





## DESIGN CRITERIA

General Industrial KLZ/KLA Series Triplex Plunger Pumps are designed and manufactured to pump water and other liquids of similar viscosity compatible with the construction materials used in the pump.

Durable by design, KLZ/KLA Series Pumps are ideal for a wide variety of high-pressure applications including intermittent or continuous duty high-pressure cleaning and water sandblasting.

Optimum pump performance can only be achieved if the entire fluid system is designed and built using properly sized plumbing and accessories. General KLZ/KLA Industrial Pumps are positive displacement pumps and require the use of a properly designed pressure relief mechanism in the discharge plumbing of any system using these pumps. **Failure to install a relief mechanism could result in personal injury or damage to the system.**

**General Pump, Inc. does not assume any liability or responsibility for the design and operation of a customer's high-pressure system.**

## PUMP SELECTION - NORMAL DUTY

The General Industrial KLZ/KLA Series offers a wide range of flow, pressure and drive options. Pump performances indicated for the KLZ/KLA Series (RPM, GPM, PSI, fluid temperature) are the designed maximum for pumps operated on a **normal intermittent duty cycle**.

## PUMP SELECTION - CONTINUOUS DUTY

Most KLZ/KLA Pumps can be re-rated for continuous duty by reducing the pump RPM by 25% minimum and by installing a feed pump capable of delivering two times the operating flow rate at 45 PSI maximum. In selecting a pump for continuous duty, optimal performance is accomplished by using the largest plunger diameter practical and reducing the RPM to deliver the desired flow. **Do not exceed the maximum rated discharge pressure of this pump.**

**Example:** Customer requirement is 20.0 GPM @ 1160 PSI. According to the catalogue, the KLZ/KLA 33 operated at 750 RPM would be the proper pump for intermittent duty. For continuous duty select the KLZ/KLA Series pump that allows for the most reduction in crankshaft speed. The KLZ/KLA 40 operated at 500 rpm will deliver the desired performance on a continuous duty basis. The KLZ/KLA 40 was selected instead of the KLZ/KLA 50, because the KLZ/KLA 50 would have to be operated at 325 RPM to produce the desired flow (too slow for proper lubrication).

**Proper splash lubrication requires a 500 RPM minimum internal crankshaft speed.**

## PUMP INSTALLATION

When designing a system, **keep the inlet plumbing as simple as possible using a minimum amount of fittings or elbows with no elbows within 12" of pump inlet.**

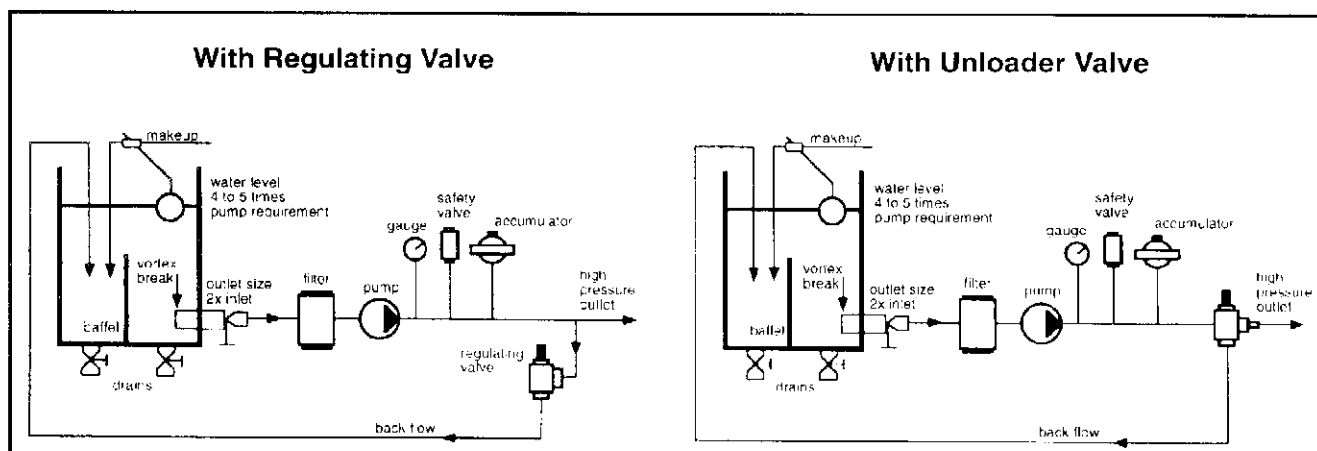
Pump life is considerably influenced by the condition of the fluid supplied to the inlet of the pump. **Inlet plumbing should be flexible reinforced hose, 1.5 to 2 times larger than the specified inlet port size.** Inlet and discharge fittings are furnished with each pump.

It is critical to provide airtight inlet plumbing sized to deliver an adequate volume of settled fluid to the pump (**minimum 2 times the operating flow rate**). This is best accomplished with a pressurized feed at 30-45 PSI or a flooded inlet.

**Do not let pump self prime.**

When using an inlet holding tank (float tank), size it according to the maximum rated output of the pump. Provide a **minimum of 5 times the operating flow rate (a 10 GPM pump requires a 50 GPM tank)**. The feed tank should contain sufficient baffling to eliminate air bubbles and turbulence. Feed tanks should be mounted so the water level in the tank is always higher than the inlet port of the pump (flooded inlet). Diffusers should be installed on all return lines to the tank.

Typical Installation diagram:



## FLUID TEMPERATURE

KLZ/KLA Series Pumps are rated for 150°F maximum fluid temperature. However, **when operating with fluid temperatures exceeding 110°F, a pressurized inlet is required.** Install a feed pump capable of delivering two times the operating flow rate at 45 PSI maximum, and follow continuous duty parameters.

## FILTERS

Install an inlet filter on all systems. The filter should be positioned as close as possible to the inlet of the pump. **The inlet filter capacity must be a minimum of three times the rated output of the pump.** Filter media of 50 to 80 microns is recommended for most systems.

## PUMP MOUNTING

The pump must be mounted in a horizontal position on a rigid base in a manner to permit drainage of crankcase oil. The pump should be flat with no more than a 5 degree incline. Pumps can be operated using pulley or direct drive. **Observe the specified pump rotation indicated by the arrows on the crankcase.** General Industrial Pumps are splash lubricated. By observing the proper rotation and crankshaft speed (500 RPM minimum), the crank mechanism puts oil in circulation through internal crankcase grooves so the connecting rods, bearings, piston guides and other surfaces requiring lubrication receive proper coverage.

Crankcase oil (Pennzoil RO 220 or equivalent) should be checked frequently and changed as follows: Initial oil change between the first 50 and 100 hours of operation; then after each successive 500 hours of operation.

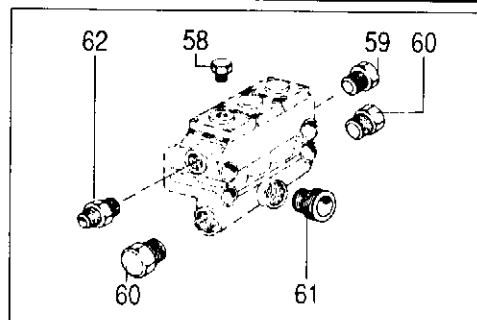
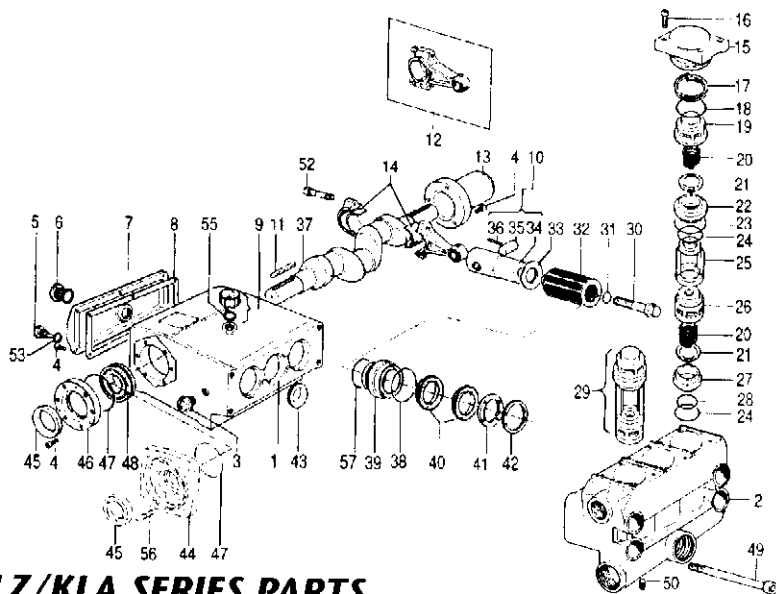
KLZ/KLA Series Pumps are equipped with grease fittings (Position 29). Greasing should be done prior to initial start-up and after every 100 hours of operation. Using a hand grease gun, apply a high grade silicon grease with a penetration coefficient of 290. **Caution — Do Not Overlubricate — Stop At The First Sign Of Back Pressure To Avoid Damage To Packings.**

## START-UP

Check oil prior to start-up, and open all inlet and discharge valves. **Always start the pump in a zero pressure condition. Never let pump run dry.**

### WARRANTY

General Pump products are warranted by the manufacturer to be free from defects in material and workmanship. Period of warranty shall be 1 year from date product is received by original buyer. Liability of manufacturer under the foregoing warranty is limited to **repair or replacement** at the option of manufacturer of that product which according to the manufacturer's investigation was deemed defective at time of shipment. Damage resulting from neglect, abuse, tampering or misapplication voids the warranty. This warranty is in lieu of all other warranties, expressed or implied, including any warranty of merchantability and or any and all other obligations or liabilities on the part of the manufacturer.



### KLZ/KLA SERIES PARTS

Pos. Code	Description	Qty.	Pos. Code	Description	Qty.	Pos. Code	Description	Qty.
1	F060100120 Crankcase	1	F070300060	Valve Spacer KLA36-40-45-50	3	F881020011	Packing KL7/A40	6
2	F064200090 Manifold KLZ30	1	26	F021200030 Suction Valve Guide KLZ	3	F881020012	Packing KLZ/A45	6
	F064300090 Manifold KL A30	1	F021300250	Suction Valve Guide KLA	3	F881020013	Packing KLZ/A50	6
	F064200110 Manifold KLZ33	1	27	F081200040 Suction Valve Seat	3	41	F031200120 Packing Ring KLZ/A30	3
	F064300100 Manifold KLA33	1	28	F881010010 O-Ring	3	F031200130	Packing Ring KLZ/A33	3
	F064200120 Manifold KLZ36-40	1	29	F208005930 Valve Assembly KLZ30-33	3	F031200140	Packing Ring KLZ/A36	3
	F064300010 Manifold KLA36-40	1	F208006470	Valve Assembly KLA30-33	3	F031200150	Packing Ring KLZ/A40	3
	F064200140 Manifold KLZ45-50	1	F208005940	Valve Assembly KLZ36-40-45-50	3	F031200160	Packing Ring KLZ/A45	3
	F064300030 Manifold KLA45-50	1	F208006480	Valve Assembly KLA36-40-45-50	3	F881025002	Packing Ring KLZ/A50	3
3	F801053002 Oil Level Sight Glass	1	30	F035200031 Plunger Bolt KLZ/A30	3	42	F031200170 Spacer KLZ/A30	3
4	F871115603 Cap Screw	21	F035200010	Plunger Bolt KL7/A33-36-40	3	F031200180	Spacer KLZ/A33	3
5	F801057011 Magnetic Plug	1	F035200020	Plunger Bolt KLZ/A45-50	3	F031200190	Spacer KLZ/A36-40	3
6	F801053003 Oil Level Sight Glass	1	31	F881011050 O-Ringer	3	F031200200	Spacer KLZ/A45-50	3
7	F063400650 Rear Cover	1	32	F024200191 Plunger KLZ/A30	3	43	F881081002 Piston Guide Oil Seal	3
8	F080600000 Rear Cover Gasket	1	F024200200	Plunger Kl 7/A33	3	45	F881080014 Crankshaft Oil Seal	2
9	F801054002 Oil Fill Plug	1	F024200210	Plunger KLZ/A36	3	46	F063400680 Bearing Cover	2
10	F250001020 Complete Piston	1	F024200220	Plunger KLZ/A40	3	47	F881013100 O-Ring	2
11	F071000030 Key	1	F024200230	Plunger KLZ/A45	3	48	F811110002 Bearing	2
12	F250000050 Complete Connecting Rod	3	F024200240	Plunger Kl.Z/A50	3	49	F871141719 Cap Screw	4
13	F040400120 Shaft Cover	1	33	F041200000 Wiper	3	50	F084200000 Discharge Plug Att. 1/4 G3/8"	3
14	F812000002 Bushing	3	34	F020000030 Piston Guide	3	52	F871350002 Connecting Rod Screw	6
15	F063200010 Closed Valve Cover KLZ	3	35	F071000020 Winst Pin	3	53	F030300000 Washer	1
	F063300090 Closed Valve Cover KLZ	3	36	F872138010 Retainer Pin	3	55	F881011173 O-Ring	1
16	F871121704 Cap Screw	12	37	F050000030 Crankshaft	1	57	F881010012 O-Ring	3
17	F881112001 Spring Ring	3	38	F881010011 O-Ring KLZ/A30	3	58	F821201051 Plug	1
18	F881010214 O-Ring	3		F881010012 O-Ring KLZ/A33-36-40	3	61	F084200080 Plug	1
19	F021200050 Discharge Valve Guide KLZ	3		F881010013 O-Ring KLZ/A45-50	3	62	F084200070 Plug	2
	F021300270 Discharge Valve Guide KLZ	3	39	F022300150 Packing Support KLZ/A30	3	61	F821013011 Reducer	1
20	F090200030 Valve Spring	6		F022300160 Packing Support KLZ/A33	3	62	F084200180 Nipple	1
21	F082200030 Valve Disc	6		F022300170 Packing Support KLZ/A36	3			
22	F081200050 Discharge Valve Seat	3		F022300180 Packing Support KLZ/A40	3			
23	F881011160 O-Ring	3		F022300190 Packing Support KLZ/A45	3			
24	F881011157 O-Ring	6		F022300200 Packing Support Kl.Z/A50	3			
25	F070200000 Valve Spacer KLZ30-33	3	40	F881020008 Packing Kl.Z/A30	6			
	F070300040 Valve Spacer KLA30-33	3		F881020009 Packing KLZ/A33	6			
	F070200020 Valve Spacer KLZ36-40-45-50	3		F881020010 Packing KLZ/A36	6			

### REPAIR KITS

POSITIONS INCLUDED	N.PCS.	KLZKLA 30	KLZKLA 33	KLZKLA 36	KLZKLA 40	KLZKLA 45	KLZKLA 50	KLZKLA 30, 33	KLZKLA 36, 40, 45, 50
19, 20, 21, 22, 23, 24	1-2							KITS 593,647	594,648
25, 26, 27, 28, (29)									
38, 40	3-6	KIT 442	KIT 443	KIT 444	KIT 445	KIT 446	KIT 447		
39, 57	3	KIT 576	KIT 577	KIT 578	KIT 579	KIT 580	KIT 581		
41	3	KIT 582	KIT 583	KIT 584	KIT 585	KIT 586	KIT 459		
38, 39, 40, 41, 42, 57	1-2	KIT 587	KIT 588	KIT 589	KIT 590	KIT 591	KIT 592		
17, 18, 23, 24, 28, 31, 47, 51, 53, 55, 57	3-20				595				
43	3			425					
45	2			426					

### TORQUE SPECS

Position	Ft./lbs
30	36
49	144
52	18

### GENERAL PUMP INCORPORATED

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