



High Pressure Equipment Company

Standard Operating and Maintenance Instructions for Pumping Systems Models PS-10, PS-20, PS-30, PS-40, PS-50



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Standard Operating and Maintenance Instructions for Pumping Systems Models PS-10, PS-20, PS-30, PS-40, PS-50:

Models:

- Model PS-10: 10,000 psi
- Model PS-20: 20,000 psi
- Model PS-30: 30,000 psi
- Model PS-40: 40,000 psi
- Model PS-50: 50,000 psi

Description:

High pressure air operated hydraulic pumping systems are complete, self-contained units and are ready to operate. Just hook up standard shop air supply (maximum 100 psi) to connection supplied on the side of the console. Discharge capacities range from 2 cubic inches per minute to 64 cubic inches per minute depending on the model.

Standard Features:

System includes hydraulic oil reservoir, oil filter, air operated hydraulic pump, pressure gauge, panel mounted high pressure valves, safety head assembly, panel mounted air regulator and gauge, air line filter, and lubricator. All components are enclosed in a steel console with only the back open. Dimensions of standard systems are 26 in wide, 24 in deep, and 40 in high.

Safety Features:

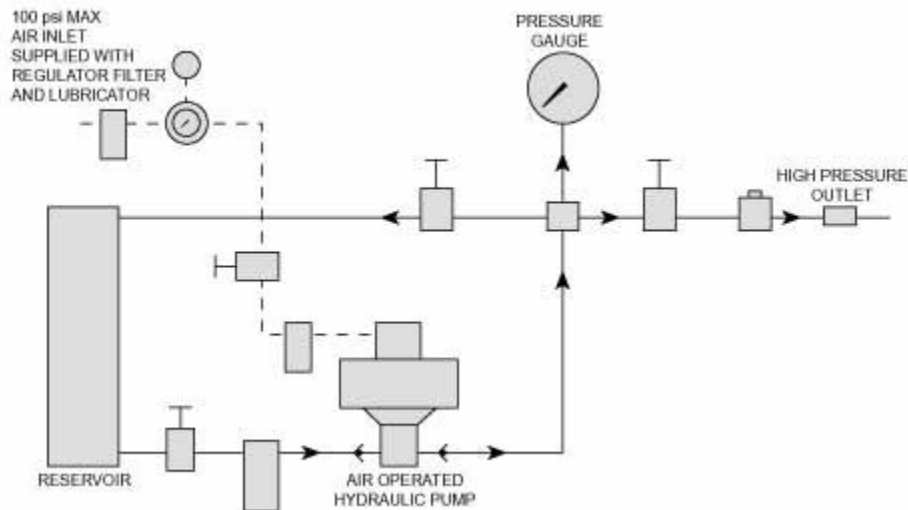
The system includes a safety head and rupture disc located within the cabinet in order to provide maximum safety to the operator. The disc has been installed at the factory and is rated slightly higher than the maximum working pressure of the unit. In the event the pressure is permitted to exceed the 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.

System Capabilities:

The output pressure is predetermined by adjustment to the air regulator setting. Output pressure is maintained constantly and pump compensates for pressure drops or losses.

Hydraulic input is gravity fed, however, if pump is used alone, the feed can be pressurized to the limit of the pump. Within the pump the large diameter air piston drives a smaller piston to provide fluid flow at high pressure.

Air consumption will be approximately 56 cfm of free air at 100 psi input. Reservoir capacity is 4 gallons, do not pressurize.



Standard Pump System Specifications:

Approximate Air to Hydraulic Pressure Ratio — Static Conditions

	Model No.	Air psi										
		10	20	30	40	50	60	70	80	90	100	110
Hydraulic Pressure psi	PS-10	1,500	3,200	5,200	7,100	9,000	10,800	12,500	14,500	16,300	18,000	19,800
	PS-20	3,000	6,000	9,500	12,600	16,000	19,100	22,300	25,600	29,000	32,300	35,600
	PS-30	4,000	8,800	13,700	18,000	22,500	27,000	31,500	36,500	41,400	45,800	50,300
	PS-40	6,000	13,000	21,000	27,000	34,000	40,500	46,000	52,000	59,000	65,000	70,000
	PS-50	6,000	13,000	21,000	27,000	34,000	40,500	46,000	52,000	59,000	65,000	70,000
	PS-90	Uses Dual Pump		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Approximate Rate of Discharge — CIPM

Model →		PS-10			PS-20			PS-30			PS-40			PS-50		
Air psi →		60	80	100	60	80	100	60	80	100	60	80	100	60	80	100
Pressure →	10,000 psi	27	52	64	31	40	44	28	33	35	19	23	24	19	23	24
	30,000 psi	0	0	0	0	0	14	0	16	21	12	15	17	12	15	17
	40,000 psi	0	0	0	0	0	0	0	0	14	2	12	15	2	12	15
	50,000 psi	0	0	0	0	0	0	0	0	0	0	6	11	0	6	11

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 1/4" 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.

Operating Instructions:

1. Set the air regulator at the desired pressure 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 loss.

Venting the System:

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.

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 the 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 3 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 lock" 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 lock." The check valves on the inlet and outlet side of the pump should be cleaned or replaced.

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