TECHNICAL MANUAL

OPERATION AND SERVICE INSTRUCTIONS

ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE LEVEL

ELECTRIC MOTOR-DRIVEN PORTABLE AIR COMPRESSOR ASSEMBLY

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

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SECTION I

INTRODUCTION AND GENERAL INFORMATION

1-1. INTRODUCTION. This technical manual contains operation and service instructions for the Type MB-2A, Electric Motor-Driven, Portable Air Compressor. The unit is manufactured by Davey Compressor Company (FSCM 16004), Cincinnati, Ohio 45242. The Davey Model 4MB-2A and Part Number 68151 is assigned to this unit. Refer to figure 1-1 for an identifying view. The instructions contained herein are for the guidance of personnel responsible for the operation of the equipment.

a. Purpose. This type of air compressor is a portable, two-wheel unit with a towbar and retractable towbar prop. The unit is designed to be transported to an area where compressed air of pressures up to 200 pounds per square inch (psi) is needed. The area of operation must have an available electrical power source of 230/460-volt, 3-phase, 4-wire, 60-hertz, alternating current for the operation of the unit electric motor. Compressed air from the unit may be used for the operation of small pneumatic tools, greasing equipment, paint spray guns, tire inflation, and like compressed air requirements.

b. Arrangement. This manual is arranged into sections containing instructions for the use of special tools and test equipment; preparation for use and shipment; operating instructions, and maintenance instructions. Refer to the Table of Contents for topics within these sections and page numbers where these topics may be found.

c. Additional References. Overhaul Instructions for this unit may be found in T.O.34Y1-64-23 and Illustrated Parts Breakdown in T.O.34Y1-64-24. Abbreviations used throughout the manual are in accordance with Military Standard, MIL-STD-12, or are defined at their first appearance in the text.

1-2. GENERAL INFORMATION. This model of the Type MB-2A is a sliding vane, rotary motion type. The compressor is capable of producing 15 cubic feet of free air per minute (cfm) at pressure of 200 pounds per square inch (psi), continuous operation, and 250 psi intermittent operation. A 230/460-volt, 3-phase, 4-wire, 60-hertz electric motor is used to drive the

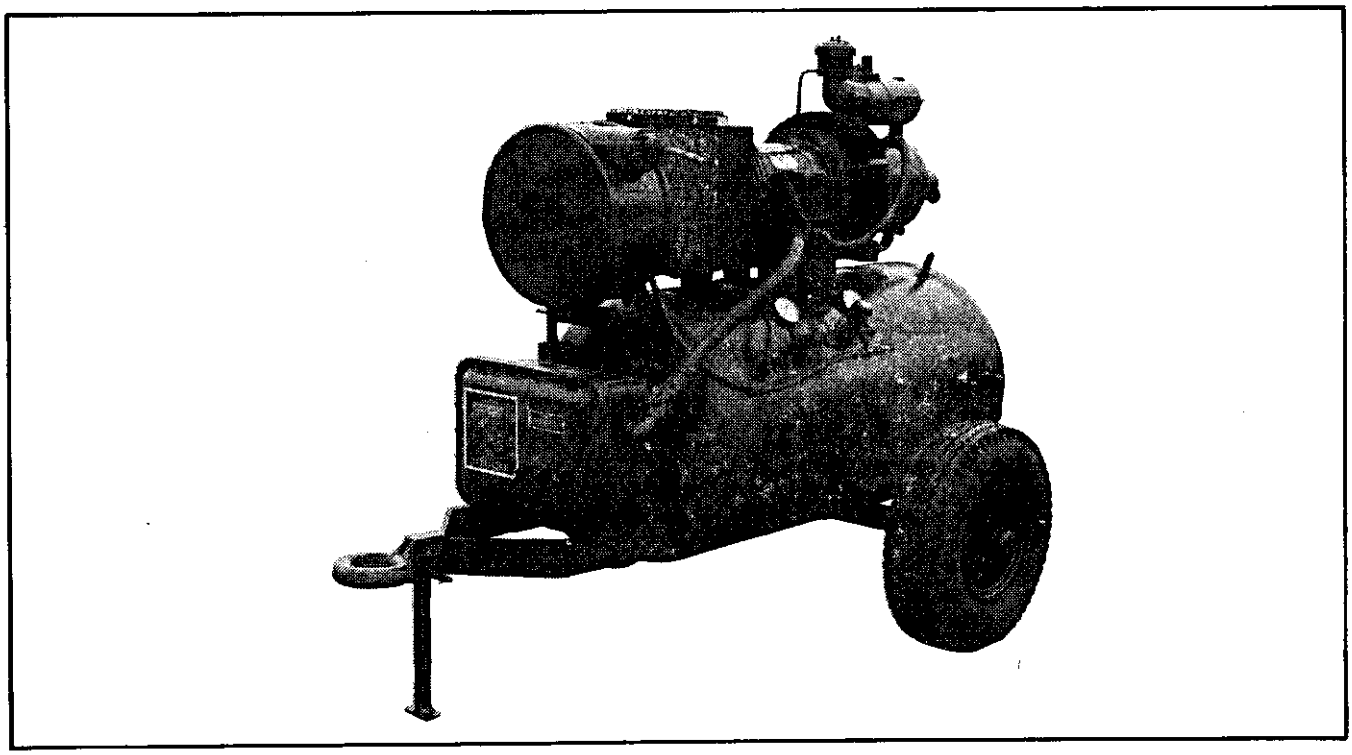


Figure 1-1. Electric Motor-Driven Portable Air Compressor, Type MB-2A

compressor through a direct-connected coupling assembly. A tabulated listing of Leading Particulars is found in table 1-1. Components of the unit are described in the following paragraphs.

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.

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. The aftercooler fan is mounted on the motor shaft extension on the opposite end of the motor drive shaft.

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.

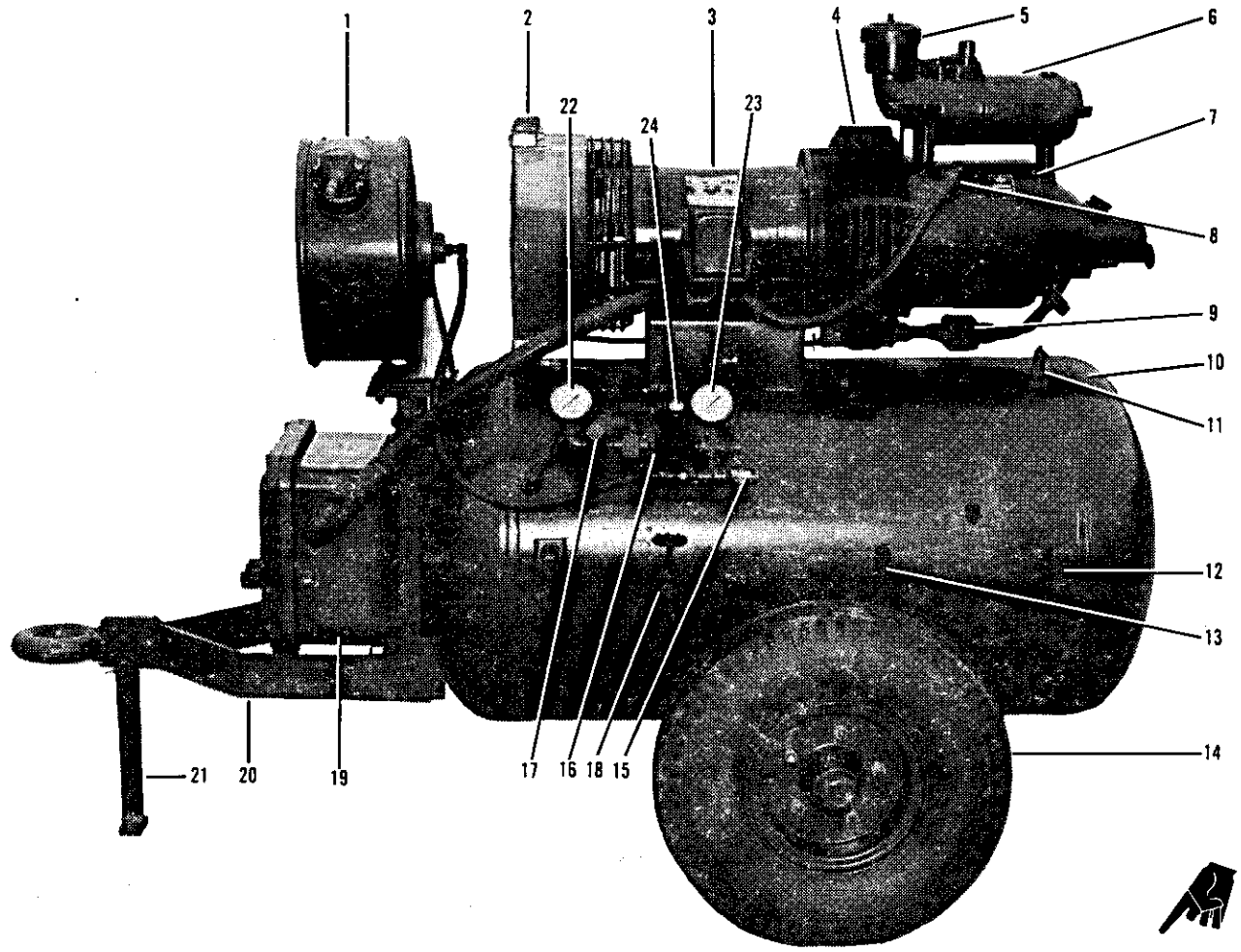
f. Rotary Air Compressor Assembly (7, Figure 1-2). The rotary air compressor assembly is a two stage, sliding vane, rotary motion type. It is capable of producing 15 cfm at 200 psi, continuous operation.

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 temperature, 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 or all of 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)



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	4MB-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

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. The assembly shown is in the on position (up). 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 stub shafts.

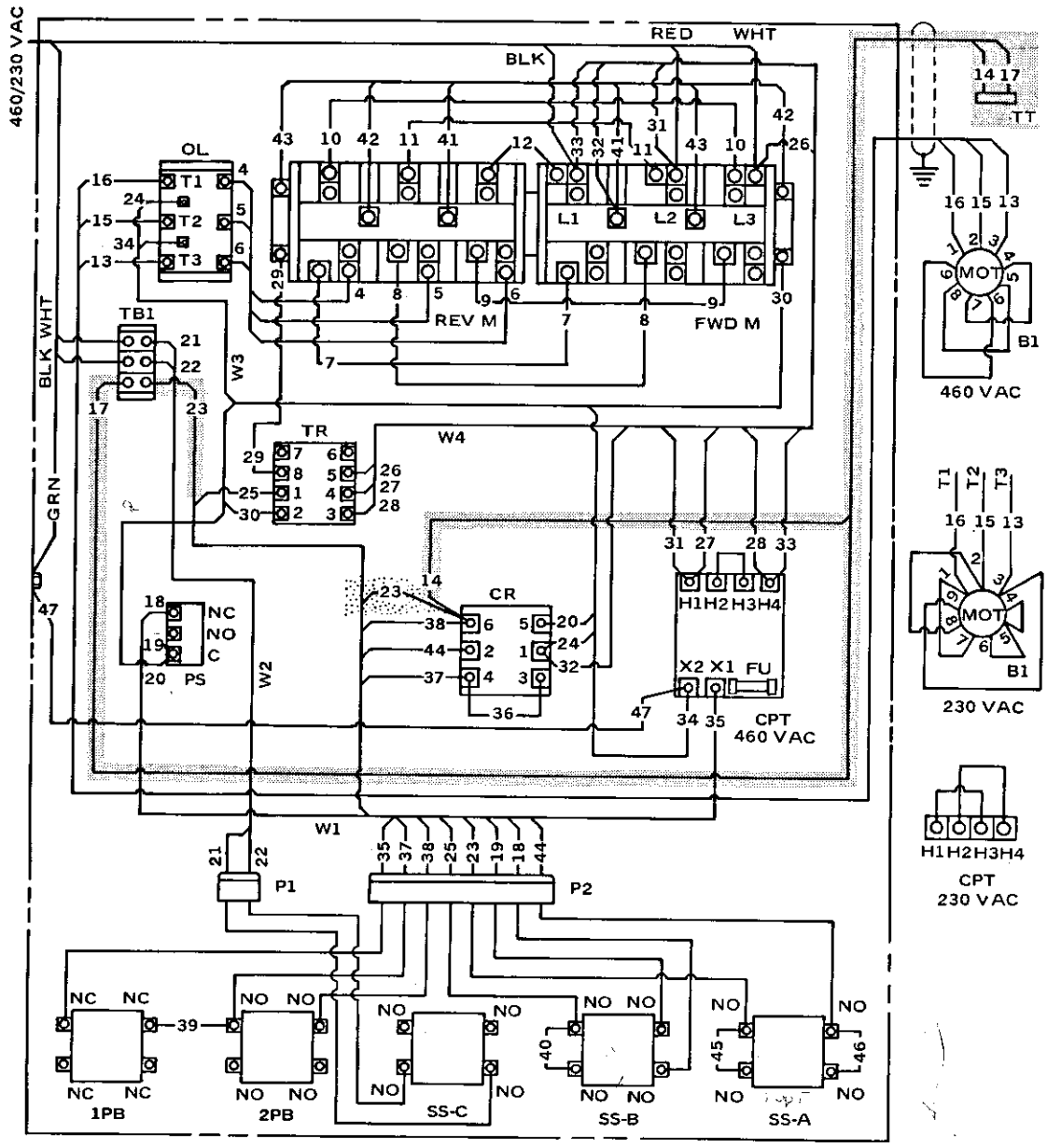
l. Control Box Assembly (19, Figure 1-2). The motor control components are enclosed in an explosion proof box. The assembly consists of a starter assembly, control transformer, hand-off-auto selector switch, start button, emergency stop button, pressure switch, and an automatic phase reversal relay. 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. On unit serial numbers 13DY2MS-22250 thru 13DY2MS-28325, the air compressor is also equipped with thermoswitch to protect the unit if the compressor should overheat. If the compressor overheats, the switch opens 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. Refer to Figure 1-3, Wiring Diagram.

1-3. CONSUMABLE MATERIALS LIST. A listing of consumable materials necessary for the operation and service of this Type MB-2A air compressor unit is found in table 1-2.

Table 1-2. Consumable Materials

NOMENCLATURE	MATERIAL	SPECIFICATION NUMBER	GOVERNMENT STANDARD NO.	PART NUMBER
Cleaning	Solvent	P-D-680, Type II		
Compressor	Oil, Steam Turbine	MIL-L-17331	2190 TEP	
Air filter	Oil, Steam Turbine	MIL-L-17331	2190 TEP	
Wheel bearing	Grease, Lubricating (lead soap base)	MIL-G-81322A		
Cleaning	Solvent, electrical equipment	Trichloroethane O-T-620		



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 1-3. Wiring Diagram

SECTION II

SPECIAL TOOLS AND TEST EQUIPMENT

2-1. SPECIAL TOOLS AND TEST EQUIPMENT. There are no special tools or test equipment required for the operation and service of the Type MB-2A air compressor.

SECTION III

PREPARATION FOR USE AND SHIPMENT

3-1. PREPARATION FOR USE. The Type MB-2A air compressor assembly is shipped as a pretested, completely assembled item of equipment. The following procedures are to be followed to place the equipment in operation.

a. Remove shipping crate from the shipping skid. Remove strapping and shoring which hold the unit to the skid.

b. Remove sealing tape from the oil bath type air cleaner (5, figure 1-2). Remove sealing tape from safety valves (11, 15), rupture disc (17), gauges (22, 23), service outlet assembly (16), end of hose in hose reel (1), and from the end of control cable. Remove sealing tape from control cable connector on the side of the control box assembly (19). Remove sealing tape from oil separator (6) pressure gauge and bleeder valve window.

c. Visually inspect the unit for damage in shipment, such as, broken lines and loosened parts.

WARNING

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

d. Remove corrosion-preventive compound with cleaning solvent, Federal Specification P-D-680, Type II.

e. Fill the air compressor (7, figure 1-2) oil chamber with clean lubricating oil of the type specified in Table 5-2, Lubrication Chart.

f. Fill the oil bath type air cleaner (5, figure 1-2) to the oil level bead mark with lubricating oil of the type specified in Table 5-2, Lubrication Chart.

g. Lubricate the wheel (14, figure 1-2) bearings with grease specified in Table 5-2, Lubrication Chart.

h. Check the inflation pressure of the tires. Proper pressure is 15 psi; add air as necessary.

CAUTION

When input voltage is changed from 460 VAC to 230 VAC, or the reverse, make certain control box assembly is wired correctly, proper heaters are used on overload relay, and that input voltage indicator plate has proper wiring side showing (plate is reversible).

i. The Type MB-2A, Model 4MB-2A, control box assembly (19, figure 1-2) is wired, at the time of manufacture, for 460 VAC operation with proper heaters installed on the overload relay (OL, figure 1-3). A voltage indicator plate is also attached to the control box cover. If the unit is to be operated on 230 VAC, remove the control box assembly cover, change overload relay heaters to the 230 VAC heaters (supplied inside the control box assembly) and rewire for 230 VAC operation as shown in figure 1-3. Also, reverse the voltage indicator plate so that proper input voltage is showing.

j. Make certain drain cock in bottom of oil cooler (4, figure 1-2) and in bottom of air receiver assembly (10) are closed. Also, the receiver drain valve (18) shall be closed.

k. If hose assembly is not connected between the service outlet assembly (16, figure 1-2) and the hose reel assembly (1), make this connection.

3-2. PREPARATION FOR SHIPMENT (AND STORAGE). Preparation for shipment and storage procedures are found in Technical Order, T.O.35-1-4.

SECTION IV

OPERATION INSTRUCTIONS

4-1. THEORY OF OPERATION. The prime mover of the Type MB-2A, Model 4MB-2A, is an electric motor which is completely controlled by the components of the control box assembly. Electrical power for the operation of the unit is 230/460 VAC, 3-phase, 4-wire, 60 hertz, from an outside power source. The power source is introduced to the control box assembly via the main control cable. The control box assembly incorporates a selector switch for hand-off-auto operation, a start pushbutton, and an emergency stop pushbutton.

4-2. After the outside power source is connected, the mode of operation (hand-auto) selected, and the motor started, the air compressor is then operating. The air compressor is driven by a coupling, the drive half mounted on the motor shaft extension and the driven half mounted on the compressor rotor shaft.

4-3. The air compressor is a rotary, sliding vane, two-stage type. Air is drawn into the compressor through an oil bath type air cleaner where it then enters the first stage of compression. The compressed air from the first stage then passes into the second stage where it is further compressed to the unit's designed pressure. The second stage compressed air then is passed through an oil separator assembly where virtually all oil is separated from the air. To remove heat of compression from the air, which reduces condensation, the air passes from the oil separator through an aftercooler; then, into the air receiver assembly. The air passing through the aftercooler is cooled by a suction type fan drawing air over the cooling fins of the aftercooler. The compressor lubricating oil is cooled by passing through an oil cooler where air is forced over the cooling fins by an impeller type fan which is part of the drive coupling half. The flow of oil through the oil cooler is regulated, in relation to the oil temperature, by passing through a thermal bypass valve assembly.

4-4. Service air stored in the air receiver assembly is directed to the service hose in the hose reel through a service outlet assembly. This assembly incorporates gauges that indicate air pressure within the air receiver tank and downstream, after passing through the adjustable pressure regulator, the air pressure being delivered to the service hose assembly.

4-5. OPERATION INSTRUCTIONS. Following are instructions for complete start-to-stop procedures to be observed for the operation of the Type MB-2A, Model 4MB-2A.

a. Preliminary Procedures. Pull the unit to the work sight near a power source of 230/460 VAC, 3-phase, 4-wire, 60 hertz. Park the unit on a surface as level as possible, lower the towbar prop (21, figure 1-2) and lock in position with pin provided. Set both hand brake levers (13) in the on (up) position. Perform all of the Before Operation procedures found in table 5-1.

b. Connecting Main Power Cable to Power Source. First, observe input voltage indicator plate to determine the voltage wiring of the control box assembly as the unit is now wired. The unit was shipped from the factory wired for 460 VAC. If desired input is 230 VAC, the control box wiring must be changed as follows (refer to figure 1-3):

WARNING

Do not open control box cover while power is on.

(1) Remove the control box cover. Remove heaters (size 1035) from starter overload relay (OL, figure 1-3). Replace these heaters with the 230 VAC heaters (size 1041) supplied inside control box for this purpose.

(2) Rewire the control power transformer (CPT), H1 to H3 and H2 to H4, as shown on figure 1-3.

(3) Remove the motor terminal connection box cover and rewire the motor (MOT) as shown on figure 1-3. Reinstall the motor connection box cover.

(4) Check to make certain main power cable connections at L1, L2, L3; at TB1; and at ground are secure. Reinstall control box cover and reverse the input voltage indicator plate to show 230 VAC wiring of the unit.

NOTE

If the unit has been in use using 230 VAC power source instead of 460 VAC as factory wired, the wiring change is the reverse of steps 1 through 4 above. In other words, the wiring shall be as shown on figure 1-3 for 460 VAC and using overload relay heaters size 1035.

WARNING

Main power source is of high voltage. Use extreme care to avoid electrical shock which can cause serious injury or death.

(5) Connect the main power cable to the power source.

NOTE

The control box assembly incorporates an automatic phase sensing relay which eliminates possibility of the motor running in direction other than the correct rotation for compressor operation.

c. Connection Between the Unit and Pneumatic System to be Charged. Connection is made by unreeling the air service hose reel (1, figure 1-2) and connecting the hose to the pneumatic system to be charged.

d. Operating Controls. The following operating controls are provided:

(1) Drain valves. Drain valves are provided in the bottom of the compressor oil cooler (4, figure 1-2) and in the bottom of the air receiver assembly (10) for the purpose of draining condensation. An additional receiver drain valve (18) is also provided to relieve air pressure from receiver tank. These drain valves should be closed during operation.

(2) Selector switch (2, figure 4-1). The selector switch has three positions: HAND position for continuous motor operation, OFF position for stopping the unit, and AUTO position for operating the equipment in automatic stop-start mode.

(3) Start pushbutton (3, figure 4-1). The start pushbutton is pushed to start the equipment after the selector switch (2) has been placed in position for mode of operation desired.

(4) Stop pushbutton (4, figure 4-1). The stop pushbutton is pushed to stop the equipment should an emergency arise.

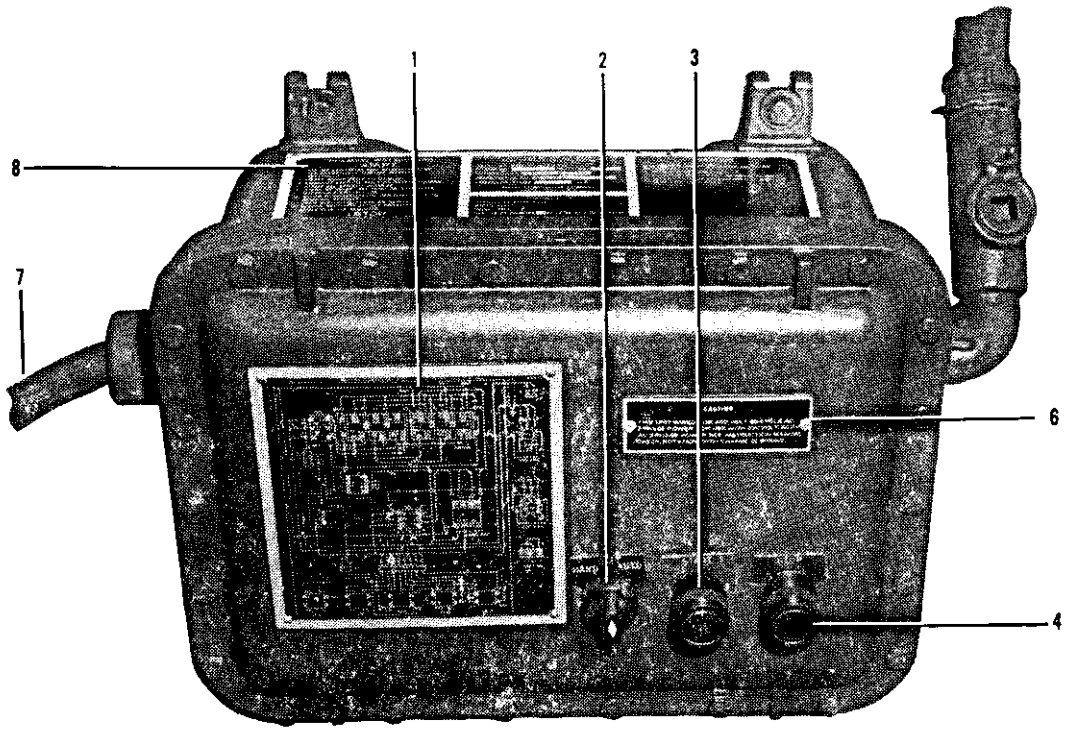
NOTE

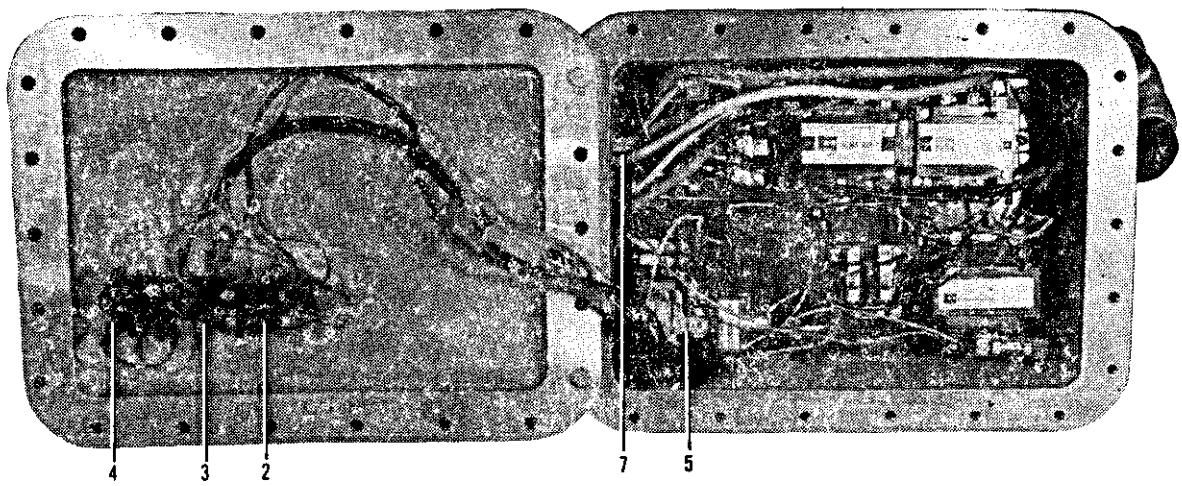
The stop pushbutton (4, figure 4-1) should not be used except in the case of of an emergency. For normal stopping procedure refer to paragraph 4-8.

(5) Pressure switch (5, figure 4-1). The pressure switch (located inside control box assembly) senses the air pressure within the air receiver tank and is wired to shut down the unit (in AUTO mode only) should an overpressure in the tank occur.

(6) Receiver pressure gauge (1, figure 4-2). The receiver pressure gauge indicates the compressed air pressure within the air receiver tank.

(7) Rupture disc (2, figure 4-2). The rupture disc is a safety device to protect against excessive overpressure within the air receiver tank. Should pressure within the tank exceed 350 psi (at 72°F), the disc will rupture and allow receiver air to be expelled.





1. WIRING DIAGRAM PLATE
2. SELECTOR SWITCH
3. START PUSHBUTTON
4. STOP PUSHBUTTON
5. PRESSURE SWITCH
6. INPUT VOLTAGE PLATE
7. MAIN POWER CABLE
8. OPERATING INSTRUCTION PLATE

Figure 4-1. Control Box Assembly

(8) Shutoff valve (3, figure 4-2). The shutoff valve is used to open or close off the flow of air from the receiver tank to the air pressure regulator.

(9) Air pressure regulator (4, figure 4-2). The air pressure regulator is used to regulate the flow of air to the air service hose. This air is directed to the hose reel assembly via hose assembly (7). This system is protected by a safety valve (6) set at 240 psi.

(10) Service air pressure gauge (5, figure 4-2). This gauge indicates the pressure setting of the air pressure regulator and service air being directed to the service hose reel.

(11) Oil separator bleeder valve (1, figure 4-3). The bleeder valve removes accumulated oil from the separator and returns the oil to the compressor via the air intake. The accumulated oil results from the air passing through the separator felts. A sight glass is provided for visual check of oil removal. Under normal conditions, oil will flow past sight glass with a percolating action when compressor is operating under full load. If bleeder valve is full of oil and no action is indicated, oil is not being removed. No action of the oil indicates the valve or separator felts are clogged.

(12) Oil separator pressure gauge (2, figure 4-3). This gauge indicates the air pressure within the compressor.

4-6. STARTING THE EQUIPMENT. Start the Type MB-2A, Model 4MB-2A unit in the following manner:

a. Open drain cocks in the bottom of the oil cooler (4, figure 1-2) and in the bottom of the air receiver assembly (10) and drain all accumulated water. Close the drain cocks. Make certain that receiver drain valve (18) and shutoff valve (3, figure 4-2) are closed.

b. Place the selector switch (2, figure 4-1) in the AUTO position. (Place selector switch in HAND position if it is determined that work project requires continuous operation.)

c. Press the start pushbutton (3, figure 4-1).

d. Allow unit to run until a minimum of 100 psi is indicated on receiver pressure gauge (1, figure 4-2) before putting the unit to use on a pneumatic system.

4-7. OPERATING THE EQUIPMENT. After the equipment is started, put into use as follows:

a. Pull service air hose out of hose reel (1, figure 1-2) and connect to pneumatic system to be serviced.

b. Allow the equipment to run until working pressure of system being serviced is indicated on receiver pressure gauge (1, figure 4-2).

c. Open shutoff valve (3, figure 4-2) and adjust air pressure regulator (4) to the pressure required for system being serviced. This pressure is indicated on pressure gauge (5).

4-8. STOPPING THE EQUIPMENT. After the pneumatic system is serviced, stop the equipment as follows:

a. Close the shutoff valve (3, figure 4-2).

b. Place the selector switch (2, figure 4-1) in the OFF position.

c. Slowly open receiver drain valve (18, figure 1-2). This will bleed moisture from the air receiver and relieve the equipment of remaining receiver air.

d. Disconnect air service hose from system that was serviced. Pull on hose to release hose reel clutch and allow hose to slowly rewind into reel.

WARNING

Power source is of high voltage. Exercise extreme care when disconnecting main power cable to avoid electrical shock that could cause serious injury or death.

e. Disconnect main power cable from power source. Coil the cable, tape or tie the coils and stow on the unit in a suitable manner.

CAUTION

When unit is being moved from one location to another, do not drag main power cable. Damaged cable insulation can cause an electrical short circuit.

4-9. EMERGENCY STOPPING. Should an emergency arise where normal stopping procedure, paragraph 4-8, can not be performed, stop the equipment by pressing the stop pushbutton (4, figure 4-1). Then, perform normal stopping procedures as time or cause of emergency permits.

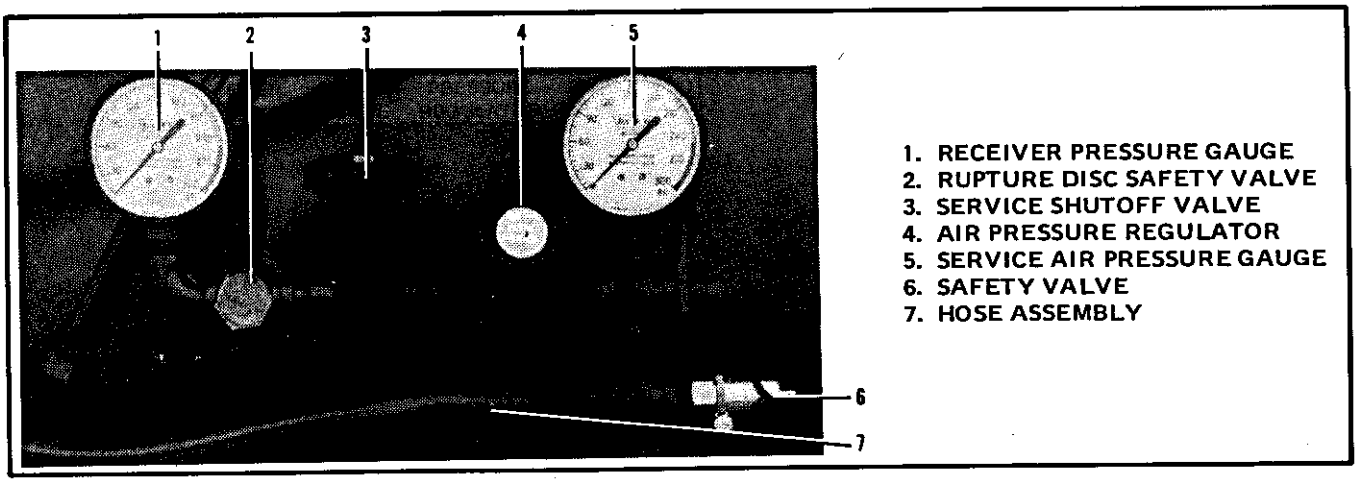


Figure 4-2. Service Outlet Assembly

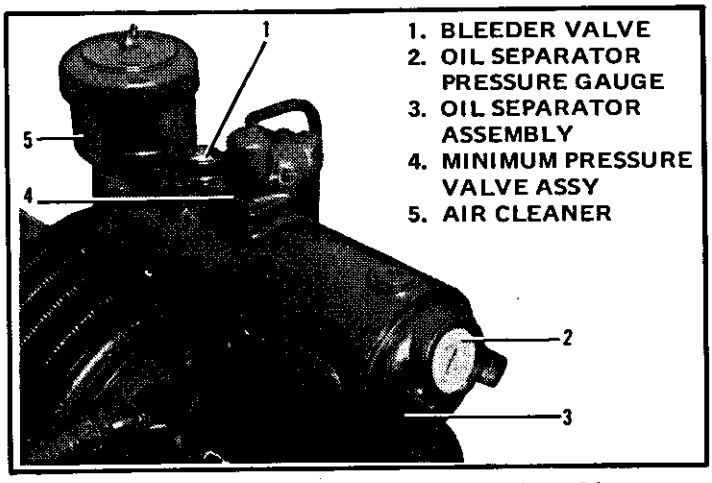


Figure 4-3. Compressor Oil Separator Assembly

SECTION V

MAINTENANCE INSTRUCTIONS

5-1. MAINTENANCE INSTRUCTIONS. This section contains maintenance instructions for personnel authorized for organizational and intermediate maintenance levels. Maintenance beyond these levels should be referred to depot.

5-2. OPERATIONAL CHECKOUT. Operational checkout of this equipment is limited to the starting, operating and stopping procedures outlined in paragraphs 4-6 through 4-8.

5-3. INSPECTION AND PREVENTIVE MAINTENANCE. Refer to table 5-1 for inspection and preventive maintenance checks and services and intervals for their performance. Also, refer to table 5-2 for lubrication instructions.

5-4. TROUBLESHOOTING. Refer to table 5-3 for possible troubles that may be encountered, their probable causes, and necessary remedies for these troubles.

5-5. REPAIR. The repair instructions, within the scope of this manual, are detailed in the following paragraphs.

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.

NOTE

Disassemble only to the extent necessary to obtain access to component, part, or parts requiring maintenance. Disassembly shall be only to the level authorized by organizational and intermediate maintenance. All other disassembly shall be referred to depot level.

Table 5-1. Inspection and Preventive Maintenance

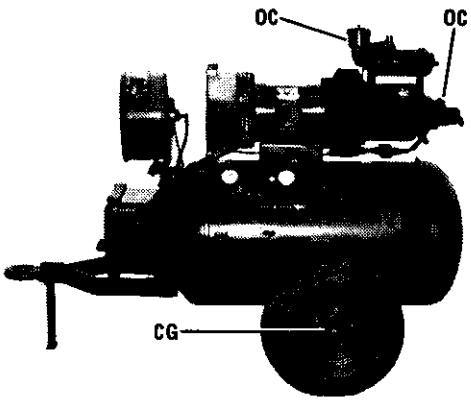
COMPONENT	INSPECTION, CHECK, AND SERVICE	INTERVAL
Oil cooler and air receiver	Open drain cocks and drain accumulated water.	Before operation.
Air compressor	Check oil level at filler plug. Fill to level of plug opening. Refer to Table 5-2, Lubrication Chart.	Before operation.
Air cleaner	Inspect for accumulated dirt and level of oil. Fill with oil to bead mark. Refer to Table 5-2, Lubrication Chart.	Before operation.

Table 5-1. Inspection and Preventive Maintenance - Continued

COMPONENT	INSPECTION, CHECK, AND SERVICE	INTERVAL
Air hoses	Inspect for frayed hose covering, cuts, and evidence of any other damage. If condition warrents, hydrostatically test hose in accordance with T.O.34Y1-1-171 and T.O.00-25-223.	Before operation.
Oil cooler and aftercooler	Inspect for leaks and cleanliness of cooling fins. Clean fins as necessary.	After use.
Tires	Visually inspect tires for cuts, other damage, and aging. Check air pressure and add air as necessary.	Before operation.
Oil filter screen	Inspect the compressor oil filter screen for sludge and clean as necessary.	6 months or 150 hours.
Compressor assembly	Change oil. Refer to Table 5-2, Lubrication Chart.	150 operating hours or 6 months.
Electrical wiring	Check the electrical wiring for damaged insulation and loose connections.	6 months or 150 hours.
Wheels	Remove wheel assemblies and lubricate wheel bearings. Refer to Table 5-2, Lubrication Chart.	2 years or 2000 hours.
	Check attaching hardware on rims and hubs for tightness.	
Parking brakes	Inspect brake lining pad for wear. If worn beyond adjustment possibility, replace the lining.	2 years or 2000 hours.
Oil separator	Inspect oil separator felts for fit and cleanliness.	6 months or 150 hours.
	Inspect bleeder valve filter assembly for cleanliness.	
Motor assembly	Check drive coupling and fan hub for tightness.	6 months or 150 hours.
	Check tightness of mounting hardware.	
All mounting hardware	Check for tightness of all nuts and bolts.	6 months or 150 hours.
Control box assembly	Inspect all electrical controls in control box assembly for accumulation of rust and corrosion and condition of wiring.	12 months or 1000 operating hours.

Table 5-2. 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 use 150	OC OC
WHEEL BEARINGS Repack.	2 yrs or 2000 hrs	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.

Table 5-3. Troubleshooting

TROUBLE	PROBABLE CAUSE	REMEDY
	ELECTRICAL SYSTEM	
	WARNING Input power source is of high potential and extremely dangerous if care is not observed. When unit is connected to power source, many points within the electrical circuits are also of this high potential. Disconnect the unit from the power source when making any electrical repairs or replacement to avoid shock that could cause serious injury or death.	
	NOTE Always check wiring, connections, and power source in case of electrical troubles. Tag wires before removing and check their labeled markings for reasembly reference. Use the wiring diagram, figure 1-3 when assembling components and wiring.	
	AIR SYSTEM	
	WARNING Do not attempt any air system component removal or repair with air pressure in the system. Observe the receiver air pressure gauge and oil separator pressure gauge. Open the receiver drain valve (18, figure 1-2) to relieve pressure from receiver tank. After shutdown, allow time for compressor to bleed down oil and air before attempting any disassembly. Oil separator pressure gauge must read zero to indicate compressor internal pressure has been relieved.	
Motor will not start	1. No electrical power due to bad connection at power source.	1. Check and tighten main power cable connections at source. If connections secure, proceed to cause 2.
	2. Air pressure in receiver exceeds cut-in setting of pressure switch. (Selector switch in AUTO position.)	2. Open air receiver drain valve and reduce air supply below cut-in pressure of approximately 190 psi. If receiver pressure gauge indicates pressure below the setting and motor still will not start proceed to cause 3.

Table 5-3. Troubleshooting - Continued

TROUBLE	PROBABLE CAUSE	REMEDY
Motor will not start - continued	3. Pressure switch is defective or improperly set.	3. Remove control box cover and check pressure switch. Set as necessary, see para 5-10.e, or replace pressure switch. If pressure switch is set properly and not malfunctioning, proceed to cause 4 while cover is off control box.
	4. Improperly wired.	4. Check wiring against wiring diagram, figure 1-3. Tighten connections and repair as necessary. If no fault is found, proceed to cause 5.
	5. Overload relay heaters tripped or broken.	5. Check and replace heaters as necessary. If relay tripped due to overload only, check for overload cause and correct. Proceed to cause 6 if no malfunction found.
	6. Selector switch is defective.	6. Replace a defective switch. If not defective, proceed to cause 7.
	7. Defective starter component.	7. Check each starter component and replace any defective parts. If components are not defective proceed to cause 8.
	8. Compressor overheated. (This would occur only if unit had been in operation a short time before the attempted start.) (Applicable to serial no's 13DY2MS-22250 thru 13DY2MS-28325 only.)	8. Allow compressor to cool. Check oil level; add oil as necessary. Thermal shutdown is automatically reset when compressor cools. If not overheated, proceed to cause 9.
	9. Defective motor.	9. Repair or replace motor.
Motor starts but fails to attain operating speed.	1. Low voltage.	1. Check power source and wiring for correct input voltage. If correct proceed to cause 2.
	2. Single phasing.	2. Check line fuses. No malfunction, proceed to cause 3.
	3. Compressor defective.	3. Check and repair as necessary. If compressor is not defective, see cause 4.
	4. Defective motor.	4. Repair or replace motor.
Motor excessively noisy	1. High voltage.	1. Check power source voltage and control box wiring for proper voltage wiring. If correct, proceed to cause 2.

Table 5-3. Troubleshooting - Continued

TROUBLE	PROBABLE CAUSE	REMEDY
Motor excessively noisy - continued	2. Vibration due to loose mounting or out of balance of motor or compressor due to malfunction of internal parts of either or both assemblies at coupling connection.	2. Tighten mounting hardware. Check and repair connection as necessary replacing defective parts. If no defect found proceed to cause 3.
	3. Defective internal motor parts.	3. Repair or replace motor.
Motor overheating	1. Single phasing.	1. Check line fuses. If no defect, proceed to cause 2.
	2. Improper or defective wiring.	2. Check wiring against figure 1-3. Repair or replace any defective wiring. If no wiring defect, proceed to cause 3.
	3. Compressor overloading due to incorrect setting of unloader or incorrect setting of pressure switch.	3. Adjust constant speed unloader as specified in para 5-11. Adjust pressure switch as specified in para 5-10.e.
Compressor noisy	1. Oil level too low.	1. Stop the unit, check oil level and fill as necessary. See WARNING at beginning of this table. If oil level is not low, proceed to cause 2.
	2. Poor or no oil circulation due to clogged oil filter screen.	2. While unit is stopped, check and clean filter screen, see para 5-7. Then, proceed to cause 3.
	3. Minimum pressure and non-return valve sticking.	3. With unit stopped, relieve the receiver of all air pressure and allow time for compressor assembly to bleed down. Check and clean or replace parts as necessary, para 5-6. If determined this is not the cause, proceed to cause 4.
	4. Loose, worn, or damaged compressor parts.	4. Tighten all accessible parts. If none were loose and it is determined malfunction is internal, repair compressor as necessary.
Compressor fails to pump up to pressure	1. Air receiver drain cock or drain valve open or leaking.	1. Check and close both or replace as necessary. If closed, proceed to cause 2.

Table 5-3. Troubleshooting - Continued

TROUBLE	PROBABLE CAUSE	REMEDY
Compressor fails to pump up to pressure - continued	2. Leaks in air system tubing, aftercooler, or air system component connections.	2. Check the system tubing and connections for leaks. Use a soap and water solution applied with a brush. Leaking will cause solution to bubble. If defective components are found, replace; if none, proceed to cause 3.
	3. Constant speed unloader not adjusted correctly, or faulty, causing improper unloading pressure.	3. Adjust unloader as specified in para 5-11. If defective parts are found, replace. If there are no defects and adjustment is correct, proceed to cause 4.
	4. Minimum pressure valve or bleeder valve sticking.	4. Check and clean or if defective parts are found, replace parts (para 5-6). If not the cause, proceed to cause 5.
	5. Incorrect unloading pressure due to setting of pressure switch or a defective pressure switch.	5. Remove control box cover and check or set pressure switch correctly (para 5-10.e). If switch is defective, replace. Reinstall cover. If pressure switch setting or defect was not cause, proceed to cause 6.
	6. Leaking or defective safety valve.	6. Check for leaks and for proper operation. If leaking can be corrected by tightening, do so. If defective safety valve, replace.
Compressor overheating or discharges abnormally hot air	1. Oil level too low.	1. Stop the unit and check oil level; add oil as necessary. If oil not low, proceed to cause 2.
	2. Dirty oil cooler or aftercooler fins restricting cooling air circulation. Also, fins on compressor oil chamber may be dirty, hindering heat dissipation.	2. Clean accumulated dirt or debris from oil cooler and aftercooler fins as necessary. Check oil chamber fins and clean. If cooling fins are clean, proceed to cause 3.
	3. Clogged oil filter screen.	3. Remove screen, clean, and reinstall, para 5-7. If not dirty, proceed to cause 4.
	4. Incorrect grade of oil used, or oil is dirty.	4. With compressor stopped but warm, drain and change oil using proper grade as specified in table 5-2. If the compressor oil was not the trouble, proceed to cause 5.

Table 5-3. Troubleshooting - Continued

TROUBLE	PROBABLE CAUSE	REMEDY
Compressor overheating or discharges abnormally hot air - continued	5. Dirty, clogged, or defective thermal bypass valve assembly.	5. Remove the thermal bypass valve assembly, clean and check as specified in para 5-12.
Excessive oil consumption	1. Oil leaks at gasket or seal connections.	1. Tighten components at leak area as required. If leak not due to loosness, repair or replace as necessary. If no leakage found, proceed to cause 2.
	2. Improper grade of oil being used (refer to table 5-2).	2. With unit stopped, but still warm, drain and change oil to proper grade as specified.
	3. Oil separator felts or seals are shrunk or damaged.	3. Inspect and replace as necessary (para 5-6).
Excessive moisture in air from service hose assembly	1. Condensate accumulation in air receiver.	1. Open receiver drain cock to drain off water. This should be done before operating and daily.
Unable to obtain proper air regulation	1. Service air pressure gauge is defective, giving incorrect reading.	1. Replace the gauge if inspection shows it to be defective. If gauge not defective, proceed with cause 2.
	2. Air pressure regulator not adjusted properly for system being serviced, or the regulator is defective. Make certain that shutoff valve is fully opened for air pressure regulation; if not, proper regulation cannot be obtained.	2. Try readjusting pressure regulator by turning adjusting handle to change pressure for system being serviced. If adjustment cannot be made, repair or replace air pressure regulator.
Compressor fails during operation	1. Hydraulic lock within compressor assembly, or internal part failure.	1. Stop the unit immediately. Relieve all air receiver pressure by opening receiver drain valve. Close the valve when zero pressure is indicated on receiver pressure gauge and oil separator gauge. Allow time for oil in compressor to bleed down. Then, manually turn compressor in opposite direction of normal rotation. If binding is evident beyond hydraulic lock, the compressor has damaged internal parts and must be repaired.
Motor fails to stop when selector switch is placed in OFF position	1. Selector switch is defective.	1. Press emergency stop pushbutton to stop unit. Remove control box cover and check the selector switch; replace as necessary. If selector switch was not the cause, proceed to cause 2.

Table 5-3. Troubleshooting - Continued

TROUBLE	PROBABLE CAUSE	REMEDY
Motor fails to stop when selector switch is placed in OFF position - continued	2. Motor starter component failure.	2. Check and repair or replace any defective components. Refer to figure 1-3 for wiring diagram. After repair, reinstall control box cover.
Wheels squeaking	1. Lack of lubrication for wheel bearings, or defective bearings.	1. Lubricate in accordance with figure 5-2 and/or replace bearings as specified in para 5-8.
	2. Loss of lubricant due to worn or damaged grease seal.	2. Remove the wheel from unit and replace a damaged seal as specified in para 5-8.
	3. Wheel bolts have become loosened.	3. Tighten all wheel attaching hardware as necessary.
Hose reel does not have desired retract tension or will not retract service hose	1. Spring tension not adjusted properly.	1. Adjust spring tension as specified in para 5-13.
	2. Broken tension spring or other internal parts.	2. Repair or replace as specified in para 5-13.

5-6. Oil Separator Assembly (figure 5-1). Repair of the oil separator assembly is as follows:

a. Disassembly. Remove the two socket head cap screws that attach air intake elbow to oil separator casing (40). Separate and remove the intake elbow with air cleaner still assembled to the elbow. Carefully set this assembly aside keeping air cleaner upright so that oil in the air cleaner is not spilled. Remove the intake elbow gasket. From inside oil separator casing intake, remove the nut and lock washer that attach the casing on compressor stud. Unscrew and remove the separator bolt (1) and o-ring packing (2). Tap the side of the casing with a soft mallet or plastic hammer to loosen from compressor oil chamber. Lift the oil separator assembly off unit. Disassemble as follows:

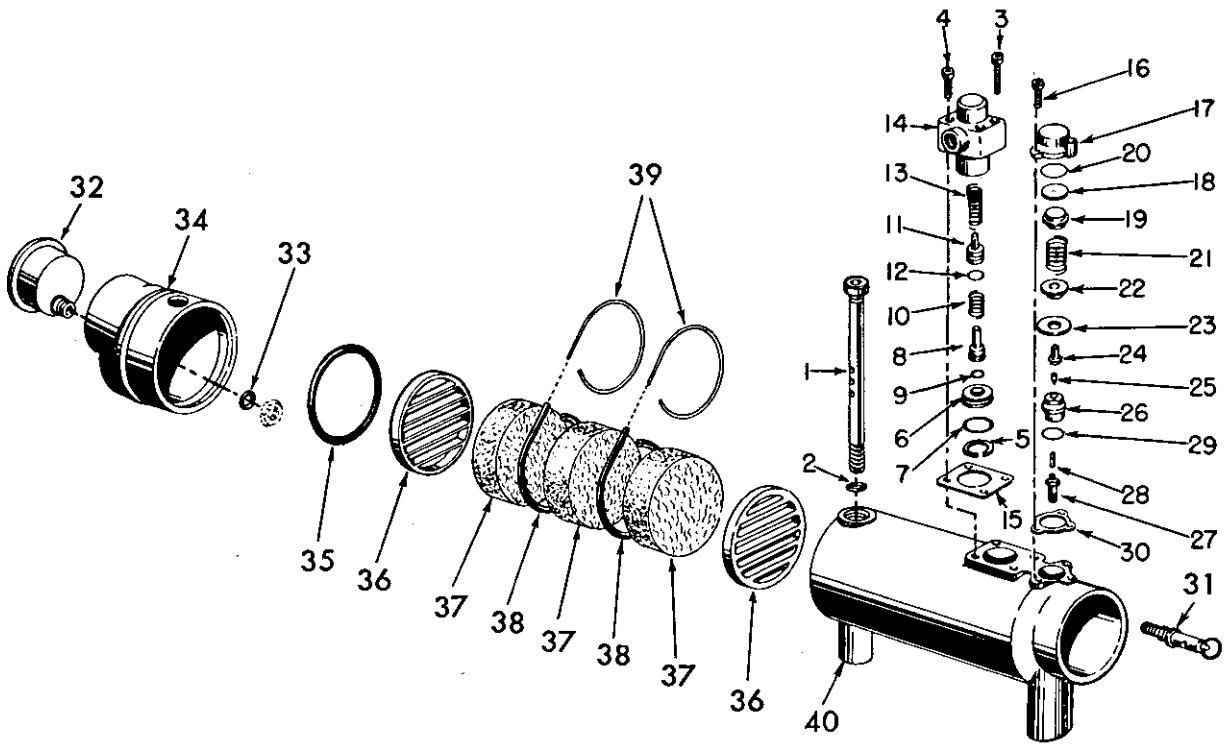
(1) Pull the cover assembly (32, 33, 34) out of separator casing (40). Remove nut attaching air pressure gauge (32) to cover (34) (this nut is supplied as part of gauge assembly). Remove the gauge (32) and o-ring packing (33) from cover (34). Remove o-ring packing (35) from cover (34).

(2) Slide the two grids (36) with three felts (37), two seals (38), and two wires (39) out of casing (40).

(3) Remove four socket head cap screws (3, 4) (two each) and remove the minimum pressure valve assembly (5 through 14) from casing (40) and remove gasket (15). To disassemble minimum pressure valve assembly, remove retaining ring (5), seat (6), and separate o-ring packing (7) from seat (6). Remove piston (8), spring (10), and separate seal (9) from piston (8). Remove piston (11), spring (13), and separate o-ring packing (12) from piston (11). Discharge elbow (14) is now free of all components.

(4) Remove two screws (16). Turn the separator casing upside down and dislodge the assemblage of bleeder valve parts (17 through 29). Separate the bleeder valve parts in the disassembly order shown in figure 5-1 (items 17 through 29). Remove gasket (30). Unscrew and remove safety valve (31) from casing (40).

b. Cleaning. Clean components of the oil separator assembly as follows:



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

Figure 5-1. Oil Separator Assembly - Disassembly and Assembly

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 all metalic parts both inside and out with solvent, Federal Specification, P-D-680, Type II, and a clean, lint-free cloth. Then, air dry.

(2) Wipe o-ring packing clean with a clean cloth dampened with the solvent.

c. Inspection. Inspect components of the oil separator assembly as follows:

(1) Inspect the felts (37, figure 5-1) for dirty condition, damage, or shrinking. If these conditions are evident, replace the felts.

(2) Inspect seals (38) for any damage; if found, replace the seals.

(3) Inspect air pressure gauge (32) for broken face and for any other damage and for operation. Any damage is cause for replacement.

(4) Inspect all parts for cracks, breaks, distortion, and condition of threads.

d. Repair or Replacement. Replace all parts which have evident damage or defects. It is recommended o-ring packing and gaskets be replaced at assembly.

e. Assembly. Assemble the oil separator assembly in the following sequence:

(1) Assemble the bleeder valve assembly (17 through 29, figure 5-1), using new gasket (30), into casing (40) in the order shown on exploded view and secure with two socket head cap screws (16).

(2) Assemble the minimum pressure valve assembly (5 through 14) in the order shown on exploded view and, using new gasket (15), secure the assembly to casing (40) with four socket head cap screws (3, 4), two each. Discharge opening of elbow (14) should face to the side shown.

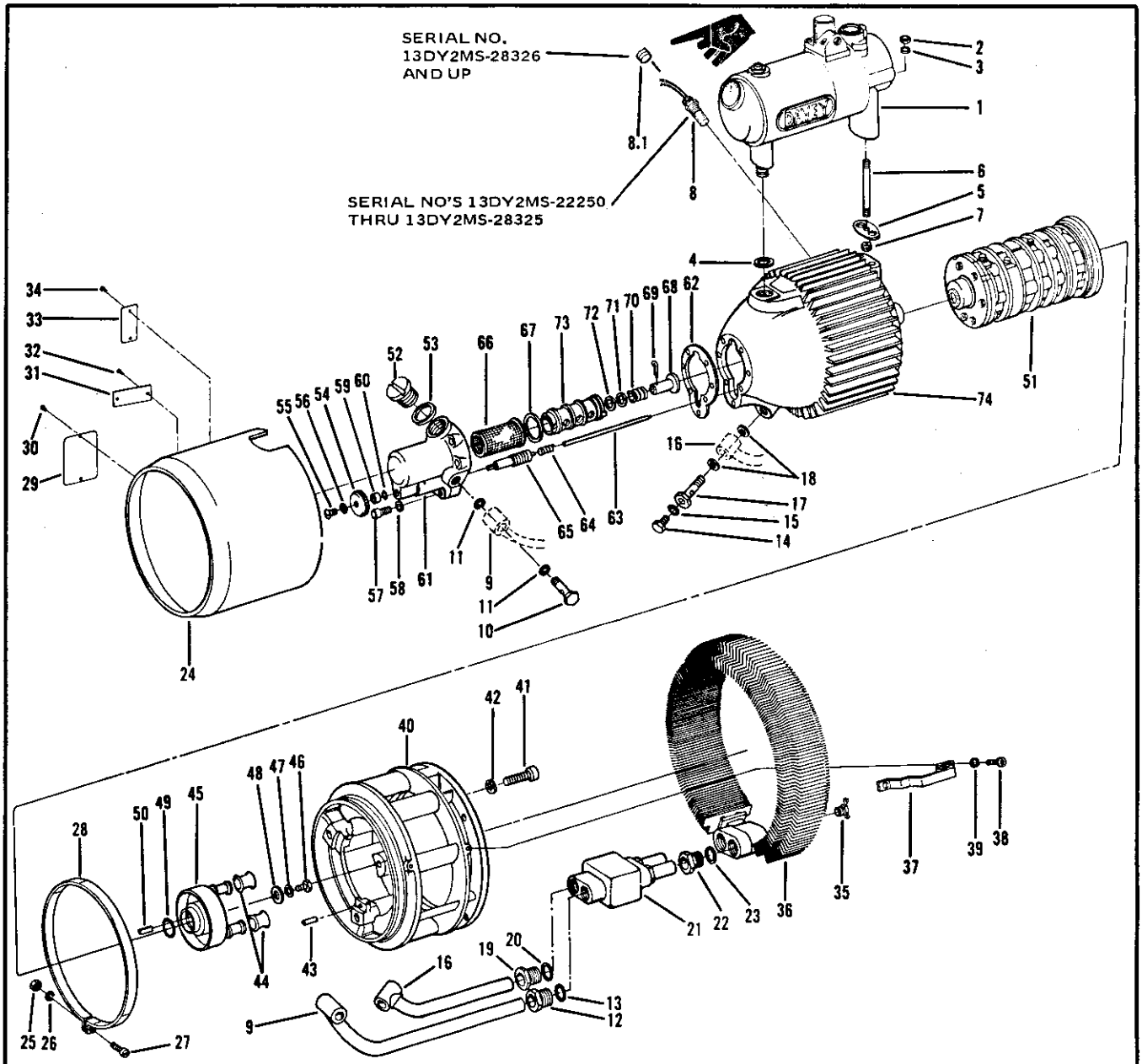
(3) Assemble safety valve (31) into casing (40). Position the two grids (36), three felts (37), two seals (38) and wires (39) inside casing (40) in the order shown.

(4) Assemble air pressure gauge (32) into cover (34) installing o-ring packing (33) and securing to cover (34) with nut provided with gauge. Apply a light film of compressor lubricating oil to o-ring packing (35) and assemble in groove of cover (34). Assemble the cover assembly in casing (40) with hole in cover aligned with hole in casing for bolt (1).

(5) Position the oil separator assembly on the compressor oil chamber as shown in figure 5-2. Use new gasket (5, figure 5-2) and o-ring (4). Attach air intake end to stud (6) with lock washer (3) and nut (2). Assemble o-ring packing (2, figure 5-1) on bolt (1) and assemble bolt (1) through separator casing attaching separator assembly to the compressor oil chamber.

(6) Use a new intake elbow gasket and carefully assemble the intake elbow, with air cleaner installed, on the intake end of casing (40) using two socket head cap screws.

5-7. Compressor Oil Filter (figure 5-2). Maintenance of the compressor oil filter is as follows:



1. OIL SEPARATOR ASSY
2. NUT
3. LOCK WASHER
4. PACKING
5. GASKET
6. STUD
7. INSERT
8. THERMOSTATIC SWITCH
8.1. PIPE PLUG
9. OIL TUBE ASSY
10. TUBE BOLT
11. PACKING
12. SEALING SCREW
13. PACKING
14. DRAIN PLUG
15. PACKING
16. OIL TUBE ASSY
17. BANJO BOLT
18. PACKING
19. SEALING SCREW
20. PACKING
21. THERMAL BYPASS VALVE ASSY
22. SEALING SCREW
23. PACKING
24. COWL
25. NUT
26. LOCK WASHER
27. CAP 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. LOCK WASHER
40. LANTERN
41. CAP SCREW
42. LOCK WASHER
43. DOWEL PIN
44. DRIVE BUSHING
45. COUPLING ASSY
46. CAP SCREW
47. LOCK WASHER
48. SPECIAL WASHER
49. PACKING
50. KEY
51. ROTOR-STATOR ASSY
52. OIL FILLER PLUG
53. PACKING
54. ADJUSTING KNOB
55. SCREW
56. LOCK WASHER
57. CAP SCREW
58. LOCK WASHER
59. BUSHING
60. PACKING
61. OIL FILTER HOUSING
62. GASKET
63. PUSH ROD
64. SPRING
65. ADJUSTING PIN
66. OIL FILTER
67. FILTER SEAL
68. CONNECTOR
69. COTTER PIN
70. SPRING
71. COLLAR
72. SEAL
73. FILTER SUPPORT
74. OIL CHAMBER

Figure 5-2. Rotary Compressor Assembly - Disassembly and Assembly

a. Disassembly Disassemble the compressor to extent necessary to gain access to filter (66) as follows:

(1) Disconnect oil tube assembly (9) at filter housing (61) by removing bolt (10) and o-ring packing (11).

(2) Remove seven socket head cap screws (57) and lock washers (58). Pull filter housing (61) away from oil chamber (74) and remove gasket (62).

(3) Slide filter (66) off filter support (73). Removal of other parts is not necessary unless cleaning of these parts is evident. If necessary, disassemble these parts as shown on figure 5-2.

WARNING

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

b. Cleaning. Clean the removed parts in solvent, P-D-680, Type II, and dry thoroughly.

c. Inspection. Inspect the filter (66, figure 5-2) for distortion, breaks in screen, and enlarged holes (punctures). Inspect all removed parts for crack, breaks, and damaged threads.

d. Repair or Replacement. Replace any part found to be defective after being cleaned and inspected.

e. Assembly. Assemble in the following sequence:

(1) Assemble all parts removed in the order illustrated on figure 5-2.

(2) Use a new gasket (62) and position the filter housing (61), with assemblage of the other parts shown in place, against the oil chamber (74).

(3) Attach filter housing (61) with seven lock washers (58) and socket head cap screws (57). Attach the oil tube assembly (9) to filter housing (61) with o-ring packing (11) and bolt (10).

5-8. Wheel, Tire and Tube (figure 5-3). Maintenance of the wheels, tires and tubes is as follows:

a. Disassembly. Pry off grease cap (1), remove cotter pin (2); then, loosen spindle nut (3). Place a suitable jack under axle on the side of unit to be serviced and raise unit to a point where tire just clears the ground. Then, disassemble as follows:

(1) Remove spindle nut (3) and spindle washer (4). Pull entire wheel and tire assembly off axle spindle.

(2) Relieve air pressure from tube by removing valve core from the tube valve stem. Remove five nuts (5) and lock washers (6) attaching the rim assembly to hub (20). Pull tire, tube, and rim assembly off hub. Studs (7) need not be removed from hub (20) except for replacement.

(3) Remove eight nuts (8), lock washers (9), and cap screws (10). Separate the outer rim (11) and inner rim (12) and remove tire (13) and tube (14).

(4) As necessary for inspection or replacement, disassemble the outer bearing cone (15), outer bearing cup (16), grease seal (17), inner bearing cone (18), and inner bearing cup (19) from hub (20).

WARNING

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

b. Cleaning. Clean removed parts, except tire and tube, with solvent, P-D-680, Type II, and dry thoroughly.

c. Inspection. Inspect the tire and tube for cuts, punctures, and deterioration. Inspect bearings (15, 16 and 18, 19) for gritty action when rotated and for any binding. Inspect grease seal (17) for any damage to sealing lip. Examine all parts for crack, breaks, and distortion, and condition of threaded parts.

d. Repair or Replacement. If bearings (15, 16 and 18, 19) are defective, replace the complete bearing, cup and cone. Replace all damaged parts.

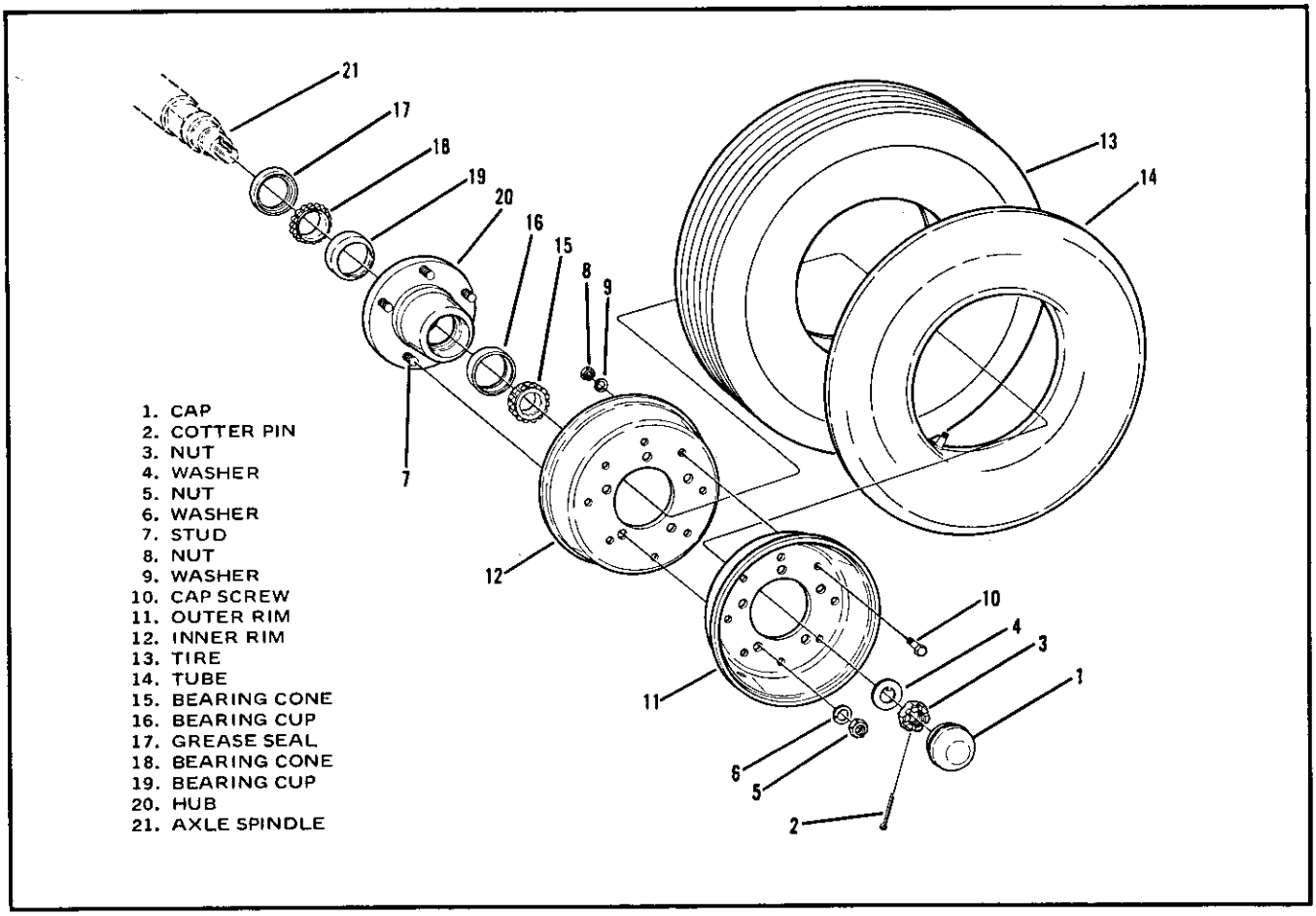


Figure 5-3. Wheel, Tire, and Tube - Disassembly and Assembly

e. Assembly. Assemble the tire, tube, and wheel assembly as follows:

(1) If bearing cups (16, 19) were removed from hub (20) for replacement, press the cups into hub with a suitable arbor and press. Install inner bearing cone (18) and press in grease seal (17) with sealing lip facing toward bearing.

(2) Assemble tube (14) into tire (13). Assemble the inner rim (12) and outer rim (11) on each side of tire, as shown, with tube valve stem through hole provided in outer rim (11).

CAUTION

Check to make certain tube is assembled evenly in tire so that it will not be pinched when rims are secured together.

(3) Secure the tire, tube, and rim assembly together with the eight cap screws (10), lock washers (9), and nuts (8). Install valve core into the tube valve stem. Inflate tube to 15 psi air pressure and check for leaks.

(4) Assemble the tire, tube, and rim assembly onto hub studs (7) and secure with five lock washers (6) and nuts (5).

(5) Carefully place this assembly onto axle spindle (21) so that grease seal is not damaged. Fill cavity between bearings in hub (20) approximately half full of grease (refer to table 5-2). Place outer bearing cone (15) on spindle against cup (16). Assemble spindle washer (4) and nut (3). Tighten nut (3) until wheel assembly is snug on spindle with no wobble when turned by hand. Align slot in nut (3) with hole in spindle and install cotter pin (2). Assemble cap (1) and lower unit with jack.

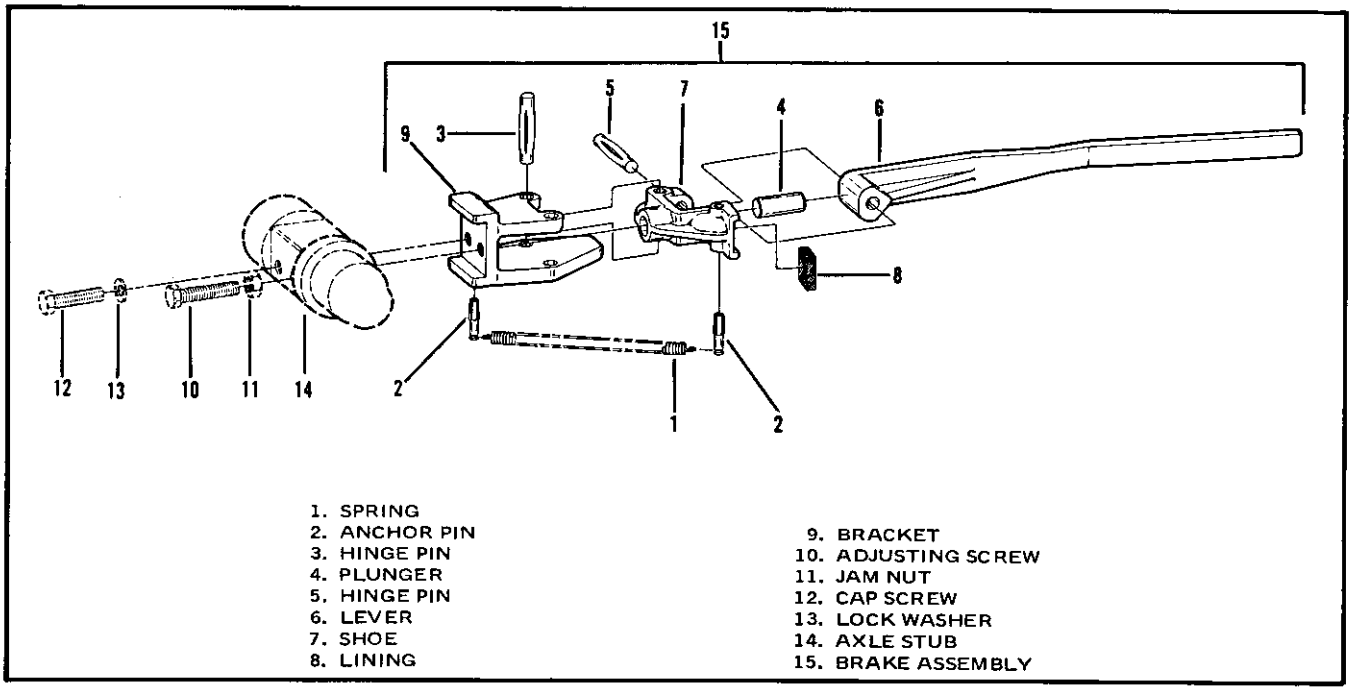
(6) Maintenance of wheel on opposite side is the same as just described above.

5-9. Hand Brake Lining (figure 5-4). If hand brake lining should become worn beyond adjustment, service as follows:

a. Disassembly. Disconnect and remove the return spring (1). Loosen adjusting screw jam nut (11) and remove the adjusting screw (10), with jam nut (11). Remove attaching cap screw (12) and lock washer (13). Remove the hand brake assembly (15) from axle.

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. SPRING
2. ANCHOR PIN
3. HINGE PIN
4. PLUNGER
5. HINGE PIN
6. LEVER
7. SHOE
8. LINING
9. BRACKET
10. ADJUSTING SCREW
11. JAM NUT
12. CAP SCREW
13. LOCK WASHER
14. AXLE STUB
15. BRAKE ASSEMBLY

Figure 5-4. Hand Brake Lining - Disassembly and Assembly

b. Cleaning. Clean the entire hand brake assembly with solvent, P-D-680, Type II.

c. Inspection. Inspect entire assembly for cracks and breaks. Inspect spring for broken coils and distortion.

d. Repair or Replacement. Replace a broken or distorted spring. Replace any broken or cracked part. Replace worn brake lining as follows:

(1) Place the brake shoe portion of the assembly in a vise. Using a knife, or other suitable tool, cut and scrape away the old, worn lining. Clean the lining attaching surface thoroughly.

(2) Use a suitable glue and attach a new lining in place on the brake shoe. Allow glue to dry completely before assembling brake assembly on unit.

e. Assembly. Place hand brake assembly in position on axle and attach with lock washer (13) and cap screw (12). Assemble the adjusting screw (10) with jam nut (11). Attach return spring (1). Adjust the screw (10) so that lining presses tightly against wheel rim when handle is raised to ON position; then, tighten jam nut (11).

5-10. Electrical Control Box Assembly (figure 4-1). Maintenance of the electrical control box assembly within the scope of this manual is as follows:

WARNING

Power source is of high potential. Make certain power source is off, or main power cable is disconnected from power source, when maintaining the electrical control box assembly to avoid serious electrical shock that could cause injury or death.

a. Disassembly. Remove the twenty-two cap screws that attach the cover assembly to the box and carefully remove the cover assembly.

WARNING

Provide adequate ventilation when using Trichloroethane (Fed Spec O-T-620). Avoid prolonged breathing of vapor and skin contact.

b. Cleaning. Remove any accumulation of rust and corrosion from electrical components and the control box using 1, 1, 1-Trichloroethane solvent, Federal Specification, O-T-620, Type I.

c. Inspection. Inspect all electrical control box assembly components for any evident damage. Inspect wiring connections and tightness of terminals and evidence of shorting or burning.

d. Repair or Replacement. Any component that shows evident damage shall be replaced. Refer to figure 1-3 for wiring diagram. Tighten all terminal connections as necessary. Repair or replace any wiring that shows evidence of shorting and burning. After cleaning, inspection, and repair or replacement, spray the electrical controls and the internal part of the control box with an insulating and protective plastic coating, Military Specification MIL-TT-0050, making certain that contact points of the electrical controls are not sprayed.

e. Pressure Switch Adjustment. With cover assembly removed from control box assembly, check the pressure setting of the air pressure switch and adjust, if necessary.

NOTE

The normally closed air pressure switch should be set to open at from 210 to 215 psi. The pressure differential of the switch between open and closed is from 15 to 20 psi. Therefore, with the selector switch in AUTO mode of operation, the pressure switch will open when receiver pressure reaches 210-215 psi and will shut off the motor. When receiver pressure drops 15 to 20 psi below the setting of the pressure switch, the switch will close, the motor will start, and the compressor will again bring receiver pressure up to the maximum.

(1) Observe the pressure setting on the air pressure switch scale (see figure 5-5).

(2) Turn the self-locking type adjustment nut clockwise to raise the actuating point and counterclockwise to lower.

f. Assembly. Position the control box cover on the control box assembly and install the twenty-two cap screws.

5-11. Constant Speed Unloader Adjustment. The constant speed unloader is set to unload at 210 psi and to maintain the compressed air output within a 40 psi range. If this setting has been disturbed or changed, adjust the constant speed unloader as follows:

a. To increase unloading pressure of the air compressor, turn the adjusting knob (54, figure 5-2) in a clockwise direction.

b. To decrease the unloading pressure, turn the adjusting knob (54) in a counterclockwise direction.

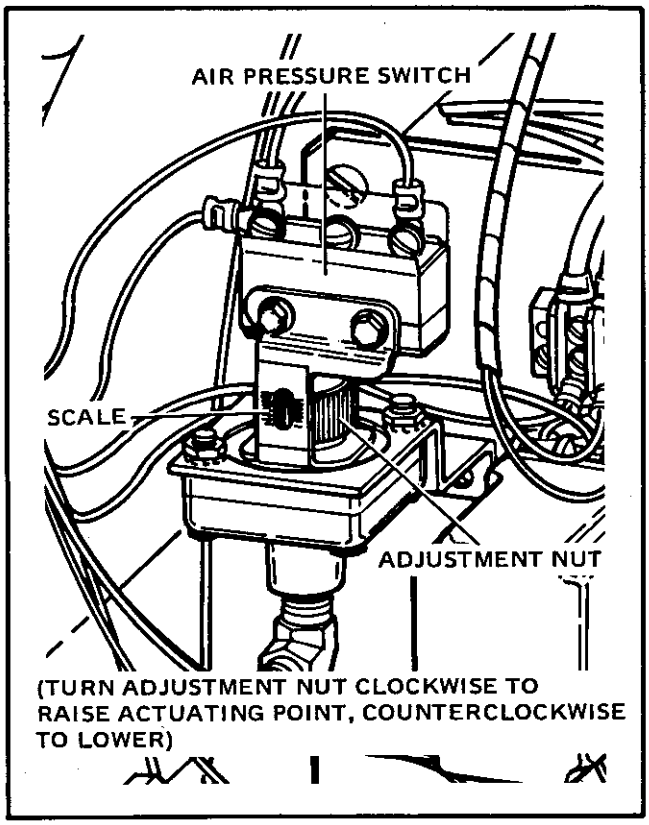


Figure 5-5. Air Pressure Switch Adjustment

5-12. Thermal Bypass Valve (9, figure 1-2). Maintenance of the thermal bypass valve is as follows:

NOTE

Oil must be drained from compressor before maintenance of thermal bypass valve can be performed.

a. Disassembly. Loosen the sealing screws that attach the thermal bypass valve to the oil cooler and the oil tube assemblies to the thermal bypass valve. Disconnect the two oil tube assemblies from the compressor. Remove the oil tube assemblies and the thermal bypass valve from the unit. Disassemble the thermal bypass valve as follows:

(1) Remove the four screws and lockwashers that attach the cover to valve body. Remove the cover and o-ring packing.

(2) Remove the shuttle assembly from the body. Remove the power element spring. Remove the o-ring packing from shuttle assembly.

WARNING

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

b. Cleaning. Clean the removed parts, except o-ring packing with solvent, P-D-680, Type II, and dry thoroughly. Clean the body and tubes with the same type solvent used to clean any sludge from the oil passages.

c. Inspection. Inspect the removed parts for any damage such as breaks, cracks, broken spring coils, distortion, and damaged threads. Check the distance between top face of shuttle and adjusting nut as follows:

(1) Immerse the shuttle assembly in an oil bath heated to 150°F. Allow assembly to remain in bath for approximately ten minutes to stabilize temperature.

(2) Apply a load of 15 pounds to adjusting nut and measure distance between face of shuttle and face of adjusting nut. This dimension shall be 0.005 to 0.015 inch.

(3) If adjustment is necessary, remove cotter pin securing adjusting nut to plunger and turn adjusting nut as needed to obtain this dimension. Then, install cotter pin.

d. Repair or Replacement. Replace all parts found to be defective and a shuttle assembly that cannot be set properly.

e. Assembly. Assemble the thermal bypass valve as follows:

(1) Place power element spring into bottom cavity of body. Coat shuttle assembly o-ring packing with clean lubricating oil or petroleum jelly and install in groove on shuttle.

(2) Assemble shuttle assembly into body with power element spring against flange of power element.

(3) Assemble the cover o-ring packing on cover, install cover and attach with four lock washers and screws.

(4) Slide two sealing screws onto body tube assemblies. Position thermal bypass valve on compressor and attach to oil cooler with these sealing screws.

(5) Slide two sealing screws onto the oil inlet and oil outlet tube assemblies. Attach these tube assemblies to thermal bypass valve body and the other end of tubes to the compressor.

5-13. Hose Reel Assembly Maintenance. If the air service hose requires replacement or if the hose reel retract requires adjustment, service the hose reel as follows:

a. Disassembly. Remove four nuts that attach the hose guide enclosure to the back cover of the hose reel assembly and pull off enclosure. Remove the hose bumper from the service end of hose assembly. Unwind the hose from the reel; remove lock nuts, screws, and clamps holding hose on reel. Disconnect hose from swivel joint street tee.

WARNING

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

b. Cleaning. Wipe the inside and outside of the hose reel clean with a cloth dampened with solvent, P-D-680, Type II. Further cleaning is not necessary.

NOTE

The hose reel springs and bearings are packed with grease and require no further lubrication.

c. Inspection. Inspect the hose assembly for breaks in covering and for deterioration. If condition so warrents, hydrostatically test the hose in accordance with T.O.34Y1-1-171 and T.O.00-25-223. Inspect all parts of hose reel for broken or dented parts and for free movement of reel.

d. Repair or Replacement. Repair of the hose reel assembly, within the scope of this manual, should be limited to the replacement of a defective hose assembly.

e. Assembly. Wind spool flange clockwise, facing swivel, until spring is tight. Back off spool two turns and latch. Insert air service hose through roller guide and hole in spool flange. Connect hose fitting to swivel joint street tee and secure hose with clamps, screws, and lock nuts. Attach hose bumper to the other end of hose assembly about 12 inches from the end. Release the hose latch by pulling on the hose and allow hose to wind onto spool. Do not let go of hose; allow to wind onto spool slowly. If it is desired to increase or decrease retract tension, pull hose out of reel 8 to 10 feet and latch. Add hose wraps on reel, one at a time, to increase tension; or unwrap hose, one wrap at a time, to decrease tension. When desired tension is obtained, assemble the hose guide enclosure to reel back cover and attach with four nuts.

5-14. TESTING. Testing of the unit after maintenance, within the scope of this manual, is limited to the starting, operating, and stopping of the equipment as described in procedures of paragraphs 4-6 through 4-8.

5-15. CALIBRATION/ACCURACY ADJUSTMENT. None applicable to this equipment.