the adjusting screw further out of the pump housing to increase pump output.

(c). Actuate the pump piston with the hand plunger after each adjustment and count the number of drops of oil falling from the tube.

(d). When the desired pump output is achieved, tighten the locknut.

2-15. SERVICING THE PNEUMATIC LUBRICATION SYSTEM

a. Filter.

(1). Draining. The filter (1, Figure 2-12) should be drained regularly to obtain maximum benefit. Open the drain cock (2) to drain the filter. Never allow moisture to fill the bowl up to the filter element.

(2). Cleaning. The filter must be dismantled for cleaning. The frequency of cleaning will be determined by the working environment. Perform the following procedures to clean the filter.

(a). Close the air cutoff valve (3, Figure 2-12).

(b). Open the drain cock (2).

(c). Remove the screws (1, Figure 2-13) and remove the body (2) from the cover (3).

(d). Wash all metal parts with a non-flamable solvent.

(e). Clean the felt filter element by soaking it in mineral spirits or similar cleaning agent.

(f). Inspect the filter element (4) and gasket (5), and replace if necessary.

(g). Use Figure 2-13 as a guide, and reassemble the filter.

b. Pressure Regulator. Occasionally the regulator will have to be disassembled for cleaning, inspection, and lubrication. The pressure regulator can be serviced without disconnecting the piping. Perform the following procedures to service the pressure regulator.

(1). Close the air cutoff valve (3, Figure 2-12).

(2). Remove the screws (1, Figure 2-13) bonnet (2), seat (3), spring (4), diaphragm follower (5), and diaphragm (6).

(3). Loosen the jam nut (7) and remove the handwheel (8).

(4). Remove the screws (9), baffle (10), gasket (11), valve seat (12), o-ring (13), and gasket (14).

(5). Remove the plunger (15), o-ring (16), spring (17), washer (18), and o-ring (19) from the body (20).

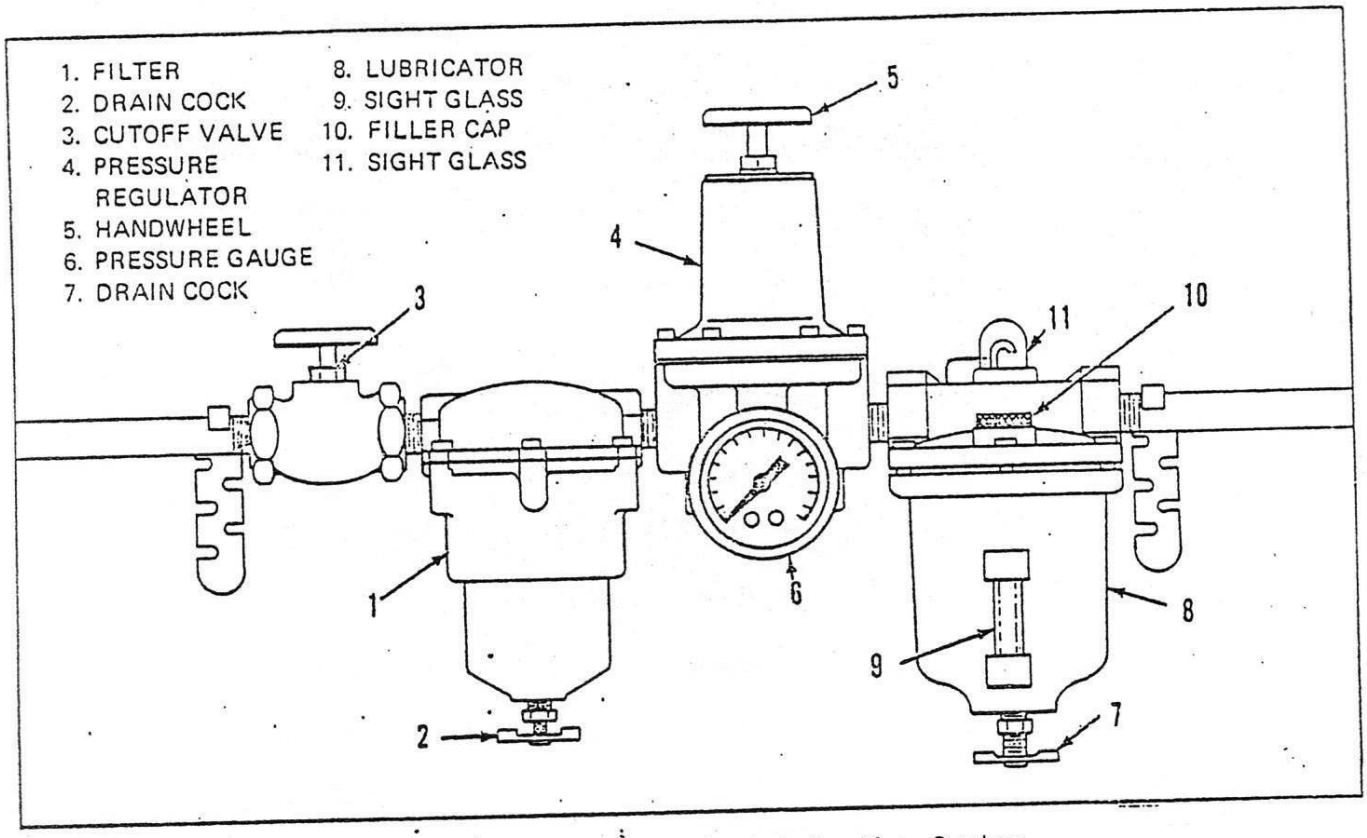
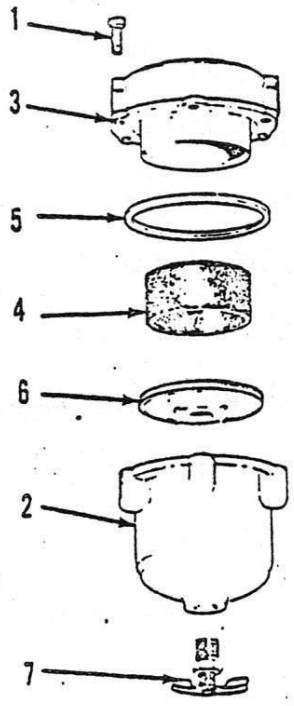


Figure 2-12 Pneumatic Lubrication System



1. SCREW
2. BODY
3. COVER
4. FILTER ELEMENT
5. GASKET
6. BAFFLE
7. DRAIN COCK

Figure2-13 Filter

1. SCREW
2. BONNET
3. SEAT
4. SPRING
5. DIAPHRAGM FOLLOWER
6. DIAPHRAGM
7. JAM NUT
8. HANDWHEEL
9. SCREW
10. BAFFLE
11. GASKET
12. SEAT
13. O-RING
14. GASKET
15. PLUNGER
16. O-RING
17. SPRING
18. WASHER
19. O-RING
20. BODY
21. PRESSURE GAUGE
22. PIPE PLUG

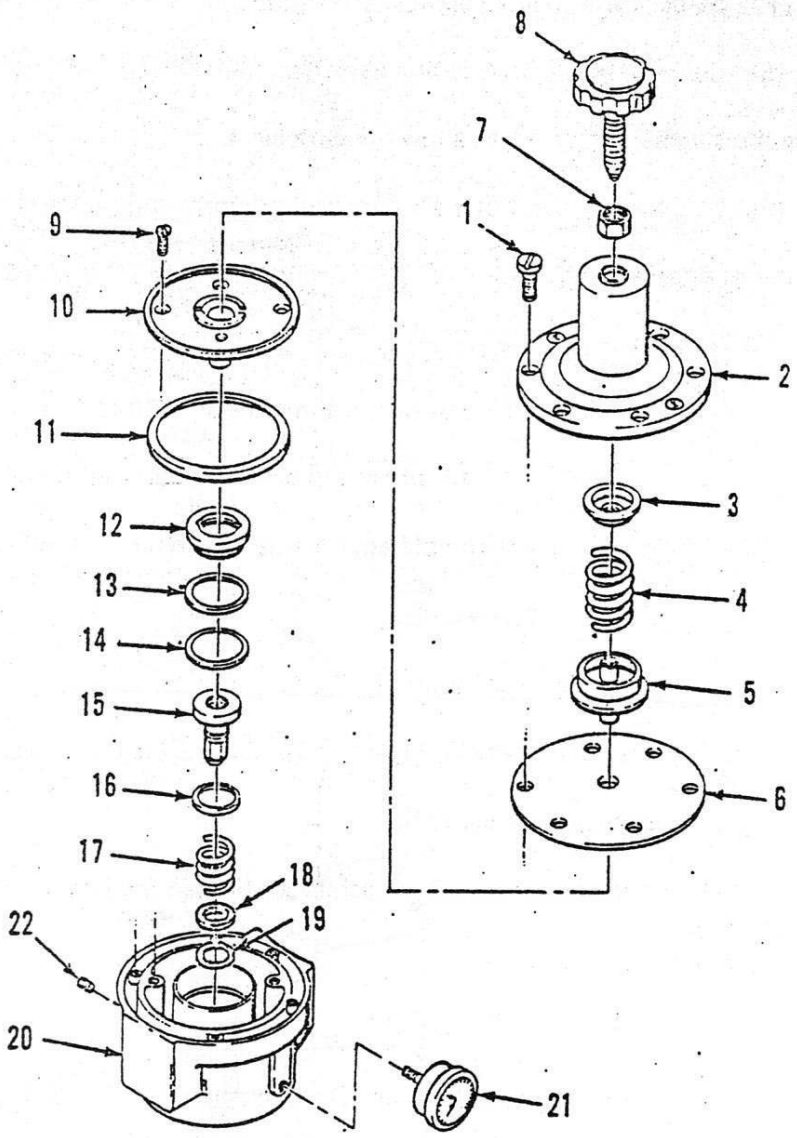


Figure 2-14 Pressure Regulator

(6). Remove the pressure gauge (21) from the body (20).

(7). Inspect all parts for damage or wear, paying particular attention to the diaphragm (6), valve seat (12), plunger (15), and all gaskets and o-rings.

(8). Clean all metal parts with a non-flammable solvent, and wash all rubber parts with soap and water. Rinse thoroughly and dry with a low pressure air jet.

(9). Replace any parts that are damaged or worn, and reassemble the pressure regulator by reversing disassembly procedures.

NOTE

Lubricate all metal-to-metal surfaces with Lubriplate and all rubber parts with pneumatic grease during reassembly.

(10). When assembly is completed, operate the engine to buildup air pressure in the controls air reservoir.

(11). Open the air cutoff valve (3, Figure 2-12).

(12). Use the handwheel (8, Figure 2-14) and adjust the delivery pressure by observing the indication on the air pressure gauge (21).

(13). When the desired setting is achieved, tighten the jam nut (7).

c. Pneumatic Lubricator

(1). Close the air cutoff valve (3, Figure 2-12).

(2). Remove the screws (1, Figure 2-15), clamp ring (2), gasket (3), bowl (4), and gasket (5) from the body (6).

CAUTION

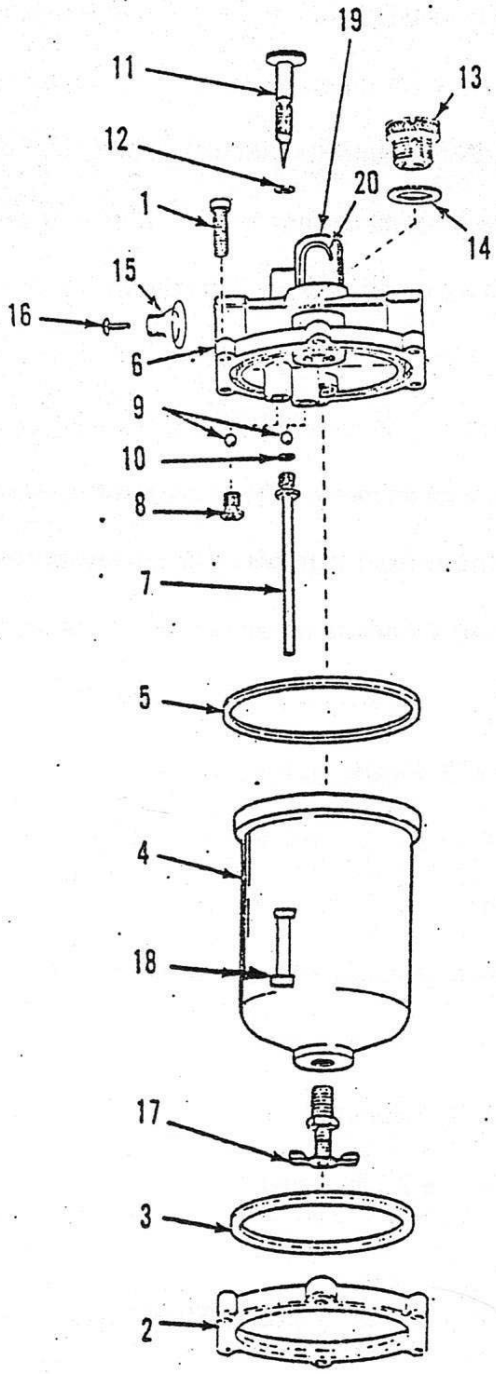
Exercise care when removing the bowl (4) to avoid damaging the siphon tube (7).

(3). Remove the siphon tube (7), check valve (8), ball checks (9), and o-ring (10).

(3). Remove the siphon tube (7), check valve (8), ball checks (9), and o-ring (10).

(4). Remove the adjusting screw (11) and o-ring (12).

(5). Remove the filler plug (13) and gasket (14).



1. SCREW
2. CLAMP RING
3. GASKET
4. BOWL
5. GASKET
6. BODY
7. SIPHON TUBE
8. CHECK VALVE
9. BALL CHECK
10. O-RING
11. ADJUSTING SCREW
12. O-RING
13. FILLER PLUG
14. GASKET
15. FLOW GUIDE
16. SCREW
17. DRAW COCK
18. SIGHT GLASS
19. SIGHT GLASS
20. TUBE

Figure 2-15 Pneumatic Lubricator

NOTE

If the flow guide (15) is to be removed, the body (6) must be removed from the piping to gain access to the screw (16) and flow guide (15).

(6). Wash all metal parts in a non-flammable solvent. Wash all rubber parts with soap and water and rinse thoroughly. Blow all parts dry with a low pressure air jet.

(7). Make sure the siphon tube (7) is not clogged.

(8). Make sure the small nick (orifice) in the ball seat in the check valve (8) is clean.

NOTE

Air must pass through this orifice to create pressure on the surface of the oil in the bowl, so that oil will be drawn up through the siphon tube.

(9). Inspect all parts for wear or damage, paying particular attention to gaskets and o-rings.

NOTE

Pressure must build up in the bowl to force oil up the siphon tube, therefore gaskets and o-rings must be in good condition.

(10). Use Figure 2-15 as a guide, and reassemble the lubricator by reversing disassembly procedures above.

NOTE

Lubricate all metal-to-metal surfaces with Lubriplate and all rubber parts with pneumatic grease during reassembly.

(11). Make sure the screws (1) are tight enough to form an airtight seal between the bowl (4) and body (6).

(12). Service the lubricator with oil through the filler plug hole. Tighten the filler plug (13) tight enough to form an airtight seal.

(13). When assembly is completed, operate the engine to buildup air pressure in the controls air reservoir.

(14). Open the air cutoff valve (3, Figure 2-12).

(15). Check to see that the pressure (6) on the pressure regulator is indicating the desired delivery pressure.

NOTE

Controls on the driller's control panel must be operating to perform the following procedures.

(16). Count the number of drops of oil per minute falling from the tube (20, Figure 2-15) inside the sight glass (19). The rate of flow should be 1 to 3 drops per minute.

(17). If necessary, turn the adjusting screw (11) to attain the desired number of drops per minute.

2-16. FOAM INJECTION PUMP SERVICING. Over an extended period of time deposits will collect in the foam injector pump and lines, which will require disassembly and cleaning. If the foam injection system is flushed with clean water after being used, the interval between disassembly and cleaning will be lengthened considerably. The following procedures include disassembly of the entire injection system. When maintenance is being performed, only those procedures necessary to effect repair or cleaning should be performed.

a. Removal and Disassembly

(1). Loosen the tube nuts (1 and 2, Figure 2-16 and remove the suction and discharge line assemblies.

(2). Remove the cover from the foam injection pump housing.

(3). Remove the mounting bolts attaching the foam injection pump to the housing.

(4). Position the pump so that the cover can be removed from the junction box (3). Remove the junction box cover and disconnect electrical leads. Remove the foam injection pump.

NOTE

If the diaphragm (4) is being replaced, start and stop the motor intermittently until the diaphragm plunger is at maximum distance away from the head