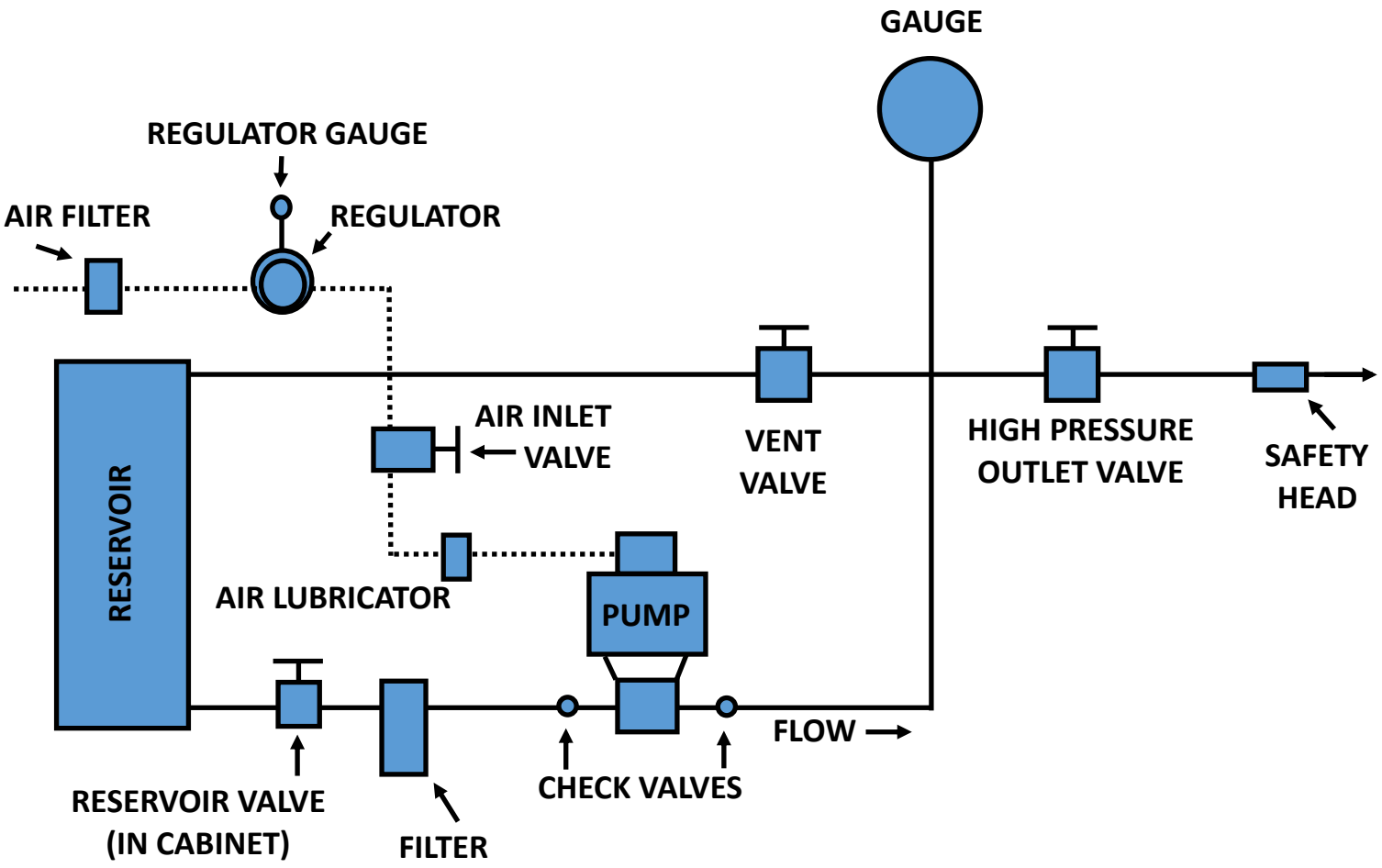
Standard Operating & Maintenance Instructions for Pumping Systems

Model #'s

PS-10, PS-30, PS-40 & PS-50

High Pressure Equipment Company

2955 West 17th Street, Ste. 6, Erie, PA 16505 ▪ Phone: (814) 838-2028 ▪ 1 (800) 289-7447 ▪ Fax: (814) 838-6075 ▪ sales@highpressure.com



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INSTALLATION

The only connections required for installation of the system are an air supply and connection of the system to the pressure vessel or unit which is to be pressurized.

The air supply line is connected directly to the side of the cabinet and is for 1/2" NPT pipe. A larger air supply line is recommended if the system is quite a distance from the source of air. Pressure of the air supply should be between 70 psi and 150 psi.

The high pressure outlet connection is for l/4· OD coned and threaded tubing (HF4 connection).

The reservoir is built directly into the cabinet and should be filled with a suitable fluid before operation. Most any low viscosity petroleum base hydraulic oil may be used. Other fluids including water may be used on occasion if it becomes necessary, however, water will decrease the packing life of the pump and should not be used if avoidable.

OPERATION

1) Set the air regulator at the desired pressure range in accordance with the regulator setting chart. This is indicated on the small air regulator gauge on the face of the cabinet.

2) Close the "Vent Valve".

3) Open the "High Pressure Outlet Valve".

4) Open the "Air Supply Valve".

   The system will now begin to build up pressure until the set pressure limit is reached and then will automatically stop. Should there be any pressure loss due to temperature, compaction of the materials being pressurized, or leakage in the item being pressurized, the pump will automatically start up and compensate for the pressure less.

VENTING THE PRESSURE

To vent the pressure from the system simply shut off the "Air Inlet Valve" and open the "Vent Valve" and all of the pressurized fluid **will** return to the reservoir.

Pressure may be vented rapidly or slowly by simply controlling the amount the vent valve is opened.

SAFETY FEATURES

The system includes a safety head and rupture disc located within the cabinet in order to provide maximum safety to the operator. The disc has been installed at the factory and is rated slightly higher than the maximum working pressure of the unit. In the event the pressure is permitted to exceed the maximum working pressure, the disc will rupture before any damage of the gauge or other components occurs. The safety head is machined with a pipe thread on the exhaust. A pipe connection may be run from this opening to any convenient vent. This will eliminate any oil spillage within the cabinet in the event the disc becomes ruptured.

VALVES

It is not necessary to close the high pressure valves extremely tight for maximum shutoff. This will tend to damage the valve seat and the stem.

MAINTENANCE

The air line is equipped with a filter, and lubricator. The air filter is provided to filter water from the air supply. Depending upon the amount of water in your air supply, the filter bowl will fill up over a period of time. This is easily drained by opening the small drain cock on the bottom of the bowl and allowing the water to drain into a container.

The lubricator is provided in order to lubricate the air portion of the pump. This has been set at the factory for typical air flow conditions. An oil flow of approximately) to 5 drops per minute is recommended. This lubricator should be periodically checked and filled with a lubricating oil of approximately 150 to 200 S.S.U. @ 100 F (S.A.E. 10).

The fluid within the reservoir should be kept clean in order to provide maximum life of the pump. When this fluid becomes excessively dirty, it is easily drained through the drain plug located at the bottom of the reservoir. A filter is provided between the reservoir and the pump. It is recommended that the disposable cartridge be removed and replaced should it become clogged with an excess of dirt. The valve between the reservoir and filter should be closed before removing the filter.

TROUBLE SHOOTING

The pump is running but will not develop pressure:

1) If the system has just been shipped, moved to a new location or repairs have been made within the hydraulic lines, an "air look" may have developed. A connection on the inlet side of the pump should be broken enough to determine whether or not the pump is receiving oil from the reservoir. If so, a connection on the outlet side of the pump should be broken slightly. With the pump operating (set the regulator so that the pump is operating slowly) determine as to whether there is a flow through the lines. This will usually clear the "air lock" and the connection can be retightened.

2) If the pump will not develop pressure and there does not appear to be an "air look", the check valves on the inlet and outlet side of the pump should be cleaned or replaced.

SPARE PARTS

Spare parts or further information about your pumping system may be obtained direct from the factory. Parts are generally stocked for immediate delivery.

HIGH PRESSURE EQUIPMENT CO. INC.

2955 WEST 17TH STREET, SUITE 6

ERIE, PENNSYLVANIA, U.S.A. (16505)

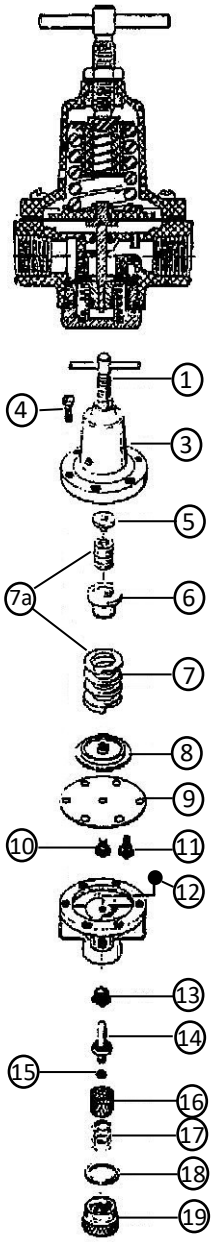
PHONE: (814) 838-2028 ▪ TOLL FREE: 1 (800) 289-7447

WEBSITE: WWW.HIGHPRESSURE.COM ▪ EMAIL: SALES@HIGHPRESSURE.COM

INSTRUCTIONS and PARTS LIST

PRESSURE REGULATOR

Type 11-002



INSTALLATION

Install the regulator as near as possible: to the device it is to serve, downstream from the filter, but upstream from the lubricator. Note the arrow stamped onto the body which indicates direction of air flow. Use pipes and fitting large enough to allow unrestricted air flow through the regulator.

OPERATION

Before turning on the air pressure, turn out the adjusting screw (1) relieving compression on the regulating, spring (7a) thus closing the valve. After the air pressure is turned on, turn the adjusting screw (1) in until the secondary pressure gauge shows the desired pressure. It is best to adjust the regulator under typical flow conditions.

MAINTENANCE

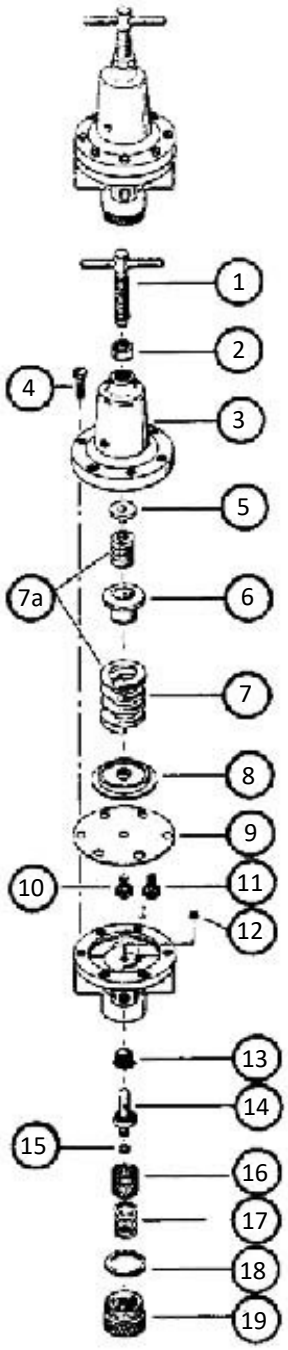
To prevent foreign material from the pipe line from entering the valve, the regulator has a strainer screen (16). This should be cleaned regularly. The screen is removed by unscrewing the bottom plug (19).

The regulator can be: disassembled for servicing without removing it from the pipe line. To disassemble, shut off the air pressure and turn out the adjusting screw (1) to relieve all compression to the spring (7a). Remove the bonnet screws (4) to take off the bonnet (3), the upper spring rest (5), the intermediate spring rest (6), the springs (7a), and the diaphragm assembly (8, 9 & 10). To disassemble the diaphragm assembly grasp the lower spring rest (8) firmly in one hand and with a wrench unscrew the diaphragm screw (10) or relief seat (11).

The valve (14) will come out when the bottom plug (19) is removed. The screen (16) can then also be taken out.

Clean and inspect each part carefully. If any part is damaged. replace it, ordering from the parts list on reverse side. When assembling put a coat of grease onto the "O" ring: on the valve (14). Assemble with the regulator in a vertical position.

PRESSURE REGULATOR
Type 11-002
Parts List



Pipe Size	1/4", 3/8"	1/2"	3/4", 1"
Repair Kits:			
1/4" & 3/8" non-relieving	529-01		
1/4" & 3/8" relieving	529.03		
1/2" non-relieving		535-01	
1/2" relieving		535-03	
3/4" & 1" non-relieving			536-01
3/4" & 1" relieving			536-03
Kits Contain:			
9. Diaphragm	481-01	481-01	482-01
12. "O" Ring	705-01	705-01	705-01
14. Valve (includes "O" Ring #15)	496-03	497-03	498-05
16. Strainer Screen	509-01	510-01	511-01
17. Valve Spring	506-01	507-01	508-01
18. "O" Ring for Plug	918-01	522-01	523-01
Replacement Parts:			
1. Adjusting Screw	1094-03	1094-03	1095-03
2. Lock Nut	1305-01	1305-01	1363-01
4. Screws (set)	1317-02	1317-02	66-02
5. Upper Spring Rest, 50 psi	1288-01	1288-01	1324-01
125 psi	477-01	477-01	478-01
250 psi	1290-01	1290-01	-
6. Intermediate Spring Rest, 125 psi	524-01	524-01	525-01
7. Regulating Spring, 50 psi	499-01	499-01	500-01
250 psi	501-01	501-01	-
7a. Compound Spring, 125 psi	502-02	502-02	503-02
8. Lower Spring Rest	479-02	479-02	480-02
10. Seat (non-relieving type)	520-01	520-01	520-01
13. Valve Seat	483-01	484-01	485-01
19. Valve Guide Plug	512-02	513-02	514-02
Parts not normally replaced:			
3. Bonnet	470-02	470-02	472-02
Body			

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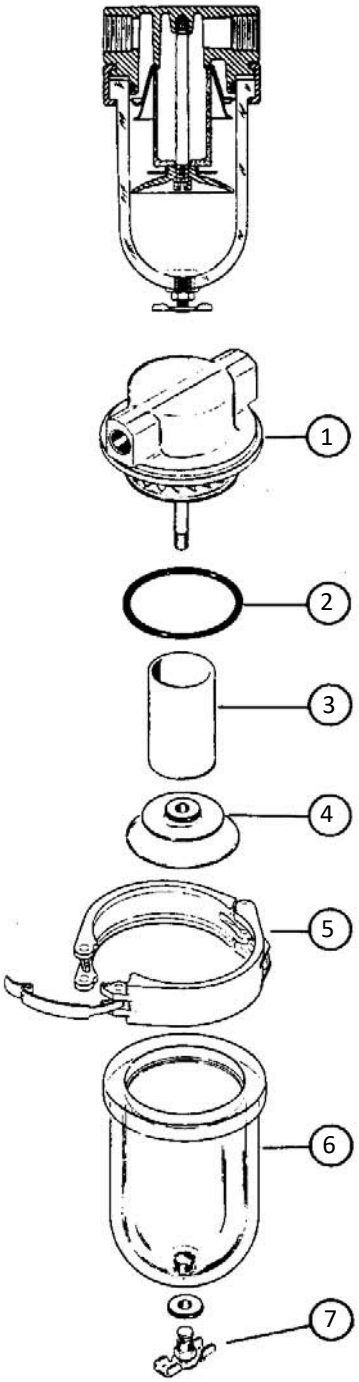
INSTRUCTIONS AND PARTS LIST

MANUAL DRAIN FILTER

Type 12-002 - Pipes Sizes 1/4”, 3/8”, 1/2”



INSTALLATION

Install the filter ahead of the regulator and lubricator in the compressed air line, as near as possible to the machine or device it is to serve. Note the arrow on the body which indicates the direction of air flow through the filter. Do Not use the plastic bowl on air systems using synthetic, fire-resistant lubrication in the air compressor.

OPERATION

It is important to drain the bowl regularly. Never permit moisture to fill the bowl above the baffle (4).

The maximum temperature and pressure for this filter is 100° F. at 250 psi, 160° F at 200 psi, or 200° F at 100 psi.

MAINTENANCE

For cleaning and service the filter must be disassembled. To do this, first shut off the air pressure then disassemble. Remove the clamp ring (5) and unscrew the baffle (4). This will release the filter element (3).

Clean the filter element (3) in a cleaning solvent and blow it out with compressed air. It is important to keep the filter element (3) clean.

When cleaning the parts, use soap and water or a petroleum solvent such as kerosene.

CAUTION: The plastic parts used in this product will be damaged by acetone, methyl alcohol, benzene, dioxane, ethyl acetate, lacquer thinners, hydrocarbons or strong alkaline substances.

Before reassembly, clean and check each part thoroughly. If any are damaged replace them, ordering from the Parts List.

Replacement Parts	
2. “O” Ring	2317-26
3. Filter Element	
75-micron Monel Screen	730-01
50-micron sintered bronze	723-01
20-micron sintered bronze	723-02
5-micron sintered bronze	723-03
4. Baffle	787-01
5. Clamping-Ring Assembly	788-02
4. Bowl (with drain-cock)	
Safety-Green	603-18
Metal	601-14
7. Drain-cock	684-01
* Bowl insert gasket (not shown)	2811-01

Parts Not Normally Replaced

Body	
1/4” pipe size	789-02
3/8” pipe size	790-03
1/2” pipe size	790-04

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Instructions for Installation and Operation - Oil-Fog Lubricators

INSTALLATION

Install the lubricator downstream from the filter and regulator as near as possible to the device it is to serve.

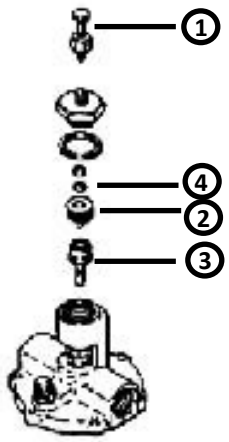
Lubricators 10-002, 10-003, and 10-053 are reversible and can be installed with the sir flow in either direction. Arrows on the venturi tube can be seen through the sight-feed glass and must point in the direction of the air flow. To change the direction of flow remove the needle valve assembly (1), and the drip gland (2), and adjust the venturi tube (3) with a screwdriver.

The 10-076 must be installed with the air flowing in the direction indicated by the arrow on the lubricator body.

WARNING: Do Not use the transparent bowl on air systems using synthetic, fire-resistant lubrication in the air compressor. These lubricants attack and may cause failure of the polycarbonate bowl. For applications which require the use of fire-resistant compressor oils, equip the lubricator with a metal bowl.

Lubricants: Fill the lubricator with oil through the filler plug. Use high quality lubrication oil of approximately 150 to 200 S.S.U. at 100° F (S.A.E. 10). Do not use oils containing graphites, soap, fillers, etc. The lubricator reservoir may be filled without turning off air pressure.

LUBRICATOR ADJUSTMENTS



OPERATION

Maximum recommended operating pressures and temperatures for transparent bowls are 250 psi at 120° F. ambient, 200 psi at 175° F. ambient.

To start the lubricator, close the needle valve completely. After the air is turned on, open the needle valve and adjust under typical flow conditions. Usually 3 to 5 drops per minute is sufficient.

The felt throttling disc (4) in the 10-002, 10-003, and 10-053 provides accuracy of oil feed adjustment at low rates of flow (1-15 drops-minute). At higher rates of flow this filter disc may restrict the flow; if it does it should be removed.

CAUTION

When cleaning parts, use only soap and water or a petroleum solvent such as kerosene.

The transparent bowl will be damaged by the following materials:

COMPRESSOR OILS - Cellulube #150 and #220, Keystone Penetrating Oil #2, Kano Krail, and Pydraul AC

OTHER MATERIALS:

Acetaldehyde	Carbolic Acid	Dimethyl Formamide	Methyl Alcohol	Sodium Sulfide
Acetic Acid (conc.)	Carbon Disulfide	Dioxane	Methylene Chloride	Styrene
Acetone	Carbon Tetrachloride	Ethane Tetrachloride	Milk of Lime (CaOH)	Sulfuric Acid (conc.)
Acrylonitrile	Caustic Potash Solution (5%)	Ethyl Ether	Nitric Acid (conc.)	Sulphural Chloride
Ammonium Fluoride	Caustic Soda Solution (5%)	Ethylamine	Nitrobenzene	Tannergas
Ammonium Sulfide	Chlorobenzene	Ethylane Chlorohydrin	Nitracellulose Lacquer	Tetraphydronapthalene
Benzene	Chloroform	Ethylane Dichloride	Phenal	Thiophene
Benzoic Acid	Cresol	Formic Acid (conc.)	Phosphorous Hydroxy Chloride	Toluene
Benzyl Alcohol	Cyclohexanol	Freon (Du Pont Trademark)	Phosphorous Trichloride	Xylene
Bromobenzene	Cyclohexanone	Gasoline (high aromatic)	Propionic Acid	
Butyric Acid	Cyclohexene	Hydrochloric Acid (conc.)	Pyridine	