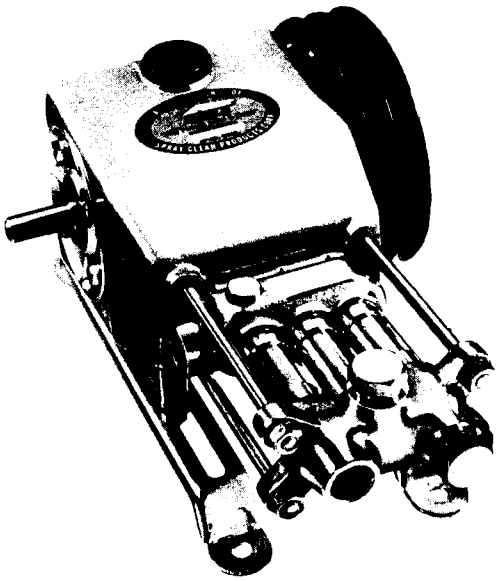


CAT PUMPS®

Piston Pump Model 500

HORSEPOWER REQUIREMENTS

Flow		PRESSURE PSI 600	PSI 800	PSI 1000	Pump RPM
GPM	L/M	BAR 40	BAR 55	BAR 70	
5.0	—	2.1	2.8	3.4	800
4.0	—	1.7	2.2	2.8	640
3.0	—	1.3	1.7	2.1	480

DETERMINING THE PUMP R.P.M. Rated G.P.M. / Rated R.P.M. = "Desired" G.P.M. / "Desired" R.P.M.

DETERMINING THE REQUIRED H.P. GPM x PSI / 1460 = Electric Brake H.P. Required

DETERMINING MOTOR PULLEY SIZE Motor Pulley O.D. / Pump R.P.M. = Pump Pulley O.D. / Motor R.P.M.

Note: Consult engine manufacturer when using gas or diesel engine

SPECIFICATIONS

	U.S. Measure
Volume	5 G.P.M.
Discharge Pressure	1000 P.S.I.
Max. Inlet Pressure	−8.5 to + 40 P.S.I.
RPM	800 RPM
Crankcase Capacity	43 Oz.
Max. Fluid Temperature	140°F
Inlet Ports (1)	3/4" NPT
Discharge Ports (3)	3/4" NPT
Pulley Mounting	Either side
Shaft Diameter	.787"
Weight w/Pulley & Mounting Rails	34.75 Lbs.
Dimensions	15.98" x 10.78" x 8.23"

INLET CONDITION CHECK-LIST

Inadequate inlet conditions can cause serious malfunctions in the best designed pump. Suprisingly, the simplest of things can cause the most severe problems. Some of these conditions can go unnoticed to the unfamiliar or untrained eye. To help eliminate some of these costly headaches, we have put together a check list of probable cause areas which should be evaluated before operation of any system. Remember, no two systems are alike, so there can be no **ONE** best way to set-up a system. All factors must be carefully considered.

INLET SUPPLY should be adequate to accommodate the maximum flow being delivered by the pump.

- ☐ Avoid closed loop systems, especially at higher temperatures and larger volumes. By-pass should be returned to a holding tank.
- ☐ Low vapor pressure fluids, such as solvents, require a booster pump for adequate inlet supply.
- ☐ Higher viscosity fluids require a positive NPSH for adequate inlet supply.
- ☐ Higher temperature fluids tend to vaporize and require a positive NPSH for adequate supply.
- ☐ When using an inlet holding tank, size it to provide adequate fluid to accommodate the maximum output of the pump, generally a minimum of five times the GPM (however, a combination of system factors can change this requirement significantly); provide adequate baffling in the tank to eliminate air bubbles and turbulence; install diffusers on all return lines to the tank.

INLET LINE SIZE should be adequate to avoid starving the pump.

- ☐ The line should generally be 1-1/2 to 2 times the specified pump inlet port size.
- ☐ The line MUST be a FLEXIBLE hose, NOT a rigid pipe, and reinforced on SUCTION systems to avoid collapsing.
- ☐ The simpler the inlet plumbing the less the potential for problems. Keep the length to a minimum, the number of elbows and joints to a minimum (ideally no elbows) and the inlet accessories to a minimum.
- ☐ Use pipe sealant to assure air-tight, positive sealing pipe joints.

INLET PRESSURE should fall within the specifications of the pump. These conditions vary slightly from the plunger to the piston pumps.

- ☐ Higher temperatures require pressurized inlet.
- ☐ Optimum pump performance is achieved with a flooded or pressurized inlet, however, negative feed is possible under ideal conditions.

INLET ACCESSORIES are designed to protect against overpressurization, monitor inlet flow, control contamination, control temperature and provide ease of servicing.

- ☐ All accessories should be sized to avoid restricting the inlet flow.
- ☐ A pressure gauge is recommended to monitor the inlet pressure and should be mounted AS CLOSE TO THE PUMP INLET as possible.
- ☐ All accessories should be compatible with the solution being pumped to avoid malfunction.

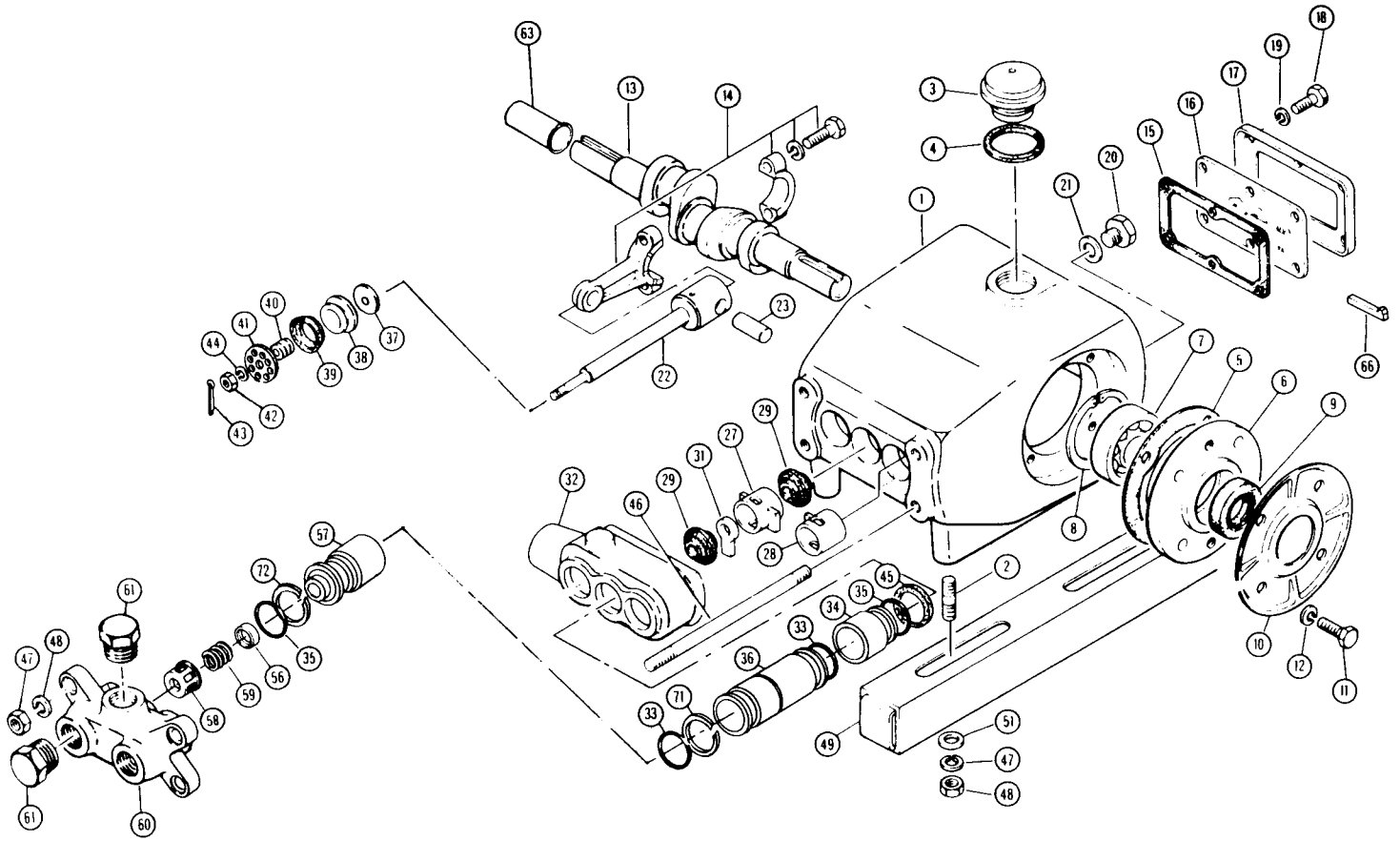
BY-PASS TO INLET Care should be exercised when deciding the method of by-pass. It is recommended the by-pass be directed to a baffled reservoir tank, with at least one baffle between the by-pass line and the inlet line to the pump. Although not recommended, by-pass fluid may be returned to the inlet line of the pump if the system is properly designed to protect your pump. When using this method a PRESSURE REDUCING VALVE should be installed on the inlet line to avoid excessive pressure to the inlet of the pump. (**REDUCING VALVE** SHOULD BE INSTALLED **BETWEEN** THE BY-PASS CONNECTION AND THE INLET TO THE PUMP) It is also recommended that a TEMPERATURE SENSING VALVE be used to monitor the temperature build-up in the by-pass loop to avoid premature seal failure.

- ☐ A low-pressure, flexible cloth braid (not metal braid) hose should be used from the by-pass connection to the inlet of the pump.
- ☐ It is recommended to use a minimum 24" by-pass hose.
- ☐ On any new installation or during periodic maintenance or trouble-shooting, it is recommended that the pressure in the by-pass line be checked to avoid overpressurizing the inlet.

See High Pressure Guide for more information on pump protection and maintenance.

EXPLODED VIEW
April 1986

PISTON MODEL
500



PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY.
1	26859	Crankcase, Special Order	1
2	14050	Stud, M10 x 45	4
3	43211	Oil Filler Cap	1
4	14177	O-Ring	1
5	20235	Gasket, Bearing Case	2
6	24303	Bearing Case, Special Order	2
7	14480	Bearing	2
8	20238	Retaining Ring, Internal	2
9	20239	Oil Seal, Crankshaft	2
10	20240	Bearing Cover	2
11	80728	Sems Hex Screw, M8 x 25, 3 pc.	8
12	15845	Split Lockwasher, M8	8
13	20216	Crankshaft	1
14	20244	Connecting Rod Assembly	3
15	11292	Gasket, Oil Gauge	1
16	20321	Window, Oil Gauge	1
17	15728	Frame, Oil Gauge	1
18	92519	Hex Head Screw, Sems M6 x 16	6
19	12502	Split Lockwasher - M6	6
20	18878	Drain Plug, Oil	1
21	23170	O-Ring, Drain Plug	1
22	25361	Piston Rod	3
23	20251	Piston Rod Pin	3
27	20313	Seal Retainer (Center)	1
28	20314	Seal Retainer (Outside)	2
29	25461	Oil Seal	6
31	20323	Wick, Oil	3
32	—	Inlet Manifold	1
—		Inlet Manifold - S.S.	1
33	23172	O-Ring, Cylinder	6
34	21982	Cylinder Adapter	3
35	11351	O-Ring	6
36	21984	Cylinder	3
37	22020	Valve, Inlet	3
38	22021	Piston	3
39	43172	Piston Cup, M20 Viton	3
40	23357	Piston Spacer	3
41	22023	Retainer, Piston	3
42	27986	Slotted Nut, S.S. M5	3
43	14158	Cotterpin, S.S., M1.5 x 10	3
44	15848	Lockwasher	3
45	11261	Spacer, Cylinder	1
46	25459	Stud, (M10 x 175)	4
47	81048	Hex Nut, M10 Reg. Thread	8
48	12503	Split Lockwasher, M10	8
49	—	Mounting Rail	2
51	12490	Flat Washer, M10	4
56	20262	Valve, Discharge	3
57	21983	Valve Seat, Discharge	3
58	43135	Retainer, Valve Spring	3
59	20265	Valve Spring	3
60	20325	Discharge Manifold	1
—	24762	Discharge Manifold - S.S.	1
61	20326	Plug, 3/4" chrome	2
66	50146	Key, M7 x 7 x 40	1
67	25812	Sems Hex Screw, M8 x 30, 3 pc.	3
68	12489	Washer, Flat	3
69	15845	Split Lockwasher, M8	3
71	21985	Back-up Ring, Cylinder	3
72	21986	Back-up Ring, Discharge Valve	3