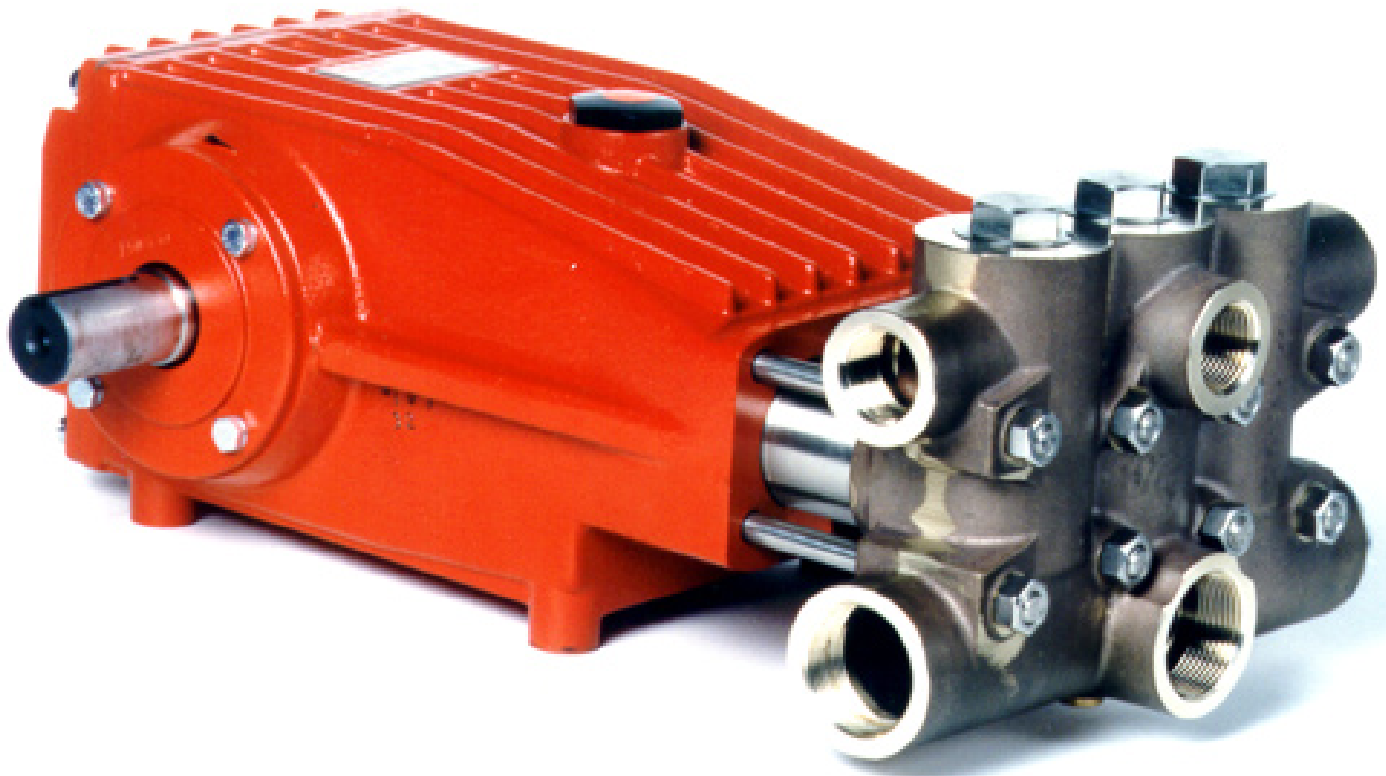


Triplex Ceramic  
Plunger Pump  
Operating Instructions/  
Repair and Service  
Manual

# Models

## LP121A/LP200/LP250/LP250W-MT

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Updated 03/12

## Installation Instruction

**Installation of the Giant Industries, Inc., pump is not a complicated procedure, but there are some basic steps common to all pumps. The following information is to be considered as a general outline for installation. If you have unique requirements, please contact Giant Industries, Inc. or your local distributor for assistance.**

1. The pump should be installed flat on a base to a maximum of a 15 degree angle of inclination to ensure optimum lubrication.
2. The inlet to the pump should be sized for the flow rate of the pump with no unnecessary restrictions that can cause cavitation. Teflon tape should be used to seal all joints. If pumps are to be operated at temperatures in excess of 140<sup>o</sup> F, it is important to insure a positive head to the pump to prevent cavitation.
3. The discharge plumbing from the pump should be properly sized to the flow rate to prevent line pressure loss to the work area. It is essential to provide a safety bypass valve between the pump and the work area to protect the pump from pressure spikes in the event of a blockage or the use of a shut-off gun.
4. Use of a dampener is necessary to minimize pulsation at drive elements, plumbing, connections, and other system areas. The use of a dampener with Giant Industries, Inc. pumps is optional, although recommended by Giant Industries, Inc. to further reduce system pulsation. Dampeners can also reduce the severity of pressure spikes that occur in systems using a shut-off gun. A dampener must be positioned downstream from the unloader.
5. Crankshaft rotation on Giant Industries, Inc. pumps should be made in the direction designated by the arrows on the pump crankcase. Reverse rotation may be safely achieved by following a few guidelines available upon request from Giant Industries, Inc. Required horsepower for system operation can be obtained from the charts on pages 3 and 6.
6. Before beginning operation of your pumping system, remember: Check that the crankcase and seal areas have been properly lubricated per recommended schedules. Do not run the pump dry for extended periods of time. Cavitation will result in severe damage. Always remember to check that all plumbing valves are open and that pumped media can flow freely to the inlet of the pump.

Finally, remember that high pressure operation in a pump system has many advantages. But, if it is used carelessly and without regard to its potential hazard, it can cause serious injury.

### IMPORTANT OPERATING CONDITIONS

**Failure to comply with any of these conditions invalidates the warranty.**

1. Prior to initial operation, add oil to the crankcase so that oil level is between the two lines on the oil dipstick. **DO NOT OVERFILL.**  
  
**Use Giant gear lube oil (p/n 1154) or the equivalent SAE 90 Industrial gear oil.**  
  
Crankcase oil should be changed after the first 50 hours of operation, then at regular intervals of 500 hours or less depending on operating conditions.
2. Pump operation must not exceed rated pressure, volume, or RPM. A pressure relief device must be installed in the discharge of the system.
3. Acids, alkalines, or abrasive fluids cannot be pumped unless approval in writing is obtained before operation from Giant Industries, Inc.
4. Run the pump dry approximately 10 seconds to drain the water before exposure to freezing temperatures.

# Model LP200 Specifications

|  | <u>U.S</u>            | <u>Metric</u>                   |
|--|-----------------------|---------------------------------|
| Volume .....                                 | 19.0 GPM .....        | 72.1 LPM                        |
| Discharge Pressure .....                     | 2900 PSI .....        | 200 Bar                         |
| Inlet Pressure .....                         | -4.35 to 90 PSI ..... | -0.3 to 6.2 Bar                 |
| Speed .....                                  |                       | Up to 1000 RPM                  |
| Plunger Diameter .....                       | 1.10" .....           | 28 mm                           |
| Stroke .....                                 | 1.65" .....           | 42 mm                           |
| Crankcase Oil Capacity .....                 | 118 fl.oz .....       | 3.5 L                           |
| Temperature of Pumped Fluids @ 1000 RPM..... | 140 °F .....          | 60 °C                           |
| Temperature of Pumped Fluids @ 500 RPM.....  | 160 °F .....          | 71 °C                           |
| Inlet Port .....                             |                       | (3) x 1-1/2" BSP                |
| Discharge Port .....                         |                       | (3) x 1" BSP                    |
| Crankshaft Mounting .....                    |                       | Either Side                     |
| Shaft Rotation.....                          |                       | Top of Pulley Towards Fluid End |
| Weight .....                                 | 119 lbs. ....         | 54 kg                           |
| Crankshaft Diameter .....                    |                       | 35 mm                           |

# Model LP121A Specifications

|  | <u>U.S</u>            | <u>Metric</u>                   |
|--|-----------------------|---------------------------------|
| Volume .....                                 | 32.5 GPM .....        | 123.1 LPM                       |
| Discharge Pressure .....                     | 1740 PSI .....        | 120 Bar                         |
| Inlet Pressure .....                         | -4.35 to 90 PSI ..... | -0.3 to 6.2 Bar                 |
| Speed .....                                  |                       | Up to 1000 RPM                  |
| Plunger Diameter .....                       | 1.42" .....           | 36 mm                           |
| Stroke .....                                 | 1.65" .....           | 42 mm                           |
| Crankcase Oil Capacity .....                 | 118 fl.oz .....       | 3.5 L                           |
| Temperature of Pumped Fluids @ 1000 RPM..... | 140 °F .....          | 60 °C                           |
| Temperature of Pumped Fluids @ 500 RPM.....  | 160 °F .....          | 71 °C                           |
| Inlet Port .....                             |                       | (3) x 1-1/2" BSP                |
| Discharge Port .....                         |                       | (3) x 1" BSP                    |
| Crankshaft Mounting .....                    |                       | Either Side                     |
| Shaft Rotation.....                          |                       | Top of Pulley Towards Fluid End |
| Weight .....                                 | 119 lbs. ....         | 54 kg                           |
| Crankshaft Diameter .....                    |                       | 35 mm                           |

| LP200 HORSEPOWER REQUIREMENTS |      |          |          |          |          |
|-------------------------------|------|----------|----------|----------|----------|
| RPM                           | GPM  | 1000 PSI | 1500 PSI | 2000 PSI | 2900 PSI |
| 500                           | 9.5  | 6.6      | 9.9      | 13.2     | 19.1     |
| 640                           | 12.2 | 8.4      | 12.7     | 16.9     | 24.5     |
| 750                           | 14.3 | 9.9      | 14.8     | 19.8     | 28.7     |
| 805                           | 15.3 | 10.6     | 15.9     | 21.2     | 30.8     |
| 865                           | 16.4 | 11.4     | 17.1     | 22.8     | 33.1     |
| 920                           | 17.5 | 12.1     | 18.2     | 24.3     | 35.2     |
| 1000                          | 19.0 | 13.2     | 19.8     | 26.4     | 38.3     |

| LP121A HORSEPOWER REQUIREMENTS |      |         |          |          |          |
|--------------------------------|------|---------|----------|----------|----------|
| RPM                            | GPM  | 500 PSI | 1000 PSI | 1500 PSI | 1740 PSI |
| 500                            | 16.3 | 5.6     | 11.3     | 16.9     | 19.6     |
| 640                            | 20.8 | 7.2     | 14.4     | 21.7     | 25.1     |
| 750                            | 24.4 | 8.5     | 16.9     | 25.4     | 29.5     |
| 805                            | 26.2 | 9.1     | 18.2     | 27.3     | 31.6     |
| 865                            | 28.1 | 9.8     | 19.5     | 29.3     | 34.0     |
| 920                            | 29.9 | 10.4    | 20.8     | 31.1     | 36.1     |
| 1000                           | 32.5 | 11.3    | 22.6     | 33.9     | 39.3     |

### 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.

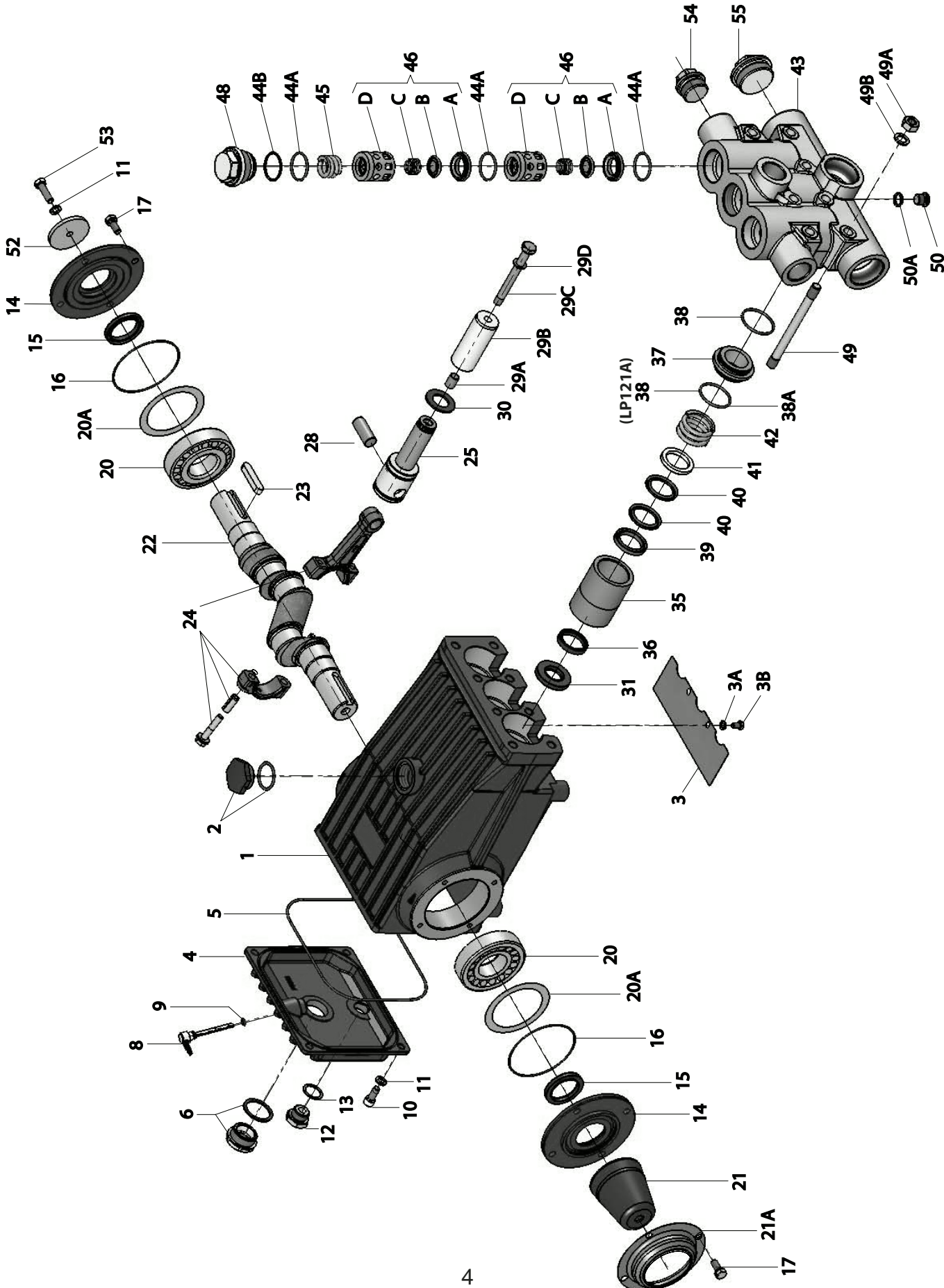
1. Select GPM required, then select appropriate motor and pump pulley from the same line.
2. The desired pressure is achieved by selecting the correct nozzle size that corresponds with the pump GPM.

### HORSEPOWER INFORMATION

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:

$$HP = (GPM \times PSI) / 1440$$

# Exploded View - LP121A, LP200, LP250, and LP250W-MT



## LP121A, LP200, LP250, and LP250W-MT Parts List

| ITEM | PART       | DESCRIPTION                     | QTY | ITEM | PART       | DESCRIPTION                      | QTY |
|------|------------|---------------------------------|-----|------|------------|----------------------------------|-----|
| 1    | 07759      | Crankcase                       | 1   | 35   | 07170      | Seal Sleeve (LP121A)             | 3   |
| 2    | 13000      | Oil filler Plug Assy.           | 1   | 36   | 13228      | Leakage Seal (LP200)             | 3   |
| 3    | 05940      | Cover Plate                     | 1   | 36   | 13291      | Leakage Seal (LP121A)            | 3   |
| 3A   | 07223-0100 | Spring Ring                     | 2   | 36   | 13360      | Leakage Seal (LP250, LP200)      | 3   |
| 3B   | 05051      | Hexagon Screw                   | 2   | 36   | 13025      | Leakage Seal (LP250W-MT)         | 3   |
| 4    | 06085      | Crankcase Cover                 | 1   | 37   | 07170      | Seal Case (except LP121A)        | 3   |
| 5    | 07104      | O-ring, Crankcase Cover         | 1   | 37   | 07139      | Seal Case (LP121A only)          | 3   |
| 6    | 05943      | Oil Sight Glass                 | 1   | 38   | 07140      | O-Ring (except LP121A)           | 3   |
| 8    | 06086      | Oil Dipstick Assy.              | 1   | 38   | 07140      | O-Ring (except LP121A only)      | 6   |
| 9    | 01009      | O-Ring, Dipstick Assy.          | 1   | 38A  | 12055      | O-Ring (except LP121A)           | 3   |
| 10   | 01010      | Cylinder Screw                  | 4   | 39   | 13197      | Pressure Ring (LP200)            | 3   |
| 11   | 01011-0400 | Spring Ring                     | 5   | 39   | 13026      | Pressure Ring (LP250, LP250W-MT) | 3   |
| 12   | 07109      | Plug, 1/2" BSP                  | 1   | 39   | 07142      | Pressure Ring (LP121A)           | 3   |
| 13   | 07182      | Gasket                          | 1   | 40   | 13115      | V-Sleeve (LP200)                 | 6   |
| 14   | 07111      | Bearing Cover                   | 2   | 40   | 13027      | V-Sleeve (LP250, LP250W-MT)      | 6   |
| 15   | 07112      | Radial Shaft Seal               | 2   | 40   | 07144      | V-Sleeve (LP121A)                | 6   |
| 16   | 07113      | O-Ring                          | 2   | 41   | 13198      | Support Ring (LP200)             | 3   |
| 17   | 07114      | Hexagon Screw                   | 8   | 41   | 13028      | Support Ring (LP250, LP250W-MT)  | 3   |
| 20   | 07116      | Taper Roller Bearing            | 2   | 41   | 07146      | Support Ring (LP121A)            | 3   |
| 20A  | 07117      | Fitting Disc                    | 1-3 | 42   | 07173      | Tension Spring (except LP121A)   | 3   |
| 20B  | 13001      | Fitting Disc                    | 1-3 | 42   | 07147      | Tension Spring (LP121A only)     | 3   |
| 21   | 05376      | Shaft Protector                 | 1   | 43   | 13029      | Valve Casing                     | 1   |
| 21A  | 05377      | Shaft Guard Holder              | 1   | 44A  | 07150      | O-Ring                           | 9   |
| 22   | 13242      | Crankshaft                      | 1   | 44B  | 06266      | Support Ring for O-Ring          | 3   |
| 23   | 13243      | Fitting Key                     | 1   | 45   | 06078      | Compression Spring               | 3   |
| 24   | 13340      | Connecting Rod Assy.            | 3   | 46A  | 07064      | Valve Seat                       | 6   |
| 24A  | 13227      | Hex Screw                       | 3   | 46B  | 07063      | Valve Plate                      | 6   |
| 24B  | 13278      | Spring Washer                   | 3   | 46C  | 07750-0100 | Valve Spring                     | 6   |
| 25   | 13341      | Crosshead / Plunger Assy.       | 3   | 46D  | 07066      | Spacer Pipe                      | 6   |
| 28   | 13232      | Crosshead Pin                   | 3   | 48   | 06077      | Plug                             | 3   |
| 29A  | 07125      | Centering Sleeve                | 3   | 49   | 07157      | Stud Bolt                        | 8   |
| 29B  | 13220      | Plunger Pipe (LP200)            | 3   | 49A  | 07158      | Hexagon Nut                      | 8   |
| 29B  | 13022      | Plunger Pipe (LP250, LP250W-MT) | 3   | 49B  | 07159      | Disc                             | 8   |
| 29B  | 07130      | Plunger Pipe (LP121A)           | 3   | 50   | 07423      | Plug                             | 1   |
| 29C  | 13031      | Tension Screw                   | 3   | 50A  | 07161      | Copper Ring                      | 1   |
| 29D  | 07755      | Copper Ring                     | 3   | 52   | 13020      | Disc for Crankshaft              | 1   |
| 30   | 07779      | Drip Shield                     | 3   | 53   | 06607      | Hexagon Screw                    | 1   |
| 31   | 07133      | Radial Shaft Seal               | 3   | 54   | 13321      | Plug, 1" BSP*                    | 2   |
| 35   | 13196      | Seal Sleeve (LP200)             | 3   | 55   | 13322      | Plug 1-1/2" BSP*                 | 2   |
| 35   | 13024      | Seal Sleeve (LP250, LP250W-MT)  | 3   |      |            |                                  |     |

\*BSP to NPT Adapters/Seals (sold separately)

Inlet = 13375 (Adapter) / 13374 (Seal)

Discharge = 13373 (Adapter) / 13372 (Seal)

## LP121A, LP200, LP250 SERIES & LP250W-MT REPAIR KITS

| Plunger Packing Kits |       |              |      |                      |       |              |      |
|----------------------|-------|--------------|------|----------------------|-------|--------------|------|
| LP200 - #9307        |       |              |      | LP250 Series - #9308 |       |              |      |
| Item                 | Part# | Description  | Qty. | Item                 | Part# | Description  | Qty. |
| 36                   | 13228 | Leakage Seal | 3    | 36                   | 13360 | Grooved Ring | 3    |
| 38                   | 07140 | O-Ring       | 3    | 38                   | 07140 | O-Ring       | 3    |
| 38A                  | 12055 | O-Ring       | 3    | 38A                  | 12055 | O-Ring       | 3    |
| 40                   | 13115 | V-Sleeve     | 6    | 40                   | 13027 | V-Sleeve     | 6    |
| LP121A - #09720      |       |              |      | LP250W-MT - #9308-MT |       |              |      |
| Item                 | Part# | Description  | Qty. | Item                 | Part# | Description  | Qty. |
| 36                   | 13291 | Leakage Seal | 3    | 36                   | 13025 | Leakage Seal | 3    |
| 38                   | 07140 | O-Ring       | 6    | 38                   | 07140 | O-Ring       | 3    |
| 40                   | 07144 | V-Sleeve     | 6    | 38A                  | 12055 | O-Ring       | 3    |
|                      |       |              |      | 40                   | 13027 | V-Sleeve     | 6    |

| Valve Kit - #09196 |       |              |      |
|--------------------|-------|--------------|------|
| Item               | Part# | Description  | Qty. |
| 44A                | 07150 | O-Ring       | 9    |
| 44B                | 06266 | Support Ring | 3    |
| 46A                | 07064 | Valve Seat   | 3    |
| 46B                | 07063 | Valve Plate  | 3    |
| 46C                | 07062 | Valve Spring | 3    |

| Oil Seal Kit - #09577 |       |              |      |
|-----------------------|-------|--------------|------|
| Item                  | Part# | Description  | Qty. |
| 31                    | 07133 | Oil Seal Kit | 3    |

# Specifications

## Model LP250 and LP250W-MT

|                                    | <u>U.S.</u>           | <u>Metric</u>                   |
|------------------------------------|-----------------------|---------------------------------|
| Volume .....                       | 26.0 GPM .....        | 98.3 LPM                        |
| Discharge Pressure .....           | 2200 PSI .....        | 150 Bar                         |
| Inlet Pressure .....               | -4.35 to 90 PSI ..... | -0.3 to 6.2 Bar                 |
| Speed .....                        |                       | 1000 RPM                        |
| Plunger Diameter .....             | 1.26" .....           | 32 mm                           |
| Stroke .....                       | 1.65" .....           | 42 mm                           |
| Crankcase Oil Capacity .....       | 118 fl.oz. ....       | 3.5 L                           |
| Temperature of Pumped Fluids ..... | 140 °F .....          | 60 °C                           |
| Inlet Port .....                   |                       | 3 x 1-1/2" BSP                  |
| Discharge Port .....               |                       | 3 x 1" BSP                      |
| Crankshaft Mounting .....          |                       | Either Side                     |
| Shaft Rotation .....               |                       | Top of Pulley Towards Fluid End |
| Weight .....                       | 119 lbs. ....         | 54 kg                           |
| Crankshaft Diameter.....           |                       | 35 mm                           |

### 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.

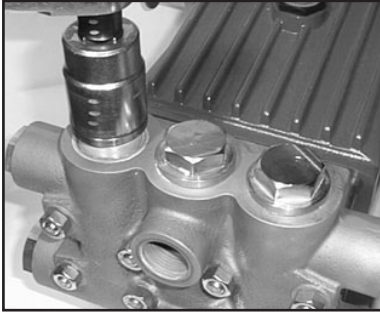
### HORSEPOWER INFORMATION

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:

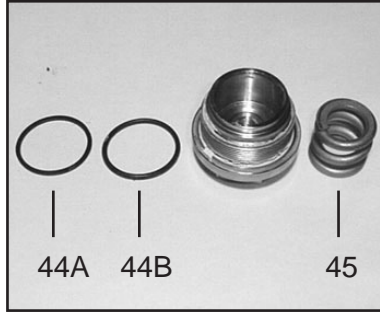
$$HP = (GPM \times PSI) / 1440$$

| <b>LP250 HORSEPOWER REQUIREMENTS</b> |            |                 |                 |                 |                 |
|--------------------------------------|------------|-----------------|-----------------|-----------------|-----------------|
| <b>RPM</b>                           | <b>GPM</b> | <b>1000 PSI</b> | <b>1500 PSI</b> | <b>2000 PSI</b> | <b>2200 PSI</b> |
| 500                                  | 13.0       | 9.0             | 13.5            | 18.0            | 19.8            |
| 640                                  | 16.6       | 11.5            | 17.3            | 23.1            | 25.4            |
| 750                                  | 19.5       | 13.5            | 20.3            | 27.1            | 29.8            |
| 805                                  | 20.9       | 14.5            | 21.8            | 29.0            | 31.9            |
| 865                                  | 22.5       | 15.6            | 23.4            | 31.2            | 34.3            |
| 920                                  | 23.9       | 16.6            | 24.9            | 33.2            | 36.5            |
| 1000                                 | 26.0       | 18.0            | 27.1            | 36.1            | 39.7            |

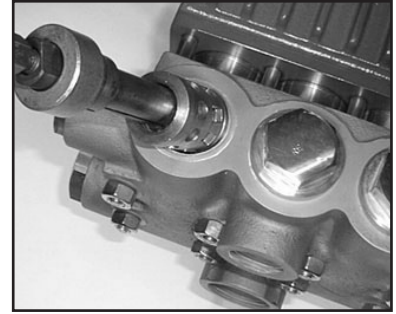
## LP121A, LP200, LP250, and LP250W-MT - Repair Instructions



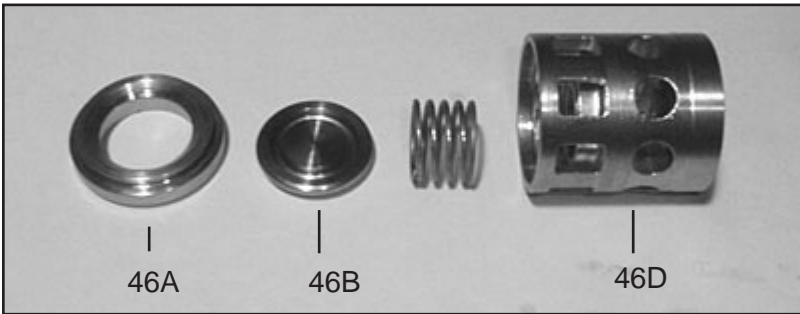
1. With a 30mm wrench, remove the 3 plugs (48).



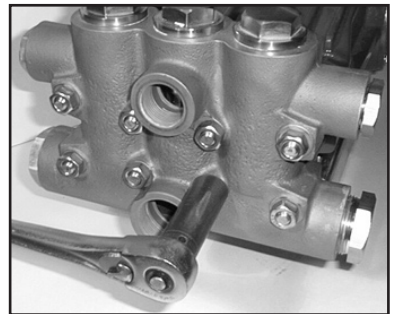
2. Remove the compression spring (45), O-rings and support rings (44A & 44B).



3. Remove the complete valve assembly (46A-46D) with valve pullers.



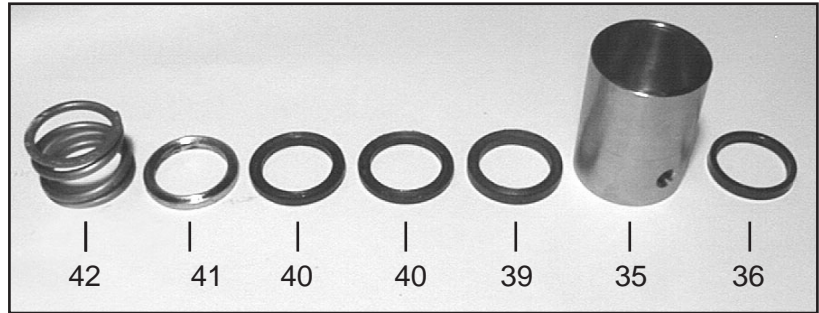
4. Loosen valve seats (46A) from spacer pipe (46D) by lightly hitting the valve plate (46B) with a plastic stick. Check sealing surface and replace worn parts. Reassemble with new O-rings (44A) and oil them before installing. Tighten up tension plugs (48) to 107 ft.-lbs. (145 NM).



5. Loosen the 8 nuts (49A) with a 19mm wrench. Tap the back of the manifold (43) with a rubber mallet to dislodge and slide off the studs (49).

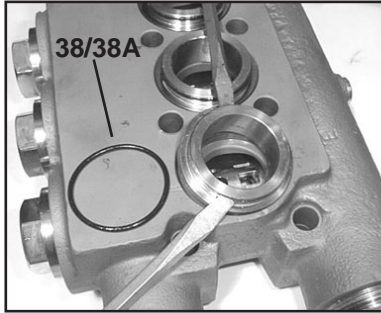


6. Pull seal sleeves (35) out of guides in crankcase (1).

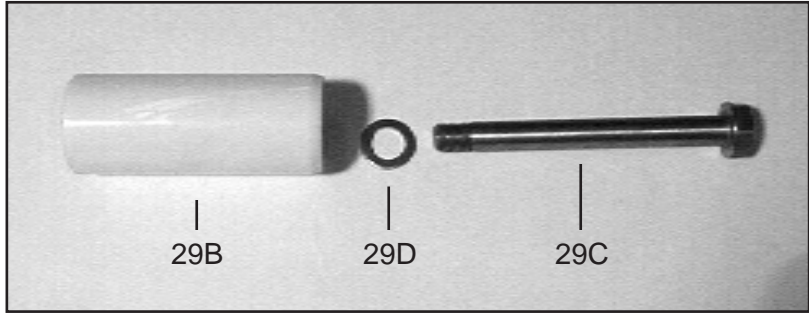


7. Remove the tension spring (42), support ring (41), v-sleeves (40), pressure ring (39), from the seal sleeve (35). Examine seals (36) carefully and replace if worn. Clean all parts.

# LP121A, LP200, LP250, and LP250W-MT - Repair Instructions



8. Remove seal case (37) from valve casing (43) and inspect O-rings (38/38A).



9. Check plunger surface (29B). If plunger pipe is worn, loosen tension screws (29C) and pull off plunger pipe to the front. Clean front surface of plunger (25) thoroughly. Apply a thin coat of Loctite to the tension screw threads (29C). **Note: Care must be taken that no glue gets between the plunger pipe (29B) and the centering sleeve (29A).** Add new copper ring (29D).



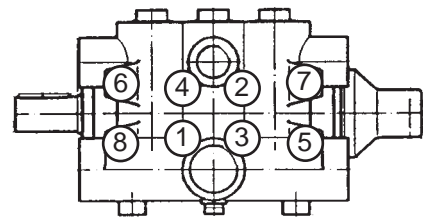
10. Place new plunger pipe (29B) carefully through the oiled seals and push seal sleeve (35) with plunger pipe into the crankcase guide. **Note: Make sure weep hole is facing down.**



11. Tighten the tension screws (29C) to 310 in.-lbs. (35NM). The plunger pipe (29B) should not be strained by over tightening of the tension screw (29C) or through damage to the front surface of the plunger; otherwise, it will probably break.



12. Place valve vasing (43) over studs and push firmly until seated against the crankcase (1). Tighten the hexagon nuts (49A) in a crosswise pattern (shown below) to 59 ft.-lbs. (80 NM)





# LP121A, LP200, LP250, and LP250W-MT - Repair Instructions

## To Dismantle Gear End

After removing valve casing (43) and plunger pipe (29B), drain oil. Remove crankcase cover (4) and bearing cover (14). Loosen connecting rod screws (24A) and push the front of the connecting rod (24) forward as far as possible into the crosshead guide.

**IMPORTANT!** Connecting rods (24) are marked for identification. Do not twist connecting rod halves. Connecting rod is to be reinstalled in the same position on shaft journals.

Turning the crankshaft (22) slightly, hit it out carefully to the side with a rubber hammer.

**IMPORTANT!** Do not bend the connecting rod (24) shanks. Check crankshaft (22) and connecting rod (24) surfaces, radial shaft seals (15) and taper roller bearings (20).

## To Reassemble

Using a soft tool, press in the outer bearing ring until the outer edge lines up with the outer edge of the bearing hole. Remove bearing cover (14) together with radial shaft seal (15) and o-ring (16). Fit crankshaft (22) through bearing hole on the opposite side. Press in outer bearing and tighten it inwards with the bearing cover, keeping the crankshaft in vertical position and turning slowly so that the taper rollers of the bearings touch the edge of the outer bearing ring. Adjust axial bearing clearance to at least 0.1mm and maximum 0.15mm by placing fitting discs (20A and 20B) under the bearing cover.

**IMPORTANT!** After assembly has been completed, the crankshaft should turn easily with very little clearance. Tighten connecting rod screws (24A) to 310 in.-lbs. (35 NM).

## LP121A, LP200, LP250, and LP250W-MT Torque Specifications

| <u>Position</u> | <u>Item#</u> | <u>Description</u>              | <u>Torque Amount</u>  |
|-----------------|--------------|---------------------------------|-----------------------|
| 24              | 13340        | Inner Hex Screw, Connecting Rod | 310 in.-lbs. (35 NM)  |
| 29C             | 13031        | Tension Screw, Plunger          | 310 in.-lbs. (35 NM)  |
| 48              | 06077        | Plug, Discharge                 | 107 ft.-lbs. (145 NM) |
| 49A             | 07158        | Hexagon Nut, Stud Bolts         | 59 ft.-lbs. (80 NM)   |

## Pump Mounting Selection Guide

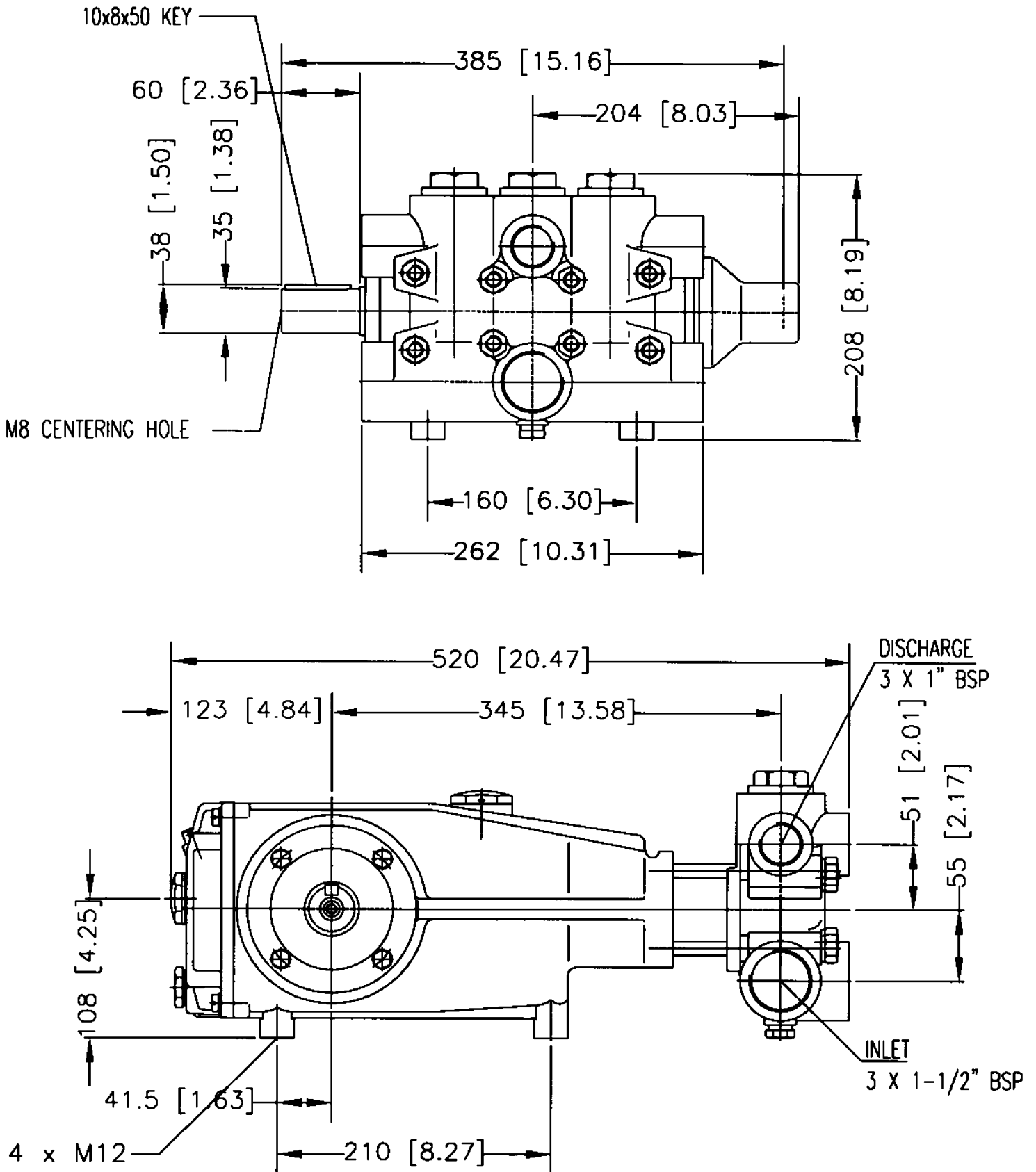
|  |
|--|
| <p><b>Bushings</b><br/> <b>06496</b> - 35mm H Bushing</p>  |
| <p><b>Pulley &amp; Sheaves</b><br/> <b>07165</b> - 12.75" Cast Iron - 4 gr. - AB Section</p>                               |
| <p><b>Rails</b><br/> <b>07357</b> - Plated Steel Channel Rails<br/>                     (L=11.75" x W=1.88" x H=3.00")</p> |

## Pump System Malfunction

| <u>MALFUNCTION</u>                           | <u>CAUSE</u>  | <u>REMEDY</u>  |
|--|---|--|
| The Pressure and/or the Delivery Drops       | Worn packing seals<br>Broken valve spring<br>Belt slippage<br>Worn or Damaged nozzle<br>Fouled discharge valve<br>Fouled inlet strainer<br>Worn or Damaged hose<br>Worn or Plugged relief valve on pump<br>Cavitation<br><br>Unloader | Replace packing seals<br>Replace spring<br>Tighten or Replace belt<br>Replace nozzle<br>Clean valve assembly<br>Clean strainer<br>Repair/Replace hose<br>Clean, Reset, and Replace worn parts<br>Check suction lines on inlet of pump for restrictions<br>Check for proper operation |
| Water in crankcase                           | High humidity<br>Worn seals   | Reduce oil change interval<br>Replace seals  |
| Noisy Operation                              | Worn bearings<br><br>Cavitation   | Replace bearings, Refill crankcase oil with recommended lubricant<br>Check inlet lines for restrictions and/or proper sizing   |
| Rough/Pulsating Operation with Pressure Drop | Worn packing<br>Inlet restriction<br><br>Accumulator pressure<br>Unloader<br>Cavitation   | Replace packing<br>Check system for stoppage, air leaks, correctly sized inlet plumbing to pump<br>Recharge/Replace accumulator<br>Check for proper operation<br>Check inlet lines for restrictions and/or proper size   |
| Pressure Drop at Gun                         | Restricted discharge plumbing   | Re-size discharge plumbing to flow rate of pump  |
| Excessive Leakage                            | Worn plungers<br>Worn packing/seals<br>Excessive vacuum<br>Cracked plungers<br>Inlet pressure too high  | Replace plungers<br>Adjust or Replace packing seals<br>Reduce suction vacuum<br>Replace plungers<br>Reduce inlet pressure  |
| High Crankcase Temperature                   | Wrong Grade of oil<br>Improper amount of oil in crankcase   | Giant oil is recommended<br>Adjust oil level to proper amount  |

| <b>Preventative Maintenance Check List &amp; Recommended Spare Parts List</b> |              |               |                |                       |                        |                        |
|---|--------------|---------------|----------------|-----------------------|------------------------|------------------------|
| <b>Check</b>  | <b>Daily</b> | <b>Weekly</b> | <b>50 Hrs.</b> | <b>Every 500 Hrs.</b> | <b>Every 1500 Hrs.</b> | <b>Every 3000 Hrs.</b> |
| Oil Level/Quality   | X            |               |                |                       |                        |                        |
| Oil Leaks   | X            |               |                |                       |                        |                        |
| Water Leaks   | X            |               |                |                       |                        |                        |
| Belts, Pulley   |              | X             |                |                       |                        |                        |
| Plumbing  |              | X             |                |                       |                        |                        |
| <b>Recommended Spare Parts</b>  |              |               |                |                       |                        |                        |
| Oil Change<br>(1 Gallon) p/n 01154  |              |               | X              | X                     |                        |                        |
| Plunger Seal Kit<br>(1 kit/pump) See page 5                                   |              |               |                |                       | X                      |                        |
| Valve Repair Kit<br>(2 kits/pump) See page 5                                  |              |               |                |                       |                        | X                      |

LP121A, LP200, LP250 & LP250W-MT Dimensions - mm (in)



# GIANT INDUSTRIES LIMITED WARRANTY

Giant Industries, Inc. pumps and accessories are warranted by the manufacturer to be free from defects in workmanship and material as follows:

1. For portable pressure washers and self-service car wash applications, the discharge manifolds are guaranteed for the life of the pump. Our other pump parts, used in portable pressure washers and in car wash applications, are warranted for five years from the date of shipment for all pumps used in NON-SALINE, clean water applications.
2. One (1) year from the date of shipment for all other Giant industrial and consumer pumps.
3. Six (6) months from the date of shipment for all rebuilt pumps.
4. Ninety (90) days from the date of shipment for all Giant accessories.

This warranty is limited to repair or replacement of pumps and accessories of which the manufacturer's evaluation shows were defective at the time of shipment by the manufacturer. The following items are NOT covered or will void the warranty:

1. Defects caused by negligence or fault of the buyer or third party.
2. Normal wear and tear to standard wear parts.
3. Use of repair parts other than those manufactured or authorized by Giant.
4. Improper use of the product as a component part.
5. Changes or modifications made by the customer or third party.
6. The operation of pumps and or accessories exceeding the specifications set forth in the Operations Manuals provided by Giant Industries, Inc.

Liability under this warranty is on all non-wear parts and limited to the replacement or repair of those products returned freight prepaid to Giant Industries which are deemed to be defective due to workmanship or failure of material. A Returned Goods Authorization (R.G.A.) number and completed warranty evaluation form is required prior to the return to Giant Industries of all products under warranty consideration. Call (419)-531-4600 or fax (419)-531-6836 to obtain an R.G.A. number.

Repair or replacement of defective products as provided is the sole and exclusive remedy provided hereunder and the MANUFACTURER SHALL NOT BE LIABLE FOR FURTHER LOSS, DAMAGES, OR EXPENSES, INCLUDING INCIDENTAL AND CONSEQUENTIAL DAMAGES DIRECTLY OR INDIRECTLY ARISING FROM THE SALE OR USE OF THIS PRODUCT.

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