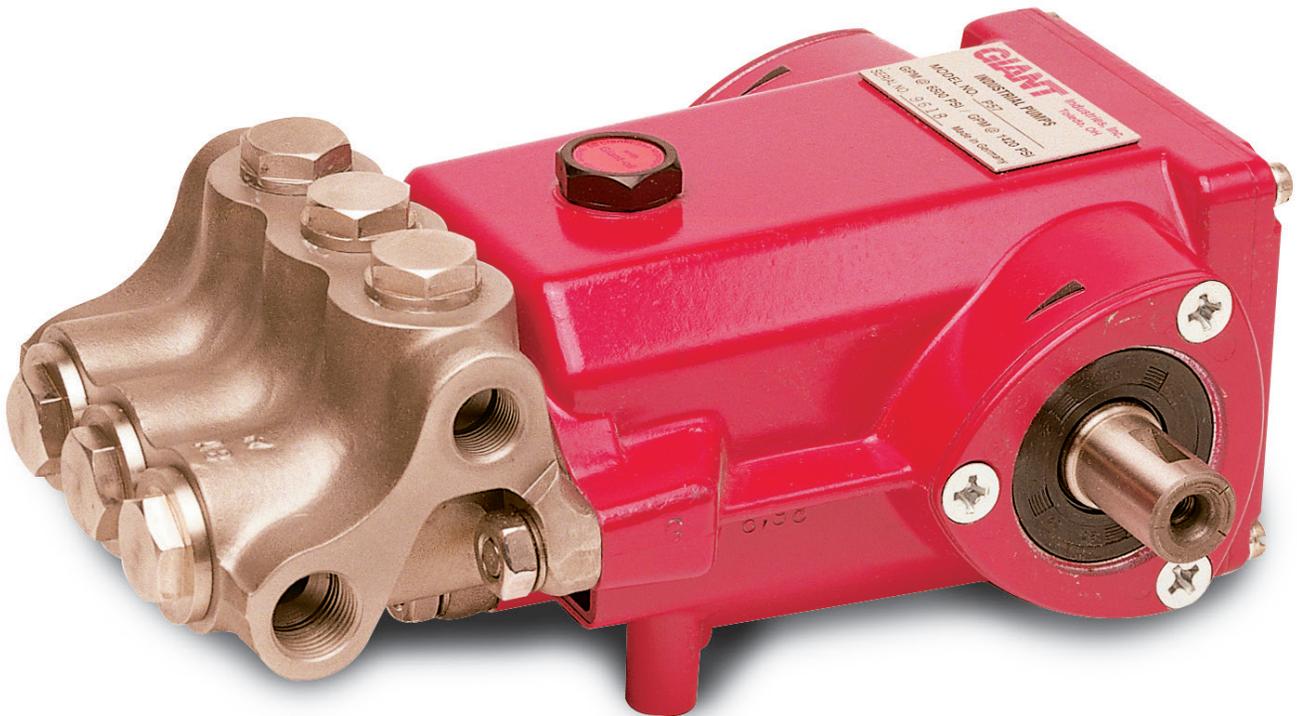


# Models P57 & P57-0011

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Triplex Ceramic  
Plunger Pump  
Operating Instructions/  
Repair and Service  
Manual



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Updated 08/21

# INSTALLATION INSTRUCTIONS

 Maximum pressures of 6525 PSI (450 bar) for P57 and only apply for very intermittent operation such as when testing tanks and pipelines whereby the maximum operating pressure is only attained for a very short period of time (a few minutes).

Required NPSH refers to water: Specific weight 1kg/dm<sup>3</sup>, viscosity 1°E at maximum permissible revolutions.

## Operation and Maintenance

Check oil level prior to starting and ensure trouble-free water supply.

**Oil: Use only 0.45 litres of Giant oil (p/n 01154) or ISO VG 220 (e.g. Aral Degol BG220) or SAE 90 gear oil.**

Initial change after 50 operating hours and then every 500 operating hours, after 6 months operation in any case.

**Caution:** When operating in damp places or with high temperature fluctuations, oil must be changed immediately (should condensate or frothy oil occur in the gear box).

Maximum input pressure: 145 PSI (10 bar).  
Maximum suction head: -4.35 PSI (-0.3 bar).

**Keep NPSH under control.**

## Safety Rules

Pump operation without safety valve as well as any excess in temperature or speed limits automatically voids the warranty. The safety valve must be regulated in accordance with the guidelines for liquid spraying units so that the admissible operating pressure can not be exceeded by more than 10%.

When the pump is in operation, the open shaft end must be covered up by shaft protector (17) and the driven shaft side and coupling by a belt guard or coupling bell. Before any maintenance to the pump takes place, pressure in discharge line and in pump must be at zero. Close up suction line. To ensure that the driving motor does not get switched on accidentally, disconnect fuses.

Before starting the pump, make sure that all parts on the pressure side of the unit are vented and refilled, while pressure is at zero. In order to prevent air, or an air/water-mixture being absorbed and to prevent cavitation occurring, the pump-npsHr, positive suction head and water temperature must be kept under control.

Cavitation and/or compression of gases lead to uncontrollable pressure-kicks which can ruin pump and unit parts and also be dangerous to the operator or anyone standing nearby.

Giant plunger pumps are suitable for pumping clean water and other non-aggressive or abrasive media with a specific weight similar to water.

**Before pumping other liquids - especially inflammable, explosive and toxic media - the pump manufacturer must, under all circumstances, be consulted with regard to the resistance of the pump material. It is the responsibility of the equipment manufacture and/or operator to ensure that all pertinent safety regulations are adhered to.**

# Specifications

## Models P57 & P57-0011

	U.S.	Metric
Flow .....	1.3 GPM.....	5.1 L/min
Discharge Pressure (Continuous).....	5000 PSI .....	350 Bar
Discharge Pressure (Intermittent).....	6525 PSI .....	450 Bar
Power Required .....	6.3 BHP.....	4.7 kW
Maximum Inlet Pressure .....	145 PSI .....	10 Bar
Maximum Crankshaft Speed .....		1420 RPM
Plunger Diameter .....	0.47" .....	12 mm
Stroke .....	0.56" .....	14.1 mm
Crankcase Oil Capacity .....	15.2 fl.oz. ....	0.45 Liters
Max. Temperature of Pumped Fluids.....	160 °F.....	70 °C
Inlet Ports.....		(2) 1/2" BSP
Discharge Ports .....		(2) 3/8" BSP
Crankshaft Mounting.....		Either
Shaft Rotation .....	Top of Pulley Towards Fluid End	
Weight.....	17.2 lbs. ....	7.8 Kg.
Crankshaft Diameter.....	0.87" .....	22mm

Consult the factory for special requirements that must be met if the pump is to operate beyond one or more of the limits specified above.

### PULLEY INFORMATION

Pulley selection and pump speed are based on a 1725 RPM motor and "B" section belts. When selecting desired GPM, allow for a ±5% tolerance on pumps output due to variations in pulleys, belts and motors among manufacturers.

1. Select GPM required, then select appropriate motor and pump pulley from the same line.
2. The desired pressure is achieved by selecting the correct nozzle size that corresponds with the pump GPM.

### HORSEPOWER INFORMATION

Horsepower ratings shown are the power requirements for the pump. Gas engine power outputs must be approximately twice the pump power requirements shown above.

We recommend that a 1.1 service factor be specified when selecting an electric motor as the power source. To compute specific pump horsepower requirements, use the following formula:

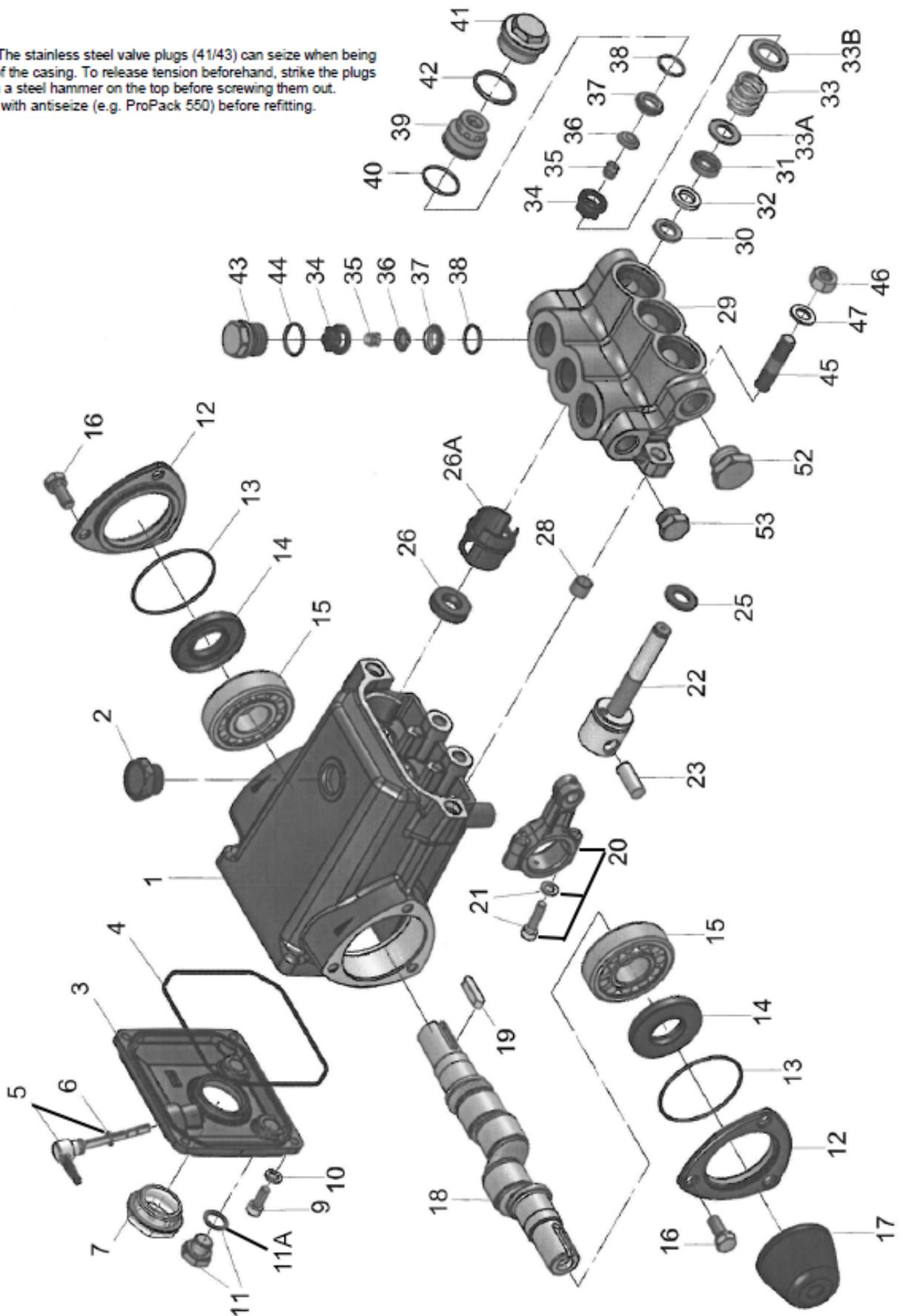
$$\frac{\text{GPM} \times \text{PSI}}{1450} = \text{hp}$$

<b>P57 PULLEY SELECTION &amp; HORSEPOWER REQUIREMENTS</b>						
<b>PUMP PULLEY</b>	<b>RPM</b>	<b>GPM</b>	<b>3000 PSI</b>	<b>4000 PSI</b>	<b>5000 PSI</b>	<b>6525 PSI*</b>
7.75"	500	0.5	1.0	1.4	1.7	2.3
7.75"	750	0.7	1.4	1.9	2.4	3.2
7.75"	1000	0.9	1.9	2.5	3.1	4.1
7.75"	1250	1.1	2.3	3.0	3.8	5.0
7.75"	1420	1.3	2.7	3.6	4.5	5.9

\*Intermittent duty

## Exploded View - P57 & P57-0011

**Important!** The stainless steel valve plugs (41/43) can seize when being screwed out of the casing. To release tension beforehand, strike the plugs 1-2 times with a steel hammer on the top before screwing them out. Coat threads with antiseize (e.g. ProPack 550) before refitting.



## P57 & P57-0011 SPARE PARTS LIST

<u>ITEM</u>	<u>PART</u>	<u>DESCRIPTION</u>	<u>QTY.</u>	<u>ITEM</u>	<u>PART</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	07180	Crankcase	1	29	12226	Manifold	1
2	07181	Oil Fill Plug Assembly	1	30	12130	Pressure Ring	3
2A	07182	Gasket (not shown)	1	31	08354	Grooved Seal (P57)	3
3	07183	Cover, Crankcase	1	31	07391-0010	Grooved Seal, Viton (P57-0011)	3
4	07184	O-Ring, Crankcase Cover	1	32	07941	Support Ring	3
5	07185	Oil Dip Stick Assembly	1	33	12132	Pressure Spring	3
6	01009	O-Ring, Dip Stick	1	33A	12133	Support Disc I	3
7	07186	Oil Sight Glass Assembly	1	33B	12134	Support Disc II	3
9	07188	Screw, Crankcase Cover	4	34	07907	Spring Tension Disc	6
10	07223-0100	Spring Washer	4	35	07906-0100	Valve Spring	6
11	07190	Oil Drain Plug Assembly	1	36	07491	Valve Plate	6
11A	13262	Gasket	1	37	07849	Valve Seat	6
12	13402	Bearing Cover	2	38	07853	O-Ring (P57)	6
13	07193	O-Ring, Bearing Cover	2	38	07853-0001	O-Ring, Viton (P57-0011)	6
14	01166	Radial Shaft Seal	2	39	07940	Suction Valve Retainer	3
15	01086	Bearing	2	40	07212	O-Ring (P57)	3
16	07114	Hex Screw with Washer	6	40	07212-0001	O-Ring, Viton (P57-0011)	3
17	05023	Shaft Protector	1	41	12135	Plug, Inlet	3
18	12128	Crankshaft	1	42	07214	O-Ring (P57)	3
19	03385	Fitting Key	1	42	07214-0001	O-Ring, Viton (P57-0011)	3
20	07199	Connecting Rod Assembly	3	43	12136	Plug, Outlet	3
21	01027	Screw with Washer	6	44	07913	O-Ring (P57)	3
22	07396	Plunger Assembly	3	44	07913-0001	O-Ring, Viton (P57-0001)	3
23	01031	Crosshead Pin	3	45	07215	Stud Bolt	4
25	13403	Flinger	3	46	08040	Hex Nut	4
26	08026	Radial Shaft Seal	3	47	08041	Spring Ring	4
26A	13346	Spacer Sleeve	3	52	12250	Plug, 1/2" BSP, S.S.	1
28	07207	Centering Sleeve	2	53	12138	Plug, 3/8" BSP, S.S.	1

## P57 & P57-0011 REPAIR KITS

### Plunger Packing Kit #09313 (P57)

<u>Item</u>	<u>Part #</u>	<u>Description</u>	<u>Qty.</u>
31	08354	Grooved Seal	3
32	07941	Support Ring	3
40	07212	O-Ring	3
42	07214	O-Ring	3

### Plunger Packing Kit #09313-0011 (P57-0011)

<u>Item</u>	<u>Part #</u>	<u>Description</u>	<u>Qty.</u>
31	07391-0010	Grooved Seal Assy.	3
32	07941	Support Ring	3
40	07212-0001	O-Ring, Viton	3
42	07214-0001	O-Ring, Viton	3

### Valve Assembly Kit #09315 (P57)

<u>Item</u>	<u>Part #</u>	<u>Description</u>	<u>Qty.</u>
34	07907	Spring Tension Disc	6
35	07906-0010	Valve Spring	6
36	07491	Valve Plate	6
37	07849	Valve Seat	6
38	07853	O-Ring	6
40	07212	O-Ring	3
42	07214	O-Ring	3
44	07913	O-Ring	3

### Oil Seal Kit #09314 (P57 & P57-0011)

<u>Item</u>	<u>Part #</u>	<u>Description</u>	<u>Qty.</u>
25	13403	Flinger	3
26	08026	Radial Shaft Seal	3

## P57 & P57-0011 TORQUE SPECIFICATIONS

<u>Position</u>	<u>Item#</u>	<u>Description</u>	<u>Torque Amount</u>
	21	Screw with Washer	133 in.-lbs. (15 Nm)
	41	Plug, Inlet	52 ft.-lbs. (70.5 Nm)
	43	Plug, Discharge	52 ft.-lbs. (70.5 Nm)
	46	Nut, Stud	35 ft.-lbs. (47.5 Nm)

## PUMP SYSTEM MALFUNCTION

MALFUNCTION	CAUSE	REMEDY
The Pressure and/or the Delivery Drops	Worn Packing Seals	Replace packing seals
	Broken Valve Springs	Replace springs
	Belt Slippage	Tighten or replace belt
	Worn or Damaged Nozzle	Replace nozzle
	Fouled Discharge Valve	Clean valve assembly
	Work or Plugged Relief valve on pump	Clean, reset and replace worn parts
	Cavitation	Check suction lines on inlet of pump for restrictions
	Unloader	Check for proper operation
Water in Crankcase	High Humidity	Reduce oil change intervals
	Worn Seals	Replace seals
Noisy Operation	Worn Bearings	Replace bearings, refill crankcase oil with recommended lubricant
	Cavitation	Check inlet lines for restrictions and/or proper sizing
Rough/Plusating Operation with Pressure Drop	Worn Packing	Replace packing
	Inlet Restriction	Check system for stoppage air leaks, correctly size inlet plumbing to pump
	Accumulator Pressure	Recharge/replace accumulator
	Unloader	Check for proper operation
	Cavitation	Check inlet lines for restrictions and/or proper size
Pump Pressure as Drop at Gun Rated, Pressure	Restricted Discharge Plumbing	Resize discharge plumbing to flow rate of pump
Excessive Leakage	Worn Plungers	Replace plungers
	Worn Packing/Seals	Adjust or Replace packing seals
	Excessive Vacuum	Reduce suction vacuum
	Cracked Plungers	Replace plungers
	Inlet Pressure Too High	Reduce inlet pressure
High Crankcase Temperature	Wrong Grade of Oil	Giant oil is recommended
	Improper Amount of Oil in Crankcase	Adjust oil level to proper amount

### Preventive Maintenance Check List & Recommended Spare Parts List

Check	Daily	Weekly	50 hrs	Every 500 hrs	Every 1500 hrs	Every 3000 hrs
Oil Level/Quality	X					
Oil Leaks	X					
Water Leaks	X					
Belts, Pulley		X				
Plumbing		X				
Recommended Spare Parts (see page 5 for kit list)						
Oil Change (1 Quart) p/n 01153			X	X		
Seal Spare Parts					X	
Oil Seal Kit					X	
Valve Spare Parts						X

### Pump Mounting Selection Guide

<b>Bushings</b> <b>01056</b> - 22 mm Tapered H Bushing
<b>Pulley &amp; Sheaves</b> <b>AB Section</b> <b>01061</b> - 7.75" Cast Iron 1 gr. <b>01062</b> - 7.75" Cast Iron 2 gr.
<b>Rails</b> <b>01034</b> -Steel Box Rails (L=9.25"x W=1.18"x h=1.62") <b>01075</b> - Plated Steel Channel Rails (L=9.00"x W=2.12"x H=2.50")

# REPAIR INSTRUCTIONS - P57 & P57-0011

**CAUTION: The stainless steel valve plugs (41 and 43) can seize (when being removed from the manifold). To release tension beforehand, strike the plugs 1 to 2 times with a steel hammer on the top (before removing them). When replacing them, make sure that the threads are coated with antiseize, e.g., Fel-Pro Nickel Anti-Seize 51119**

## To Check Suction and Discharge Valves

### Inlet Valves

1. Using a socket wrench, carefully remove valve plugs (41 and 43). Take out the suction valve adaptor (39) along with the suction valve assembly (34-38).
2. Using a soft tool, push the valve assembly (34-38) out of the suction valve adaptor (39).
3. Replace o-rings (38, 40 and 42). Replace valve parts (34-37).
4. Carefully replace the valve plugs and tighten to 52 ft-lbs (70 NM).

### Discharge Valves

5. Remove the valve plugs (43). Remove the exposed spring tension cap (34), valve spring (35) and valve plate (36).
6. Using a 12mm (diameter) valve puller, take out the valve seat (37).
7. Replace o-rings (38 and 44). Replace valve parts 34-37.
8. Carefully replace and tighten valve plugs to 52 ft-lbs (70 NM).

## To Check Seals and Plunger Pipe

1. Carefully remove the valve plugs (41). Remove stud nuts (46) and washer (47) from the manifold (29) by pulling it out towards the front. Remove the manifold from the plungers (22).
2. Take out the suction valve adaptor (39), tension spring (33), support discs (33A & 33B) and seal unit (30, 31 and 32).
3. Check the surface of the plungers (22). **Any damaged surfaces will cause accelerated wear on the seals. If the plunger (22) is worn, the complete plunger must be changed - see the section below. The ceramic pipe alone cannot be changed due to reasons of precision.**
4. Check and clean the pressure ring and reinstall into the manifold (29).
5. Reinstall the support ring (32). Prior to replacing the seal assembly (31), grease the new seals.
6. Replace the remaining parts into the manifold (29) in the order that they were removed.
7. Evenly tighten the valve casing with the stud nuts (46) to 35 ft-lbs (47.5 NM).

## To Check Plungers and Crankcase

1. If oil leaks at plunger outlet (22), the oil seal (26) and the plungers have to be examined (and replaced, if necessary). After re-moving the valve casing (29) and its components, drain the oil and remove crankcase cover (3) and bearing cover (12).
2. Remove the connecting rod screws (21) and push the outer connecting rod halves as far as possible into the crosshead guides. **Important! The connecting rods are marked for identification. Do not twist the connecting rod halves. Connecting rods are to be fitted back onto the crankshaft journals in their exact original position.**
3. While slightly turning, hit out (using a rubber hammer) the crankshaft (18) to one side. Either press out the second bearing in the crankcase or carefully hit it out with a soft tool. **Important! Do not bend the connecting rod shanks. Check the crankshaft, connecting rod surfaces as well as the shaft seals (26). Rough surfaces indicate a problem with lubrication and/or possible rough running of the pump. If you suspect that the pump has been running under cavitation or heavy pulsations, make improvements on the inlet and/or discharge connections to and from the pump.**
4. If oil has been leaking through the plunger base oil seals (26), remove them by pushing them out from the backside with a socket wrench. With the seal lip facing forward, replace them into the crankcase (1).

## To Reassemble

1. Replace the front halves of the connecting rod (22) and plunger assembly (22). **Make sure that they are in the same position and orientation.**
2. Using a soft tool, press in one roller bearing until it lies level with the edge of the bearing hole. Mount the other bearing onto the crankshaft.
3. Carefully press in the crankshaft through the opposite bearing hole being particularly careful with the journals.
4. Install radial shaft seal (15), bearing cover (12) and o-ring (13).
5. Replace the back-halves of the connecting rods (**to their original position and orientation**) and tighten to 133 in-lbs (15 NM). **Important! After assembly has been completed, the crankshaft should turn easily (with very little movement).**
6. Replace the flinger (25) on the plunger (22)
7. Replace the back cover (3) o-ring (4), manifold (29) and its contents. Tighten the nuts (46) to 35 ft-lbs (47.5 NM).
8. Make sure Fill the crankcase (1) with the proper amount of oil.

**NOTE: Contact Giant Industries for Service School Information. Phone: (419)-531-4600**

