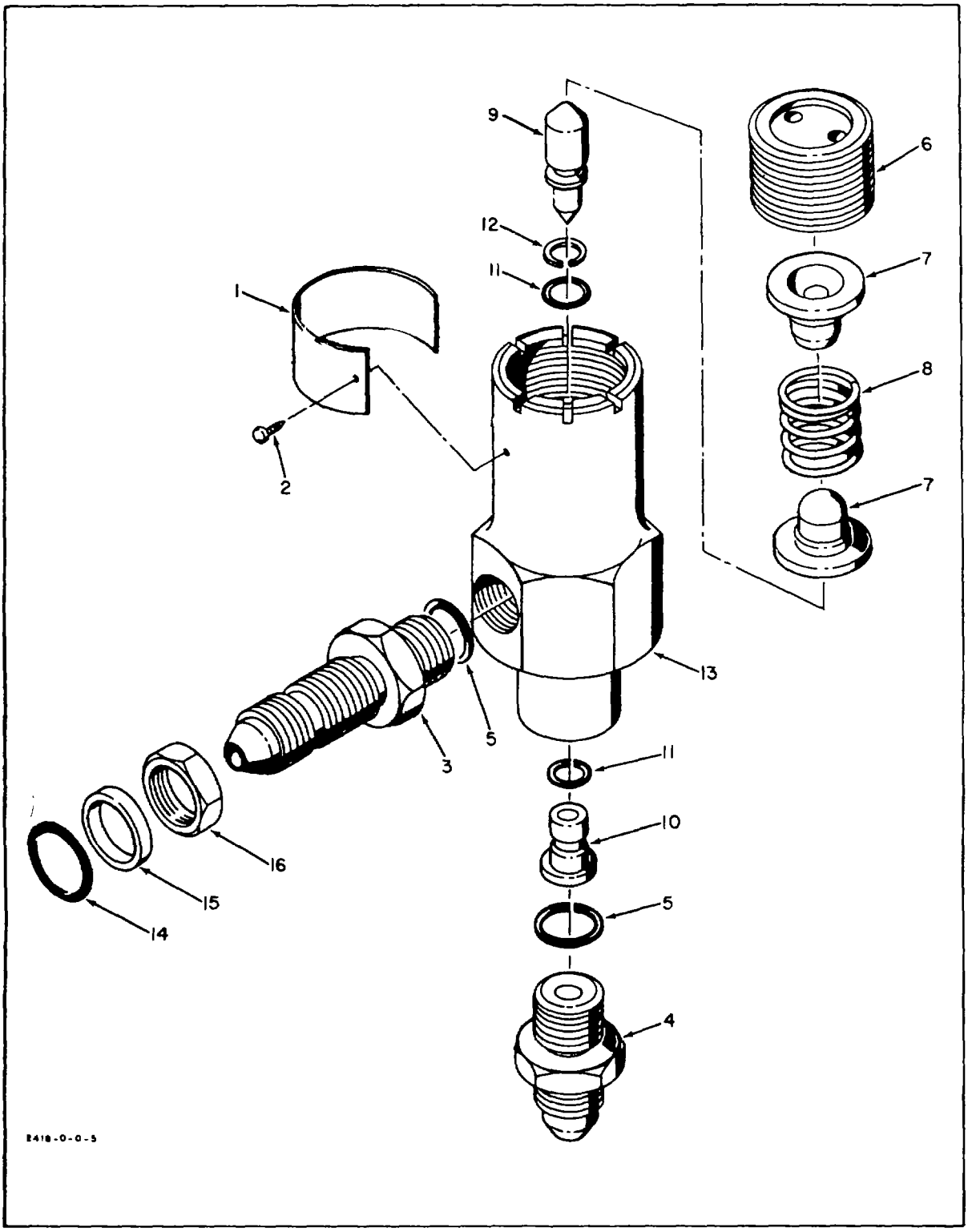

Figure 2-6. Back Pressure Valve Assembly

FIG. & INDEX NO.		DESCRIPTION
2-6		VALVE ASSEMBLY, Back pressure (78385) ..... (See figure'2-4for NHA)
-1		. PLATE, Identification (78385)..... (ATTACHING PARTS)
- 2		. SCREW, Drive (88044)..... ---*---
-3		. FITTING, Inlet (78385) .....
-4		. FITTING, Outlet (78385) .....
-5		. GASKET, Fitting (78385) .....
- 6		. CAP, Valve (78385) .....
-7		. PLATE, Spring (78385) .....
- 8		. SPRING, Pressure, back (78385).....
- 9		. PISTON, Pressure, back (78385) .....
-10		. SEAT, Piston (78385) .....
-11		. PACKING, Preformed (78385) .....
-12		. RETAINER, Packing (96906) .....
-13		. BODY, Valve (78385) .....
-14		. GASKET (96906) ..... .
-15		. RING, Backup (96906) .....
-16		. NUT, Tube, flared (88044).....

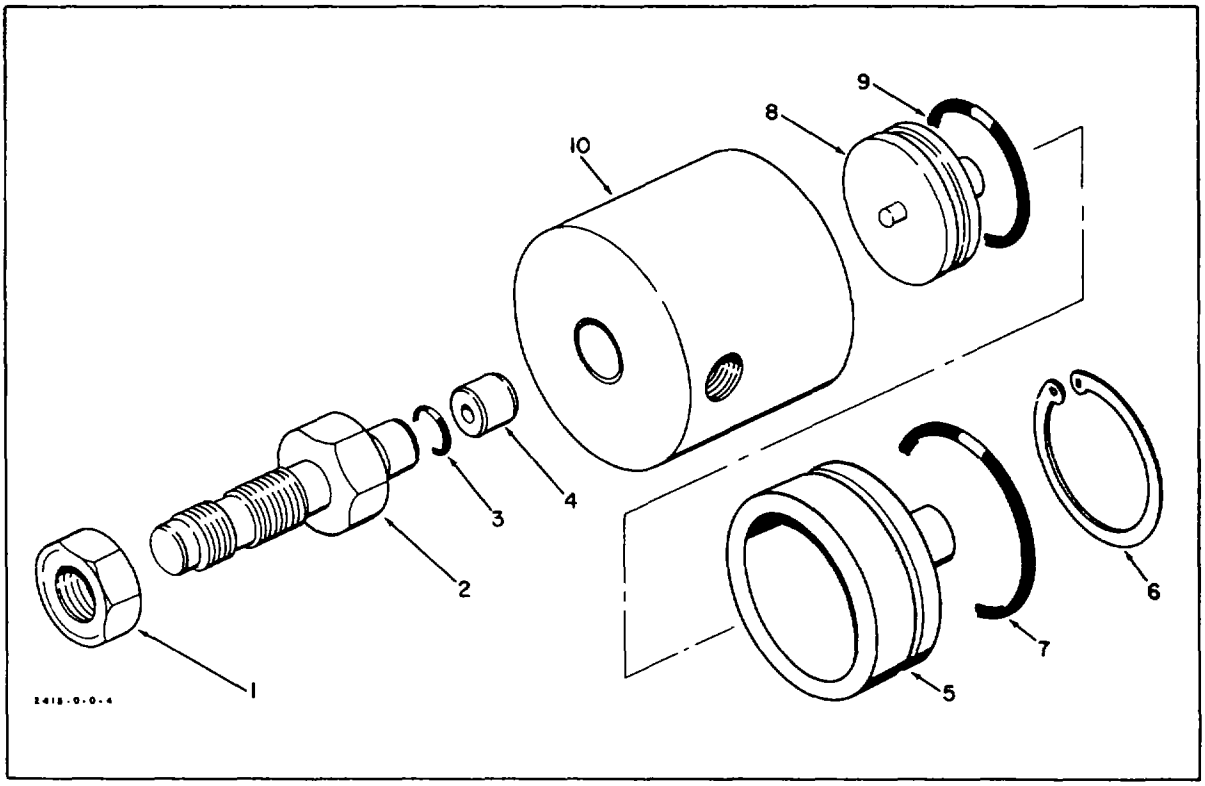

Figure 2-7. Dump Valve Assembly

FIG. & INDEX NO.		DESCRIPTION
2-7		VALVE ASSEMBLY, Dump (78385) ..... (See figure 2A-for NHA)
- 1		. NUT, Tube, flared (88044) .....
- 2		. UNION, Bulkhead (78385) .....
- 3		. PACKING, Preformed (96906) .....
-4		. SEAT, Valve, dump (78385) .....
- 5		. CAP, Valve, end (78385) ..... (ATTACHING PARTS)
- 6		. RING, Retaining (96906) .....
- 7		. PACKING, Preformed (96906) ..... ---*---
- 8		. PISTON (78385) .....
- 9		. PACKING, Preformed (96906) .....
-10		. BODY, Valve, dump (78385) .....

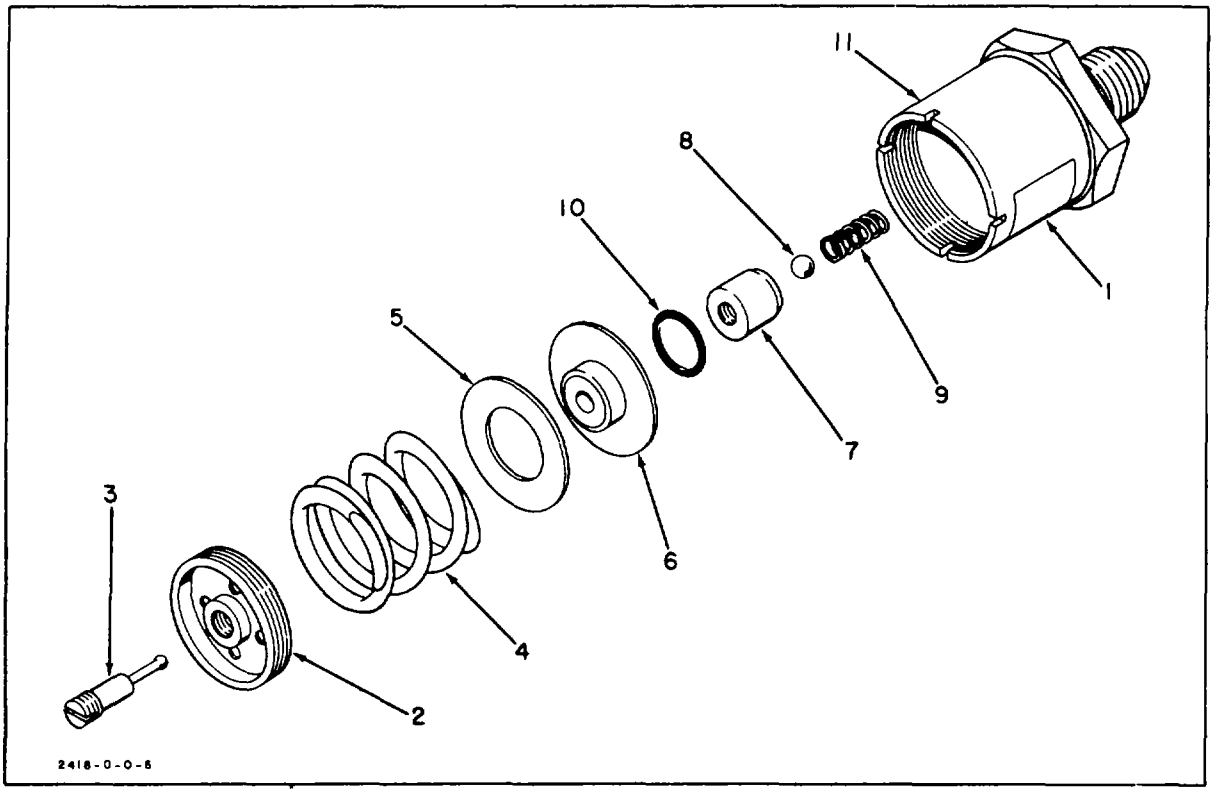

Figure 2-8. Pressure Relief Valve Assembly

FIG. & INDEX NO.		DESCRIPTION
2-8		VALVE ASSEMBLY, Pressure relief (78385)..... (See figure 2 -4for NHA)
- 1		. PLATE, Identification (78385).....
- 2		. SCREW, Adjusting (78385).....
- 3		. STEM (78385).....
- 4		. SPRING, Relief valve (78385) .....
- 5		. SHIM, Spring (78385) .....
- 6		. RETAINER, Spring (78385).....
- 7		. PISTON ASSEMBLY (78385).....
- 8		. BALL, Relief (78385) .....
- 9		. SPRING, Return, ball (78385) .....
- 10		. PACKING, Preformed (78385) .....
- 11		. BODY, Valve (78385) .....

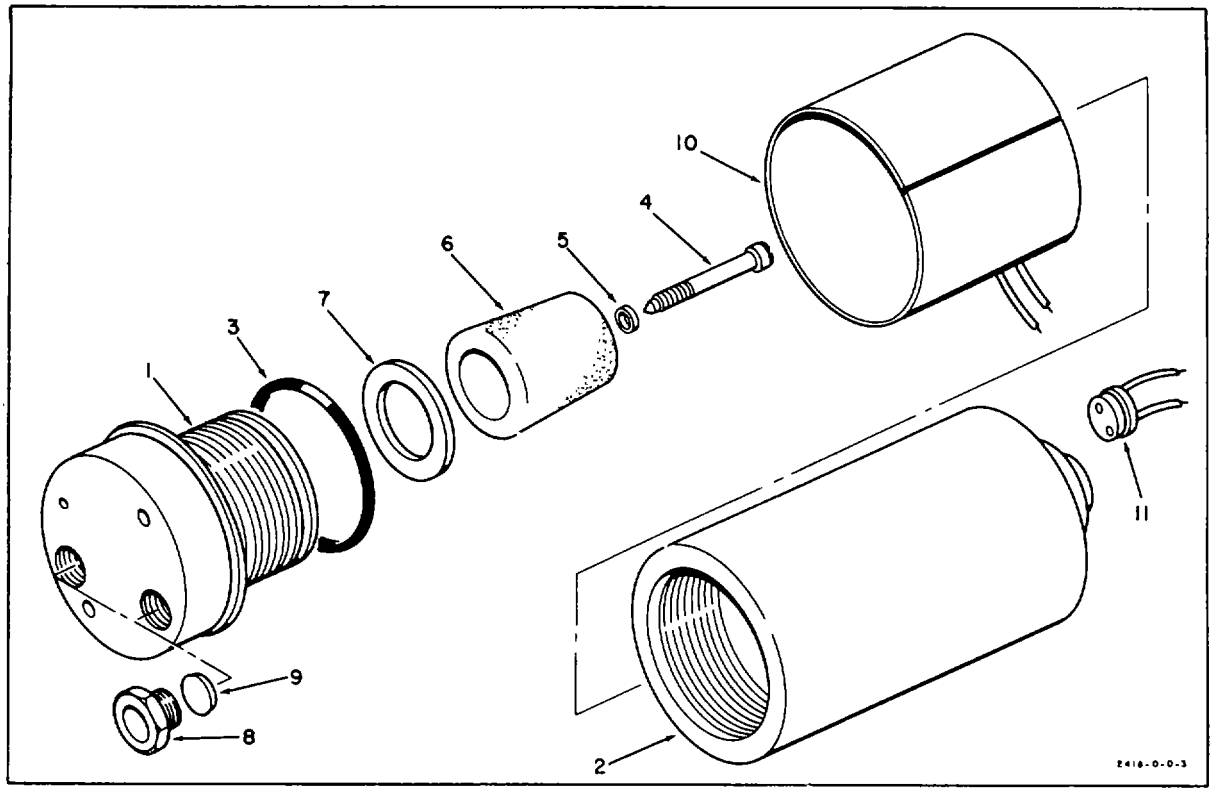

Figure 2-9. Moisture Separator Assembly

FIG. & INDEX NO.		DESCRIPTION
2-9		MOISTURE SEPARATOR ASSEMBLY (78385)..... (See figure 2-4 for NHA)
-1		. CAP, Tank (78385).....
- 2		. SHELL (78385) .....
- 3		. PACKING, Preformed (78385) .....
- 4		. SCREW AND PLUG ASSEMBLY (78385).....
- 5		. WASHER, Flat (78385) .....
- 6		. ELEMENT, Filter (78385) .....
- 7		. GASKET, Filter (78385) .....
- 8		. RETAINER, Disc, rupture (78385) .....
- 9		. DISC, Rupture (78385).....
-10		. BLANKET, Heater (78385) .....
-11		. SWITCH, Thermostat (78385).....

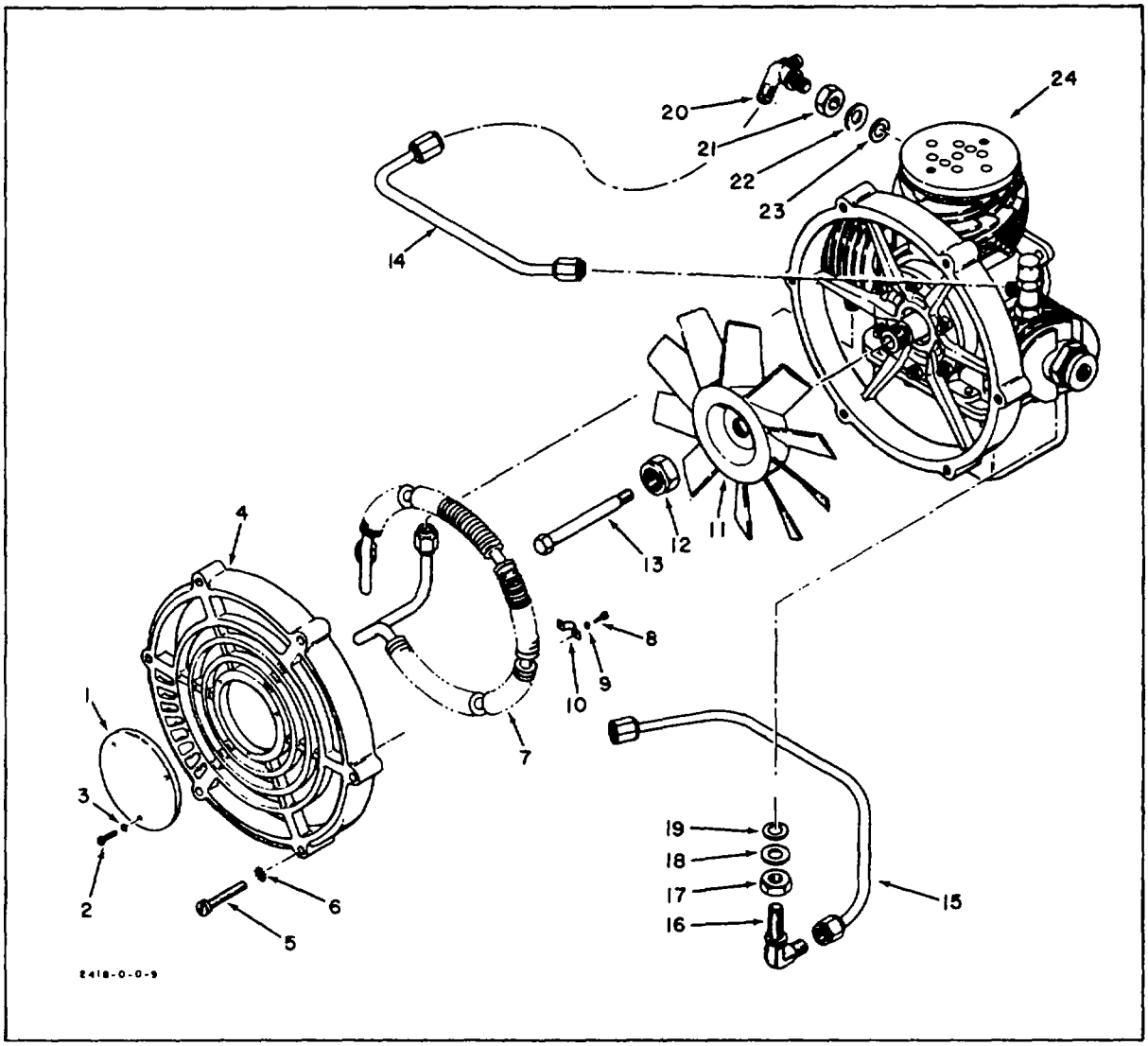

Figure 2-10. Aftercooler and Fan

FIG. & INDEX NO.		DESCRIPTION
2-10		AFTERCOOLER AND FAN, Air compressor .....
		(See figure 2-4 for NHA)
- 1		. NAMEPLATE, Fan guard (78385) .....
		(ATTACHING PARTS)
- 2		. SCREW, Machine (96906) .....
- 3		. WASHER, Lock (96906) .....
		---*---
- 4		. GUARD, Fan (78385) .....
		(ATTACHING PARTS)
- 5		. SCREW, Machine (88044) .....
- 6		. WASHER, Lock (96906).....
		---*---
- 7		. AFTERCOOLER (78385) .....
		(ATTACHING PARTS)
-8		. SCREW, Machine (88044) .....
- 9		. WASHER, Lock (96906).....
-10		. CLAMP, Aftercooler (78385) .....
-11		. FAN (78385) .....
		(ATTACHING PARTS)
-12		. NUT, Hexagon (72962) .....
		---*---
-13		. BOLT, Draw (78385) .....
-14		. TUBE, Intercooler, first to.....
		second stage (78385)
-15		. TUBE, Intercooler, second to.....
		third stage (78385)
-16		. ELBOW, 90°, flared tube and bulkhead .....
		(88044)
		(ATTACHING PARTS)
-17		. NUT, Hexagon (96906) .....
		---*---
18		. GASKET (78385) .....
-19		. RING, Backup (96906) .....
-20		. ELBOW, Tee (78385).....
		(ATTACHING PARTS)
-21		. NUT, Hexagon (88044) .....
		---*---
-22		. GASKET (78385) .....
-23		. RING, Backup (96906) .....
-24		. FIRST STAGE, Compressor (78385).....
		(See figure 2-11 for details)

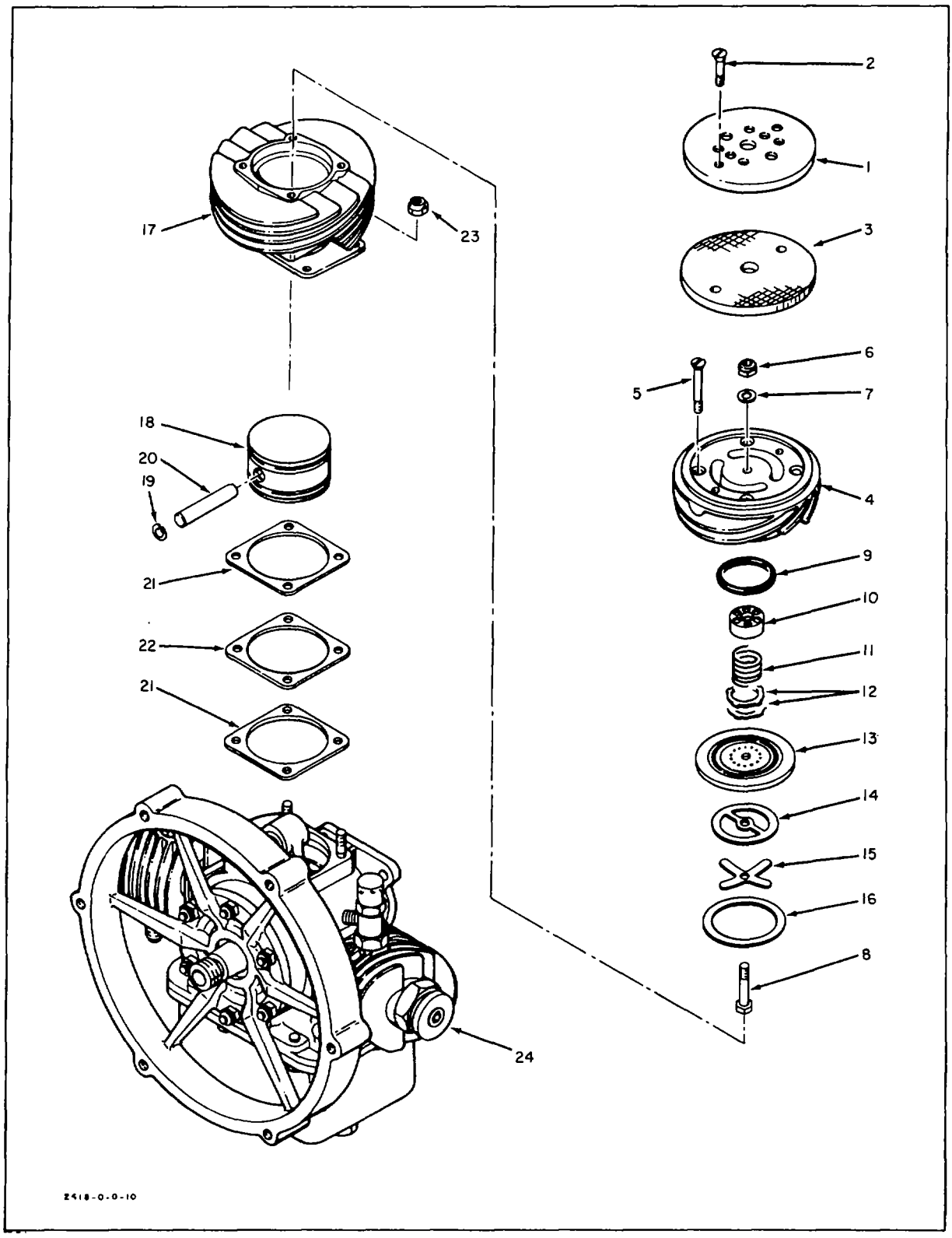

Figure 2-11. First Stage Cylinder, Piston and Valve Assembly

FIG. & INDEX NO.		DESCRIPTION
2-11		CYLINDER, PISTON AND VALVE ASSEMBLY .....
		First stage (See figure 2-10 for NHA)
- 1		. COVER, Filter (78385) .....
		(ATTACHING PARTS)
- 2		. SCREW, Machine (96906) .....
		---*---
- 3		. FILTER, Air (78385). .....
- 4		. HEAD, Cylinder (78385) .....
		(ATTACHING PARTS)
- 5		. SCREW, Machine, FH (03038) .....
- 6		. NUT, Hexagon (96906) ..... .
- 7		. WASHER, Flat (88044) .....
- 8		. BOLT, Hex head (78385) .....
		---*---
-9		. PACKING, Preformed (78385) .....
-10		. STOP, Valve (78385) .....
-11		. SPRING, Valve (78385) .....
-12		. VALVE, Exhaust (78385).....
-13		. PLATE, Valve (78385) .....
-14		. VALVE, Intake (78385).....
-15		. SPRING, Valve (78385) .....
-16		. GASKET, Plate (78385) .....
-17		. CYLINDER, First stage (78385).....
-18		. PISTON ASSEMBLY (78385).....
-19		. RING, Retaining (96906).....
-20		. PIN, Piston (78385).....
-21		. GASKET, First stage (78385).....
-22		. SHIM, First stage (78385) .....
-23		. NUT, Hexagon (56878) .....
-24		. SECOND STAGE, Compressor.....
		(See figure 2-12 for details)

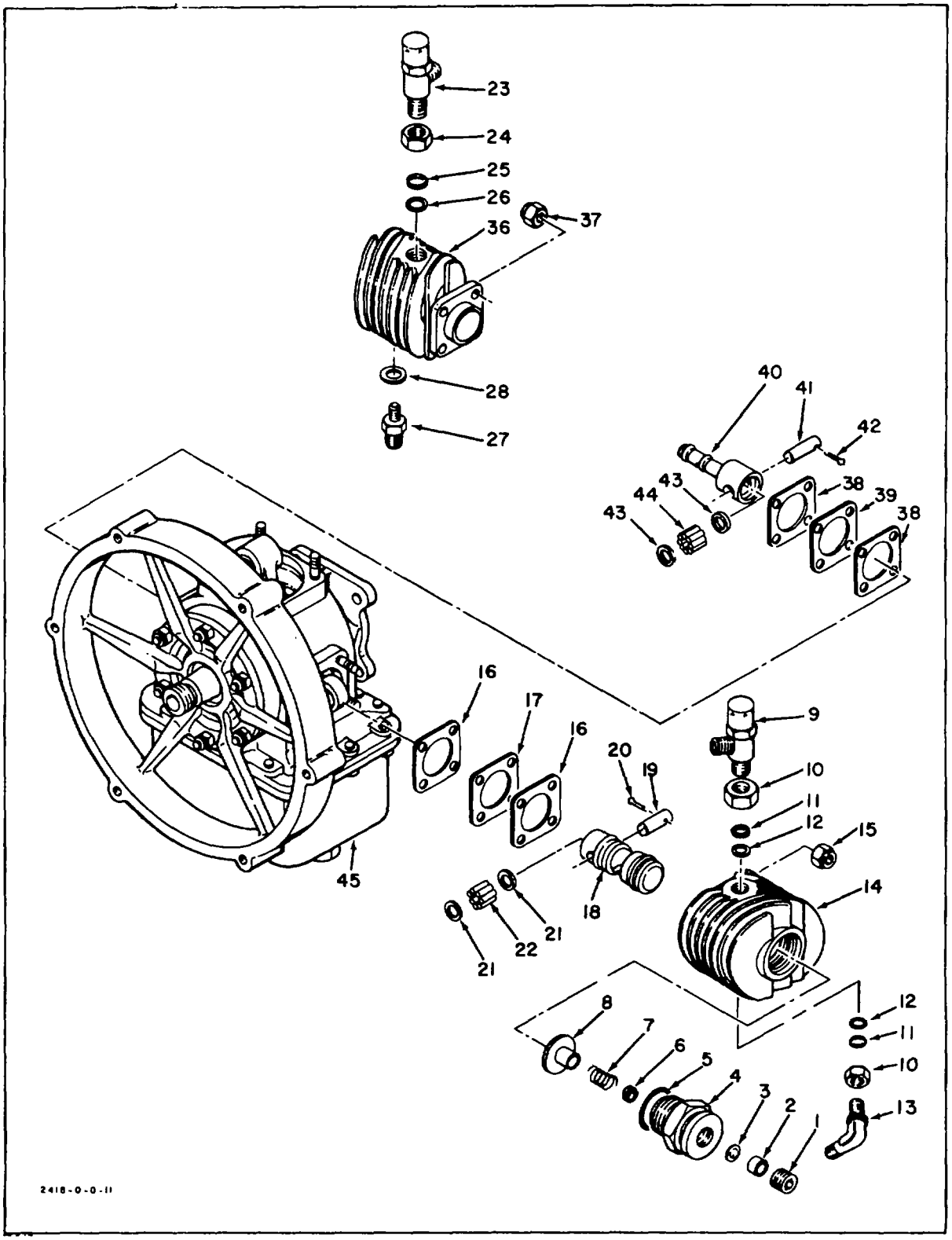

Figure 2-12. Second and Third Stage Cylinder, Piston and Valve Assembly

FIG. & INDEX NO.		DESCRIPTION
2-12		CYLINDER, PISTON, AND VALVE ASSEMBLY Second and third stage(Figure 2-11 for NMA' CAP AND RUPTURE DISC ASSEMBLY ..... Second stage (78385)
- 1		. . SCREW, Hold-down, disc (78385).....
- 2		. . RING, Retainer, disc (78385) .....
-3		. . DISC, Rupture (78385).....
4		. . CAP, Cylinder (78385) .....
5		. PACKING, Preformed (78385) .....
- 6		. WASHER, Spring (78385) .....
7		. SPRING, Valve, exhaust (78385). .....
-8		. VALVE, Exhaust (78385).....
- 9		. STRAINER AND RELIEF VALVE ASSEMBLY ..... Second stage (78385)
-10		. NUT, Flared tube (88044) .....
-11		. RING, Back-up (96906) .....
-12		. GASKET, Tube fitting (78385).....
-13		. ELBOW, Flared tube (88044).....
-14		. CYLINDER, Second stage (78385).....
		(ATTACHING PARTS)
-15		. NUT, Lock (56878).....
		---*---
-16		. GASKET, Paper (78385) .....
-17		. GASKET, Metal (78385) .....
-18		. PISTON ASSEMBLY, Second stage (78385) .....
-19		. PIN, Wrist, piston (78385) .....
		(ATTACHING PARTS)
-20		. PIN, Cotter (88044) .....
		---*---
-21		. WASHER, Link (78385) .....
-22		. BEARING, Needle, roller (60380) .....
-23		. STRAINER AND RELIEF VALVE..... ASSEMBLY, Third stage (78385) .....
-24		. NUT, Flared tube (88044) .....
-25		. RING, Back-up (96906) .....
-26		. GASKET, Tube fitting (78385).....
-27		. BUSHING, Reducer (78385) .....
-28		. SEAL, Metallic (78385) .....
		. CAP AND RUPTURE DISC ASSEMBLY, ... Third stage (78385)

FIG. & INDEX NO.		DESCRIPTION
2-12.		
-36		. CYLINDER AND SLEEVE ASSEMBLY , Third stage (78385).....
		(ATTACHING PARTS)
-37		. NUT, Lock (56878)..... .
		---*---
-38		. GASKET, Paper (78385) .....
-39		. GASKET, Metallic (78385) .....
-40		. PISTON ASSEMBLY, Third stage (78385) .....
-41		. PIN, Wrist, piston (78385) .....
		(ATTACHING PARTS)
-42		. PIN, Cotter (88044) .....
		---*---
-43		. WASHER, Link (78385) .....
-44		. BEARING, Needle, roller (60380) .....
-46		. CRANKCASE ASSEMBLY, Compressor ..... (See figure 2-13 for details)

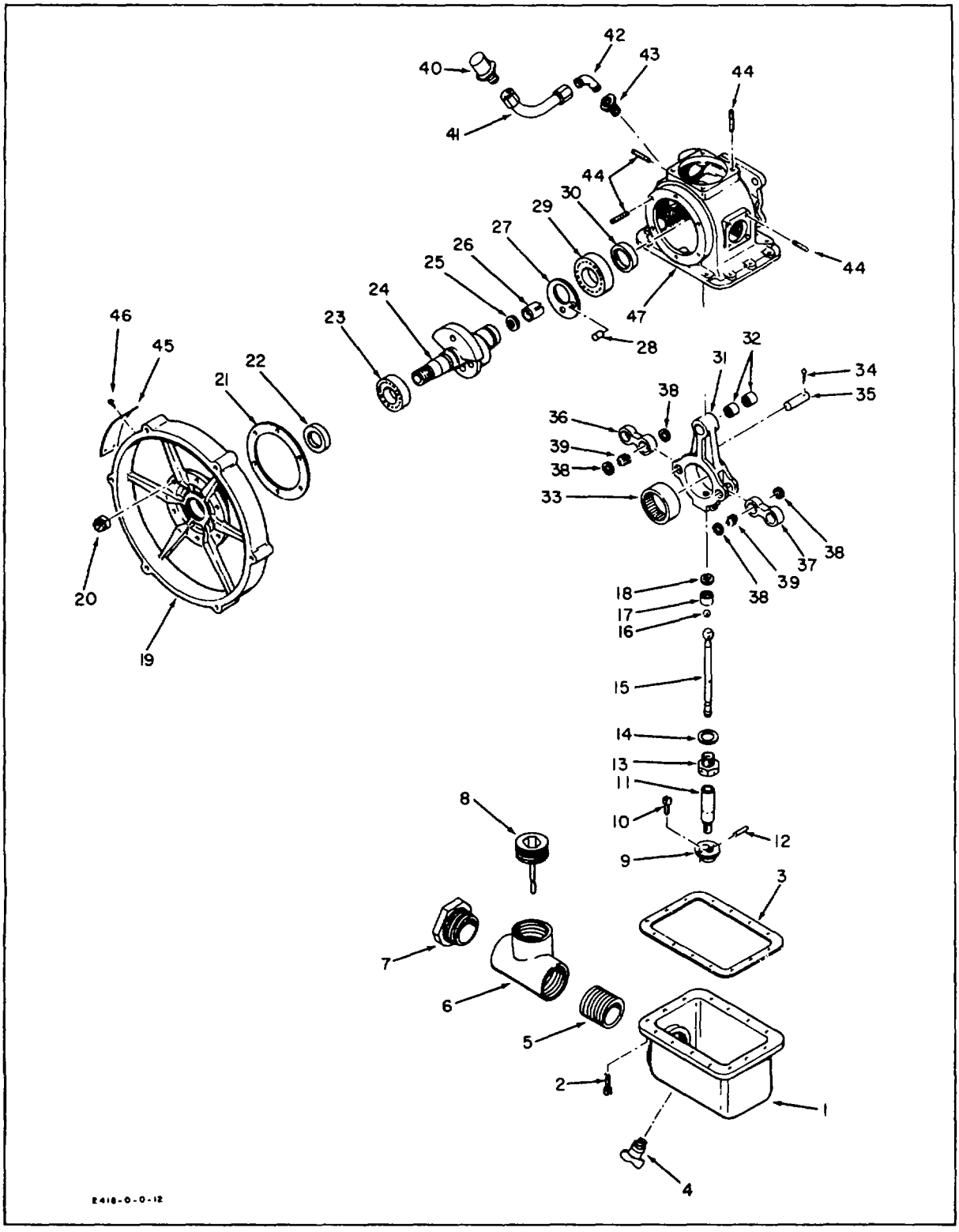

Figure 2-13. Compressor Crankcase Assembly

FIG. & INDEX NO.		DESCRIPTION
2-13		CRANKCASE ASSEMBLY, Compressor .....
		(See figure 2-13 for NHA)
- 1		. RESERVOIR, Oil (78385).....
		(ATTACHING PARTS)
- 2		. SCREW, Sems (03038).....
		---*---
- 3		. GASKET, Reservoir, oil (78385).....
- 4		. DRAIN COCK (78385).....
- 5		. NIPPLE, Pipe (78385) .....
- 6		. TEE, Reservoir (78385).....
- 7		. PLUG, Sight (78385) .....
- 8		. PLUG, Dip stick (78385).....
- 9		. RETAINER, Cylinder (78385) .....
		(ATTACHING PARTS)
- 10		. SCREW, Machine (88044) .....
		---*---
- 11		. CYLINDER, Pump, oil (78385) .....
		(ATTACHING PARTS)
- 12		. PIN, Roll (78385).....
		---*---
- 13		. RETAINER, Piston (78385) .....
- 14		. SHIM, Oil pump (78385).....
		. PISTON ASSEMBLY, Oil pump (78385).....
- 15		. . PISTON, Oil pump (78385).....
- 16		. BALL, Metal (78385).....
- 17		. RETAINER, Ball (78385) .....
- 18		. SOCKET, Rod, master (78385) .....
- 19		. ENDBELL, Compressor (78385).....
		(ATTACHING PARTS)
- 20		. NUT, Hexagon, self locking (56878) .....
		---*---
- 21		. GASKET, End (78385) .....
- 22		. SEAL, Oil (80201) .....
- 23		. BEARING, Ball (43334).....
- 24		. CRANKSHAFT (78385).....
- 25		. WASHER, Thrust (78385) .....
- 26		. BUSHING, Drive (78385) .....
- 27		. PLATE, Retainer (78385) .....
		(ATTACHING PARTS)
- 28		. PIN, Roll (78385).....
		---*---
- 29		. BEARING, Ball (43334).....
- 30		. SEAL, Oil (80201) .....
		. MASTER ROD ASSEMBLY (78385).....

FIG. & INDEX NO.		DESCRIPTION
2-13		
-·31		. . ROD, Master (78385)
- 32		. . BEARING, Needle (60380)
- 33		. . BEARING, Needle (78385)
- 34		. PIN, Cotter (88044)
- 35		. PIN, Wrist (78385)
- 36		. LINK, Connecting, 3rd stage (78385)
- 37		. LINK, Connecting, 2nd stage (78385)
- 38		. WASHER, Link (78385)
- 39		. BEARING, Needle (60380)
- 40		. VALVE, Relief (78385)
- 41		. TUBE ASSEMBLY, Crankcase to relief valve (78385)
- 42		. ELBOW, Tube to pipe (96906)
- 43		. BUSHING, Reducing, 3/4 to 1/8 (78385)
- 44		. STUD (78385)
- 45		. PLATE, Identification (78385) (ATTACHING PARTS)
- 46		. SCREW, Drive (88044) ---*---
- 47		. CRANKCASE (78385)

APPENDIX A

MAINTENANCE OF ELECTRIC MOTOR

		Page
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A-5.	Repair or Replacement	A-4
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MAINTENANCE INSTRUCTIONS FOR

MODEL 225344-100

ELECTRIC MOTOR

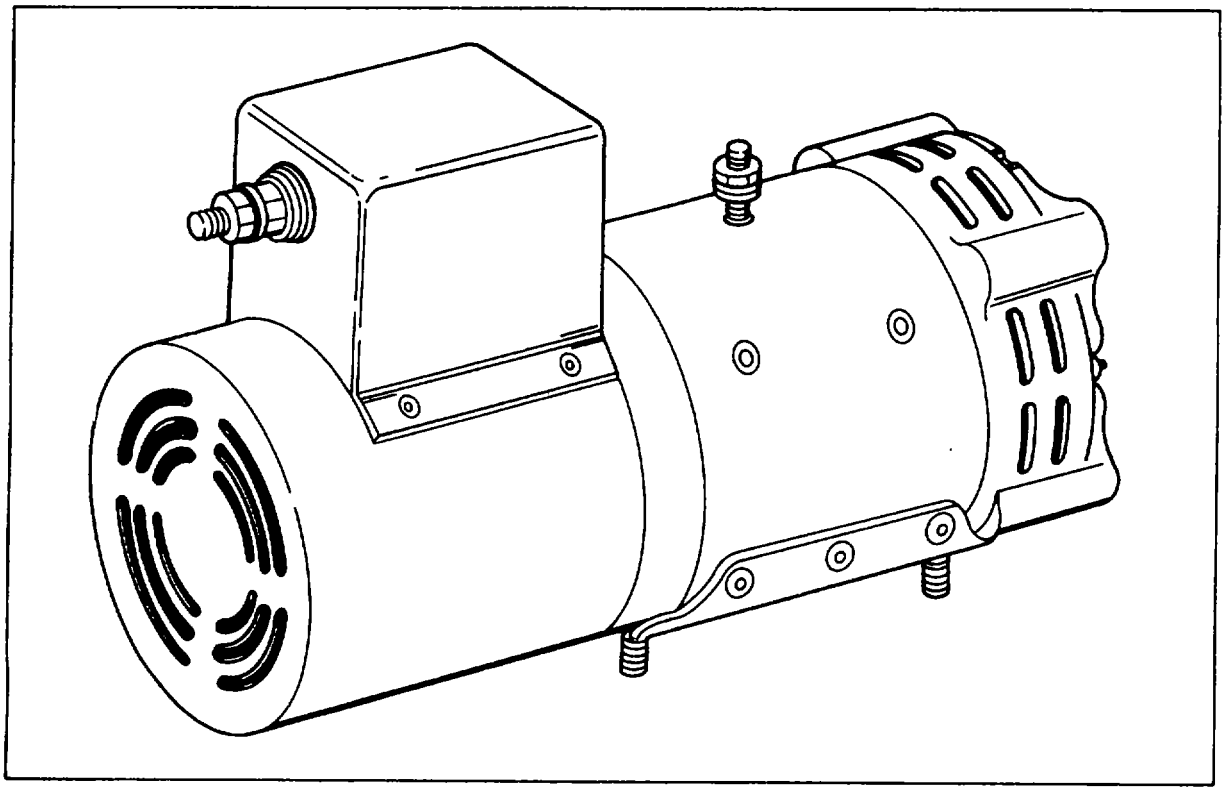

Figure A-1. DC Electric Motor

A-1. DESCRIPTION AND OPERATION.

A. The Model 225344-100 Electrical Motor, is used to drive an air compressor in an ordnance military vehicle.

B. This is an open-ventilated, continuous duty, direct-current motor. Operational characteristics of the equipment are shown in the Table of Leading Particulars, Table I. To facilitate positive identification of parts, an exploded view is given as Figure AG.

C. This unit is shipped ready for use. There are no instructions necessary for its operation. Preventative maintenance should be general, such as wiping accumulated dust from its exterior surface or other types to be determined by the operational environment of the motor.

TABLE I. LEADING PARTICULARS

Duty Cycle	Continuous
Rotation (viewed from drive end)	Counterclockwise
Input Voltage	27 VDC
Output	3.5 HP
Current (nominal)	130 AMPS
Speed	3600 RPM (Min.)
Torque	61 Lb. In.
Weight	27 Lbs.

A-2. DISASSEMBLY.

A. General.

1. Disassembly is generally in the order of the index numbers assigned to the exploded view, Figure A-4.

B. Disassembly Procedure.

1. Remove screws (2) and lift off radio filter (1) and cover assembly (3). Remove screw (4) and washer (5) to separate filter from field.

2. Remove screw (6), washer (7) and (9), and fan (8). Remove spacer (10).

3. Lift brushes (11) from their holders and remove screws (12) and washers (13).

4. The end bell assembly (items 14 through 30) are to be removed in that numerical order. Do not remove insert (29) from terminal (28) unless the threads are damaged.

Note

In order to relieve the tension on springs (20), nuts (17) should be backed off first sufficiently to allow holder (19) to rotate 3/4 turn before the spring holder is removed.

5. Remove screws (31), retainer (32) and bearing (33). Remove nuts (34), washers (35) and tap end bell (30) with a rawhide mallet to separate it from the remaining assembly.

6. Remove insulators (36), washers (37) and rod assemblies (38). Tap end bell (39) on lugs with a rawhide mallet to separate it from the stator assembly. Do not remove pin (40) or insert (41) from the end bell unless they are damaged. Press bearing (44) from armature (42). Do not remove insert (43) unless it is damaged.

7. Remove screws (45), base (46), screws (47), pole shoes (48), field winding (49), terminal lugs (50), winding (51) and terminal (52) only if necessary.

8. Do not remove identification plate (56) unless necessary.

A-3. CLEANING.

A. Wash all parts in cleaning solvent Federal Specification P-D 680 except for brush rigging assembly (items 14 through 29), ball bearings (33) and (44), armature (42) and windings (49) and (51). Wipe these parts with a lint free solvent dampened cloth. Dry all parts thoroughly after cleaning.

WARNING

Clean parts in a well ventilated area, or in a parts cleaning cabinet equipped with an approved exhaust system to minimize inhalation of solvent vapors. Avoid prolonged exposure of cleaning solvent

with the skin. Wash thoroughly with soap and water after exposure.

A-4. INSPECTION.

A. Inspect all parts for damage or wear that would affect serviceability. Pay particular attention to the items listed in the Table II Inspection.

A-5. REPAIR OR REPLACEMENT.

A. Repair Armature Commutator.

If commutator of armature is rough, pitted or burned, repair as follows:

1. Set armature in Vee blocks and check that runout or eccentricity of armature body does not exceed 0.002 inch. Replace armature if over limits. If commutator runout exceeds 0.005 inch, or if commutator is rough, pitted or burned, turn as described in next step. Otherwise, lightly sand commutator with 000 grade flint paper. Blow flint particles out with dry, compressed air at not over 40 psi.

CAUTION

- Never use coarse sandpaper or emery cloth as these will leave a rough surface which reduces brush life.

2. To turn commutator, mount in centers on an armature lathe and take minimum cut to obtain 90 percent clean copper surface. Do not remove any metal from face of commutator riser. After turning, undercut mica 0.031 inch deep by 0.025 inch wide. Break edges of commutator bar to remove burrs and polish smooth. Clean as described under cleaning.

Note

Deepest pits need not be removed provided such pits are not concentrated in one area and do not have sharp or high edges. If after turning commutator diameter measures less than 1.880 inches, armature must be replaced.

B. Replace Field Winding Assembly.

If the field winding assembly is shorted, has an open circuit, or has damaged insulation, remove winding assembly and pole shoes from stator housing. Install replacement winding assembly as follows:

1. Locate short scribe mark (approximately 1/4 inch long) on edge of stator housing outside diameter. Position winding assembly in stator housing so that winding with terminal (52) is on the same axis as stud in stator housing (53). The other three windings travel counterclockwise in housing with a winding on each side of the reference scribe line, Figure A-4. Field terminal wires must be at scribe-line end of housing. Assemble pole shoes to windings and mount on a tight fitting arbor to insure keeping bore smooth while tightening pole shoe screws. Draw pole shoe screws tight. Torque 75-85 inch pounds. A 2.992 inch diameter gauge must pass through I.D. of shoes.

2. Use solder of 2.5 percent silver and 97.5 percent lead to attach terminals (50) and (52).

3. Ground test using 500 volts AC.

4. Impregnate stator assembly using Schenectady Isonel No. 31 varnish, Military Specification MIL-V-1137A, Grade BC, Type M, manufactured by Schenectady Chemicals, Inc., Schenectady, New York, or equivalent, maintained at a temperature of 110° F (43.3° C). Impregnate as follows:

   a. Place stator in a hot air oven and bring stator to a temperature of 290° - 330° F (143.3° - 165.6° C).

   b. Immediately dip into varnish (lead end up) for a period of 10-14 seconds considered from time the lower part of stator enters varnish to time lower part of stator leaves varnish. Maintain a uniform rate of immersion and withdrawal.

TABLE II. INSPECTION

Part Name & Index No. (Fig. A-4)	Type of Inspection	Inspection Procedure	Acceptable Defects
Noise Filter (1)	Electrical	Check for continuity between the two terminals. Check that there is no continuity between either terminal and the case.	None
Fan (8)	Visual	Examine blades for cracks, nicks, dents or bends.	None
Brushes (11)	Visual	Inspect for chipped or cracked carbon. See that leads are riveted tightly to brush, and are not frayed or broken. Replace brush if less than 0.49 inch long.	None
Bearings (33, 44)	Visual	Inspect for roughness, binding or lack of lubrication.	None
Armature (42)	Visual	Examine for rough or pitted commutator, and dark or burned commutator bars.	None
	Dielectric Test	Using 500 volts AC, test for a ground between each commutator bar and armature shaft (not at bearing surfaces); must not show continuity. Test for a short circuit or open windings with a standard growler.	None
Stator Assembly (47 through 53)	Visual	Inspect field windings (49 and 51) for burned or damaged insulation, for loose or open connections.	None
	Dielectric Test	Using 500 volts AC, test for a ground between positive field terminal and housing; must not show continuity. This test must be made with the radio noise filter electrically insulated from the motor frame, or prior to installation of radio noise filter.	None
Brush Rigging Assembly (14 through 29)	Visual	Check for cracks, defective spring, brush box or other obvious defects.	None

c. In the shortest time possible, place stator (lead end up) in an oven and bring parts to 290° - 325°F (143.3° - 162.8° C).

d. Repeat above step (b).

e. In the shortest time possible, place stator (lead end up) in oven at 290° - 325°F (143.3° - 162.8°C). The stator temperature must reach 290° - 300°F (143.3° - 148.9°C) for 1-3/4 to 2 hours.

5. Ground test using 500 volts AC.

C. Lubrication.

No lubrication required. Ball bearings are sealed units, lubricated at the factory and cannot be relubricated.

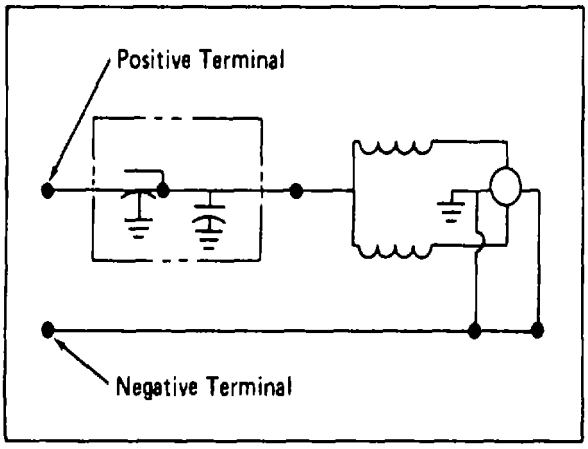

Figure A-2 . Electrical Wiring Schematic

A-6. REASSEMBLY.

A. General.

Reassemble the motor (Fig. A) generally in the reverse order of the index numbers which represent the order of disassembly.

1. Assembly of fields into the stator housing was accomplished during repair and replacement.

2. Set housing (53) in base (46) and install screws (45) torqued to 80 to 100 inch-pounds.

3. Install insert (43) if it was removed. Press bearing (44) on armature (42).

4. Install insert (41) and press pin (40) until it bottoms into end bell (39), if they were removed.

5. Insert the assembled armature into the assembled end bell. Then install the end bell on housing (53).

6. Insert rod assemblies (38) with washers (37) through end bell assembly, then install insulators (36).

7. Align the scribe mark on end bell (30) with scribe mark on housing (53). Tap end bell into place with rawhide mallet. Push rod assemblies (38) through end bell (30) and install nuts (34) and washers (35). Torque nuts (34) to 12-15 inch-pounds.

8. Install bearing (33), retainer (32) and screws (31) torqued to 20-25 inch-pounds. Use sealing compound primer and sealant on threads.

9. Install inserts (29) into terminal (28) if they were removed, then with brush holder (27), washer (26) and screw (25), fasten the terminal to insulator ring (16) with the deep chamfer on the I.D. of the insulator on the same side as the holder (27). Across the insulator 180°, repeat these instructions and install another terminal (28) and holder (27). These are positive brush holders.

10. Install brush holder (24), screw (23), washer (22) and nut (21). Install the remaining brush holder in a like manner, 180° across insulator ring (16). These are negative brush holders.

11. Install two springs (20) on spring holder (19) and insert holder through insulator ring (16). Install washer (18) and nut (17), (Figures A-3 and A-4). Install remaining springs and spring holders.

12. Torque nuts (21) and (17) to 25-29 inch-pounds Torque screws (25) to 40-46 inch-pounds.

13. Align the assembly with one positive brush holder centerline rotator 45° clockwise from the scribe mark on the side of end bell (30). Install washers (15) and screws (14) torqued to 20-25 inch-pounds.

14. Install screws (12), washers (13) and

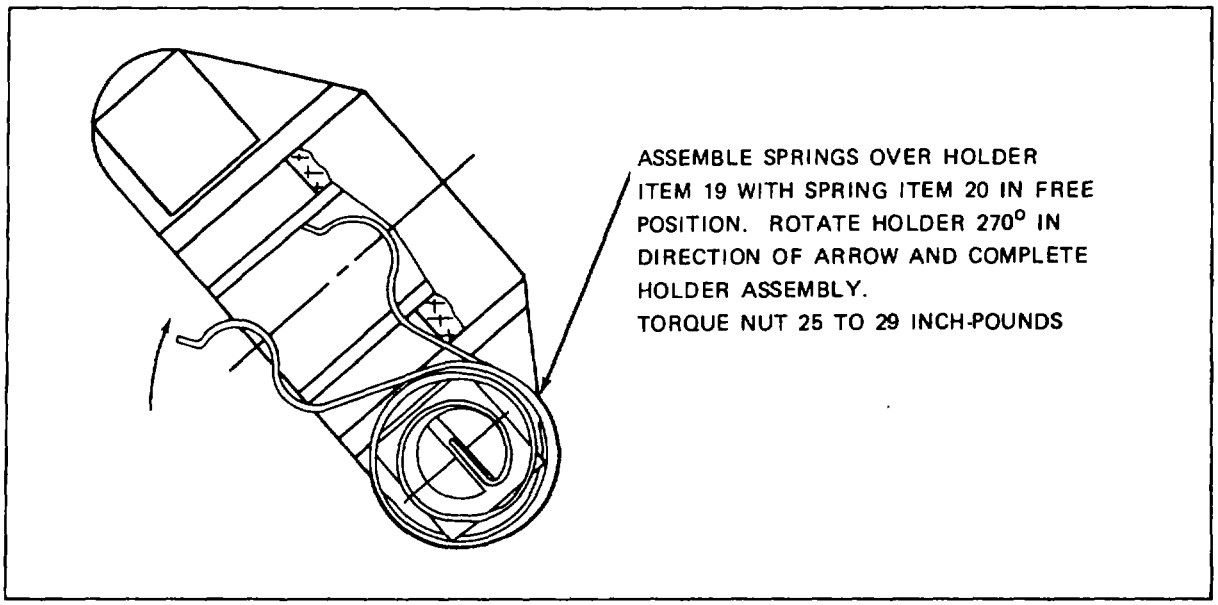

Figure A-3. Enlarged View Showing Typical Spring Installation

brushes (11). Torque screws to 40-46 inch-pounds. Threads of two screws used to fasten negative leads to end bell (30) are to be coated with sealing compound primer and sealant.

15. Install spacer (10), washer (9), fan (8), washer (7) and screw (6), torqued to 100 inch-pounds.

16. Install washer (5) and screw (4) torqued to 40-46 inch-pounds.

17. Install cover (3) and two screws (2). Install filter (1) and the remaining four screws (2). Torque all six screws to 12-15 inch-pounds, after putting sealing compound primer and sealant on the threads.

A-7. TESTING.

A. Test Equipment.

Only standard equipment is required for testing the unit. This should include a 27 volt DC power source and a test stand suitable to meet the requirement of load test Table III.

B. Run-In.

Idle motor at 8-12 volts for a minimum of one hour or until a minimum of 80 percent brush seat across the face of the brush is obtained.

C. Dielectric Strength Test.

While motor is still warm from run-in, lift the negative brushes and apply 500 volts AC between positive terminal and frame. There shall be no evidence of failure as indicated on standard test equipment.

CAUTION

The dielectric strength test must be conducted prior to the installation of the radio noise filter or with the radio noise filter electrically insulated from the motor frame.

D. Load Test.

Mount motor on suitable test stand. Set the voltage and torque load according to the values listed in the table. Measure and record values of

amperes and speed after unit has operated for a minimum of 30 seconds. All required values must be met or exceeded.

A-8. TROUBLE SHOOTING.

A list of common troubles which may be encountered, their probable causes, and suggested remedies are given in Table IV, Trouble Shooting.

A-9. STORAGE INSTRUCTIONS.

Place in a plastic bag and store in a dry dust-free area.

A-10. SPECIAL TOOLS AND EQUIPMENT.

With the exception of test equipment, only normal hand tools are required.

TABLE III. LOAD TEST

Volts D.C.	27
Torque Lb.-In.	61
RPM Min.	3,650
AMP Max.	140

TABLE IV. TROUBLE SHOOTING

Trouble	Probable Cause	Remedy
Motor fails to start	Open circuit	Inspect power circuit for blown fuses or defective wiring. Repair as necessary. Check for continuity to motor terminal and through motor.
Motor does not come up to rated speed or draws excessive current	Motor overloaded	Check accessory mounted on motor for excessive torque.
	Low voltage at motor terminal	Check voltage at motor terminal. Check for under-size cables.
	Worn Brushes	Replace brushes.
	Defective bearings	Replace bearings.
	Shorts or grounds in armature or field coils	Replace part or parts.
	Commutator dirty	Clean commutator using a strip of rough cloth. Wipe with a cloth dampened with unleaded gasoline.
	Brushes sticking in brush holders	Clean brushes by rubbing on rough cloth. Clean brush holders with a small brush and blow out with compressed air at moderate pressure.
Brushes arcing	Rough commutator	Resurface commutator, refer to Repair and Replacement.
	Mica insulation too high between commutator segments	Refer to Repair and Replacement.
Noisy motor	Insulation rubbing	Check clearance of insulation.
	Bearing faulty	Replace bearing or bearings.
	Armature not concentric	Replace armature.

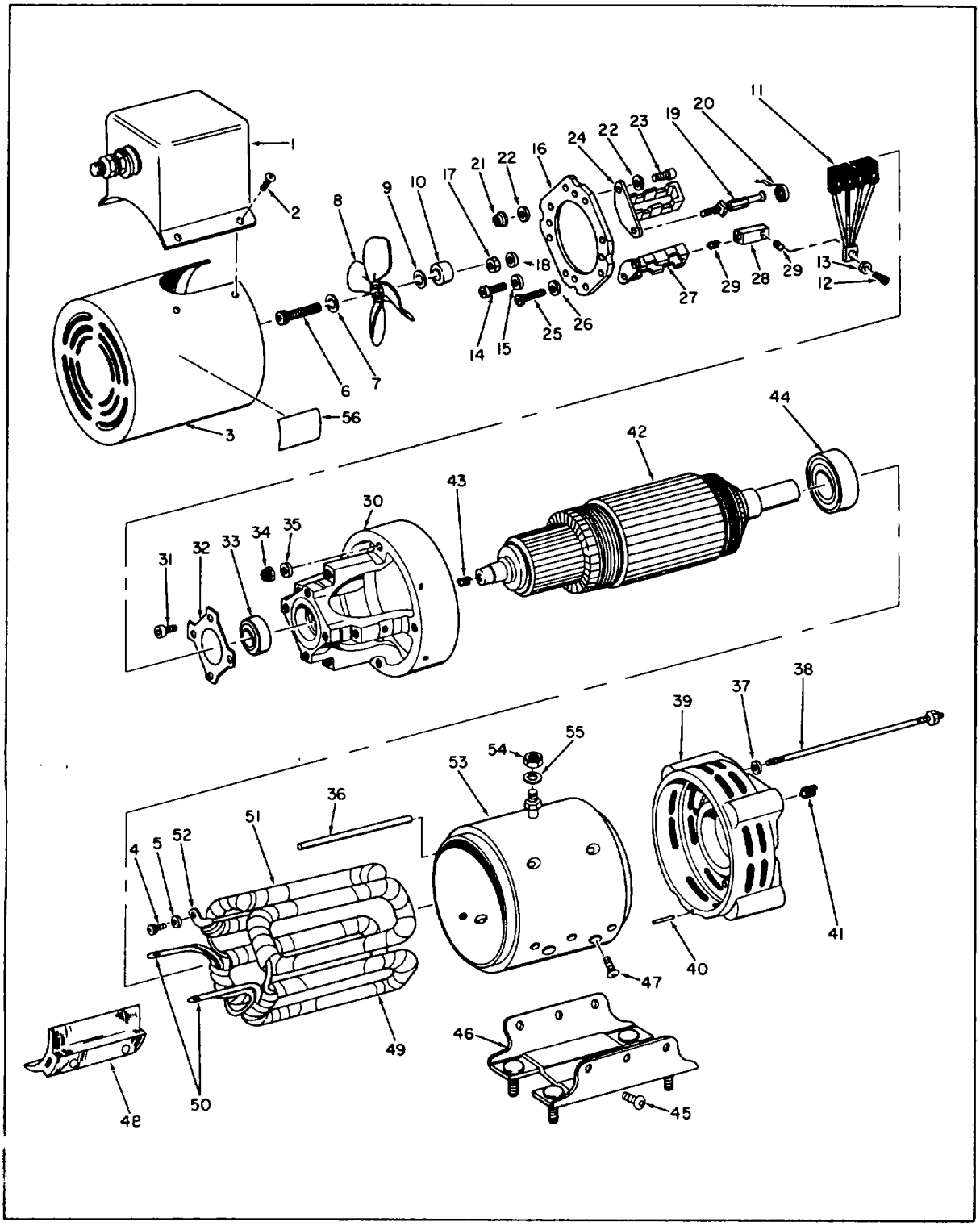

Figure A-4. Electric Motor Assembly - Exploded View

FIG. & INDEX NO.		DESCRIPTION
A-4 -		MOTOR (77200) .....
- 1		. FILTER, Radio interference (77200) .....
- 2		. SCREW .....
- 3		. COVER ASSEMBLY (77200) .....
- 4		. SCREW .....
- 5		. WASHER .....
- 6		. SCREW .....
- 7		. WASHER .....
- 8		. FAN (77200) .....
- 9		. WASHER .....
- 10		. SPACER (77200) .....
- 11		. BRUSH (77200) .....
- 12		. SCREW .....
- 13		. WASHER .....
*		. END BELL ASSEMBLY (77200) .....
- 14		. . SCREW .....
- 15		. . WASHER .....
- 16		. . RING, Insulator (77200) .....
- 17		. . NUT .....
- 18		. . WASHER .....
- 19		. . HOLDER, Spring (77200) .....
- 20		. . SPRING (77200) .....
- 21		. . NUT .....
- 22		. . WASHER .....
- 23		. . SCREW .....
- 24		. . HOLDER (77200) .....
- 25		. . SCREW .....
- 26		. . WASHER .....
- 27		. . HOLDER (77200) .....
*		. . TERMINAL ASSEMBLY (77200) .....
- 28		. . . TERMINAL (77200) .....
- 29		. . . INSERT .....
- 30		. . END BELL (77200) .....
- 31		. SCREW .....
- 32		. RETAINER (77200) .....
- 33		. BEARING (77200) .....
- 34		. NUT .....
- 35		. WASHER .....
- 36		. INSULATOR (77200) .....
- 37		. WASHER .....
- 38		. ROD ASSEMBLY (77200) .....
*		. END BELL ASSEMBLY (77200) .....
- 39		. . END BELL (77200) .....
- 40		. . PIN, Spring .....
- 41		. . INSERT .....
		* Not Illustrated

FIG. & INDEX NO.		DESCRIPTION		
A-4 - 42 - 43 - 44 - 45 - 46 * - 47 - 48 - 49 - 50 - 51 - 52 - 53 - 54 - 55 - 56		. ARMATURE (77200) .... INSERT ..... . BEARING (77200) ..... . SCREW (77200)..... . BASE (77200) ..... . STATOR ASSEMBLY, Motor (77200)..... . . SCREW (77200)..... . . POLESHOE (77200)..... . . WINDING, Field (77200)..... . . TERMINAL, Lug..... . . WINDING, Field (77200)..... . . TERMINAL, Lug..... . . HOUSING, Stator (77200) ..... . NUT ..... . WASHER ..... . PLATE, Identification (77200)..... * Not Illustrated		

APPENDIX B

REFERENCES

B-1. FIRE PROTECTION

TB 5-4200-200-10	Hand Portable Fire Extinguisher for Army Use.

B-2. LUBRICATION

C9100-IL	Petroleum, Petroleum Based Products, and Related Materials.

B-3. PAINTING

TM 9-213	Painting Instructions for Field Use.

B-4. MAINTENANCE

TM 38-750	The Army Maintenance Management System
TM 5-764	Electric Motor and Generator Repair.

B-5. SHIPMENT AND STORAGE

TM 740-90-1	Administrative Storage of Equipment.

B-6. DESTRUCTION TO PREVENT ENEMY USE

TM 750-244-3	Procedures for Destruction of Equipment to Prevent Enemy Use.

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