

Piston Sleeved Pump Model **284**

HORSEPOWER REQUIREMENTS

Flow		PRESSURE			Pump RPM
		PSI 2000	PSI 2500	PSI 3000	
GPM	L/M	BAR	BAR	BAR	
.60	—	.88	1.10	1.30	1400
.52	—	.76	.95	1.10	1200
.39	—	.57	.71	.85	900
DETERMINING THE PUMP R.P.M.		$\frac{\text{Rated G.P.M.}}{\text{Rated R.P.M.}} = \frac{\text{"Desired" G.P.M.}}{\text{"Desired" R.P.M.}}$			
DETERMINING THE REQUIRED H.P.		$\frac{\text{GPM} \times \text{PSI}}{1460} = \text{Electric Brake H.P. Required}$			
DETERMINING MOTOR PULLEY SIZE		$\frac{\text{Motor Pulley O.D.}}{\text{Pump R.P.M.}} = \frac{\text{Pump Pulley O.D.}}{\text{Motor R.P.M.}}$			

Note: Consult engine manufacturer when using gas or diesel engine

SPECIFICATIONS

	U.S. Measure
Volume6 G.P.M.
Discharge Pressure	3000 P.S.I.
Max. Inlet Pressure	-8.5 to + 40 P.S.I.
RPM	1400 RPM
Bore394"
Stroke343"
Crankcase Capacity	10 Oz.
Max. Fluid Temperature	130°F
Inlet Ports (1)	3/8" NPT
Discharge Ports (2)	3/8" NPT
Pulley Mounting	Either side
Shaft Diameter650"
Weight — Pulley & Rails	15.5 lbs.
Dimensions with Rails	10.5" x 8.8" x 5.7"

INLET CONDITION CHECK-LIST

Inadequate inlet conditions can cause serious malfunctions in the best designed pump. Surprisingly, 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.

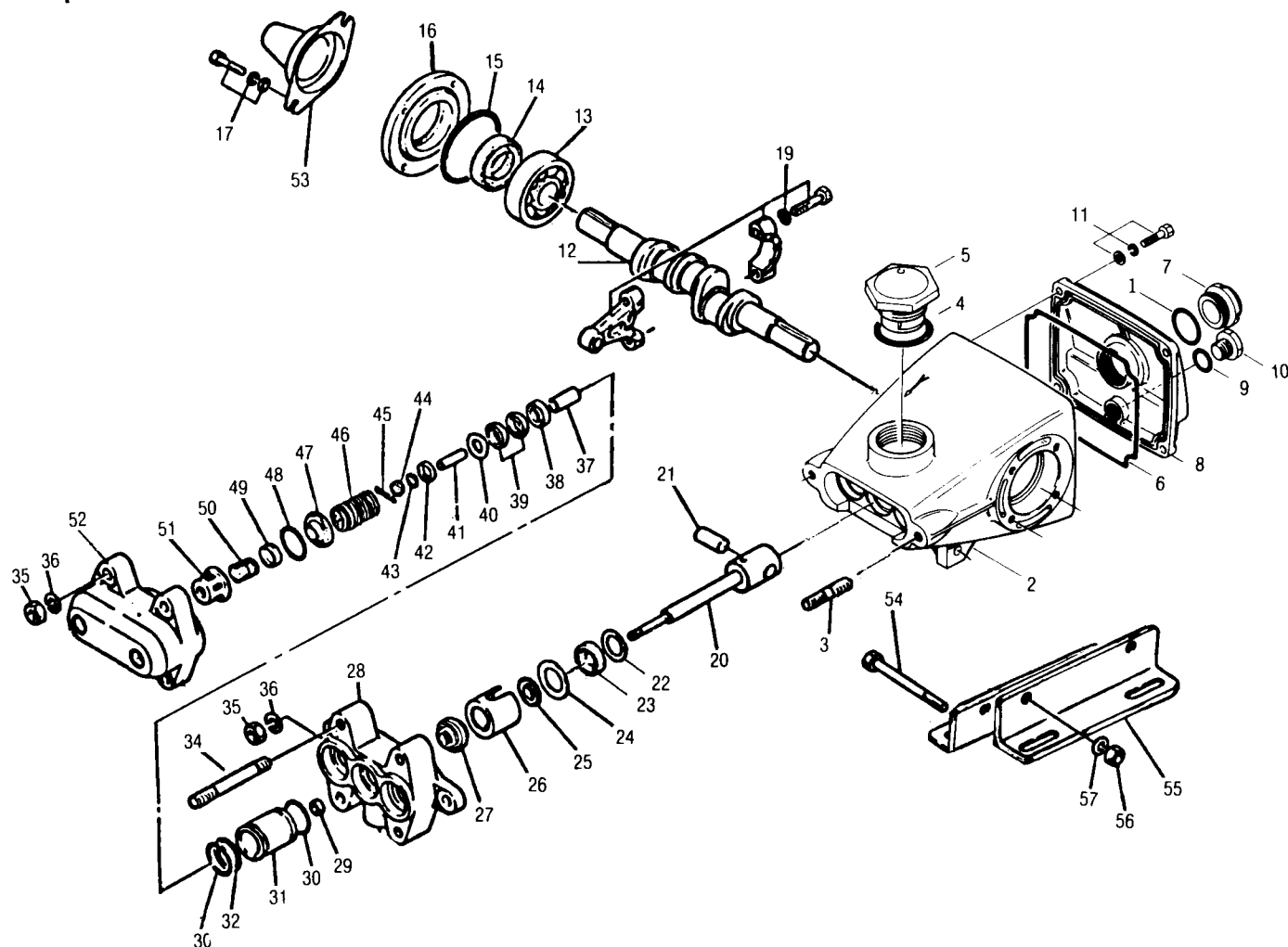
INLET ACCESSORIES are designed to protect against overpressurization, monitor inlet flow, control contamination, control temperature and provide ease of servicing.

- ☐ 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 troubleshooting, 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.



PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY.	ITEM	PART NO.	DESCRIPTION	QTY.
1	44428	Flat Flex. Gasket, Oil Gauge	1	32	21985	Back-up Ring, Packing Case	3
2	44657	Crankcase (4 Screw) (Large Cap)	1	34	85673	Cylinder Bolt	4
3	14137	Manifold Stud, M8	2	35	81109	Nut	8
4	14177	O-ring, Cap	1	36	15845	Split Lock Washer, M8	8
5	43211	Oil Filler Cap	1	37	43193	Piston	3
6	43340	O-ring, Crankcase Cover	1	38	43192	Female Adapter	3
7	43987	Bubble Oil Gauge	1	39	27879	V-Packing	6
8	43339	Crankcase Cover (4 Screw)	1	40	43191	Male Adapter	3
9	23170	O-ring, Drain Plug	1	41	28326	Spacer, Piston	3
10	25625	Drain Plug	1	42	43195	Retainer, Piston	3
11	92520	Hex Head Screw, Sems M6 x 28	6	43	19083	Spring Washer	3
12	26239	Crankshaft	1	44	19156	Nut	3
13	14487	Bearing	2	45	14158	Cotter Pin	3
14	24159	Oil Seal	2	46	43190	Spring	3
15	26536	O-ring, Oil Seal Case	2	47	27971	Discharge Valve Seat	3
16	27950	Oil Seal Case	2	48	27532	O-ring, Discharge Valve Seat	3
17	92519	Hex Head Screw, Sems M16 x 16	8	49	27887	Discharge Valve	3
19	17556	Connecting Rod	3	50	28198	Valve Spring	3
20	28323	Piston Rod	3	51	19999	Retainer, Valve Spring	3
21	16948	Piston Pin	3	52	29636	Discharge Manifold	1
22	20017	Seal Washer	3	53	25130	Protector	1
23	25461	Oil Seal	3	54	30901	Hex Head Cap Screw, 5/16"	2
24	26854	Seal Washer	3	55	26246	Angle Rail	2
25	26853	Barrier Slinger	3	56	30919	Hex Nut, 5/16"	2
26	26855	Seal Retainer	3	57	30920	Lock Washer, 5/16"	2
27	30315	Seal	3	—	30243	Direct Mount	
28	29725	Inlet Manifold	1	—	30246	Pulley Assembly	
29	27881	Valve-Inlet	3	—	30612	Angle Mounting	
30	23172	O-Ring, Packing Case	6	See Tech Bulletin #33 for more information.			
31	27877	Packing Case	3				