TECHNICAL MANUAL

OVERHAUL INSTRUCTIONS

ELECTRIC MOTOR-DRIVEN PORTABLE AIR COMPRESSOR ASSEMBLY

USAF TYPE	MODEL NUMBER	PART NUMBER
MB-2A	4MB-2A	68151

NATIONAL STOCK NO. 4310-01-037-2222

DAVEY COMPRESSOR CO. (16004)
DSA700-76-C-8333
DSA700-77-C-8430

BASIC AND ALL CHANGES HAVE BEEN MERGED TO MAKE THIS A COMPLETE PUBLICATION.

Published under authority of the Secretary of the Air Force.

AFLC RAFB, GA REPRINT

5 JANUARY 1978
CHANGE 1 - 15 MAY 1979

LIST OF EFFECTIVE PAGES

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SECTION I

INTRODUCTION AND GENERAL INFORMATION

1-1. INTRODUCTION. This technical manual contains overhaul instructions for the Type MB-2A, Electric Motor-Driven Portable Air Compressor. The unit is manufactured by Davey Compressor Company, Cincinnati, Ohio 45242 (FSCM 16004). The Davey Model Number 4MB-2A and Part Number 68151 is assigned to the unit. Refer to figure 1-1 for an identifying view of the equipment. Instructions contained herein are for the guidance of personnel responsible for the overhaul of the equipment. Operation and Service Instructions are found in T.O. 34Y1-64-21 and Illustrated Parts Breakdown in T.O.34Y1-64-24.

1-2. A Table of Contents, List of Illustrations, and List of Tables is provided as front matter in this publication. The front matter is to be used for ready reference in locating text topics, illustrations, and tables by page number.

1-3. GENERAL INFORMATION. The Type MB-2A air compressor is a two-stage, sliding vane, rotary motion type. The compressor is direct driven by a 230/460-volt, 3-phase, 4-wire, 60-hertz electric motor. The compressor capability is 15 cubic feet per minute (cfm) at pressure of 200 pounds per square inch (psi), continuous operation. A Table of Leading Particulars is found in Table 1-1. The equipment is a two-wheel portable type allowing for easy movement from one work area to another. The unit is designed for use in the operation of small pneumatic tools, greasing equipment, paint spray equipment, and the like, which require air pressures up to 200 psi. Main features of the equipment are described below and referenced on figure 1-2.

a. Hose Reel Assembly (1, Figure 1-2). An enclosed type hose reel with a universal hose guide is provided. Hose capacity of the reel is 50-feet of 1/2-inch outside diameter air hose. The reel incorporates a spring latch mechanism that allows the operator to stop hose unwind at any position. With a pull of the hose, the hose will rewind. The spring tension of the reel is adjustable to the desired rewind tension.

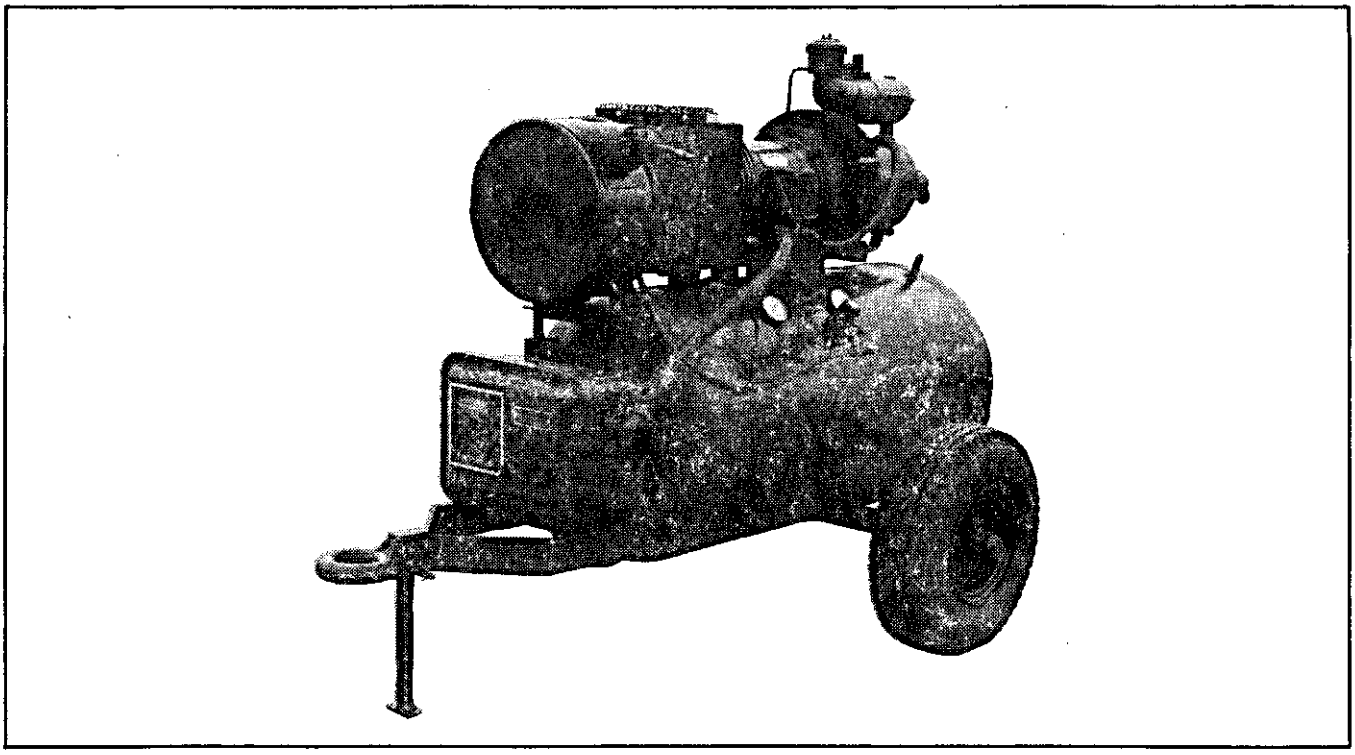


Figure 1-1. Electric Motor-Driven Portable Air Compressor, Type MB-2A

b. Aftercooler (2, Figure 1-2). The compressed air passes from the compressor oil separator assembly discharge through the aftercooler, where the heat of compression is reduced prior to the air entering the receiver. The cooling is accomplished by a suction type fan mounted directly on the drive motor shaft. The fan also provides cooling air for the motor.

c. Electric Motor (3, Figure 1-2). The prime mover for the unit is a 6.5 horsepower, 230/460-volt, 1800 revolutions per minute, 3-phase, 4-wire, 60-hertz, dripproof, alternating current, electric motor. The electric motor is used to drive the air compressor assembly through a direct-connected coupling assembly. The drive portion of the coupling is mounted on the motor shaft and incorporates the impeller, which produces the cooling air circulation for the compressor oil and the compressor assembly.

d. Compressor Oil Cooler (4, Figure 1-2). The air compressor oil passes from the oil chamber through the finned oil cooler, where it is cooled by air being forced through and over the fins. The impeller, mounted on the motor shaft, draws air over the oil chamber fins, through the oil chamber support, and expels the air through the oil cooler.

e. Oil Separator Assembly (6, Figure 1-2). The oil separator assembly is mounted on top of the air compressor assembly. The oil separator filters all traces of oil from the compressed air. The assembly contains a bleeder valve and minimum pressure valve assembly in the top part of the oil separator assembly. The bleeder valve returns the oil from the separator to the compressor assembly via the intake. The oil separator incorporates a pressure gauge which indicates the amount of any existing air pressure (in psi) within the rotary compressor assembly. A sight glass in the bleeder valve assembly shows any presence of pressure in the rotary compressor assembly by a percolating action of the oil when compressor is operating at full load.

f. Rotary Air Compressor Assembly (7, Figure 1-2). The rotary air compressor assembly is a two-stage, sliding vane, rotary motion type. It is capable of producing 15 cfm at 200 psi, continuous operation.

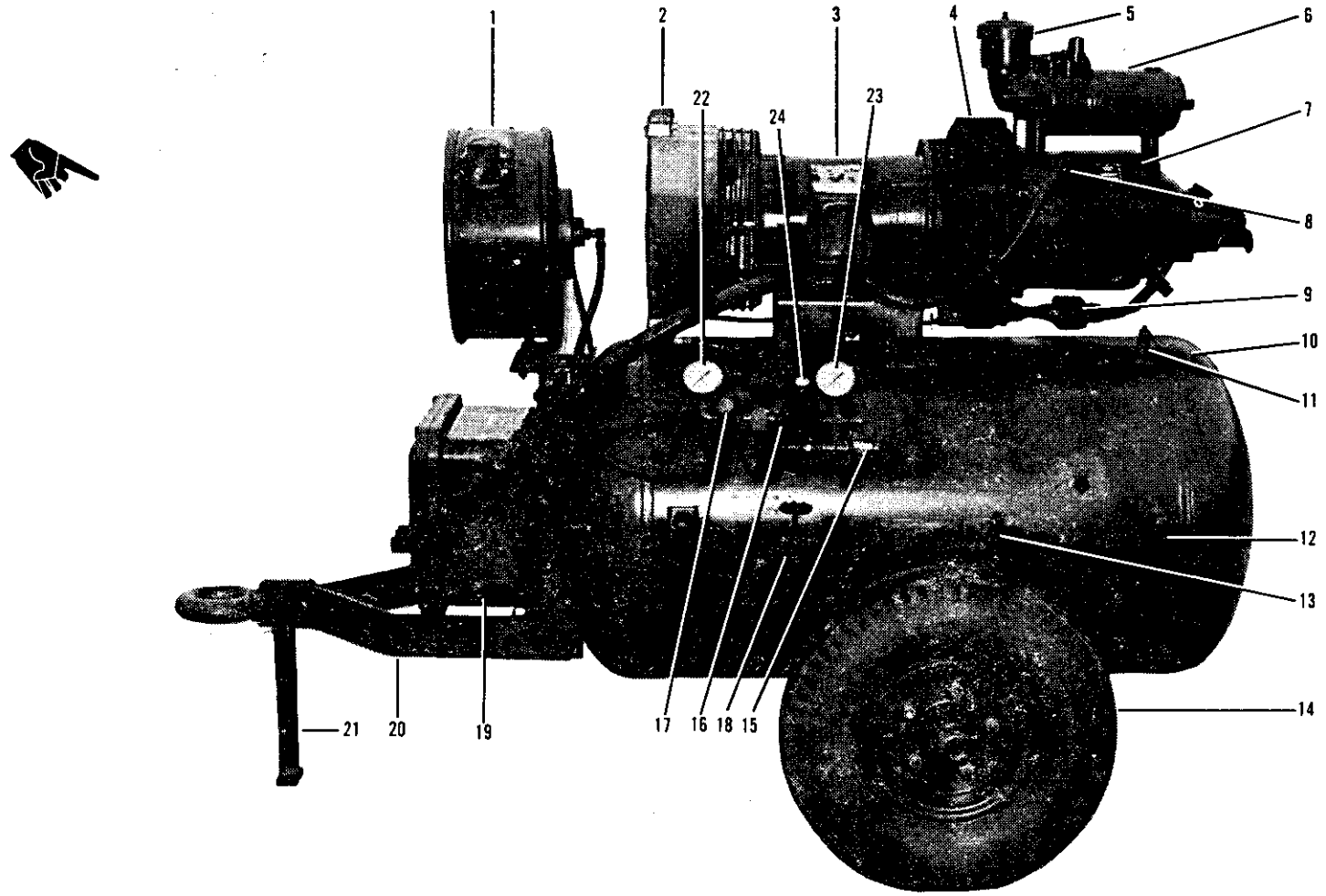
g. Thermostatic Switch (8, Figure 1-2). (Unit serial numbers 13DY2MS-22250 thru 13DY2MS-28325 only.) The thermostatic switch is a normally closed, high temperature safety shutdown device. The switch is set to open at temperature of 235° to 245°F. If the temperature within the air compressor oil chamber should reach this range, the switch will open and interrupt the motor circuit, stopping the unit. No manual reset is required, only allowing the unit to cool to temperature below 235°F.

h. Thermal Bypass Valve Assembly (9, Figure 1-2). The thermal bypass valve assembly is employed to direct part of or all the air compressor oil through the oil cooler. The valve is set to start opening at approximately 150°F and is fully open at 185°F. As the valve begins to open, warm and cool oil is mixed to maintain a relatively constant minimum operating temperature. When the valve is fully open, all oil is being passed through the cooler.

i. Air Receiver Assembly (10, Figure 1-2). The air receiver assembly is the reservoir for the compressed air. It has a capacity of 80 cubic feet. The air receiver assembly is also the unit chassis onto which all other components are mounted, including the towbar (20) and two-wheel running gear (14) with hand operated parking brakes (13). The air receiver is equipped with a safety valve (11) set to open at a pressure of 240 psi. Lifting/tiedown eyes (12) are welded to the air receiver, two each side. A drain valve (18) is also provided to relieve receiver pressure.

j. Service Outlet Assembly (16, Figure 1-2). Two service pressure gauges (22, 23) are connected to the service outlet assembly (16). Each has a pressure range of 0 to 300 psi in 5 psi increments and are red-banded 250 to 300 psi. The gauge on the left-hand side (22), facing the service outlet assembly, indicates the air pressure in the air receiver assembly. The gauge on the right-hand side (23) indicates the air pressure setting of the pressure regulator (24) and service air being delivered to the air service hose in the hose reel (1). The service outlet assembly is protected from overpressure by a rupture disc (17) type safety valve and the service hose by a safety valve (15) set at 240 psi. A shutoff valve is provided upstream to the air pressure regulator. The air pressure regulator is adjustable in the range of 5 to 250 psi for the control of service air discharge pressure.

k. Parking Brake Assembly (13, Figure 1-2). The two hand-operated parking brake assemblies (left-hand shown, right-hand on opposite side) are the cam actuated type. When the handle is raised, the cam action forces the lining pad against the wheel rim and locks in place. To release, simply push handle down. The pressure of the lining pad against the rim is adjustable by means of an adjusting screw. The two brake assemblies are attached directly to the air receiver assembly axle stud shafts.



1. HOSE REEL ASSY
2. AFTERCOOLER
3. ELECTRIC MOTOR ASSY
4. OIL COOLER
5. OIL BATH AIR CLEANER
6. OIL SEPARATOR ASSY
7. AIR COMPRESSOR ASSY
8. THERMOSTATIC SWITCH
9. THERMAL BYPASS VALVE ASSY
10. AIR RECEIVER ASSY
11. SAFETY VALVE
12. LIFTING/TIEDOWN EYES
13. PARKING BRAKES
14. WHEEL ASSY
15. SAFETY VALVE
16. SERVICE OUTLET ASSY
17. RUPTURE DISC
18. DRAIN VALVE
19. CONTROL BOX ASSY
20. TOWBAR ASSY
21. TOWBAR PROP
22. RECEIVER PRESSURE GAUGE
23. SERVICE AIR PRESSURE GAUGE
24. AIR PRESSURE REGULATOR

Figure 1-2. Major Components of the Type MB-2A Air Compressor

Table 1-1. Leading Particulars

ITEM	PARTICULAR
AIR COMPRESSOR:	
Type	Rotary
Stages	Two
Air volume and pressure	15 cfm at 200 psi
Prime mover	Electric motor
Receiver capacity	80 cubic feet
Brakes (parking)	Hand operated, cam action
Tire size, tube type	6:90 x 9, 6 ply
Tire pressure	15 psi
Air filter	Oil bath type
Model number	4 MB-2A
Part Number	68151
ELECTRIC MOTOR:	
Horsepower	6.5 hp
Input voltage	230/460 VAC
Speed	1800 rpm
Phase	3-phase, 4-wire
Hertz	60
Type	Dripproof
Frame	184T, D-flange with feet
CAPACITIES:	
Compressor oil	Approx 3-1/2 quarts
Oil bath air cleaner	Approx 2 ounces
DIMENSIONS AND WEIGHT:	
Overall length	72-1/2-inches
Overall width	41-3/4-inches
Overall height	50-1/2-inches
Volume	88-1/2 cubic feet
Weight, gross	735 pounds

l. Control Box Assembly (19, Figure 1-2). The motor control components are enclosed in an explosion-proof box. The control box assembly consists of a starter assembly, control transformer, hand-off-auto selector switch, start button, emergency stop button, pressure switch, and an automatic phase reversal relay. The electrical control unit is completely automatic and protects the motor assembly from overload. If an overload condition should exist, the electrical control unit will automatically stop the motor. The air compressor is also equipped with a normally closed thermoswitch to protect the unit if the compressor should overheat. If the compressor should overheat, the switch will open the motor circuit and the motor will stop. A pressure switch inside the control box senses the pressure within the air receiver tank via tubing assembly connection. The switch is normally closed and set to open at 210-215 psi. If an overpressure should occur, with unit operating in automatic mode, the pressure switch will open and interrupt the motor circuit. Reset is automatic after receiver pressure has been relieved to 190-195 psi. Operating in the hand mode, the pressure switch does not interrupt the motor circuit.

SECTION II

SPECIAL TOOLS AND TEST EQUIPMENT

2-1. SPECIAL TOOLS AND TEST EQUIPMENT. No special tools or test equipment are required for the overhaul of this unit.

SECTION III

DISASSEMBLY

3-1. PRELIMINARY PROCEDURES. This section contains instructions for the complete disassembly of the Type MB-2A, Model 4MB-2A, into major components, subassemblies, and component parts. Disassembly should only be to the extent necessary for the removal, inspection, repair and replacement of items requiring maintenance. Prior to disassembly, the following procedures should be followed.

WARNING

The power source for this unit is of high potential. Make certain main power cable is disconnected from power source prior to any disassembly. Never attempt to disassemble any part of the air compressor without first relieving all air pressure from the entire unit.

a. Set the parking brakes on each wheel assembly by moving the hand lever to the ON position (up).

b. Disconnect main power cable from power source, if connected.

c. Open receiver drain valve (97, figure 3-1) to make certain all air pressure is relieved from the unit.

d. Place a suitable container under the compressor drain plug (14, figure 3-5), remove the plug and drain the oil from the compressor. Install the drain plug when oil flow stops.

e. Unscrew wing nut, with stud, on top of air cleaner assembly (63, figure 3-1) and remove the oil bath type air cleaner. Separate the cover assembly from body, remove the element, discard oil, assemble the air cleaner back onto air cleaner elbow (64) until ready for maintenance (covered in a later paragraph).

WARNING

Do not attempt to lift components by hand. Provide a suitable lifting device or adequate personnel when removing components such as compressor, motor, control box, hose reel, and aftercooler. These assemblies are heavy and should be handled with care and with adequate hoists, chains, or straps to avoid personnel injury and damaged equipment.

NOTE

Many repair parts for this equipment are provided in the form of kits. See T.O.34Y1-64-24, Illustrated Parts Breakdown, for details. Activities shall replace all parts (regardless of condition) which are removed in the process of disassembly with all like parts furnished in the kit. Therefore, instructions for cleaning, inspecting, and repair of used parts have been omitted from this publication. If any parts in the kit must be cleaned, inspected, or tested prior to installation, instructions for performing these requirements are included in the manual. An installed part which is not defective need not be removed solely for the purpose of replacement by a corresponding kitted part. Residue from kits and removed parts in this category shall be administratively condemned.

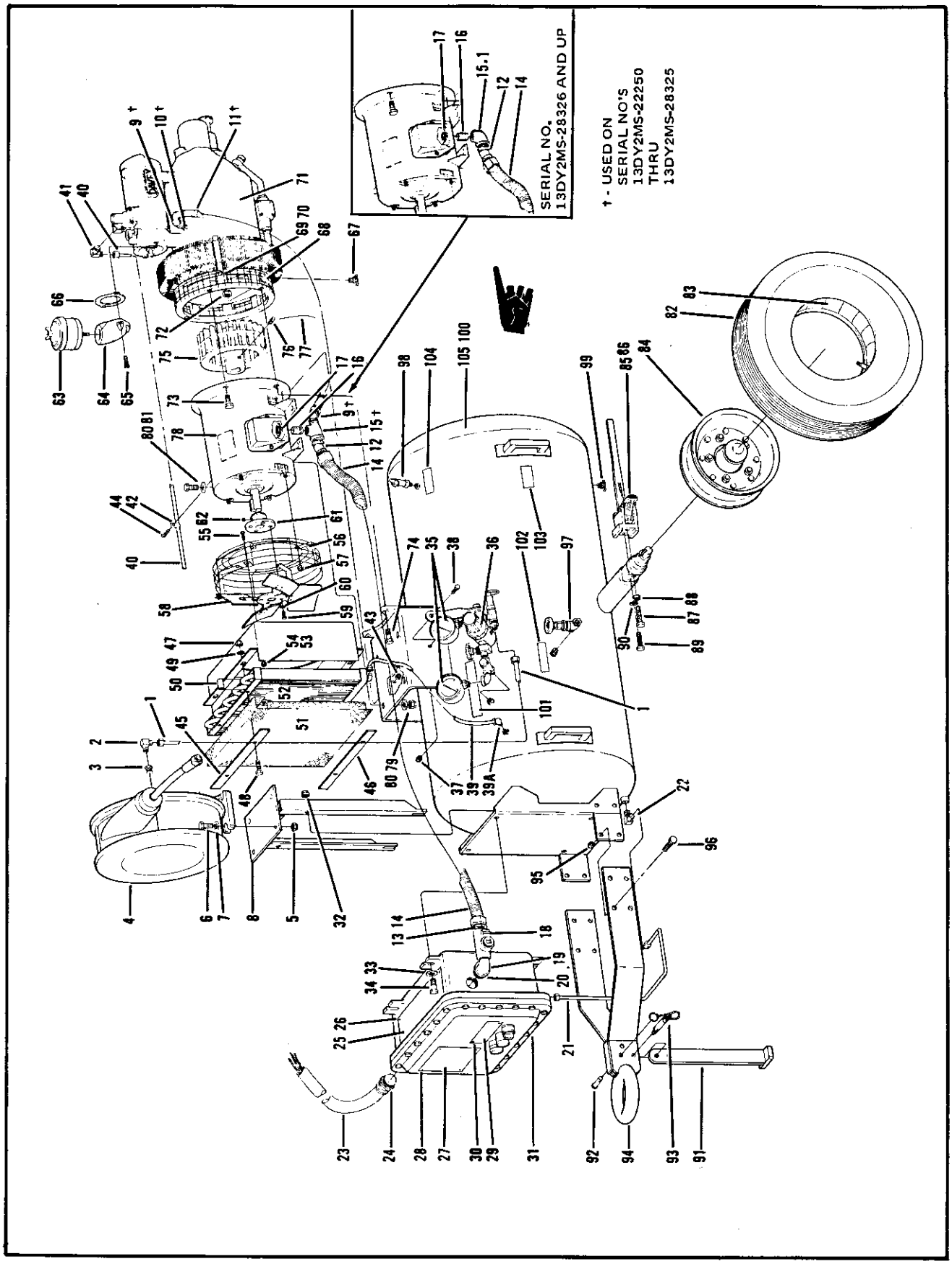


Figure 3-1. Air Compressor Assembly, Type MB-2A, Model 4MB-2A

3-2. DISASSEMBLY OF MAJOR COMPONENTS (Figure 3-1). Disassemble the major components as follows:

a. Disconnect and remove hose assembly (1) from service outlet assembly (36) and hose reel assembly elbow (2). Remove the elbow (2) and reducing bushing (3). Remove four lock nuts (5), cap screws (6), flat washers (7), and hose reel assembly (4) from bracket (8). Refer to paragraph 3-3 for hose reel disassembly.

b. When used, disconnect two conduit connectors (9) from coupling (10) and tee (15). Tag and cut wires from compressor thermoswitch and remove conduit (11). Remove the coupling (10), as necessary.

c. Remove the motor conduit box cover and disconnect leads T1, T2, T3. Mark or tag these leads for assembly reference, if not marked. Disconnect conduit connectors (12, 13). Carefully pull the lead assemblies out of tee (15), or elbow (15.1), and remove conduit (14) from the leads. Only when necessary, remove conduit nut (17), nipple (16) and tee, or elbow (15.1). Assemble conduit box cover back onto motor.

NOTE

The motor leads (and when used, the compressor thermoswitch leads) are sealed in fitting (18) and are removed from this fitting only when necessary to replace the leads. It should not be necessary to remove elbow (19) or nipple (20) from control box assembly (31).

d. Disconnect and remove tube assembly (21). Elbow (22) need not be removed from receiver unless replacement is necessary. Main power cable (23) and connector (24) are not to be removed until control box assembly (31) is disassembled (paragraph 3-4). Only when replacement is necessary, remove screws (26, 28, 30) and plates (25, 27, 29). Remove four lock nuts (32), six flat washers (33), four cap screws (34), motor control box assembly (31), and the hose reel mounting bracket (8). Refer to paragraph 3-4 for motor control box disassembly.

e. Unscrew and remove the two gauges (35). Remove lock nut (37) and cap screw (38) that secure service outlet assembly (36) bracket to motor bracket on receiver. Unscrew and remove the service outlet assembly (36) from the receiver. Refer to paragraph 3-5 for service outlet disassembly.

KEY to figure 3-1:

1. Hose assy
2. Elbow
3. Bushing
4. Hose reel assy
5. Nut
6. Screw
7. Washer
8. Bracket
† 9. Connector
†10. Coupling
†11. Conduit
12. Connector
13. Connector
14. Conduit
†15. Tee
††15.1. Elbow
16. Nipple
17. Nut
18. Seal fitting
19. Elbow
20. Nipple
21. Tube assy
22. Elbow
23. Cable assy
24. Connector
25. Instruction plate
26. Screw
27. Diagram plate
28. Screw
29. Voltage plate
30. Screw
31. Control box assy
32. Nut
33. Washer
34. Screw
35. Gauge
36. Service outlet assy
37. Nut
38. Screw
39. Tube assy
39A. Elbow
40. Tube assy
41. Elbow
42. Clamp
43. Nut
44. Screw
45. Clamp
46. Clamp
47. Nut
48. Screw
49. Washer
50. Spacer
51. Grill
52. Aftercooler
53. Shroud
54. Nut
55. Screw
56. Guard
57. Nut
58. Fan
59. Screw
60. Washer
61. Hub
62. Setscrew
63. Air cleaner assy
64. Elbow
65. Screw
66. Gasket
67. Drain cock
68. Guard
69. Screw
70. Washer
71. Compressor assy
72. Nut
73. Screw
74. Screw
75. Impeller
76. Setscrew
77. Lock wire
78. Motor assy
79. Nut
80. Washer
81. Screw
82. Tire
83. Tube
84. Wheel assy
85. Brake assy
86. Brake assy
87. Bolt
88. Nut
89. Screw
90. Washer
91. Towbar prop
92. Pin
93. Pin & chain assy
94. Towbar assy
95. Nut
96. Screw
97. Drain valve
98. Safety valve
99. Drain cock
100. Pipe plug
101. Outlet decal
102. Bleed decal
103. Drain decal
104. Safety valve decal
105. Receiver assy

† - Serial no's 13DY2MS-22250 thru 13DY2MS-28325 only
†† - Serial no. 13DY2MS-28326 and up

f. Disconnect and remove tube assembly (39) from receiver and aftercooler. It is not necessary to remove elbow (39A) from receiver unless replacement is necessary. Disconnect tube assembly (40) from compressor discharge elbow (41) and aftercooler. Remove lock nut (43), cap screw (44) and tube clamp (42) that secures tube assembly (40) to receiver motor mounting bracket. Remove discharge elbow (41), as necessary.

g. Remove four lock nuts (47), flat washers (49), cap screws (48), spacers (50), two grill clamps (45, 46), and the aftercooler grill (51) and aftercooler (52). Remove four lock nuts (54), cap screw (55), and the fan shroud (53). Remove four cap screws (59), lock washers (60), and the aftercooler fan (58). Remove four lock nuts (57) and the fan guard (56) from motor studs. Assemble the nuts back on motor studs to prevent their loss. Loosen setscrew (62) and pull fan hub (61) off motor shaft. Tape key to motor shaft to prevent its loss.

h. Unscrew air cleaner assembly (63) wing nut with stud and remove the air cleaner assembly (63). Remove two socket head cap screws (65), air cleaner elbow (64), and elbow gasket (66). If necessary, remove drain cock (67) from compressor oil cooler. Remove four machine screws (69), lock washers (70), and impeller guard (68). Assemble the lock washers (70) and machine screws (69) back on compressor cooler clamps to prevent their loss.

i. Attach suitable lifting device to air compressor assembly (71). Remove four lock nuts (72), two 1-1/2-inch cap screws (73) and two 1-3/4-inch cap screws (74); remove compressor assembly (71) from unit. Refer to paragraph 3-6 for compressor disassembly.

j. Cut, remove and discard lock wire (77). Loosen two setscrews (76) and remove impeller (75) from motor shaft. Tape key to motor shaft to prevent its loss.

k. Attach a suitable lifting device to the motor assembly (78). Remove four locknuts (79), cap screws (81), and eight flat washers (80). Remove the motor assembly (78) from the unit. Refer to paragraph 3-10 for motor disassembly.

l. To further disassemble the remaining components, place the receiver assembly (105) on a suitable stand, such as metal horses, and block the receiver to prevent rolling or turning on the stand. Remove the hub caps (1, figure 3-10), cotter pins (2), spindle nuts (3), spindle washers (4) and remove the two wheel assemblies (84, figure 3-1) with tires (82) and tubes (83) remaining with wheel assemblies (84). Refer to paragraph 3-11 for wheel and hub disassembly.

m. Remove brake adjusting bolts (87), jam nuts (88), cap screws (89), lock washers (90) and the two brake assemblies (85, 86) from the receiver axle stub shafts. Refer to paragraph 3-12 for brake disassembly.

n. As necessary, remove towbar prop pin and chain assembly (93), pin (92), and towbar prop (91). Remove eight lock nuts (95), cap screws (96) and towbar assembly (94). Unscrew and remove receiver drain valve (97), safety valve (98), and drain cock (99). The two pipe plugs (100) in the receiver tank and decals (101, 102, 103, 104) need not be removed from receiver assembly (105) except for replacement.

3-3. HOSE REEL DISASSEMBLY (Figure 3-2). Disassemble the hose reel assembly as follows:

a. Remove the hose bumper (1) from the air service hose assembly (9). Remove four nuts (3) that secure the cover and case assembly (2) to the reel cover (30). Pull off cover and case assembly (2).

KEY to figure 3-2:

1. Hose bumper
2. Cover & case assy
3. Nut
4. Guide
5. Screw
6. Washer
7. Plug nut
8. Pin & roller kit
9. Hose assy
10. Clamp
11. Nut
12. Screw
13. Elbow
14. Swivel joint
15. Sheave assy
16. Nut
17. Washer
18. Stud
19. Spring
20. Arbor
21. Setscrew
22. Retaining ring
23. Case & cam assy
24. Stud
25. Nut
26. Latch rotor assy
27. Retaining ring
28. Washer
29. Washer
30. Cover
31. Retaining ring
32. Screw
33. Washer
34. Latch stud
35. Nut
36. Washer
37. Reel shaft
38. Setscrew
39. Base
40. Pressure decal

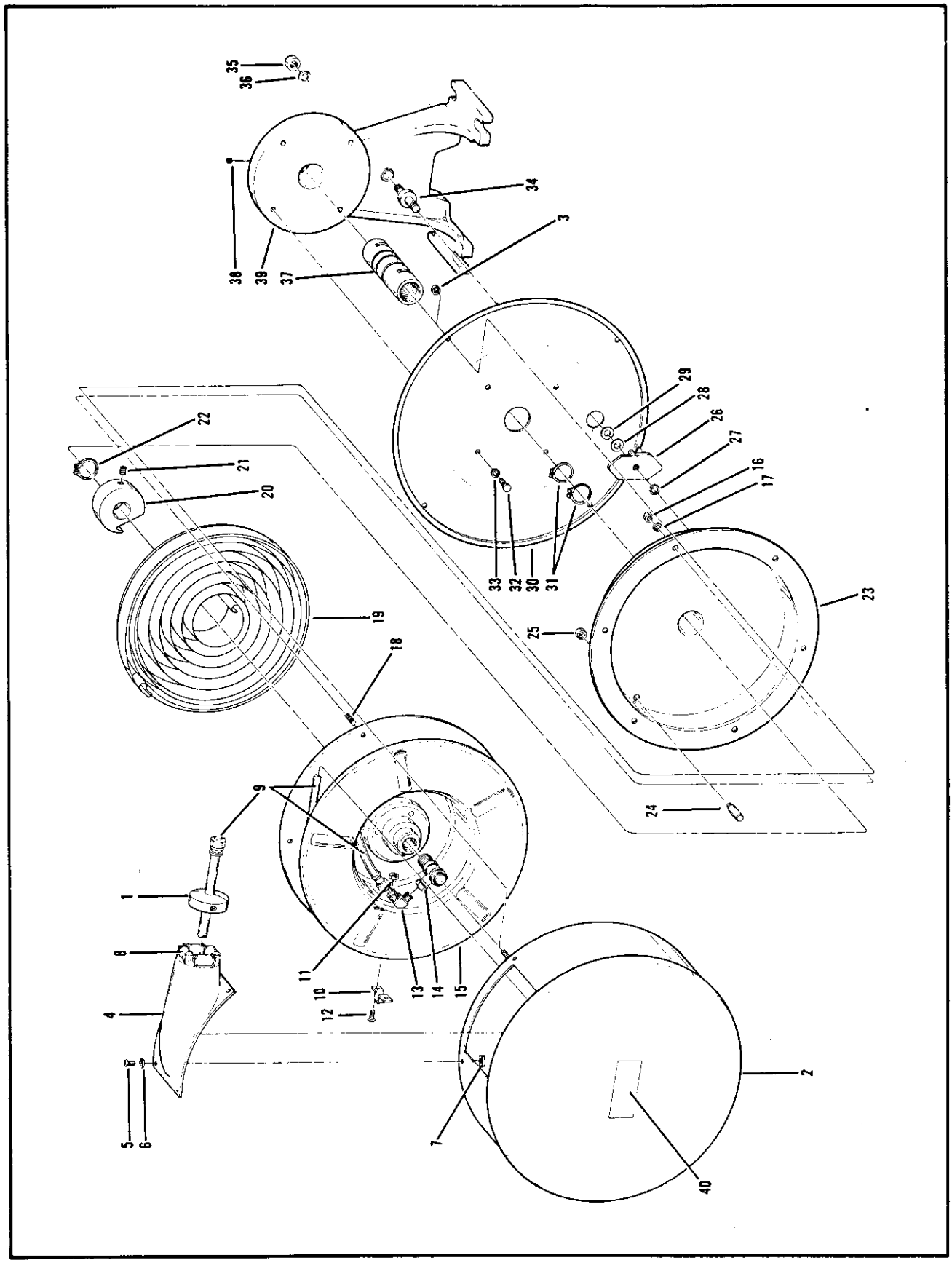


Figure 3-2. Hose Reel Assembly

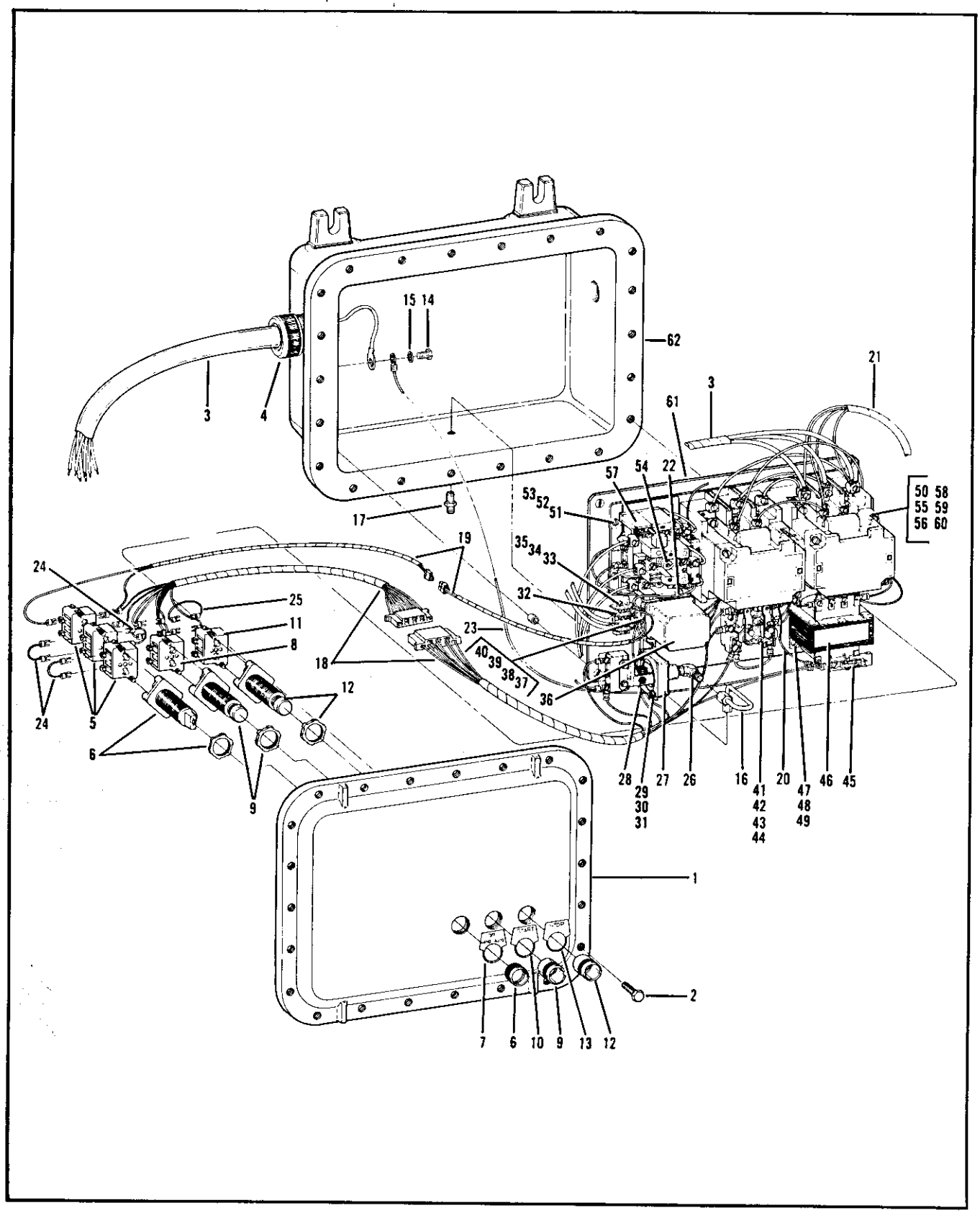


Figure 3-3. Motor Control Box Assembly

b. Remove four machine screws (5), lock washers (6), and the hose guide (4). Plug nuts (7) need not be removed. Remove pin and roller kit (8) from hose guide (4) by driving out the pins. This should be done only when replacement is necessary.

c. Unwind the service hose assembly (9), remove four lock nuts (11), machine screws (12), and two hose clamps (10). Disconnect and remove service hose assembly (9). Remove street elbow (13) and swivel joint (14).

d. Remove six nuts (16), lock washers (17), and the sheave assembly (15). Studs (18) need not be removed. Remove the drive spring (19). Loosen setscrew (21) and remove spring arbor (20).

e. Remove retaining ring (22) and pull off the case and cam assembly (23). Remove jam nut (25) and spring stud (24) from case and cam assembly (23) if necessary.

f. Remove retaining ring (27) and pull off latch rotor assembly (26) and spacing washers (28, 29). Remove two retaining rings (31), four cap screws (32) and lock washers (33); pull reel cover (30) off reel shaft (37).

g. Remove nut (35), lock washer (36), and latch stud (34) from base (39). Loosen setscrew (38) and remove reel shaft (37) from base (39). Decal (40) need be removed from cover and case assembly (2) for replacement only.

3-4. MOTOR CONTROL BOX DISASSEMBLY (Figure 3-3). Disassemble the motor control box assembly as follows:

a. Remove the twenty-two cap screws (2) that secure the cover (1) to the box assembly (62). Carefully remove the cover (1) from the box. If it is desired to completely remove cover, unplug wiring harness (18) and wiring harness (19); then, lay cover to one side. To facilitate removal of components of cover and disconnecting wire assemblies, the cover may be turned over with control switches facing outward and cover flange attached to box flange with two cap screws (2).

NOTE

As wiring harnesses, wire assemblies, and leads are disconnected during disassembly make certain each wire is marked for assembly reference. If wire markings are missing from any connection, tag or remark so terminal connections may be made correctly at assembly. Refer to wiring diagram, figure 3-12.

b. Disconnect main power cable (3) leads from starter assembly (50) terminals L1, L2, L3; from terminal block (32); remove cap screw (14) and flat washer (15) to disconnect ground. Remove the cable connector (4) and the main power cable (3) from the control box.

KEY to figure 3-3:

1. Cover
2. Screw
3. Cable assy
4. Connector
5. Contact block
6. Selector switch
7. Plate
8. Contact block
9. Start switch
10. Plate
11. Contact block
12. Stop switch
13. Plate
14. Screw
15. Washer
16. Tube assy
17. Union
18. Harness assy
19. Harness assy
20. Harness assy
21. Harness assy
22. Wire assy
23. Wire assy
24. Wire
25. Wire
26. Elbow
27. Pressure switch
28. Mtg bracket
29. Nut
30. Washer
31. Screw
32. Terminal block
33. Nut
34. Washer
35. Screw
36. Phase relay
37. Octal base
38. Nut
39. Washer
40. Screw
41. Control relay
42. Nut
43. Washer
44. Screw
45. Fuse
46. Transformer
47. Nut
48. Washer
49. Screw
50. Motor starter
51. Nut
52. Washer
53. Screw
54. Heater coil
55. Contact set
56. Coil
57. Overload relay
58. Carrier
59. Frame
60. Lever
61. Mtg board
62. Box assy

c. Where used, disconnect compressor thermoswitch lead number 14 from control relay (41) terminal number 6 and lead number 17 from terminal block (32). Disconnect motor lead numbers 13, 15, 16 from overload relay (57) terminals T1, T2, T3. The sealing fitting (18, figure 3-1) may now be removed from the elbow (19, figure 3-1), withdrawing the wires carefully through side of control box.

d. Disconnect and remove wire numbers 40, 45, 46 from selector switch contact blocks (5, figure 3-3). Disconnect and remove wire number 39 from stop switch contact block (11) and start switch contact block (8). Disconnect W1 wiring harness (18) and W2 wiring harness (19) leads from the control switches contact blocks (5, 8, 11).

e. Remove three contact block assemblies (5), selector switch (6) and switch plate (7). Remove contact block assembly (8), start pushbutton switch (9) and switch plate (10). Remove contact block assembly (11), stop pushbutton switch (12) and switch plate (13).

f. Disconnect and remove the pressure switch tube assembly (16) and bulkhead union (17). Disconnect all lead connections of W1 wiring harness (18) and W2 wiring harness (19) and remove the harnesses. Disconnect and remove W3 wiring harness (20) and W4 wiring harness (21). Disconnect and remove wire assembly number 29 (22, figure 3-3). Disconnect and remove ground wire number 47 (23).

g. Remove four slotted flat head screws that attach the mounting board assembly to the control box and carefully remove the mounting board assembly from the box. The mounting board standoff spacers will remain on the screws.

h. Remove elbow (26, figure 3-3) from pressure switch (27). Remove nuts and lock washers that attach pressure switch (27) to mounting bracket; remove pressure switch and assemble lock washers and nuts just removed back onto pressure switch screws to prevent their loss. Remove two nuts (29), lock washers (30), machine screws (31) and mounting bracket (28).

i. Remove two nuts (33), lock washers (34), machine screws (35) and remove the terminal block (32). Remove the phase sensing relay (36). Remove two nuts (38), lock washers (39), machine screws (40), and the octal base (37).

j. Remove two nuts (42), lock washers (43), machine screws (44), and the control relay (41). Remove fuse (45). Remove four nuts (47), lock washers (48), machine screws (49), and the transformer (46).

k. Remove three nuts (51), lock washers (52), machine screws (53), and the starter assembly (50) from mounting board (61).

NOTE

When manufactured, the unit was wired for 460-volt using heater coils (54) on overload relay (57). Alternate heater coils have been supplied for the conversion to 230-volt supply. At disassembly, make note of coils removed, if necessary to remove, so that at assembly the correct coils are used. The alternate coils should remain in control box assembly for future conversion.

3-5. SERVICE OUTLET DISASSEMBLY (Figure 3-4). Disassemble the service outlet assembly as follows:

a. Remove the close nipple (1) from union (2) and remove the union (2) from pipe cross (5). Remove the street elbow (3) and rupture disc safety valve (4) from pipe cross (5). Remove pipe cross (5) from nipple (6) and remove nipple (6) from shutoff valve (7). Remove shutoff valve (7) from nipple (25) and remove the nipple (25) from air pressure regulator (26). When necessary, disassemble the shutoff valve (7) as follows:

NOTE

Repair kit is available for shutoff valve (7). Refer to T.O.34Y1-64-24.

(1) Unscrew and remove handle nut (9), handle (8), washer (10), and nut (11).

1. NIPPLE
2. UNION
3. ELBOW
4. SAFETY VALVE
5. PIPE CROSS
6. NIPPLE
7. SHUTOFF VALVE
8. HANDLE
9. NUT
10. WASHER
11. NUT
12. GLAND NUT
13. RETAINING RING
14. STEM
15. SPACER
16. BACKUP RING
17. O-RING
18. BACKUP RING
19. O-RING
20. SLEEVE
21. WASHER
22. FOLLOWER
23. SPRING
24. BODY
25. NIPPLE
26. REGULATOR
27. NIPPLE
28. SAFETY VALVE
29. ADAPTER
30. TEE
31. NIPPLE
32. PIPE CAP
33. MTG BRACKET
34. SPACER
35. NIPPLE
36. PIPE CROSS

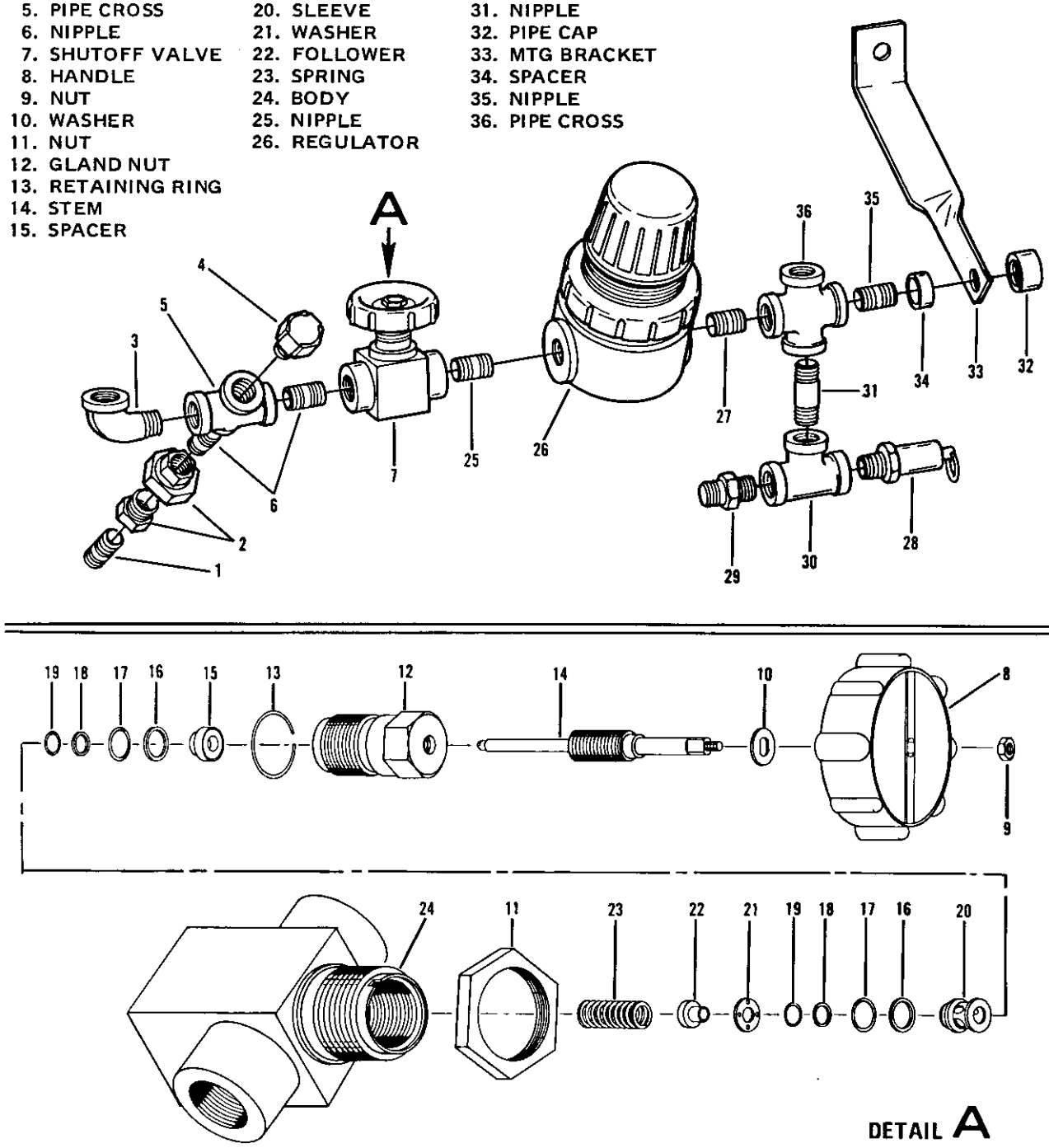


Figure 3-4. Service Outlet Assembly

(2) Remove gland nut (12), remove retaining ring (13) and disassemble valve stem (14).

(3) Remove valve spacer (15), one backup ring (16), one o-ring (17), one backup ring (18), and one o-ring (19). Remove valve sleeve (20) and disassemble one o-ring (19), one backup ring (18), one o-ring (17), and one backup ring (16).

(4) Remove valve washer (21), valve follower (22), and spring (23) from body (24).

b. Remove air pressure regulator assembly (26) from pipe nipple (27) and remove the nipple (27) from pipe cross (36).

c. Remove safety valve (28), tube adapter (29), pipe tee (30), and nipple (31). Remove pipe cap (32), mounting bracket (33), spacer (34), and nipple (35) from pipe cross (36).

3-6. AIR COMPRESSOR DISASSEMBLY (Figure 3-5). Disassemble the air compressor assembly in the following sequence.

a. Remove nut (2) and lock washer (3) attaching oil separator assembly (1) to stud (6). Unscrew separator bolt (1, figure 3-6) to free separator assembly (1, figure 3-5) from oil chamber (74). Lift separator assembly (1) off compressor and remove gasket (5) and square section ring (4). Refer to paragraph 3-7 for oil separator disassembly.

b. Remove separator stud (6) from oil chamber (74). If threads of insert (7) indicate any cross-threading or damage, remove the insert with a heli-coil removing tool. If no damage is evident the insert (7) should not be removed. Unscrew and remove the compressor high temperature thermoswitch (8), or pipe plug (8.1), whichever is used.

c. Remove tube bolt (10), square section rings (11), loosen sealing screw (12) from thermal bypass valve (21), slide the sealing screw away from valve on tube (9), remove oil tube assembly (9) and square section ring (13).

d. Remove drain plug (14), o-ring (15), banjo bolt (17) and square section rings (18). Loosen sealing screw (19) from thermal bypass valve (21), slide sealing screw away from valve on oil tube (16), remove the oil tube assembly (16) and square section ring (20).

e. Unscrew two sealing screws (22) from oil cooler (36) and remove the thermal bypass valve assembly (21), sealing screws (22) and square section rings (23). Refer to paragraph 3-8 for thermal bypass valve disassembly.

KEY to figure 3-5:

1. Separator assy
2. Nut
3. Washer
4. Square section ring
5. Gasket
6. Stud
7. Insert
† 8. Thermoswitch
†† 8.1. Pipe plug
9. Tube assy
10. Tube bolt
11. Square section ring
12. Sealing screw
13. Square section ring
14. Drain plug
15. O-ring
16. Tube assy
17. Banjo bolt
18. Square section ring
19. Sealing screw
20. Square section ring
21. Thermal bypass valve
22. Sealing screw
23. Square section ring
24. Cowl
25. Nut
26. Washer
27. Screw
28. Clamp
29. Name plate
30. Screw
31. Instruction plate
32. Screw
33. Rotation plate
34. Screw
35. Drain cock
36. Oil cooler
37. Clamp
38. Screw
39. Washer
40. Lantern
41. Screw
42. Washer
43. Dowel pin
44. Bushing
45. Coupling assy
46. Screw
47. Washer
48. Washer
49. O-ring
50. Key
51. Rotor-Stator assy
52. Filler plug
53. Square section ring
54. Adj knob
55. Screw
56. Washer
57. Screw
58. Washer
59. Bushing
60. O-ring
61. Housing
62. Gasket
63. Push rod
64. Spring
65. Adj pin
66. Oil filter
67. Seal
68. Connector
69. Cotter pin
70. Spring
71. Collar
72. Seal
73. Support
74. Oil chamber

† - Serial no's 13DY2MS-22250 thru 13DY2MS-28325
†† - Serial no. 13DY2MS-28326 and up

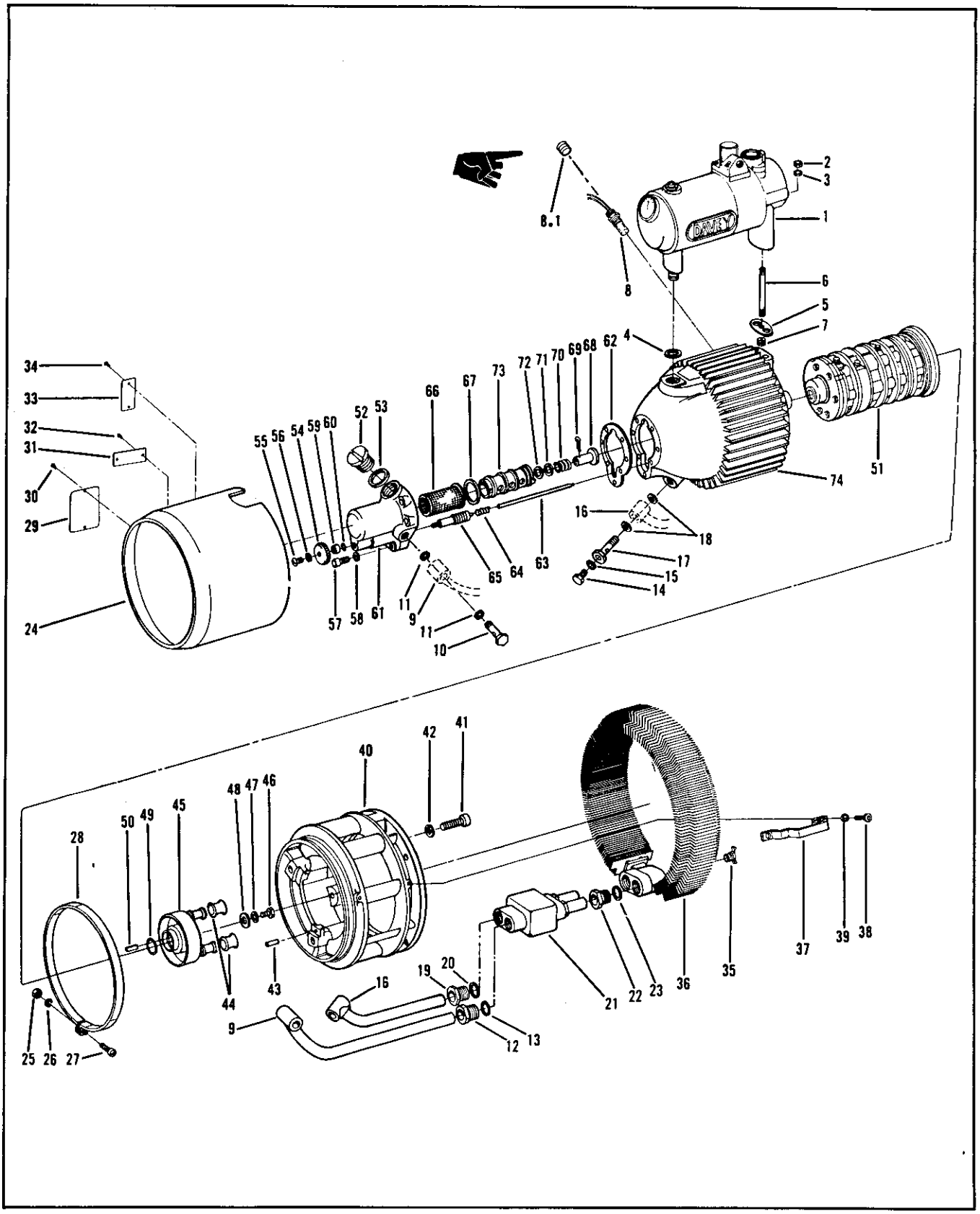


Figure 3-5. Air Compressor Assembly

f. Loosen or remove, as necessary, nut (26), lock washer (27) and screw (25) that secure cowl clamp (28). Remove the cowl (24) and clamp (28). Unless replacement is necessary, screws (30, 32, 34) and plates (29, 31, 33) need not be removed from cowl (24). If not previously removed, remove the drain cock (35).

g. Remove eight screws (38), lock washers (39), four clamps (37) and remove the oil cooler (36). Remove three cap screws (41), lock washers (42) and lantern (40). Remove dowel pin (43), as necessary.

h. Remove two drive bushings (44) from drive coupling assembly (45). Remove cap screw (46), lock washer (47), special washer (48), drive coupling assembly (45), o-ring (49), and key (50).

i. Carefully remove the rotor-stator assembly (51) from oil chamber (74). Refer to paragraph 3-9 for rotor-stator disassembly.

j. Remove the oil filler plug (52) and square section ring (53) from housing (61). Remove screw (55), lock washer (56) and adjusting knob (54). Remove seven cap screws (57) and lock washers (58); pull oil filter housing assembly off oil chamber (74). When necessary, remove bushing (59), and o-ring (60) from housing (61). Remove housing gasket (62).

k. Remove push rod (63), spring (64), and adjusting pin (65). Remove oil filter (66) and oil filter seal (67). Remove the cotter pin (69), and disassemble connector (68), spring (70), collar (71), and seal (72) from oil filter support (73).

3-7. OIL SEPARATOR DISASSEMBLY (Figure 3-6). Disassemble the oil separator assembly in the following sequence:

a. Remove separator bolt (1) and o-ring packing (2).

b. Remove two 7/8-inch cap screws (3) and two 1-1/4-inch cap screws (4) and remove the minimum pressure valve assembly from housing (40). Remove the gasket (15). Disassemble the minimum pressure valve assembly as follows:

(1) Remove retaining ring (5) and seat (6). Remove o-ring (7) from seat (6).

(2) Remove piston (8) and remove seal (9) from piston (8).

(3) Remove spring (10) and piston (11). Remove o-ring (12) from piston (11). Remove spring (13).

c. Remove two cap screws (16). Turn the separator housing upside down and dislodge the bleeder valve assembly parts (17 through 29). Remove gasket (30). Disassemble bleeder valve in the following sequence:

(1) Remove cover (17), lift out dish (19), remove window (18) and o-ring (20).

(2) Remove spring (21), piston (22), diaphragm (23), nozzle (24), plunger (25), and seat (26).

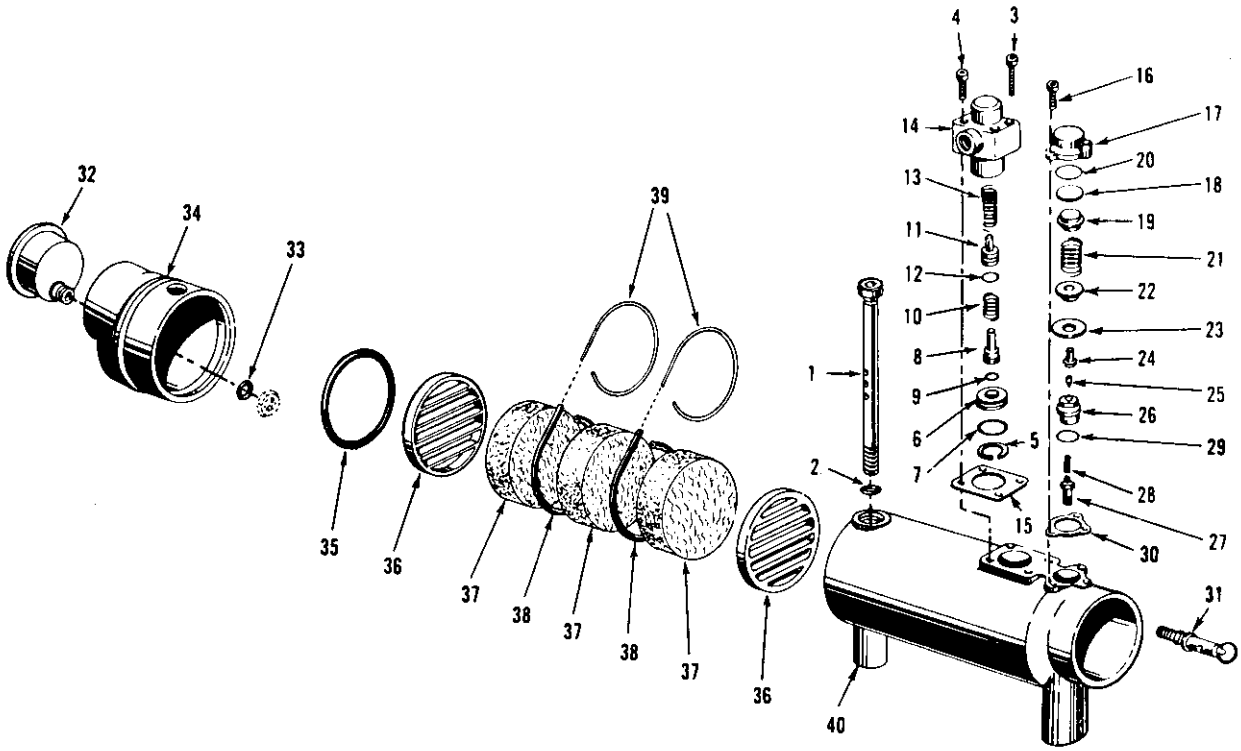
(3). Remove filter assembly (27), bleeder valve (28), and o-ring (29).

d. Unscrew and remove safety valve (31). Pull cover assembly out of housing (40). Remove the nut that attaches gauge (32) to cover (34) and remove gauge from cover. Assemble nut back on gauge to prevent its loss. Remove o-ring (33) and o-ring (35) from cover (34).

e. Remove the two grids (36), three felts (37), two seals (38), and seal wires (39) from housing (40). Note the sequence of removal of these parts for assembly reference.

3-8. THERMAL BYPASS VALVE DISASSEMBLY (Figure 3-7). Disassemble the thermal bypass valve assembly as follows:

a. Remove four screws (2), lock washers (3), and cover (1). Remove o-ring (4) from cover (1).



1. BOLT
2. O-RING
3. SCREW
4. SCREW
5. RETAINING RING
6. SEAT
7. O-RING
8. PISTON
9. SEAL
10. SPRING
11. PISTON
12. O-RING
13. SPRING
14. HOUSING
15. GASKET
16. SCREW
17. COVER
18. WINDOW
19. VALVE DISH
20. O-RING
21. SPRING
22. PISTON
23. DIAPHRAGM
24. NOZZLE
25. PLUNGER
26. SEAT
27. FILTER ASSY
28. BLEEDER VALVE
29. O-RING
30. GASKET
31. SAFETY VALVE
32. GAUGE
33. O-RING
34. COVER
35. O-RING
36. GRID
37. FELT
38. SEAL
39. WIRE
40. HOUSING

Figure 3-6. Oil Separator Assembly

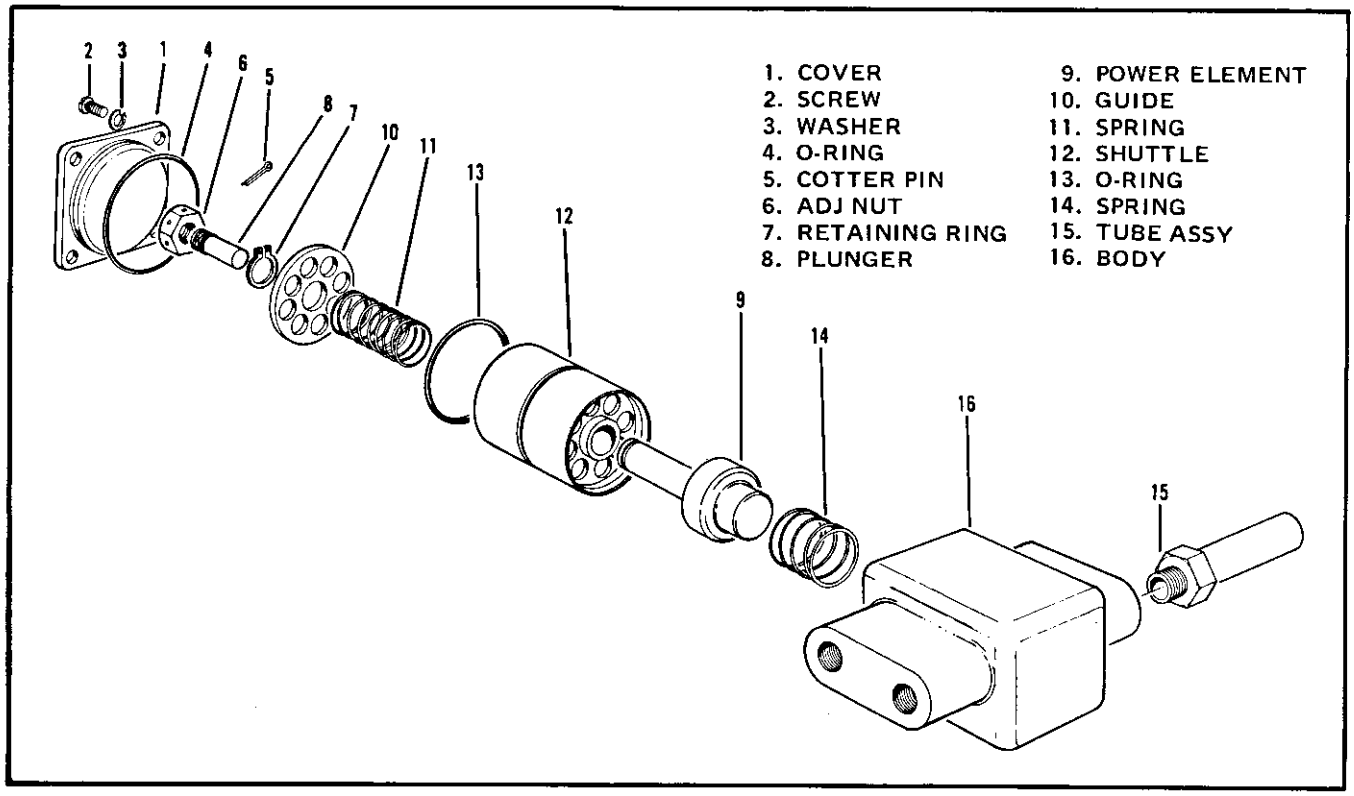


Figure 3-7. Thermal Bypass Valve Assembly

b. Lift the shuttle assembly out of body (16) and remove the power element spring (14). Remove o-ring (13) from shuttle (12).

c. To disassemble the shuttle assembly, remove cotter pin (5), adjusting nut (6) and plunger (8). Remove retaining ring (7), power element (9), shuttle guide (10) and spring (11) from shuttle (12).

d. As necessary, remove the two tube assemblies (15) from body (16).

3-9. ROTOR-STATOR DISASSEMBLY (Figure 3-8). Disassemble the rotor-stator assembly as follows:

a. Remove the stator cap (1). Unscrew and remove the plunger bushing (2) and plunger (3). Remove o-rings (4), one from plunger and one from end cover (5).

b. Remove five locknuts (6) and remove the non-drive end cover assembly (5) from second-stage stator (14).

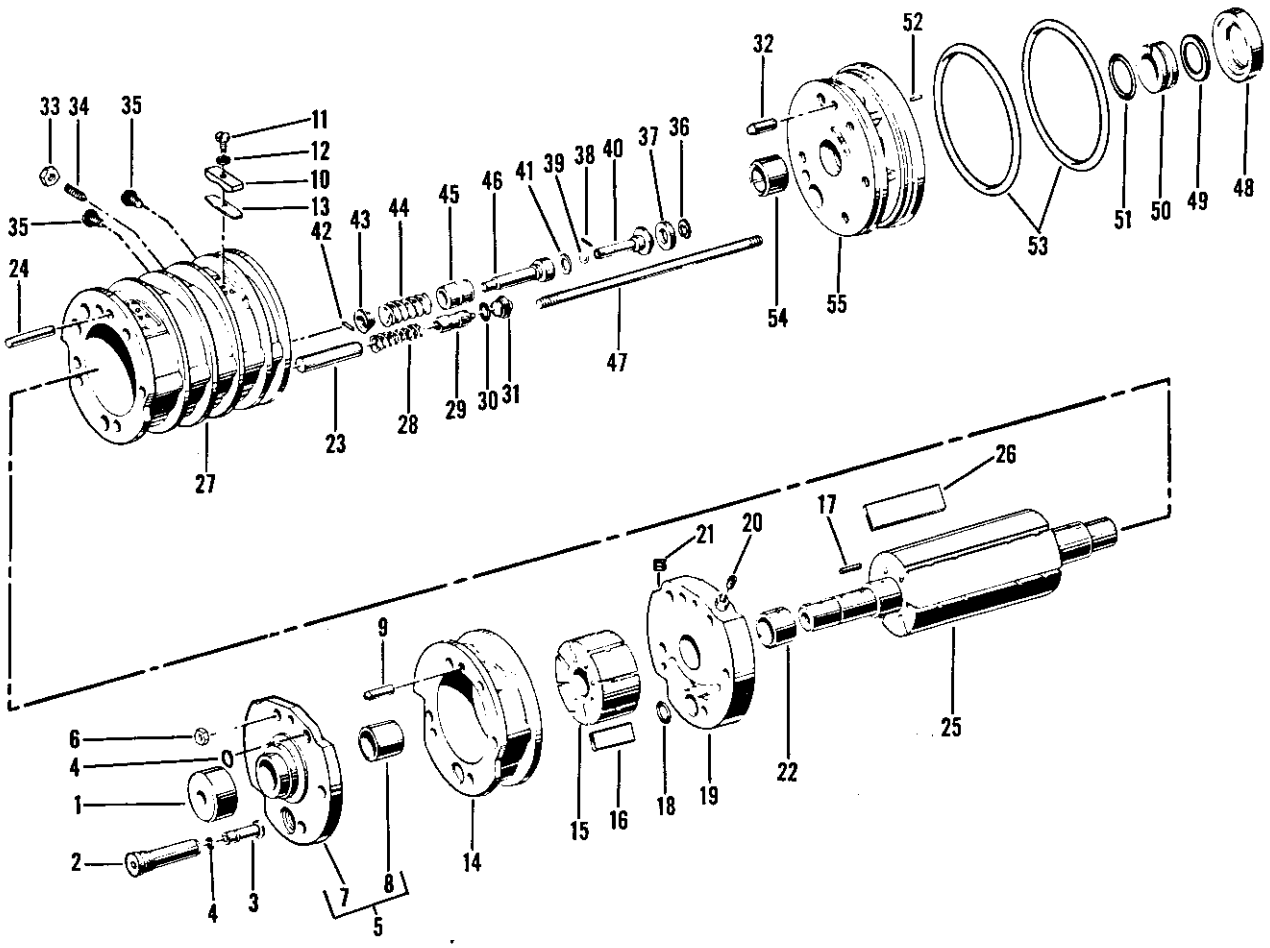
NOTE

Tap the non-drive end cover (5) lightly with a fiber faced hammer to dislodge from dowels (9).

CAUTION

When removing dowels (9) from second-stage stator (14), use care so that dowel holes are not elongated or other damage to second-stage stator does not occur.

c. If necessary to replace bearing (8), press the bearing (8) out of end cover (7). When necessary, remove the two dowels (9) from second-stage stator (14).



1. CAP
2. BUSHING
3. PLUNGER
4. O-RING
5. COVER ASSY
6. NUT
7. COVER
8. BEARING
9. DOWEL
10. GUARD
11. SCREW
12. WASHER
13. REED VALVE
14. 2ND STAGE STATOR
15. 2ND STAGE ROTOR
16. 2ND STAGE BLADES
17. KEY
18. O-RING
19. DIVISION PLATE ASSY
20. SETSCREW
21. SETSCREW
22. BEARING
23. SPACER
24. DOWEL
25. 1ST STAGE ROTOR
26. 1ST STAGE BLADES
27. 1ST STAGE STATOR
28. SPRING
29. SERVO VALVE
30. O-RING
31. PLUG
32. DOWEL
33. NUT
34. SCREW
35. SCREW
36. RETAINING RING
37. SEAT
38. PIN
39. BALL
40. STEM
41. WASHER
42. PIN
43. SPRING STOP
44. SPRING
45. SLEEVE
46. PISTON
47. STUD
48. OIL SEAL
49. THRUST WASHER
50. SLEEVE
51. O-RING
52. PIN
53. O-RING
54. BEARING
55. COVER

Figure 3-8. Rotor-Stator Assembly

d. Remove three screws (11), lock washers (12), valve guards (10), and reed valves (13). One of these groups of parts is on the second-stage stator (14); the other two are on the first-stage stator (27).

e. Separate the second-stage stator (14) from the division plate (19) and remove the second-stage rotor blade set (16) (eight blades per set). Slide the second-stage rotor (15) off the shaft extension of the first-stage rotor (25) and remove the second-stage rotor key (17). Remove o-ring (18) from division plate (19) and separate division plate (19) from the first-stage stator (27).

NOTE

Tap division plate (19) lightly with a fiber faced hammer to dislodge from dowels (24). It is not necessary to remove either setscrew (20, 21) from division plate (19).

f. Only if necessary to replace bearing (22), press the division plate bearing (22) out of the division plate (19).

CAUTION

When removing dowels (23), use care so that dowel holes in first-stage stator (27) are not elongated, or any other damage to stator does not occur.

g. Slide the spacer (23) out of bore in stator (27). When necessary, remove the two dowels (24).

h. Pull the first-stage rotor (25) out of stator (27) bore and remove the first-stage blade set (26) (twelve per set).

i. Separate first-stage stator (27) from drive end cover (55).

NOTE

Tap the stator (27) lightly with a fiber faced hammer to dislodge from dowels (32).

j. Remove spring (28), servo valve (29), servo valve plug (31) and o-ring (30) from stator (27).

CAUTION

When removing dowels (32) from drive end cover (55), use care so that dowel holes are not elongated or other damage to end cover does not occur.

k. If necessary, remove two dowels (32) from drive end cover (55).

l. Loosen or remove nut (33) and remove bushing lock screw (34). Remove two sealing screws (35). Remove the non-return valve assembly, valve washer (41), and the unloader valve assembly. To disassemble non-return valve assembly, remove retaining ring (36) and seat (37) from stem (40). When necessary, remove spring pin (38) and ball (39) from stem (40). To disassemble the unloader valve assembly, remove pin (42), spring stop (43), spring (44), and sleeve (45) from piston (46).

m. If necessary, remove the five studs (47) from drive end cover (55). Remove the oil seal (48), thrust washer (49), sealing sleeve (50), and o-ring (51). When necessary, remove spring pin (52).

n. Remove the two o-rings (53) from grooves on drive-end cover (55). When replacement of end cover bearing is necessary, press bearing (54) out of end cover bore.

3-10. ELECTRIC MOTOR DISASSEMBLY (Figure 3-9). Disassemble the electric motor assembly to the extent authorized and/or necessary as follows:

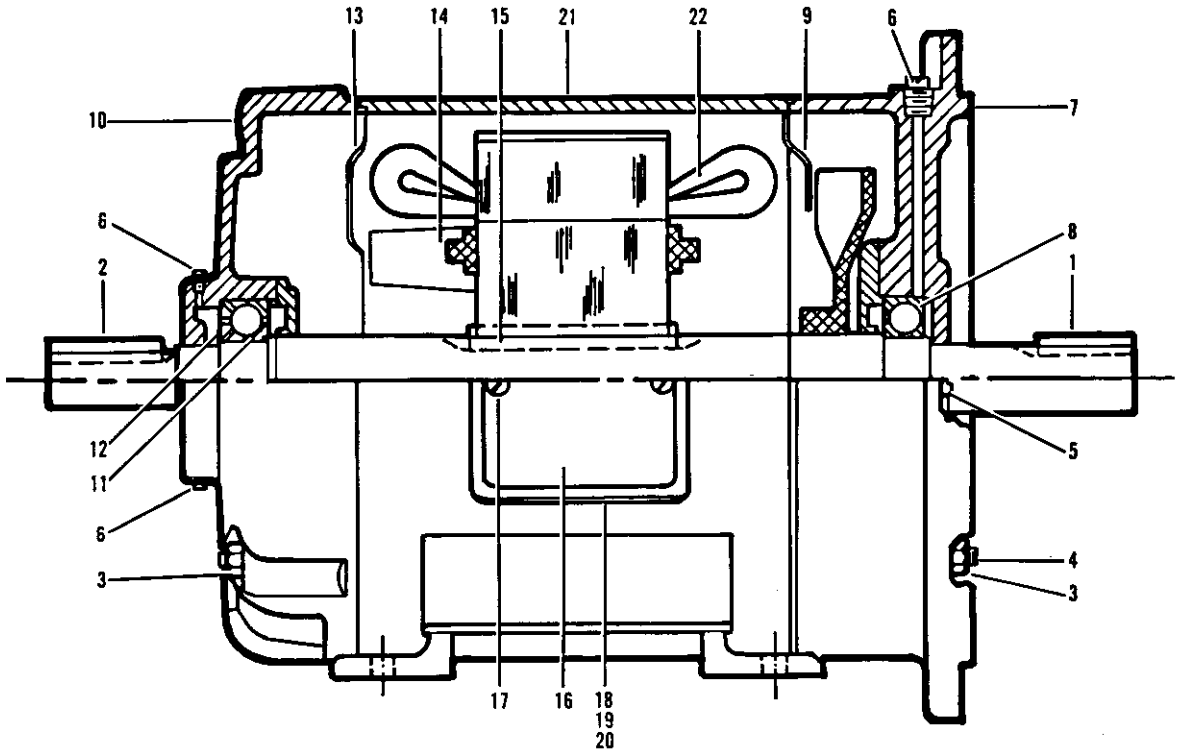
a. Remove the keys (1, 2) from motor shaft extension.

b. Remove eight nuts (3), four each end, and the four stud bolts (4). Remove two screws (5). As necessary, remove the four grease plugs (6).

c. Pull end bracket (7) off the rotor shaft and remove the bearing (8). Remove baffle (9).

d. Pull end bracket (10) off rotor shaft and remove bearing (11) and bearing loading spring (12). Remove baffle (13).

e. Remove the rotor assembly (14) with motor shaft (15) from motor body assembly (21). Do not separate these parts.



1. KEY
2. KEY
3. NUT
4. STUD BOLT
5. SCREW
6. PLUG
7. END BRACKET
8. SHAFT BEARING
9. BAFFLE
10. END BRACKET
11. SHAFT BEARING
12. LOADING SPRING
13. BAFFLE
14. ROTOR ASSY
15. MOTOR SHAFT
16. COVER
17. SCREW
18. CONDUIT BOX
19. SCREW
20. GASKET
21. MOTOR BODY ASSY
22. STATOR WINDING

Figure 3-9. Electric Motor Assembly

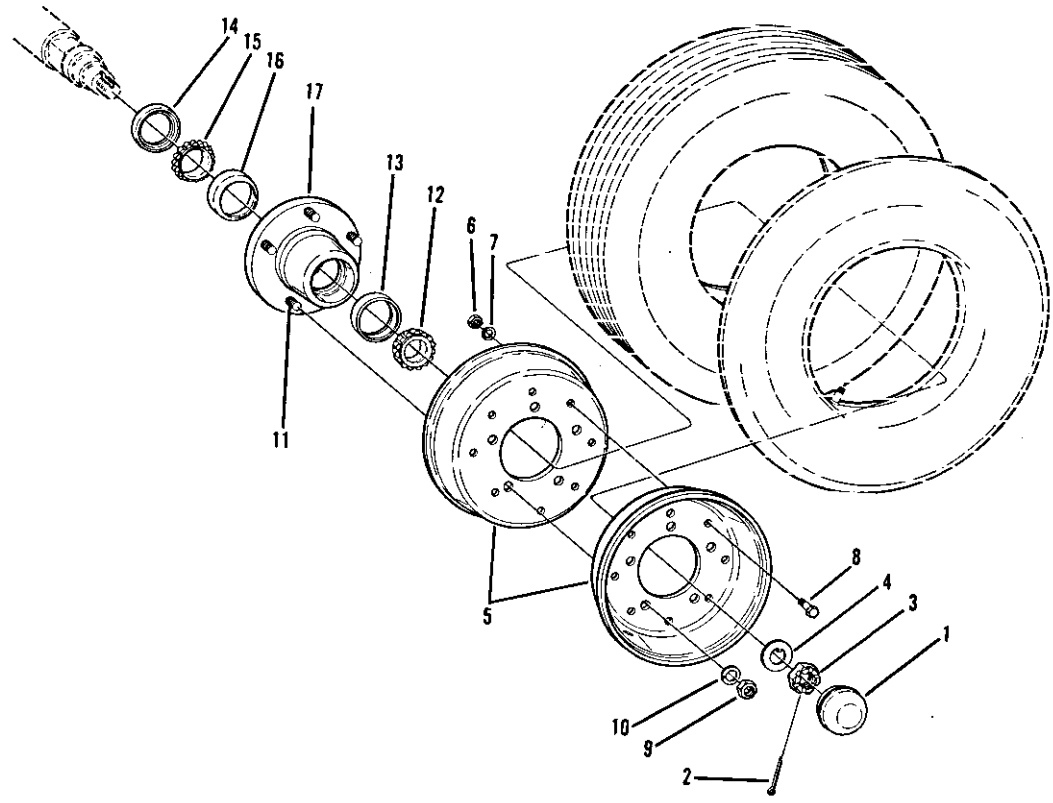
f. Remove two screws (17) that attach conduit box cover (16) and remove the cover. Remove two screws (19) that attach conduit box (18) to motor body assembly (21) and remove the conduit box (18) and gasket (20).

g. Do not attempt to remove stator winding kit (22) from motor body assembly (21).

3-11. WHEEL AND HUB DISASSEMBLY (Figure 3-10). Disassemble the wheel and hub assembly to the extent necessary as follows:

a. Pry off the hub cap (1), remove cotter pin (2), spindle nut (3), and spindle washer (4). Pull the entire remaining assembly off axle spindle and place in a suitable work area.

b. Remove five stud nuts (9) and lock washers (10). Separate the wheel and tire assembly from the hub. To remove tire and tube from wheel assembly, relieve air pressure by removing the valve core from the tube valve stem; then, remove eight nuts (6), lock washers (7), and cap screws (8). Separate the two halves of the wheel assembly (5) and remove the tire and tube. Assemble tube valve core back into valve stem to prevent its loss.



1. HUB CAP
2. COTTER PIN
3. SPINDLE NUT
4. SPINDLE WASHER
5. WHEEL ASSEMBLY
6. NUT
7. WASHER
8. SCREW
9. STUD NUT
10. WASHER
11. WHEEL STUD
12. BEARING CONE
13. BEARING CUP
14. GREASE SEAL
15. BEARING CONE
16. BEARING CUP
17. WHEEL HUB

Figure 3-10. Wheel and Hub Assembly

c. Remove the outer bearing cone (12), grease seal (14), and inner bearing cone (15).

d. When necessary to replace bearings, press the two bearing cups (13, 16) out of hub (17). The wheel studs (11) are pressed into flange of hub (17). Remove only when necessary by pressing out of the hub flange.

3-12. BRAKE DISASSEMBLY (Figure 3-11). The two brake assemblies are indentical in component parts. They differ only in the method of assembly. The disassembly, by reference to parts, is as described below for both assemblies.

a. Unhook and remove the return spring (1). Only when necessary, remove the two anchor pins (2).

b. Drive hinge pin (6) out of bracket (9) to separate the shoe (5) from bracket (9). Plunger (8) may now be removed.

c. Drill hinge pin (4) out of shoe (5) and separate lever (3) from shoe (5). Replace the hinge pins (4, 6) at assembly.

d. Use a suitable tool, such as a knife or the like, to remove worn lining (7) from shoe (5). Remove the lining only when replacement is necessary.

3-13. INSPECT, REPAIR, AS NECESSARY. Clean components as specified in Section IV and inspect, repair, or replace components or parts as specified in Section V.

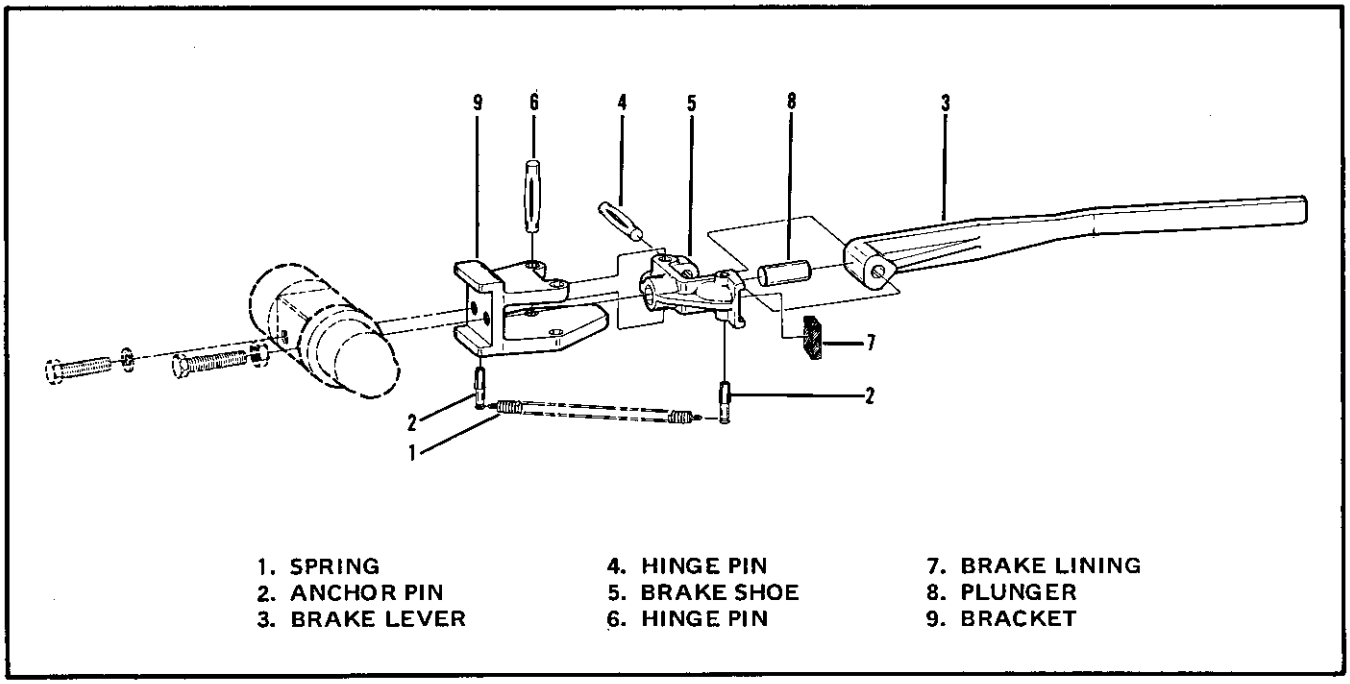
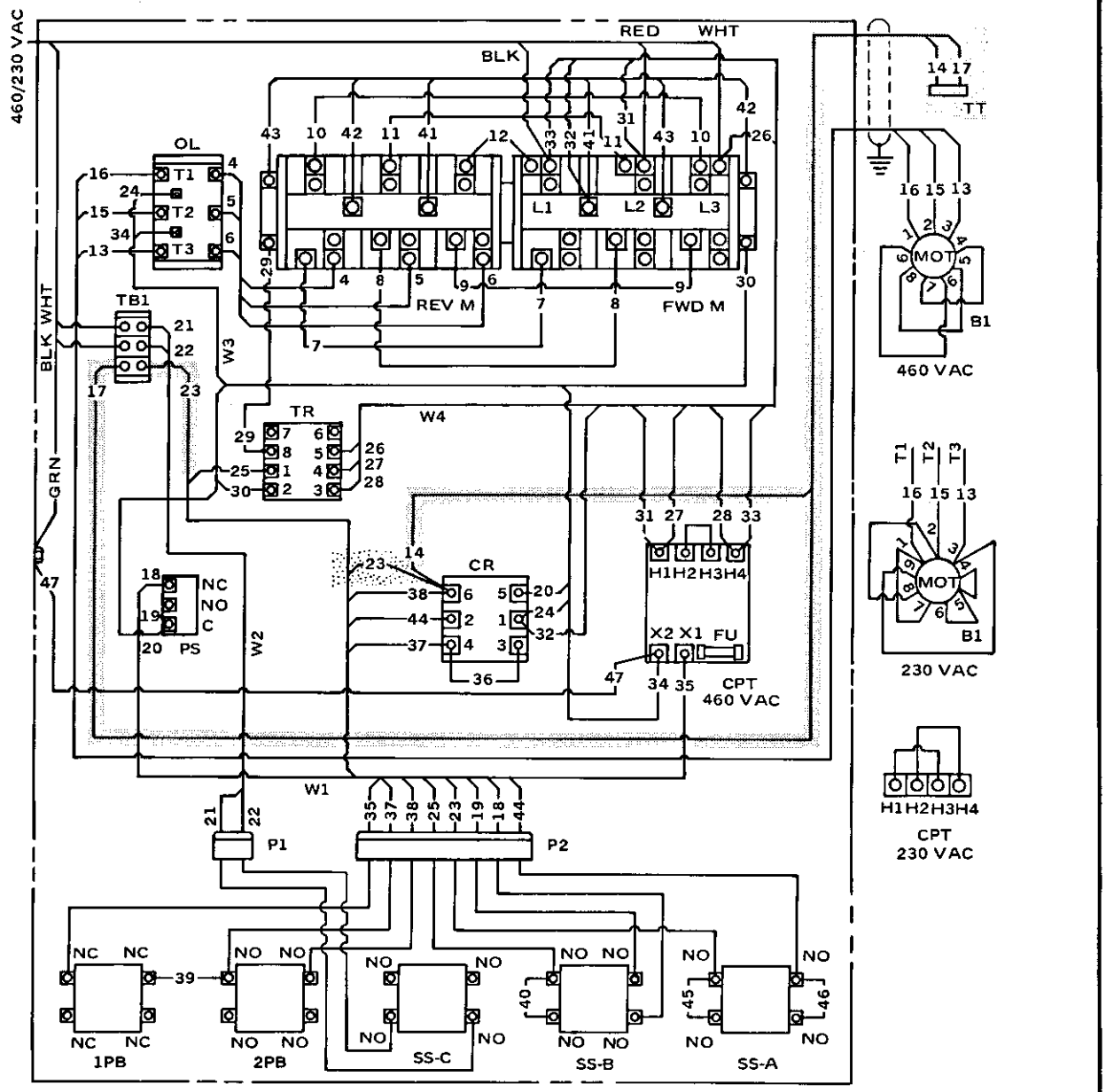


Figure 3-11. Brake Assembly



B	-	ELECTRIC MOTOR	M	-	MAGNETIC STARTER	REV	-	REVERSE
BLK	-	BLACK	MOT	-	MOTOR	SS	-	SELECTOR SWITCH
C	-	COMMON	NC	-	NORMALLY CLOSED	TB	-	TERMINAL BOARD
CPT	-	CONTROL POWER TRANSFORMER	NO	-	NORMALLY OPEN	TR	-	PHASE SENSING RELAY
CR	-	CONTROL RELAY	OL	-	OVERLOAD RELAY	TT	-	THERMOSWITCH
GRN	-	GREEN	P	-	PLUG	VAC	-	VOLTS ALTERNATING CURRENT
FU	-	FUSE	PB	-	PUSHBUTTON SWITCH	W	-	WIRING HARNESS
FWD	-	FORWARD	PS	-	PRESSURE SWITCH	WHT	-	WHITE

Figure 3-12. Wiring Diagram

SECTION IV

CLEANING

4-1. GENERAL CLEANING. Unless otherwise specified in the following paragraphs of this section, clean all metal parts using cleaning solvent Federal Specification P-D-680, Type II. Wipe nonmetallic parts, such as o-ring packing, with a clean, lint-free cloth moistened with this solvent and air dry thoroughly. Specific cleaning of components follows.

WARNING

Provide adequate ventilation when using dry cleaning solvent (Federal Specification P-D-680, Type II). Avoid prolonged breathing of vapors and minimize skin contact. Protective clothing and eye protection is recommended when cleaning in a solvent bath or tank. When cleaning or air drying with compressed air, the air pressure at the nozzle must not exceed 30 psi to avoid injury.

4-2. SPECIFIC CLEANING. Cleaning methods should be as follows:

WARNING

When cleaning the aftercooler (52, figure 3-1) and the compressor oil cooler (36, figure 3-5) use extreme care so that hands are not cut by the cooling fins. Care in cleaning should be observed so that the fins of these coolers are not bent causing obstructed cooling air flow.

a. Washing. Use a wash gun, solvent bath or tank.

b. Scrubbing. Use a soft fiber brush.

c. Wiping. Use a soft, clean, lint-free cloth dampened with solvent.

d. Rinsing. After thorough cleaning, rinse parts in a bath or tank of clean solvent.

WARNING

Provide adequate ventilation when using Trichloroethane. Avoid prolonged breathing of vapors and minimize skin contact.

e. Electrical Parts. Remove any accumulation of rust and corrosion from electrical parts and the inside of the control box assembly using 1, 1, 1-Trichloroethane solvent, Federal Specification O-T-620A.

f. Air Drying. When air drying with compressed air, the nozzle pressure shall not exceed 30 psi.

g. Painted Surfaces. After cleaning, all painted surfaces requiring paint touch-up should have applied a pretreatment primer in accordance with Military Specification MIL-P-15328, or equivalent. Application should be in accordance with MIL-T-704. After pretreatment, apply one coat of commercial grade red oxide primer, or the equivalent. Finish paint shall be green enamel, Number 24052, Federal Standard 595.

4-3. NONDESTRUCTIVE INSPECTION CLEANING. Cleaning methods in connection with applicable nondestructive inspection are the same as those described in this section.

SECTION V

INSPECTION, REPAIR, AND REPLACEMENT

5-1. INSPECTION, REPAIR, AND REPLACEMENT. This section contains inspection, repair, and replacement instructions that are classed as "special." "Special" means that which may be peculiar to a certain part or component of the equipment. Logical or common inspection, repair, or replacement, such as for broken glass components, flat tires, and the like, is not included in this section. Refer to table 5-1 and the following paragraphs for these procedures.

a. Inspection. In general, all parts shall be inspected immediately after cleaning as described in subparagraphs below. Refer to Table of Limits in Section VIII for specific dimensional inspections.

(1) Inspect all parts for visible wear, damage, distortion, cracks, breaks, and corrosion.

(2) Inspect all threaded parts for stripped threads, cross-threading, and for burrs.

(3) Inspect tubing for leaks, cracks, pinching, damaged connecting nuts, and other similar damage.

(4) Inspect all springs used throughout the unit for broken coils, resiliency, and squareness of spring ends.

(5) Examine all electrical wiring for broken insulation, evidence of burning (indicating a short), loose connections, and damaged terminals.

(6) Inspect painted surfaces for chipping, pealing, or discolored paint.

b. Repair and Replacement. For the most part, repairs to this equipment will be made by replacement of worn or damaged parts. Remove minor scratches from stator bores, rotor ends, blade slots, blade faces and ends with emery cloth, grade 320, or equivalent, and finish smooth with crocus cloth. Then, clean in accordance with applicable portions of paragraph 4-2. Component parts found to be not within the specified limits stated in Table of Limits, Section VIII, shall be replaced. Detailed repair and replacement procedures are found in the following paragraphs of this section.

5-2. AIR HOSE ASSEMBLIES. The air hose assemblies (1, figure 3-1 and 9, figure 3-2) shall be hydrostatically tested as necessary but at least annually in accordance with T.O.34Y1-1-171 and T.O.00-25-223.

5-3. AFTERCOOLER AND OIL COOLER TEST AND REPAIR. Clean the aftercooler (52, figure 3-1) and the compressor oil cooler (36, figure 3-5) internally and externally using an approved cleaning procedure and method for metals involved. Test for leaks and repair as follows:

WARNING

Air under pressure is dangerous. Use extreme caution during test of the aftercooler and oil cooler to avoid injury.

a. Connect the inlet port of cooler being tested to a controlled compressed air source regulated in pressure range of 0-250 psi. Connect a shutoff type valve to outlet port and close the valve. (The shutoff valve is used to relieve pressure after testing.)

b. Submerge the cooler in water, open air source regulator, and subject cooler to test pressure of 200 psi. Observe water for evidence of leakage, indicated by bubbling of the water.

Table 5-1. Inspection, Repair, and Replacement

COMPONENT	INSPECTION	REPAIR AND REPLACEMENT
Hose assembly (1, figure 3-1)	Inspect for leaks, cracks, and deterioration.	Replace a defective hose assembly. Also, see para 5-2 for testing.
Main power cable (23, figure 3-1)	Inspect for broken or cut insulation and for evidence of burning (indicating short).	If insulation cut or break is only in covering, wrap with an insulating tape. If leads are exposed or cable shows evidence of burning, replace the cable.
Air pressure gauges (35, figure 3-1)	Inspect the gauges for dents, broken faces, and proper operation.	Replace a damaged gauge.
Aftercooler (52, figure 3-1)	Inspect for clogged and damaged fins and for leakage.	Clean accumulated dirt and debris off cooling fins. Straighten any bent fins. Check for leaks and if leakage cannot be repaired by soldering, replace the aftercooler. See para 5-3 for leakage test.
Aftercooler fan (58, figure 3-1)	Inspect aftercooler fan blades for distortion, cracks, and breaks.	Replace a damaged fan.
Impeller (75, figure 3-1)	Inspect for chipped or broken fins.	Replace damaged impeller.
Tires (82, figure 3-1)	Inspect tires for excessive tread wear, damage to side walls, and aging.	Replace worn or damaged tires.
Tubes (83, figure 3-1)	Inspect valve stem and tube for leaks, any other visible damage and aging.	Replace damaged tubes.
Receiver drain valve and drain cock (97, 99, figure 3-1)	Check for any leakage when in closed position. Check for ease of operation.	Replace a defective drain valve or drain cock.
Safety valve (98, figure 3-1)	Check for proper action and pressure relief. Use standard instrument shop test methods.	Adjust the safety valve as necessary, or replace if action is not proper. Refer to para 5-4 as applicable.
Hose reel pin and roller kit (8, figure 3-2)	Inspect for free movement of rollers.	If roller pins are bent so that rollers will not turn freely, drill out pins and replace the pin and roller kit.
Hose assembly (9, figure 3-2)	Inspect hose assembly for leaks, cuts in cover, and deterioration.	Replace a damaged hose assembly. Also, see para 5-2 for testing.
Drive spring (19, figure 3-2)	Inspect spring for any breaks or cracks and for resiliency.	Replace a damaged or weakened spring.

Table 5-1. Inspection, Repair, and Replacement (Cont)

COMPONENT	INSPECTION	REPAIR AND REPLACEMENT
Cover and case assy and reel (2, 30, figure 3-2)	Inspect for any dents and damage that would bind the action of the sheave assembly (15) or case and cam assembly (23).	Replace any dented or damaged parts of the hose reel assy that could cause binding of hose action on reel.
Selector switch (6, figure 3-3) pushbutton switches (9, 12) and contact blocks (5, 8, 11)	Check for proper electrical function. Examine for shorts, corrosion, and other damage.	Replace all defective parts.
Pressure switch tube assembly (16, figure 3-3)	Check for leakage at connections and for collapse or pinching of tube.	Tighten connections as necessary. Replace a damaged tube assembly.
Pressure switch (27, figure 3-3)	Use standard instrument shop testing methods and check for proper operation of pressure switch. Refer to para 7-4 for adjustment.	Replace a defective pressure switch.
Phase sensing relay (36, figure 3-3)	Use standard electrical shop testing methods and check for proper operation.	Replace a defective phase sensing relay.
Control relay (41, figure 3-3)	Use standard electrical shop testing methods and check for proper operation.	Replace a defective control relay.
Control transformer (46, figure 3-3)	Use standard electrical shop testing methods and check for proper function.	Replace a defective control transformer.
Motor starter (50, figure 3-3)	Check moving and stationary contacts for fusing, burns, pits, and other damage using standard electric shop procedures. Check all wire connection for tightness and correct wiring (refer to figure 3-12).	Replace all damaged parts.
Rupture disc safety valve (4, figure 3-4)	Check the disc for rupture and any visible damage to body.	Replace the assembly if disc is ruptured or if damaged in any way.
Shutoff valve (7, figure 3-4)	Inspect for leakage when closed and for free operation of the valve.	Repair the shutoff valve if leakage is detected. Repair kit available. See T.O.34Y1-64-24 for details.
Air pressure regulator (26, figure 3-4)	Inspect for visible damage and corrosion. Use standard instrument shop procedure and check for leaks and proper regulation of air pressure.	Replace a defective air pressure regulator.

Table 5-1. Inspection, Repair, and Replacement (Cont)

COMPONENT	INSPECTION	REPAIR AND REPLACEMENT
Safety valve (28, figure 3-4)	Use standard instrument shop test methods and check proper action and pressure relief.	Replace a defective safety valve. Refer to para 5-3 for adjustment.
Thermostatic switch (8, figure 3-5) (where used)	Use standard electrical shop methods and check the switch for proper operation.	Replace a defective thermostatic switch.
Oil cooler (36, figure 3-5)	Inspect cooling fins and seams for damage and leakage.	Clean accumulated dirt and debris off cooling fins. Check for leaks and if leakage cannot be repaired by soldering, replace the oil cooler. See para 5-3 for leakage test.
Oil filter (66, figure 3-5)	Inspect soldered joints and wire mesh for crack, breaks, and punctures.	Solder joints that are cracked. Replace the filter if wire mesh is punctured.
Oil chamber (74, figure 3-5)	Inspect for stripped or damaged threads. Check for corrosion, pitting and scoring in seating surface for o-ring packing.	Clean the oil chamber thoroughly. Refer to para 5-5 for repair or replacement of oil chamber.
Bleeder valve window (18, figure 3-6)	Inspect for cracks, breaks, or any other damage.	Replace the window if view of oil is impaired in any way and if damaged.
Bleeder valve filter assembly (27, figure 3-6)	Inspect for corrosion and any other visible damage.	Clean thoroughly. Replace if damaged.
Safety valve (31, figure 3-6)	Inspect for proper operation and correct pressure setting.	Refer to para 5-4 for pressure check and setting procedure.
Air pressure gauge (32, figure 3-6)	Use standard instrument shop procedure and check for correct pressure indication over full range of gauge scale. Inspect for damaged case and broken face.	If gauge is defective, replace.
Separator felts (37, figure 3-6)	Inspect for deterioration and shrinking.	Felts should fit snuggly into housing. If they are shrunk or deteriorated, replace all three felts.
Shuttle power element (9, figure 3-7)	Check for proper operation of the element.	Refer to para 5-6 for element check. If defective replace entire shuttle assembly.
Rotor-stator bearings (8, 22, 54, figure 3-8)	Inspect bearing bores for scoring and check bore dimensions (see table 8-1).	Refer to para 5-7.b for bearing repair or replacement.

Table 5-1. Inspection, Repair, and Replacement (Cont)

COMPONENT	INSPECTION	REPAIR AND REPLACEMENT
Second-stage and first-stage stators (14, 27, figure 3-8)	Inspect matching faces of each stator for flatness, smoothness, and parallel. Faces must be parallel with each other within 0.001 inch. Inspect bores for grooves and rough spots (see table 8-1).	Refer to para 5-7.c and 5-7.d for repair or replacement of stators.
Second-stage and first-stage rotors (15, 25, figure 3-8)	Inspect for any cracks. Check blade slots for smoothness and for burring on ends. Check bearing journals for smoothness, out-of-round, and for wear.	Refer to para 5-7.a for rotor repair or replacement.
Second-stage and first-stage blades (16, 26, figure 3-8)	Check that each blade is smooth uniformly along the edge that bears on the stator bore. Check the slot surfaces for evidence of scoring and uneven wear. Check thickness and height of each blade. Refer to table 8-1.	Blades that are worn in excess of limits given in table 8-1 shall be replaced as a complete set.
Division plate (19, figure 3-8)	Inspect for evidence of scoring and check dimensions shown in table 8-1.	Replace division plate that is worn in excess of limits shown in table 8-1. Refer to para 5-7.b for repair of worn bearing.
Servo valve (29, figure 3-8)	Inspect servo valve for burrs and scoring that may cause sticking.	Refer to para 5-7.e for repair and checking of servo valve.
Motor rotor assembly and stator windings (14, 22, figure 3-9)	Use standard electric shop procedure and check for shorts and grounds. Inspect insulation and wiring for burns, breaks, and other similar damage.	Any damage that cannot be repaired by simple wire splicing, taping, or replacement of a defective part is cause for motor replacement.
Wheel bearings and seals (12, 13, 14, 15, 16, figure 3-10)	Inspect wheel bearings for any binding and gritty action when wheel is rotated. Inspect grease seals for evidence of leakage.	Replace defective wheel bearings or grease seals.
Brake lining (7, figure 3-11)	Inspect brake lining for wear beyond adjustment limit. Examine all brake components for breaks and cracks.	Replace brake lining (see para 5-8). Replace all defective parts.

c. Remove cooler from water and mark area of leakage. Turn off air supply and slowly open shutoff valve at cooler outlet port to relieve pressure. Repair leaks by silver soldering. Then, retest as instructed above. When leaks cannot be repaired in this manner, replace the cooler.

d. Straighten cooling fins using a locally manufactured tool for this purpose.

5-4. SAFETY VALVE TEST. The safety valves (98, figure 3-1, 28, figure 3-4 and 31, figure 3-6) shall be inspected and tested as necessary.

a. Connect the valve being tested to a test setup similar to that shown in figure 5-1.

NOTE

The test pressure source should be capable of supplying 350 psi to the test system. A hydrostatic tester may be used in lieu of air or nitrogen.

b. Open the three-way valve and regulate the air pressure regulator to a pressure of 240 ± 5 psi, as indicated on test setup pressure gauge, for safety valves (98, figure 3-1 and 28, figure 3-4). The pressure should also be set at 240 ± 5 psi for safety valve (31, figure 3-6).

c. If the safety valves open at these designed pressure settings, the valves are functioning properly. Close the pressure regulator and bleed the test air from the system using the three-way valve; then, remove the safety valve from test setup.

d. If the safety valves do not open at the designed pressure setting, reset as follows:

(1) Cut and remove the sealing wire.

(2) Turn the safety valve cap clockwise to increase opening pressure and counterclockwise to lower opening pressure. Turn the cap approximately one turn as required to raise or lower the opening pressure.

(3) Repeat the above procedure as needed until the required pressure setting is reached; then, rewire the cap to the body with a new sealing wire.

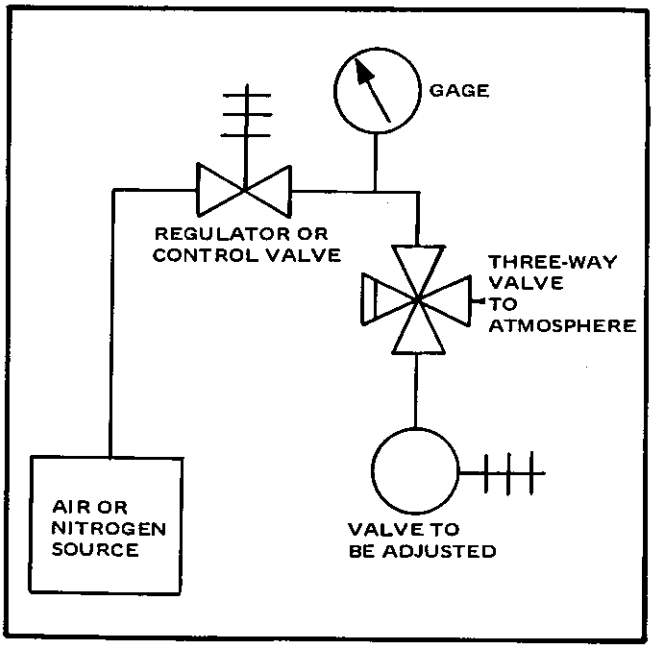


Figure 5-1. Safety Valve Test Setup

(4) When correct setting is obtained, remove the safety valve from test setup as described in paragraph 5-4.c.

5-5. COMPRESSOR OIL CHAMBER REPAIR (74, figure 3-5). The limited repair of the compressor oil chamber is as follows:

a. If threads in the oil chamber drive end, to which the lantern (40, figure 3-5) is attached, are found to be stripped or otherwise damaged, drill holes with a 33/64-inch diameter bottom drill to a depth of 1-1/16 inches. Countersink the holes 120° ± 5° to a diameter of 0.59 to 0.62 diameter.

b. Use Heli-Coil spiral flute bottoming tap number 6905-8 H4 and tap holes to a depth of 0.830 inch, minimum.

c. Use Heli-Coil installing tool, conforming to Military Specification MIL-T-21309, and install inserts MS122125 (Heli-Coil number 1185-8CN 0750).

d. If threads in oil chamber, into which the banjo bolt (17, figure 3-5) thread, are stripped or otherwise damaged, drill hole with a 21/32-inch diameter drill. Tap the drilled hole with a Heli-Coil tap number 848-6 to receive insert.

e. Use Heli-Coil installing tool and install an insert number 327-6 (3/8-18 straight pipe thread).

f. Countersink the hole 82° to a diameter of 13/16-inch for o-ring seat.

NOTE

When Heli-Coil installing equipment is not available for the 3/8-18 straight pipe thread hole, repair may be made by enlarging the hole with a 23/32-inch drill. Tap with a 1/2-14 NPT. Install a 1/2 x 3/8-inch reducing pipe bushing. Drill out the bushing to 37/64-inch and tap with a 3/8-18 straight pipe tap. Cut top of bushing flush with oil chamber. Countersink 82° to a diameter of 13/16-inch for o-ring seat.

g. If seating surface in oil chamber for the two rotor-stator assembly o-rings (53, figure 3-8) is corroded, pitted, or scored, repair as follows:

(1) Use a rotary file and clean pits and scores.

NOTE

Depth shall not exceed 1/4-inch in the inner land and 1/8-inch in outer land.

(2) Fill with a solution of A1 Epoxey Cement, Part No. A1 ADHESIVE, and allow the cement to dry for eight hours.

(3) Use a rotary file and cut o-ring land to original diameter of 5.001 to 5.003-inches.

5-6. SHUTTLE POWER ELEMENT (9, figure 3-7). Inspect the shuttle power element for operation as follows:

a. Use a suitable container (with controlled heating capability) of clean compressor oil with sufficient quantity of oil to immerse the sensing end of the power element in a holding device. Remove cotter pin from adjusting nut and place the power element, with plunger and nut, in holding fixture (sensing end of power element in the oil). See figure 5-2 for a typical setup.

b. Place setup pin (2.000 inches long) next to test element, lower weighted cylinder (15 pounds) onto setup pin. Turn adjusting nut until it just touches the weighted cylinder. Raise cylinder and install cotter pin through nut and plunger, turning nut only enough to align cotter pin holes. Remove setup pin and replace with checking pin (2.021 inches long). Lower weighted cylinder onto checking pin.

c. Heat the container of oil and observe the action of plunger and nut. The plunger should begin to raise when temperature of oil reaches 150°F. When nut reaches the weighted cylinder, the element and plunger action will raise weighted cylinder off checking pin. At 185°F, piston will have reached travel maximum. Travel range is 0.140 to 0.170-inch in temperature range of 150°F to 185°F.

5-7. ROTOR-STATOR REPAIR. Rework of the rotor-stator assembly component parts may be accomplished as follows:

a. First-Stage Rotor (25, figure 3-8). Remove scores and grooves from end faces of first-stage rotor, not to exceed 0.005-inch each end. Undercut worn and scored rotor journals not to exceed 0.010-inch undersize. (See table 8-1.) Worn rotor journals that will not clean up within the specified limits may be repaired as follows:

(1) Undercut the cast iron bearing journals to 0.125 ± 0.001-inch undersize. Manufacture bearing journal sleeves using 4130 steel stock. The inside diameter of the sleeves should be of a size to allow 0.001-inch press fit when installed on the undercut journal. The outside diameter of the sleeves should be of a size to permit grinding to the original diameter of the journal, and the length should not exceed the width of the journal. Drill 3/32-inch diameter holes through the sleeves to match oil passage holes in rotor shaft journals. Press the sleeves onto journals aligning the sleeve and rotor oil holes. Solder the exposed end of the sleeves to the rotor shaft using silver solder.

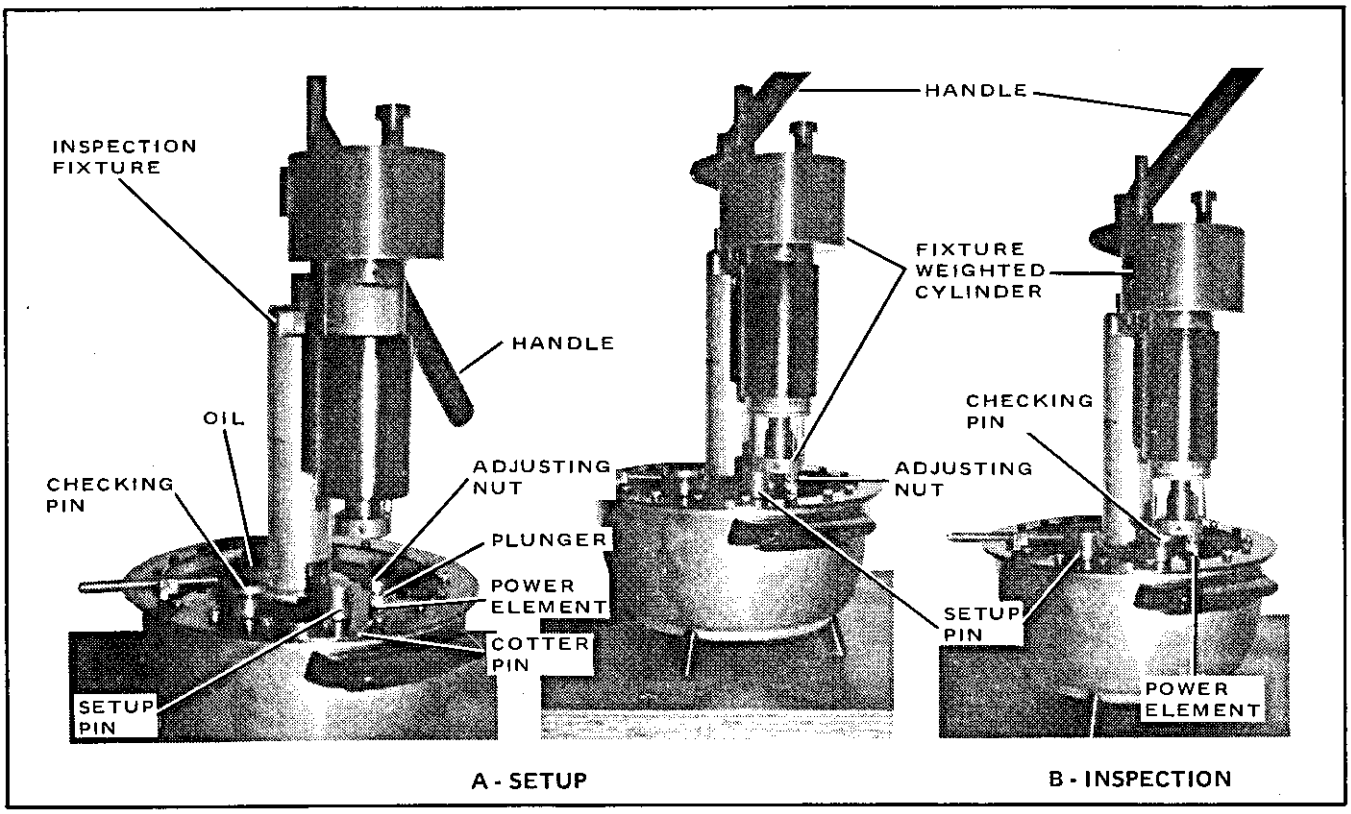


Figure 5-2. Shuttle Power Element Inspection

NOTE

A 16 micro-inch finish is required on the ground surface of the sleeve.

(2) Grind the outside diameter of the sleeve to the original journal diameter (see table 8-1) and remove burrs from edge of sleeves and oil holes.

b. End Covers and Division Plate. Remove scores and grooves from wear surfaces of the non-drive end cover (5, figure 3-8), drive end cover (55), and each side of division plate (19) (refer to table 8-1). If bearing bores of these three parts show evidence of wear beyond limits shown in table 8-1, press worn bearing out and replace with new bearings.

CAUTION

When installing new bearings (22, 54, figure 3-8) in division plate (19) and drive end cover (55), make certain that oil hole in bearing aligns with oil hole in mating part. Also, make certain that all bearings do not protrude beyond surfaces of end covers and division plate.

NOTE

When machining or grinding, remove only enough material to clean up wear and scores (usually 0.010). However, additional material may be removed provided the minimum limits are maintained. A 65 micro-inch finish is required on the reworked surfaces.

c. First-Stage Stator (27, figure 3-8). After rework of the first-stage rotor (25), end covers (5, 55) and division plate (19) is completed, it may be necessary to rework the stator (27) to assure that correct clearance is maintained (refer to table 8-1). Rework the stator, as required, as follows:

CAUTION

When reworking parts, exercise care to assure concentricity is maintained. The overall length of the first-stage rotor and stator should never be decreased more than 0.025-inch when rework is accomplished.

WARNING

Provide adequate ventilation when using cleaning solvent (Federal Specification P-D-680, Type II). Avoid prolonged breathing of vapors and minimize skin contact.

(1) Clean the stator (27, figure 3-8) with solvent, Federal Specification P-D-680, Type II.

(2) Glass bead blast to remove rust.

(3) Magnetic particle inspect for cracks around dowel pin holes. Discard stator if cracks are found.

(4) Place stator in line boring machine, or a suitable substitute, and machine the large bore to 3.070 $\pm$ 0.001-inches inside diameter.

(5) Machine the small radius to 1.324 $\pm$ 0.001-inches inside diameter.

(6). Inspect large bore and small radius for defects. If defects are found, repeat machining procedure removing only sufficient material to clean up the surface. Do not exceed 3.095-inches inside diameter large bore and 1.332-inches inside diameter on small radius. A 65 micro-inch finish, or better, is required.

(7) Electric etch the number two on the flange outer edge after rework to indicate rework has been accomplished.

d. Second-Stage Stator (14, figure 3-8). Rework the second-stage stator, as necessary, to maintain correct clearance (refer to table 8-1) as follows:

CAUTION

The overall length of the second-stage rotor (15, figure 3-8) and stator (14) should never be decreased more than 0.010-inch when rework is accomplished. A 65 micro-inch, or better, finish is required.

WARNING

Provide adequate ventilation when using dry cleaning solvent (Federal Specification P-D-680, Type II). Avoid prolonged breathing of vapors and minimize skin contact.

(1) Clean the stator (14) using solvent, Federal Specification P-D-680, Type II.

(2) Glass bead blast the stator to remove rust.

(3) Magnetic particle inspect for cracks around dowel pin holes. Discard stator if cracks are found.

(4) Place stator in boring machine, or a suitable substitute, and machine the large bore to 3.015 ± 0.001-inch inside diameter. Machine small radius to 1.337 ± 0.001-inches inside diameter.

(5) Inspect the bore and radius for defects. If defects are found, repeat machining procedure removing only sufficient material to clean up the defects. Do not exceed 3.030 + 0.000, -0.001-inches inside diameter in large bore and 1.340 + 0.000, -0.001-inches in radius.

(6) Electric etch the number two on the outer flange of the stator to indicate rework has been accomplished.

e. Servo Valve (29, figure 3-8). Before assembly, check the servo valve for any burrs or scores that may cause sticking in its bore in stator (27). Remove burrs and scores with fine crocus cloth. Insert the servo valve into the unloader valve bore in the stator and check for free movement. If sticking occurs, remove the servo valve from stator. Use a small cylinder hone or fine crocus cloth to remove burrs and scores from stator to assure free movement of the servo valve.

5-8. BRAKE LINING REPLACEMENT (7, figure 3-11). If brake lining is worn beyond adjustment limit, replace as follows:

a. Remove brake assembly from axle stub shaft.

b. Place the brake shoe (5, figure 3-11) portion of the brake in a vise. Use a knife, or other suitable tool, cut and scrape away the worn lining. Clean the lining attaching surface thoroughly.

c. Attach a new lining (7) to the brake shoe (5) with a suitable glue. Allow glue to dry completely before assembling the brake assembly on unit.

d. Assemble the reworked brake assembly to the unit axle stub shaft.

SECTION VI

ASSEMBLY

6-1. ASSEMBLY. This section contains instructions for complete assembly of component parts, subassemblies, and major components which make up the Type MB-2A, Model 4MB-2A, Air Compressor unit. The manufacturer recommends the replacement of all gaskets removed at disassembly. Coat all preformed packing o-rings with a light film of clean compressor lubricating oil to ease assembling and to avoid nicking and cutting the o-rings.

6-2. BRAKE ASSEMBLY (Figure 3-11). The left-hand and right-hand brake assemblies are assembled as follows:

a. Left-Hand Brake Assembly. If removed, press spring anchor pins (2) into the brake shoe (5) and bracket (9).

b. If removed, glue the brake lining (7) to brake shoe (5) with a suitable glue and allow the glue to dry thoroughly.

c. Assemble brake lever (3) to brake shoe (5) by pressing hinge pin (4) through the shoe and lever.

d. Assemble brake plunger (8) in center bore of brake shoe (5) and attach shoe (5) to bracket (9) by pressing hinge pin (6) through bracket and shoe.

e. Attach spring (1) to the two anchor springs (2).

f. Right-Hand Brake Assembly. The right-hand brake assembly is assembled the same as the left-hand shown in figure 3-11 with the following exceptions:

(1) Assemble spring anchor pin (2) into shoe (5) on opposite side of that shown.

(2) The assembly of lever (3) and shoe (5) is turned over 180°, so that spring anchor pin (2) is on the bottom. The shoe (5) is attached to bracket (9) by pressing hinge pin (6) through the second hole provided in bracket (9). The hinge pin (6) is always pressed through the inboard hole of bracket (9) and the brake lining leg of shoe (5) faces outboard.

g. The adjustment is made after assembly is attached to axle and wheel assembly is installed. Adjustment is covered in Section VII.

6-3. WHEEL AND HUB ASSEMBLY (Figure 3-10). If wheel bearing cups (13, 16) and studs (11) were removed, press into hub (17). Assemble bearing cone (15) into hub and press in grease seal (14), with sealing lip facing the bearing. Then, proceed with assembly as follows:

a. Place the hub (17) on axle stub shaft carefully so that grease seal (14) is not damaged.

b. Fill cavity in hub, between bearing cups (13, 16), approximately half full of grease (see table 6-1). Assemble bearing cone (12), spindle washer (4), nut (3), and secure nut on spindle with cotter pin (2).

c. Assemble tube in tire and place on outer half of wheel assembly (5) with tube inflation valve stem through hole provided in wheel half. Assemble inner half of wheel and secure the two halves together with eight cap screws (8), lock washers (7) and nuts (6). Inflate tube to 15 psi.

d. Assemble the wheel assembly on hub (17) and attach with five lock washers (10) and nuts (9). Install hub cap (1).

6-4. ELECTRIC MOTOR ASSEMBLY (Figure 3-9). Assemble the electric motor as follows:

a. Assemble the rotor assembly (14) with motor shaft (15) into motor body assembly (21).

b. Assemble baffle (13). Assemble bearing (11) and loading spring (12) and assemble end bracket (10) over rotor shaft. Align holes in bracket with the through holes in body assembly. Install stud bolts (4) and four nuts (3).

c. Assemble baffle (9). Assemble bearing (8), install screws (5), and assemble end bracket (7) over rotor shaft. Align holes in end bracket (7) with the stud bolts (4) and secure with four nuts (3).

d. Assemble gasket (20) and conduit box (18). Secure to body with two screws (19). Assemble cover (16) onto conduit box (18) and attach with screws (17).

e. Tape keys (1, 2) in keyways on rotor shaft until ready to install motor assembly.

6-5. ROTOR-STATOR ASSEMBLY (Figure 3-8). Assemble the rotor-stator assembly in the following sequence.

CAUTION

The first-stage stator (27), first-stage rotor (25) and first-stage blades (26) are matching parts. If any one of them must be replaced, the selection of replaced part is relative to dimensional limits of matching parts. This is also true of the second-stage stator (14), second-stage rotor (15), and second-stage blades (16). Refer to table 8-1 for these limits and assemble accordingly.

a. If pin (52) was removed from stator drive end cover (55), press in a new pin.

b. If bearing (54) was removed, press bearing into end cover (55). Assemble a new o-ring (51) on sealing sleeve (50), position sleeve and o-ring into bore of end cover (55); then, press in oil seal (48).

c. If dowels (32) were removed, press the two dowels into end cover (55). Install the five studs (47) into end cover (55).

d. Assemble sleeve (45), spring (44), and stop (43) onto unloader valve piston (46) and secure parts together by installing pin (42).

e. Assemble ball (39) into non-return valve stem (40) and install pin (38). Assemble valve seat (37) onto stem (40) and install retaining ring (36).

f. Install unloader valve assembly (42 through 46) into first-stage stator (27) and secure in place with two sealing screws (35), bushing lock screw (34) and nut (33). Assemble non-return valve assembly (36 through 40) into unloader valve assembly.

g. Install spring (28), servo valve (29), o-ring (30), and servo valve plug (31) into stator (27).

NOTE

Assemble first-stage stator to drive end cover carefully so that non-return valve assembly or unloader valve assembly parts do not drop out of stator.

h. If dowels (24) were removed from stator (27), install two new dowels (24).

i. Carefully assemble stator (27) onto studs (47) and against the end cover.

CAUTION

Install blades (26) with radius edge toward stator bore.

j. Insert first-stage rotor (25) carefully into bore of stator (27). Coat the twelve first-stage blades (26) liberally with clean compressor oil and install in rotor slots.

k. Assemble spacer (23) into stator (27) so that it rests against spring (28).

l. If bearing (22) was removed from division plate (19), press in a new bearing. If setscrews (20, 21) were removed, install setscrews in division plate (19). Assemble division plate onto dowels (24) and against stator (27). Install a new o-ring (18).

m. Install key (17) into keyway in rotor (25) shaft extension. Assemble second-stage rotor (15) onto shaft extension and key. Assemble second-stage stator (14) over rotor (15) and onto dowels (24) and against division plate.

CAUTION

Install blades (16) with radius edge toward stator bore.

n. Coat blades (16) liberally with clean compressor oil and install in rotor slots. Install three reed valves (13), two on first-stage stator (27) and one on second-stage stator (14), and secure with valve guards (10), lock washers (12), and screws (11).

o. If dowels (9) were removed from stator (14), install two new dowels. If bearing (8) was removed from cover (7), press in a new bearing.

p. Assemble non-drive end cover (5) onto dowels (9) and against stator (14). Secure end cover with five lock nuts (6). Torque the nuts to 6 foot-pounds.

q. Install one o-ring (4) onto plunger (3), install plunger (3) into end cover and secure plunger bushing (2). Install one o-ring (4) on end cover (5). Assemble stator cap (1) onto end cover (5).

r. Install two new o-rings (53) in the drive end cover (55) grooves and install the fiber thrust washer (49).

6-6. THERMAL BYPASS VALVE ASSEMBLY (Figure 3-7). Assemble the thermal bypass valve as follows:

a. If removed, assemble the two tube assemblies (15) to valve body (16).

b. Assemble power element (9) into shuttle (12), assemble spring (11), guide (10), and retaining ring (7). Assemble adjusting nut (6) onto plunger (8) and assemble plunger into shuttle assembly.

c. Inspect and set the shuttle power element assembly as described in paragraph 5-6; then, install cotter pin (5).

d. After shuttle assembly is set, install o-ring (13) on shuttle (12), assemble spring (14) into body (16), and install the shuttle assembly.

e. Install o-ring (4) onto cover (1), assemble the cover (1) to body and secure with the four lock washers (3) and screws (2).

6-7. OIL SEPARATOR ASSEMBLY (Figure 3-6). Assemble the oil separator assembly as follows:

a. Remove nut from gauge (32) and carefully press gauge into separator cover (34). Install o-ring (33) and secure gauge in cover with gauge nut. Assemble o-ring (35) on cover (34).

b. Install wires (39) in new seals (38). Position grid (36) in housing (40) followed by felt (37), wire and seal (39, 38), felt (37), wire and seal (39, 38), felt (37), and grid (36).

c. Assemble cover (34) in housing (40), aligning hole in cover with hole in housing for bolt (1). Install o-ring (2) on bolt (1) and install the bolt. Install safety valve (31).

d. Assemble bleeder valve assembly to housing (40) as follows:

(1) Place o-ring (29) on valve seat (26) and install filter assembly (27), bleeder valve (28), valve seat (26), plunger (25), nozzle (24), diaphragm (23), piston (22), and spring (21) in housing (40).

(2) Place o-ring (20), dish (19), and window (18) in cover (17). Position gasket (30) on housing (40) and secure cover (17) to housing with two screws (16).

e. Assemble minimum pressure valve assembly as follows:

(1) Place o-ring (12) on piston (11), seal (9) on piston (8), and o-ring (7) on seat (6).

(2) Assemble spring (13), piston (11), spring (10), piston (8), and seat (6) in housing (14). Secure these parts in housing (14) with retaining ring (5).

(3) Position gasket (15) on housing (40). Assemble minimum pressure valve assembly on housing (40) and secure with two screws (4) and two screws (3).

6-8. AIR COMPRESSOR ASSEMBLY (Figure 3-5). Assemble the air compressor assembly in the following sequence.

a. If bushing (59) was removed, place new o-ring (60) in oil filter housing (61) and press in a new bushing (59) flush with face of housing (61). Assemble adjusting pin (65) in housing (61) with small end through bushing (59). Attach adjusting knob (54) to adjusting pin (65) with lock washer (56) and screw (55).

b. Assemble spring (70), collar (71), and seal (72) on connector (68). Place small end of connector (68) into support (73) and install cotter pin (69). Position seal (67) against flange of support (73) and slide filter (66) over support (73) and against seal (67).

c. Install packing (53) on filler plug (52) and install plug (52) in housing (61). Slide oil filter assembly (66 through 73) into housing (61). Slide push rod (63) into adjusting pin (65) and attach spring (64).

d. Position gasket (62) against housing (61) and attach housing (61) to oil chamber (74) with seven lock washers (58) and screws (57).

e. Carefully slide rotor-stator assembly (51) into oil chamber (74) so that o-rings on rotor-stator are not damaged. Make certain fiber thrust washer (49, figure 3-8) is in position and install key (50, figure 3-5) in rotor shaft extension. Install o-ring (49) in coupling assembly (45), slide coupling assembly (45) onto rotor shaft and secure with washer (48), lock washer (47), and cap screw (46). Install drive bushings (44) on coupling pins.

f. If dowel pin (43) was removed from lantern (40), press a new pin (43) into lantern. Assemble lantern (40) to oil chamber (74) and secure with three lock washers (42) and cap screws (41).

g. Install oil cooler (36) over lantern (40) and attach to lantern with four clamps (37) and eight lock washers (39) and screws (38). If drain cock (35) is not installed, install drain cock (35) in oil cooler (36).

h. If plates (29, 31, 33) were removed from cowl (24), install with screws (30, 32, 34), two per plate. Slide cowl (24) in position over oil chamber (74) and attach with cowl clamp (28), screw (27), lock washer (26), and nut (25).

i. Install two square section rings (23) in oil cooler, slide the two sealing screws (22) onto thermal bypass valve assembly (21) tubes and attach thermal bypass valve assembly (21) to oil cooler (36) by screwing in the sealing screws (22).

j. Install two square section rings (20, 13) in thermal bypass valve assembly (21). Slide sealing screws (19, 12) onto oil tube assemblies (16, 9). Attach the oil tube assemblies (16, 9) to thermal bypass valve assembly (21) by screwing in sealing screws; but, do not tighten sealing screws until opposite ends of oil tubes are attached.

k. Install two square section rings (18), one on each side of oil tube (16), and attach oil tube to oil chamber (74) with banjo bolt (17). Tighten banjo bolt (17) and sealing screw (19) alternately until seal is attained at each end of oil tube (16). Install o-ring (15) on drain plug (14) and install drain plug (14) in banjo bolt (17).

l. Install two square section rings (11), one on each side of oil tube (9), and attach oil tube to oil filter housing (61) with tube bolt (10). Tighten tube bolt (10) and sealing screw (12) alternately until seal is attained at each end of oil tube (9).

m. Install high temperature thermostatic switch (8), or pipe plug (8.1)(whichever is applicable) into oil chamber (74).

n. If insert (7) and stud (6) were removed, install the insert and stud in oil chamber (74). Position gasket (5) over stud (6) and position square section ring (4) on oil chamber (74). Assemble oil separator assembly (1) on oil chamber (74) and secure with lock washer (3), nut (2), and screw separator bolt (1, figure 3-6) into oil chamber.

6-9. SERVICE OUTLET ASSEMBLY (Figure 3-4). Assemble the service outlet assembly as follows:

NOTE

Repair kit is available for shutoff valve (7). Refer to T.O.34Y1-64-24 for components.

a. Install close nipples (35, 27) and pipe nipple (31) in pipe cross (36). Assemble pipe tee (30) onto nipple (31) and install tube adapter (29) and safety valve (28) in tee (30). Assemble spacer (34) over close nipple (35), install mounting bracket (33) and pipe cap (32).

b. Install air pressure regulator (26) on close nipple (27). Install close nipple (25) in air pressure regulator (26).

c. If shutoff valve (7) was disassembled, assemble as follows:

(1) Assemble spring (23), valve follower (22), and washer (21) in body (24). Assemble, one each, backup ring (18), o-ring (19), backup ring (16) and o-ring (17) on valve sleeve (20) and assemble into body (24).

(2) Assemble, one each, backup ring (18), o-ring (19), backup ring (16) and o-ring (17) on valve spacer (15) and assemble into body (24).

(3) Assemble stem (14) through gland nut (12), install retaining ring (13) and screw gland nut (12) into body (24). (Mounting nut (11) is not used in this application.)

(4) Assemble handle washer (10) and handle (8) on stem (14); secure with nut (9).

d. Install shutoff valve (7) on close nipple (25). Install two close nipples (6), elbow (3) and safety valve (4) in pipe cross (5). Assemble these parts to shutoff valve (7).

e. Install pipe nipple (1) in air receiver and connect the service outlet assembly to nipple (1) with pipe union (2).

6-10. MOTOR CONTROL BOX ASSEMBLY (Figure 3-3). During assembly of the motor control box assembly, refer to Figure 3-12, Wiring Diagram, for connection of wires, wiring harnesses, and cable leads. Assemble the motor control box assembly as follows:

NOTE

When this unit was manufactured, it was wired for 460-volt operation using heater coils (54) on overload relay (57) for this voltage. Alternate heater coils are provided for conversion to 230-volts. At assembly, use proper heater coils and wire correctly for 230/460-volts, as applicable.

a. If the starter assembly (50) was disassembled, assemble the starter assembly and attach to the mounting board (61) with three screws (53), lock washers (52) and nuts (51). Assemble the proper heater coils (54) to overload relay (57) for desired input voltage.

b. Attach transformer (46) to mounting board (61) with four screws (49), lock washers (48), and nuts (47); install fuse (45).

c. Attach control relay (41) to mounting board (61) with two screws (44), lock washers (43), and nuts (42).

d. Attach octal base (37) to mounting board (61) with two screws (40), lock washers (39), and nuts (38). Plug phase sensing relay (36) into octal base (37).

e. Attach terminal block (32) to mounting board (61) with two screws (35), lock washers (34), and nuts (33).

f. Attach pressure switch (27) to mounting bracket (28) and mount on mounting board (61) with two screws (31), lock washers (30), and nuts (29). Install tube elbow (26) in pressure switch (27).

g. Connect wire assembly (23) to transformer (46). Connect wire assembly (22) between octal base (37) and starter assembly (50). Connect wiring harness (21).

h. Assemble the mounting board assembly into box (62) and attach to box with spacers and screws supplied with mounting board (61). Connect wiring harness (20) leads. When thermostatic switch is used, connect leads 14 and 17 to control relay and terminal board.

i. Assemble stop pushbutton and plate (12, 13) on cover (1) and install contact block assembly (11). Assemble start pushbutton and plate (9, 10) on cover (1) and install contact block assembly (8). Assemble selector switch and plate (6, 7) on cover (1) and install three contact block assemblies (5). Connect three wire assemblies (24) and wire assembly (25).

j. Connect wiring harness (18) and wiring harness (19). Install bulkhead union (17) and connect pressure switch tube assembly (16).

k. Install main power cable (3) and cable connector (4). Connect ground lead (23) from transformer (46) and green lead of main power cable (3) to inside of box (62) with washer (15) and cap screw (14). Make all other lead connections as shown on figure 3-12.

l. Assemble cover (1) on box (62) and attach with twenty-two cap screws (2).

6-11. HOSE REEL ASSEMBLY (Figure 3-2). Assemble the hose reel as follows:

a. Slide reel shaft (37) into bore of hose reel base (39) and secure with setscrew (38). Install latch stud (34) in base (39) and secure with lock washer (36) and nut (35).

b. Place reel cover (30) over shaft (37) against face of base (39) and attach with four lock washers (33) and cap screws (32). Install the two retaining rings (31) in shaft (37) grooves.

c. Install spacing washers (29, 28) and latch rotor assembly (26) on latch stud (34) and install retaining ring (27).

d. If removed, install spring stud (24) and secure to cam and case assembly (23) with jam nut (25). Slide cam and case assembly (23) onto shaft (37) and install retaining ring (22) on shaft (37). Install spring arbor (20) on shaft (37) and secure with setscrew (21).

e. Attach end of drive spring (19) on spring stud (24) and over arbor (20). If studs (18) were removed, install six studs (18) in sheave assembly (15). Attach sheave assembly (15) to cam and case assembly (23) with six lock washers (17) and nuts (16).

f. Install swivel joint (14) in end of shaft (37) and elbow (13) in swivel joint (14). Install hose assembly (9) on sheave assembly (15) with one end through hole in sheave assembly. Attach hose to elbow (13) and secure hose assembly to sheave assembly with two hose clamps (10), four screws (12) and lock nuts (11).

g. If removed, assemble pin and roller kit (8) on hose guide (4). Attach hose guide (4) to cover and case assembly (2) with four plug nuts (7), lock washers (6), and screws (5). Wrap hose on sheave assembly (15) and lead end of hose assembly (9) through hose guide (4) and rollers (8).

h. Install cover and case assembly (2) over sheave assembly (15) and secure to reel cover (30) with four nuts (3). Assemble hose bumper (1) on hose assembly (9). If removed, install decal (40) on cover and case assembly (2).

6-12. AIR COMPRESSOR UNIT ASSEMBLY (Figure 3-1). Assemble the unit in the following sequence.

a. If tires and tubes (82, 83) have not been installed on wheel assemblies, install tires, tubes, and wheel and hub assemblies (84) as described in paragraph 6-3.

b. Install the left-hand brake assembly (85 shown) and the right-hand brake assembly (86) and attach to axle stub shaft with lock washer (90), cap screw (89), jam nut (88), and adjusting bolt (87). Refer to Section VII for brake adjustment.

c. Attach towbar assembly (94) to receiver assembly (105) with eight cap screws (96) and lock nuts (95). Attach towbar prop (91) to towbar assembly (94) with pin (92) and install pin and chain assembly (93).

d. Install the receiver drain valve (97), safety valve (98), and receiver drain cock (99). If removed for any reason, install the two 2-inch NPT pipe plugs (100) in air receiver (105). If removed, install safety valve decal (104), receiver drain decal (103), receiver bleed decal (102), and service outlet decal (101).

e. Install electric motor assembly (78) on air receiver bracket and attach with four cap screws (81), eight flat washers (80), and four lock nuts (79). Install impeller (75) on motor shaft and secure with two setscrews (76). Use lock wire (77) to secure the setscrews (76).

f. Attach air compressor assembly (71) to motor flange with cap screws (73, 74), two each, and four lock nuts (72). Remove four each screws (69) and lock washers (70) from oil cooler clamps, install impeller guard (68), and reinstall the lock washers (70) and screws (69). If oil cooler drain cock (67) was not installed at compressor assembly, install the drain cock (67) in oil cooler.

g. Place air cleaner gasket (66) in position and assemble gasket (66) and elbow (64) to compressor with two cap screws (65). Install air cleaner assembly (63) on elbow (64).

h. Install fan hub (61) on motor shaft and secure to shaft with setscrew (62). Remove four nuts from motor end bracket, install fan guard (56) on motor stud bolts, and attach with four lock nuts (57). Attach fan (58) to hub (61) with four lock washers (60) and cap screws (59).

i. Assemble fan shroud (53) to fan guard (56) with four cap screws (55) and lock nuts (54). Assemble aftercooler (52) and grill (51) to fan shroud (53) with grill clamps (45, 46), four cap screws (48), spacers (50), flat washers (49), and lock nuts (47).

j. Install elbow (41) in compressor discharge elbow and connect tube assembly (40) to elbow (41) and inlet on aftercooler (52). Attach tube assembly (40) to motor mounting bracket on receiver with tubing clamp (42), cap screw (44), and lock nut (43).

k. If removed from receiver, install elbow (39A) and connect tube assembly (39) to elbow and outlet of aftercooler (52).

l. Install the service outlet assembly (36) in receiver and attach mounting bracket to motor mounting bracket with cap screw (38) and lock nut (37). Install the two air pressure gauges (35).

m. Assemble the motor control box assembly (31) in position in front of mounting bracket and position the reel mounting bracket (8) behind the receiver bracket. Attach motor control box assembly (31) and reel mounting bracket (8) with four cap screws (34), six flat washers (33), and four lock nuts (32). Flat washers (33) are used under head of cap screws (34) and behind lock nuts (32) on the bottom mounting.

n. If removed, install instruction plate (25) and attach with four screws (26). Install wiring diagram plate (27) and attach with four screws (28). Install input voltage indicator plate (29) and attach with two screws (30). Make certain that the plate is installed with sides showing the correct motor control box wiring. (Plate is reversible, 230-volt input one side, 460-volt input on the other.)

o. Connect main power cable (23) to motor control box assembly (31) with cable connector (24) (if these parts were not assembled at assembly of the motor control box assembly, paragraph 6-10). Refer to Wiring Diagram, Figure 3-12, for wiring connections.

p. Install tube elbow (22) in receiver and connect tube assembly (21) to elbow (22) and bulkhead union on bottom of motor control box assembly (31).

q. If removed, install nipple (20), elbow (19), and seal fitting (18), Remove conduit box cover from motor and install nipple (16), conduit nut (17), and pipe tee (15), or pipe elbow (15.1) (whichever is applicable). When switch is used, install pipe coupling (10) over compressor thermostatic switch. Run the switch leads through conduit connectors (9), conduit (11), tee (15), connector (12), conduit (14), connector (13), seal fitting (18), elbow (19), and nipple (20) into box assembly (31). Install conduit (11) and attach connectors (9).

r. Run the motor leads through nipple (16), tee (15), or elbow (15.1), conduit connector (12), conduit (14), connector (13), seal fitting (18), elbow (19), and nipple (20) into control box assembly (31). Install conduit (14), connector (12), and connector (13). Make lead connection to motor leads and install conduit box cover on motor.

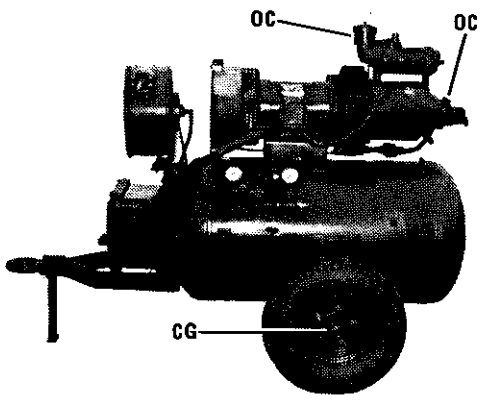
s. Remove cover of motor control box assembly (31) and make wiring connections (see figure 3-12). Install motor control box cover. Remove plug from seal fitting (28, figure 3-1) and seal the wires in fitting using Chico X7 sealing fiber and Chico A3 sealing compound, or the equivalent, as required.

t. Attach hose reel assembly (4) to bracket (8) with four cap screws (6), flat washers (7), and lock nuts (5). Install reducing bushing (3), elbow (2), and connect hose assembly (1) between elbow (2) and service outlet assembly (36).

6-13. LUBRICATION. After unit is completely assembled, refer to table 6-1, and lubricate the compressor air cleaner, compressor oil chamber, and if necessary, the wheel bearings. Use proper grade of oil for the operating ambient temperatures as indicated in table 6-1.

Table 6-1. Lubrication Chart

LOCATION	OPERATING HOURS	LUBRICANT KEY
COMPRESSOR AIR CLEANER Clean and refill to bead. There must be no oil in cup when atmospheric temperature is 0°F (-18°C) or lower.	150	OC
COMPRESSOR OIL CHAMBER Check oil level. Add oil if required. Drain and refill.	Before 150	OC OC
WHEEL BEARINGS Repack.	2000, or 2 years	CG



KEY AND NOTES

KEY	LUBRICANT	SPECIFICATION
OC	Oil, Steam Turbine	MIL-L-17331
CG	Grease, Lubricating (lead soap base)	MIL-G-81322A

NOTE

Never mix oil of different brands or specifications. Always use premium grade oil. Oil must be best quality turbine-type having rust, foam and oxidation inhibitors. To prevent accumulation of oil varnish, carbon and sludge with resulting overheating and internal failure, Therma-Solve Concentrate part number 1811 or equivalent (1 quart container) may be added to the compressor oil. Mixture is 20 percent oil concentrate (approximately 1 pint) to each oil change.

OIL CHAMBER — Drain only when hot, refill to overflow, run for several minutes and recheck oil level.

CAUTION

Do not remove filler or drain plugs until flow of air and oil in sight glass of bleeder valve has stopped. Pressure exists in oil chamber as long as a percolating action is visible. Pressure exists in oil chamber as long as the oil separator pressure gauge indicates any pressure reading.

DUSTY OPERATING CONDITIONS - Clean and refill compressor air cleaner daily.

SECTION VII

TESTING

7-1. TESTING. This section contains instructions for aligning, adjusting, testing, and calibrating the equipment, as necessary, after assembly.

7-2. BEFORE OPERATING. Perform the following steps before operating:

a. Remove cover from control box (1, figure 7-1) and check to ensure that unit is wired for 230/460-volt input, as applicable for power source, and that correct heater coils are installed. (Refer to Figure 3-12, Wiring Diagram.) Then, install control box cover.

b. Make certain that the compressor oil cooler drain cock (11, figure 7-1), receiver drain valve (14), receiver drain cock (15), air pressure regulator (13) and service shutoff valve (16) are all closed.

c. Check level of oil in air cleaner (5) and in the compressor (8). Refer to Table 6-1, Lubrication Chart.

WARNING

The main power source is of high potential. Use extreme care to avoid electrical shock that could cause serious injury or death.

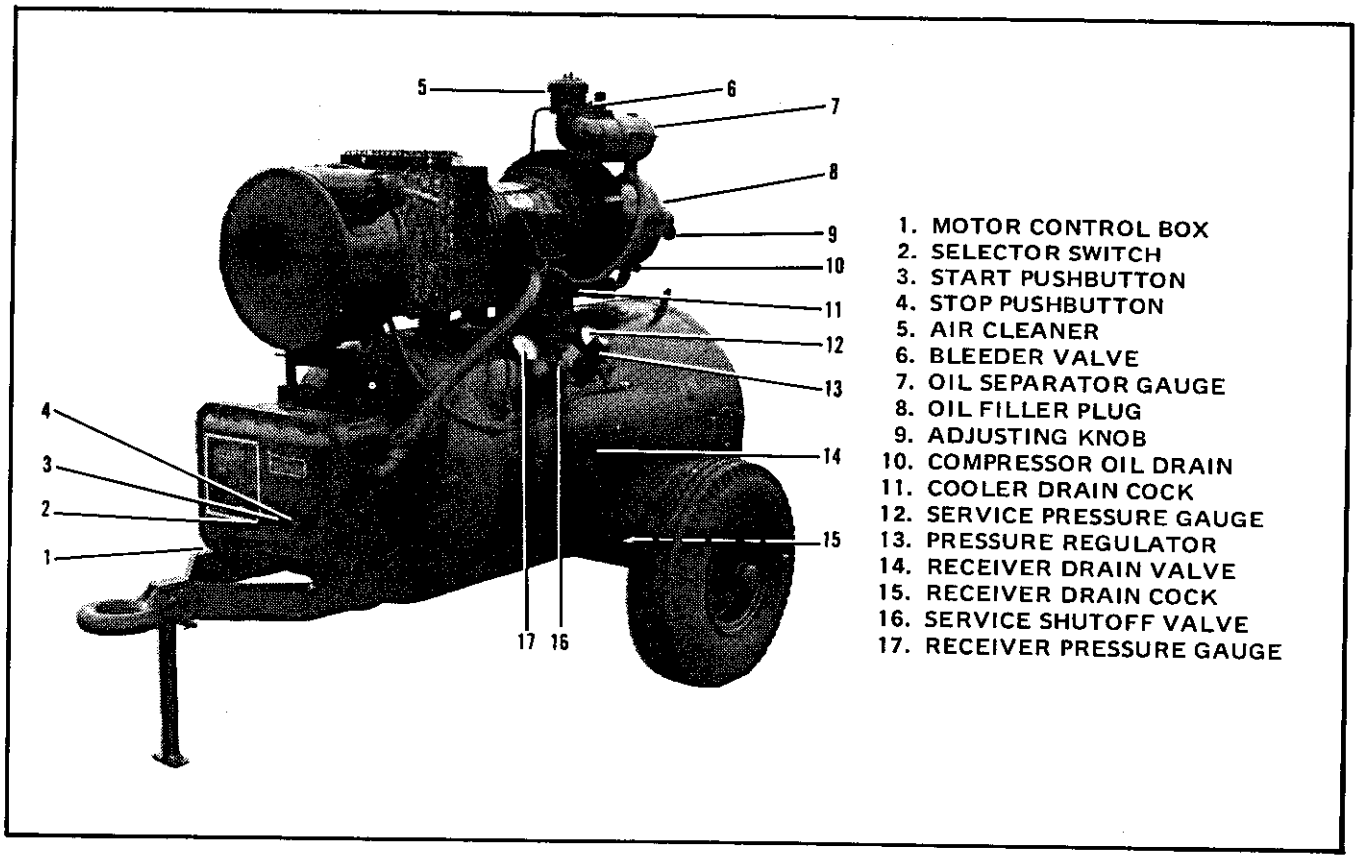


Figure 7-1. Operational Testing

d. Make certain that the control selector switch (2, figure 7-1) is in the OFF position. Connect the main power cable to the power source.

7-3. OPERATIONAL TEST. Start the equipment and check for proper operation as follows:

a. Starting. Turn main power switch on. Place selector switch (2, figure 7-1) to AUTO position.

b. Press the START pushbutton (3).

c. Allow unit to run until a minimum of 100 psi is indicated on receiver pressure gauge (17).

d. Check all piping and seals for oil leaks. Check the action of oil through bleeder valve window (6). A distinct percolating action should be seen to indicate normal oil separation.

e. Place selector switch (2) in OFF position. Open the receiver drain valve (14) and bleed off all air pressure from the unit.

WARNING

Never remove compressor oil filler plug (8) or drain plug (10), when pressure exists in compressor. Pressure exists as long as percolating action of oil can be observed in bleeder valve window (6) and on oil separator pressure gauge (7).

f. After oil separation action has stopped and all pressure is relieved, remove compressor oil filler plug (8), check level of oil, and add oil as necessary to bring level to overflowing. Install and tighten filler plug.

g. Again, start the unit as described in paragraph 7-3.a and 7-3.b above.

h. Allow compressor to run until the highest pressure it will maintain at full amperage load of motor is reached. As power load falls, increase pressure until motor is at full load again. Repeat this procedure until the receiver pressure gauge (17) indicates operating pressure of 200 psi has been reached.

NOTE

If receiver pressure of 200 psi cannot be obtained, follow procedures specified in paragraphs 7-4 and 7-5.

7-4. PRESSURE SWITCH ADJUSTMENT (Figure 7-2). Remove the control box cover to gain access to the pressure switch and adjust as follows:

NOTE

The normally closed air pressure switch should be set to open at from 210 to 215 psi receiver pressure. The pressure differential of the switch between open and close is from 15 to 20 psi. The differential is built-in and is not adjustable.

a. Observe receiver pressure on gauge (17, figure 7-1). If receiver pressure is below 200 psi when pressure switch opens and shuts off motor, turn adjustment nut (figure 7-2) clockwise to raise actuating pressure to approximately 210 psi.

b. If receiver pressure exceeds 215 psi when pressure switch opens, turn adjustment nut counterclockwise to lower actuating pressure to approximately 210 psi.

c. When pressure switch is set properly, install control box cover.

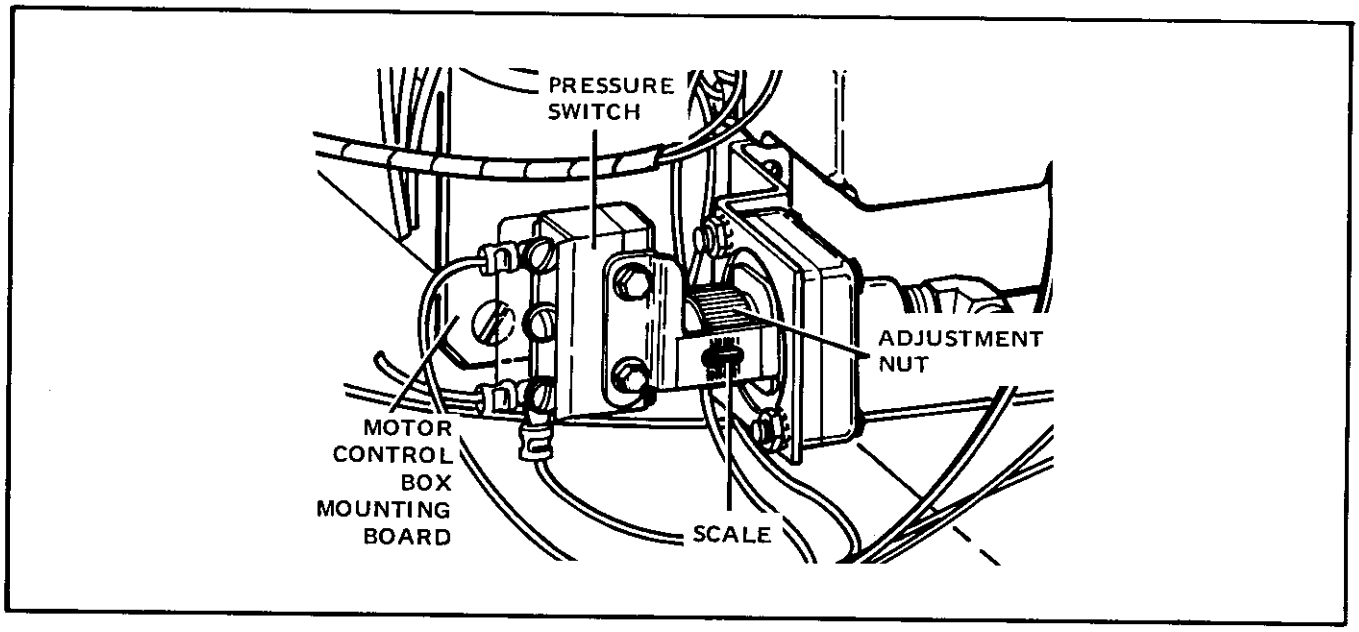


Figure 7-2. Pressure Switch Adjustment

7-5. CONSTANT SPEED UNLOADER ADJUSTMENT. The constant speed unloader (9, figure 7-1) should be set to unload the compressor at 210 psi and to maintain the compressed air output within a range of 40 psi. Adjust the constant speed unloader as follows:

a. Observe the pressure at which the compressor unloads on air receiver pressure gauge (17, figure 7-1). If unloading occurs below 210 psi, turn adjusting knob (9) clockwise to increase pressure.

b. If unloading occurs at pressure above 210 psi, turn the adjusting knob (9) counterclockwise to decrease pressure.

7-6. STOPPING THE EQUIPMENT. After operational testing and adjustments are completed, stop the unit as follows:

a. Place the selector switch (2, figure 7-1) in OFF position.

b. Slowly open receiver drain valve (14) and bleed off all air pressure from system.

c. Turn main power source off and disconnect main power cable from power source.

7-7. REMOTE TESTING OF AIR END ASSEMBLY. To test the air end assembly on a remote test stand, the procedures below apply:

a. Substitute a standard flowmeter with a scale graduation of 1-30 CFM.

b. Install the flowmeter on the air receiver service line outlet downstream of the service line shutoff valve.

c. Install the compressor to be tested on the test stand and service with lubricating oil, Federal Specification MIL-L-17331.

d. Before connecting air line to the air receiver, start the unit and operate for 15 minutes under no load. During this cycle, check for undue noise and oil leaks.

e. Stop unit, allow air to bleed from the unit and install the compressor to receiver air line.

f. Start the unit and allow the compressor to compress up to 100 PSI. Screw the unloader valve adjusting knob counterclockwise until compressor unloads. After the compressor unloads, allow it to cycle 15 minutes; check for oil leaks and undue noise in compressor.

g. Turn the unloader adjusting knob clockwise until it seats. Allow compressor to pump to 180 psi. Turn unloader adjusting knob counterclockwise until compressor unloads. Run compressor for 30 minutes.

h. Open the valve between the air receiver and the flowmeter slowly until the flowmeter indicates 13 cfm. Observe the pressure on the air receiver gauge. If pressure drops on the receiver gauge, slowly close the shutoff valve until a constant pressure of 170 psi is attained in the receiver. Observe the flowmeter, if less than 13 CFM is indicated, further repairs will be required.

i. A lower cfm reading than stated indicates excessive tolerance. If either of these conditions exists, remove, disassemble and correct the deficiency.

j. The above test procedures cover the test after overhaul or repair and apply to the air end test only. The flowmeter is suitable for end item testing.

7-8. HAND BRAKE ADJUSTMENT. After repair, overhaul, or brake lining replacement, adjust the hand brakes on each side of the unit as follows:

a. Place the hand brake lever (3, figure 3-11) in the ON, or up, position.

b. Loosen the jam nut that secures the adjusting screw on axle stub shaft. Turn the adjusting screw clockwise to tighten lining against the wheel assembly.

c. Lower the brake lever to OFF, or down, position. Turn the adjusting screw one or two more turns, or, until lining presses tightly against wheel assembly when lever is raised to ON position. Tighten the jam nut to lock the adjusting screw in this set position.

d. If adjusting screw is turned in too far, the lever will not raise, and stay, in the up position. If this occurs, loosen jam nut, turn adjusting screw counterclockwise until lever can be raised by hand; then, tighten jam nut.

SECTION VIII

TABLE OF LIMITS

8-1. TABLE OF LIMITS. The compressor rotor-stator assembly component parts wear limits are found in table 8-1. The minimum and maximum limits shown in table 8-1 are ideal limits and measurements that do not exceed the replacement maximums permit the part to be continued in service.

8-2. MISCELLANEOUS TABLE. The applicable torque values or limits and assembly limits are found in table 8-2.

Table 8-1. Table of Limits

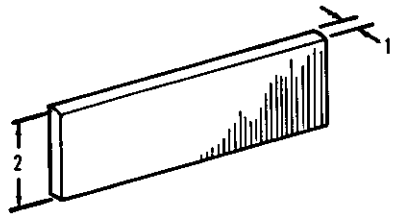
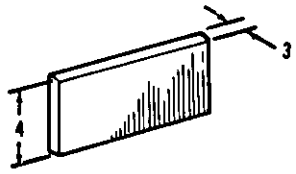
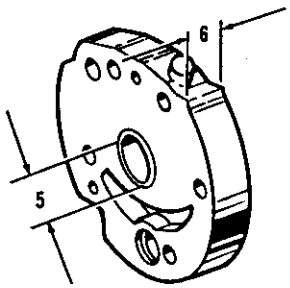
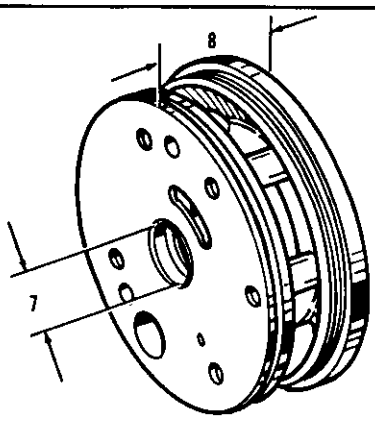
Ref No.	Description	Limits		Replacement Maximum	Illustrated Dimension Chart
		Min	Max		
1	First-stage blades (26, figure 3-8)	0.1480	0.1550	0.1470	
2		0.7120	0.7340	0.7110	
3	Second-stage blades (16, figure 3-8)	0.1480	0.1550	0.1470	
4		0.6660	0.6940	0.6650	
5	Division plate (19, figure 3-8)	1.002	1.005	1.006	
6		0.763		0.763	
7	Cover, drive end (55, figure 3-8)	1.002	1.005	1.006	
8		1.730		1.730	

Table 8-1. Table of Limits (Continued)

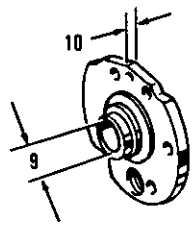
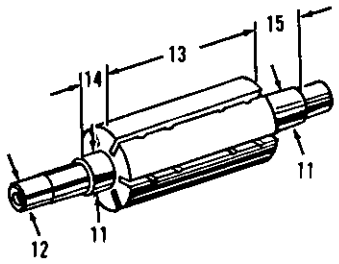
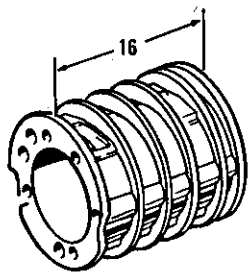
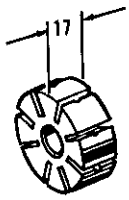
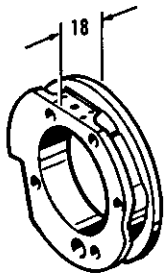
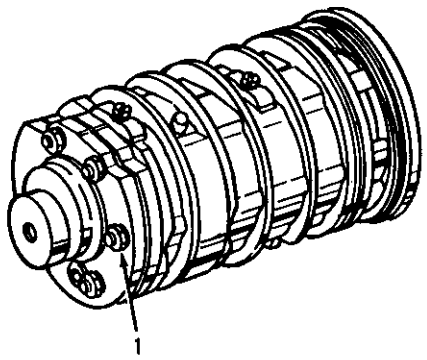
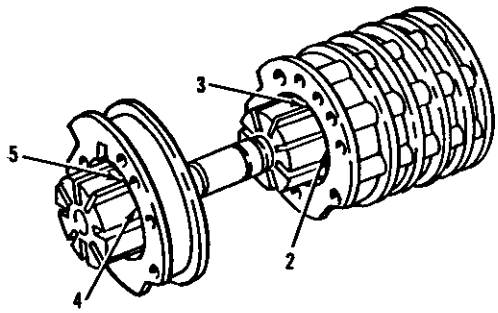
Ref No.	Description	Limits		Replacement Maximum	Illustrated Dimension Chart
		Min	Max		
9	Cover, non-drive end (5, figure 3-8)	0.7498	0.7502	0.7502	
10		0.350		0.350	
11	Rotor, first-stage (25, figure 3-8)	0.9982	0.9990	0.9980	
12		0.7485	0.7492	0.7483	
13		5.3652	5.3745	5.3650	
14		0.740	0.760	0.740	
15		1.745	1.755	1.745	
16	Stator, first-stage (27, figure 3-8)	5.3655	5.3755	5.3653	
17	Rotor, second-stage (15, figure 3-8)	1.4870	1.5010	1.4868	
18	Stator, second-stage (14, figure 3-8)	1.4940	1.5040	1.4938	

Table 8-2. Miscellaneous Table

Reference	Torque Tension Limits		Illustrated Torque Point
	Attaching Part	Torque (foot pounds)	
1	Nut (6, figure 3-8)	6	

Assembly Limits

Ref No.	Description	Allowance		Illustrated Assembly Points
		Min	Max	
2	First-stage rotor to first-stage stator	0.0030	0.0040	
3	First-stage blades to first-stage stator	0.0030	0.0045	
4	Second-stage rotor to second-stage stator	0.0035	0.0045	
5	Second-stage blades to second-stage stator	0.0040	0.0050	