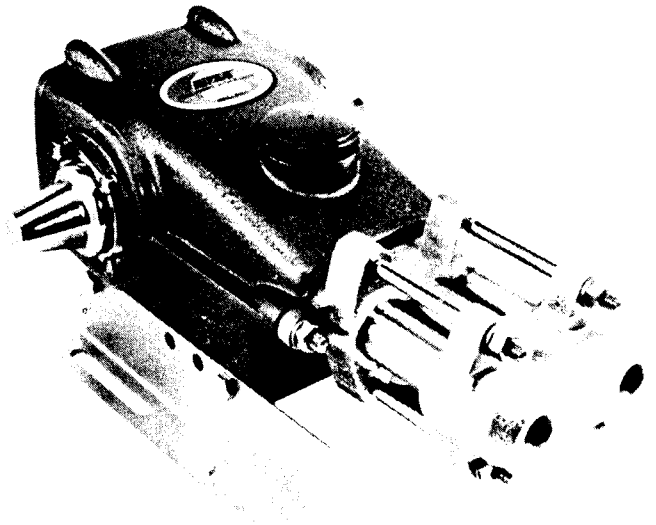


CAT® PUMPS

Triplex Piston Pump Model 434

HORSEPOWER REQUIREMENTS

Flow		PRESSURE PSI 1500	PSI 2000	PSI 3000	Pump RPM
GPM	L/M	BAR	BAR	BAR	
		—	—	—	
1.5	—	1.5	2.1	3.4	1050
1.3	—	1.3	1.8	2.9	900
.9	—	.9	1.2	1.9	600

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	1.5 G.P.M.
Discharge Pressure	3000 P.S.I.
Max. Inlet Pressure	– 8.5 to + 40 P.S.I.
RPM	1050 RPM
Bore	.433"
Stroke	.768"
Crankcase Capacity	1¼ Pts.
Max. Fluid Temperature	140°F
Inlet Ports (1)	3/8" NPT
Discharge Ports (3)	3/8" NPT
Pulley Mounting	Either side
Shaft Diameter	.650"
Weight + 8" in Pulley & Mounting Rails	20.5 Lbs.
Dimensions	13.70" x 8.78" x 5.40"

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.

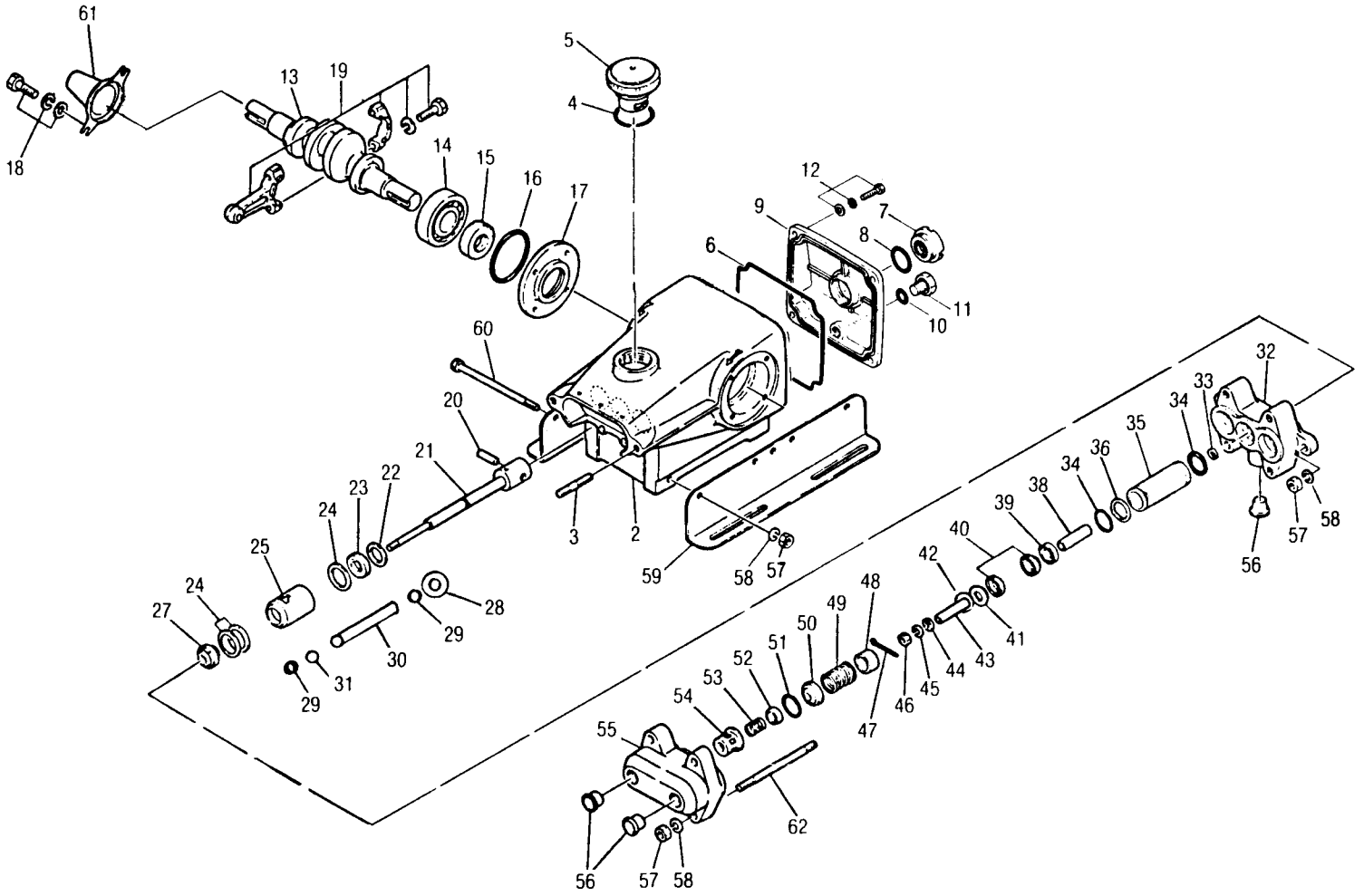
BY-PASS TO INLET Care should be exercised when deciding the method of by-pass. It is recommended the by-pass be directed to a baffled reservoir tank, with at least one baffle between the by-pass line and the inlet line to the pump. Although not recommended, by-pass fluid may be returned to the inlet 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
434



PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY.
2	43735	Crankcase, 4 Screw Cover	1
3	14137	Stud	2
4	14177	O-ring, Cap	1
5	43211	Oil Filler Cap	1
6	43340	Cover Seal, O Section	1
7	43987	Oil Gauge, Bubble Style	1
8	44428	Flat Flex Gasket, Oil Gauge	1
9	43339	Rear Cover, 4 Screw	1
10	23170	O-ring, Drain Plug	1
11	25625	Drain Plug	1
12	92520	Hex Head Screw, Sems (M6 x 20)	6
13	43163	Crankshaft, Tapped (M8 x 20)	1
14	14487	Bearing	2
15	24159	Oil Seal	2
16	26536	O-ring, Oil Seal Case	2
17	27950	Oil Seal Case	2
18	92519	Hex Head Screw, Sems (M6 x 16)	8
19	24139	Connecting Rod Assembly	3
20	16948	Piston Pin	3
21	29638	Piston Pin Assembly	3
22	20017	Washer	3
23	25301	Oil Seal	3
24	26854	Washer	9
25	27710	Seal Retainer	3
27	30315	Seal Packing	3
28	25327	Cup Washer	3
29	21549	O-ring, Piston Sleeve	3
30	25299	Piston Rod Sleeve	3
31	20160	Back-up Ring, Piston	3
32	29725	Inlet Manifold	1
33	27881	Valve, Inlet	3
34	23172	O-ring, Cylinder	6
35	28900	Packing Case	3
36	21985	Back-up Ring, Packing Case	3
38	28905	Piston	3
39	28901	Female Adapter	3
40	28902	V-packing	6
41	28903	Male Adapter	3
42	29557	Washer	3
43	28906	Spacer, Piston	3
44	43195	Piston Retainer, S.S.	3
45	19083	Spring Washer	3
46	19156	Nut	3
47	14158	Cotter Pin	3
48	28904	Spacer, Spring	3
49	43190	Spring, S.S.	3
50	27971	Discharge Valve Seat	3
51	27532	O-ring, Discharge Valve Seat	3
52	27887	Discharge Valve	3
53	28198	Valve Spring	3
54	19999	Retainer, Valve Spring	3
55	29636	Discharge Manifold	1
56	23946	Plastic Cap	3
57	81109	Nut	8
58	15845	Spring Washer	8
59	28499	Angle Rail	2
60	30900	Hex Cap Screw, 5/16" x 4½"	2
61	25130	Shaft Protector	1
62	—	Stud	4