

**Piston  
Pump  
Model**

**20**

#### HORSEPOWER REQUIREMENTS

Flow		PRESSURE			Pump RPM
		PSI 200	PSI 600	PSI 1000	
GPM	L/M	BAR	BAR	BAR	
3.0	—	.6	1.8	N/A	1725
2.0	—	.4	1.2	1.9	1150
1.0	—	.2	.6	1.0	575
<b>DETERMINING THE PUMP R.P.M.</b>		Rated G.P.M. =		"Desired" G.P.M.	
		Rated R.P.M. =		"Desired" R.P.M.	
<b>DETERMINING THE REQUIRED H.P.</b>		GPM x PSI =		Electric Brake	
		1460		H.P. Required	
<b>DETERMINING MOTOR PULLEY SIZE</b>		Motor Pulley O.D. =		Pump Pulley O.D.	
		Pump R.P.M.		Motor R.P.M.	

Note: Consult engine manufacturer when using gas or diesel engine

#### SPECIFICATIONS

	U.S. Measure
<b>Volume</b> .....	3.0 GPM
<b>Discharge Pressure</b> .....	600 PSI
<b>Max. Inlet Pressure</b> .....	0-10 PSI
<b>RPM</b> .....	1725 RPM
<b>Crankcase Capacity</b> .....	3 Oz.
<b>Max. Fluid Temperature</b> .....	140°F
<b>Inlet Ports (1)</b> .....	1/2" NPT
<b>Discharge Ports (1)</b> .....	1/2" NPT
<b>Pulley Mounting</b> .....	Either side
<b>Shaft Diameter</b> .....	.650"
<b>Weight — Pulley &amp; Rails</b> .....	12.8 Lbs.
<b>Dimensions with Rails</b> .....	6.58" x 5.13"

### 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.

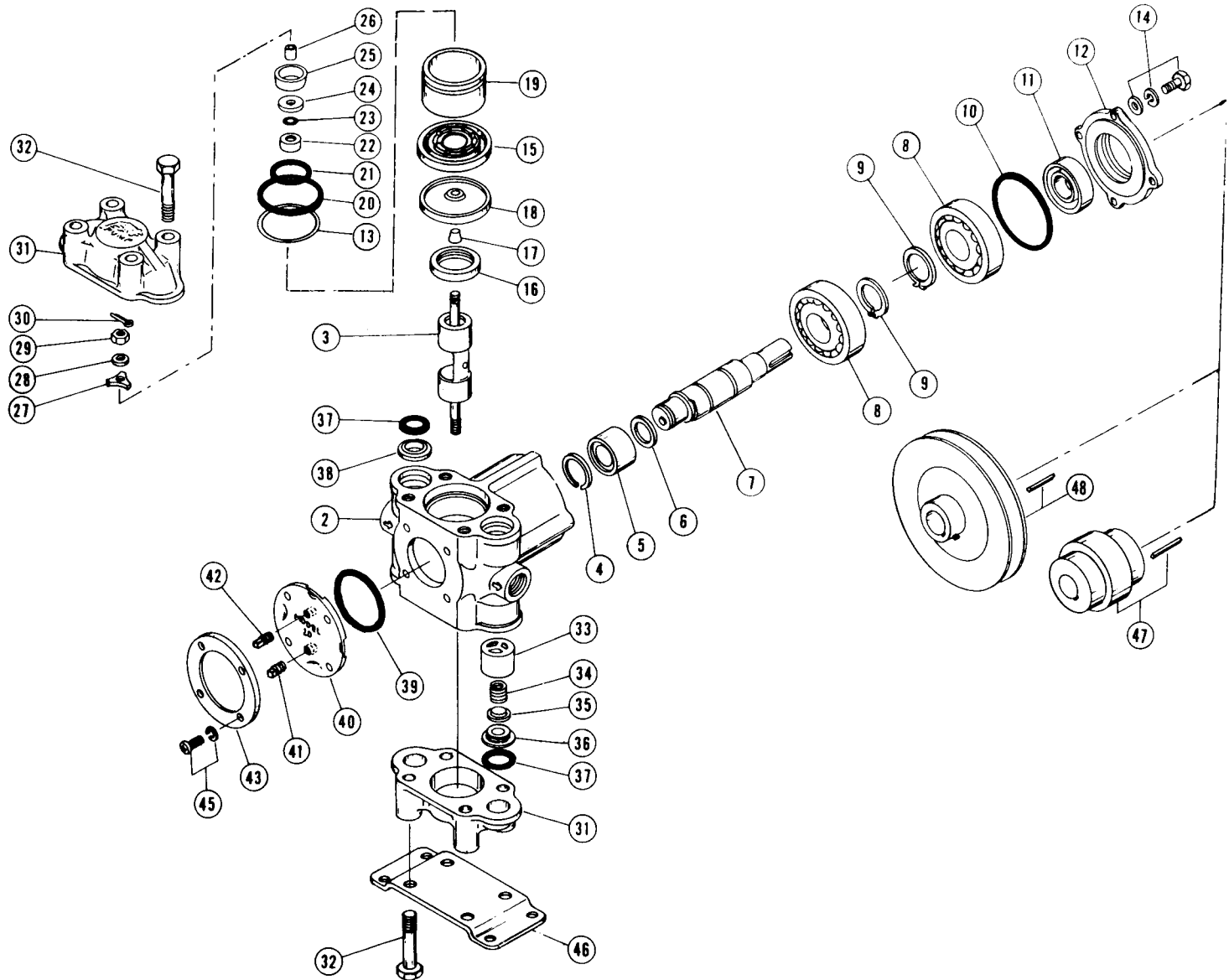
See High Pressure Guide for more information on pump protection and maintenance.

# EXPLODED VIEW

April 1986

# PISTON MODEL

20



## PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY.	ITEM	PART NO.	DESCRIPTION	QTY.
2	43141	Body	1	27	29700	Retainer, Piston	2
3	29807	Piston	1	28	27006	Helical Washer	2
4	29671	Retainer, Cam Roller	1	29	27000	Slotted Nut	2
5	29669	Cam Roller	1	30	14158	Cotterpin	2
6	29670	Teflon Guide	1	31	43142	Cylinder Head	2
7	29668	Camshaft	1	32	87936	Socket Head Bolt (M10 x 50)	8
8	14480	Bearing	2	33	29682	Retainer, Valve Spring	2
9	12383	Bearing Retainer	2	34	29683	Valve Spring	2
10	29673	O-ring	1	35	29684	Discharge Valve	2
11	24159	Oil Seal	1	36	29685	Valve Seat	2
12	29672	Oil Seal Case	1	37	17615	O-ring	4
13	43376	Adjusting Washer	2/6	38	29695	Adapter, O-ring	1
14	92519	Hex Cap Screw (M6)	4	40	29687	Oil Gauge	1
15	43324	Cylinder Flange	1	41	29688	Plug	1
16	29808	Oil Seal	2	42	29809	Vent Plug	1
17	29666	Collar, Diaphragm	2	43	29689	Retainer, Oil Gauge	1
18	29680	Diaphragm	2	45	81413	Sems Screw (M5)	4
19	43260	Cylinder	2	46	29690	Bracket, Mounting	1
20	18174	O-ring	2	47	30412	Flex Coupling	1
21	29698	O-ring	2	47	30047	Key	1
22	29693	Retainer, Diaphragm	2	48	30634	3 1/2" Pulley & Key Assembly	1
23	17399	O-ring	2				
24	29697	Inlet Valve	2				
25	29681	Piston Assembly	2				
					30450	Cup & Diaphragm Kit	1
					30451	Discharge Valve Kit	1