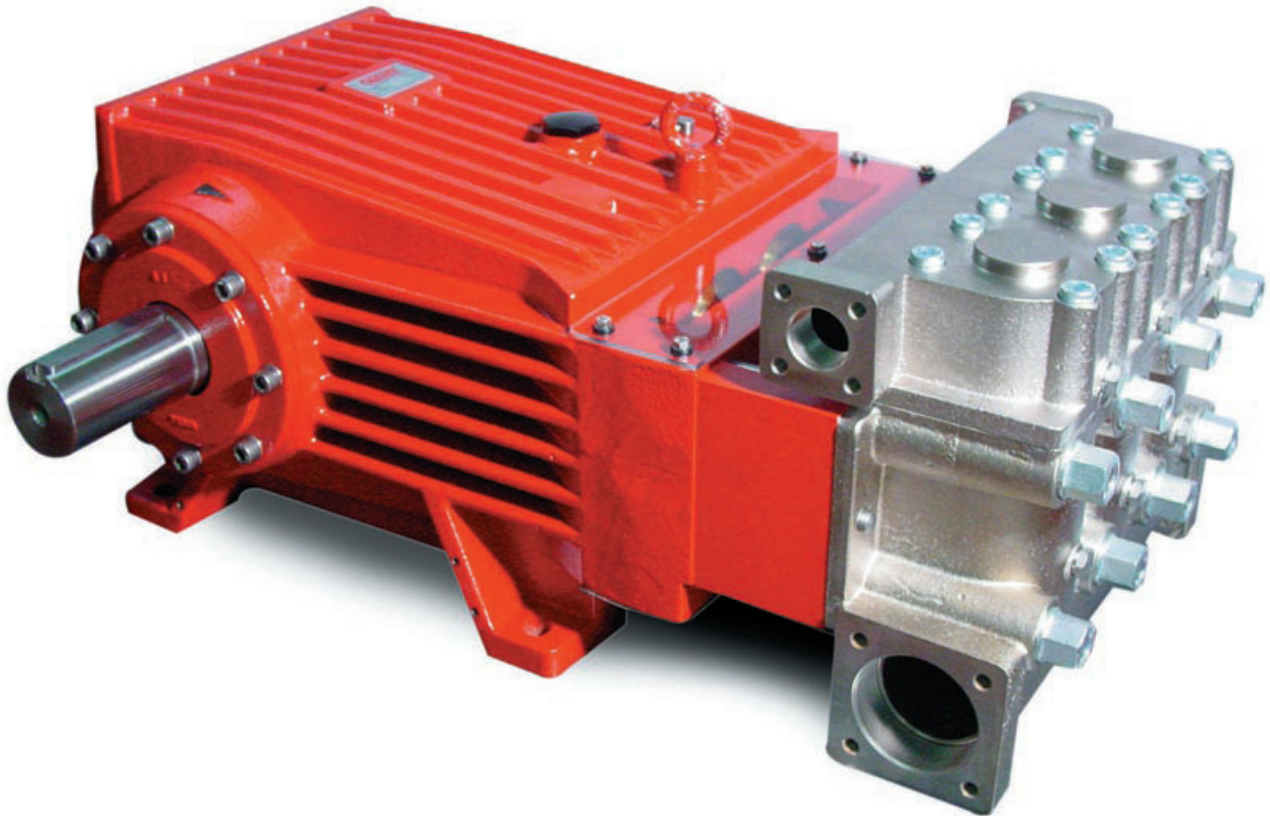


Model GP8076A

Triplex Ceramic
Plunger Pump
Operating Instructions/
Repair and Service Manual



Contents:

| | |
|----------------------------|-----------|
| Installation Instructions: | page 2 |
| Pump Specifications: | page 3 |
| Exploded View: | page 4 |
| Parts List / Kit List: | page 5 |
| Torque Specifications: | page 6 |
| Preventive Maintenance: | page 6 |
| Troubleshooting Guide: | page 6 |
| Repair Instructions: | page 7 |
| Dimensions: | back page |
| Warranty Information | back page |

GP8076A Installation Instructions

Operation and Maintenance

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

Oil: Use only 4.6 gallons (17.5 liters) of **ISO VG 220 GL4 (e.g. Aral Degol BG220)** or **SAE 90 GL4 gear oil** (Giant part number 01154).

Initial change after 50 operating hours and then every 1000 operating hours, or after 1 year if used less.

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

Maximum input pressure 145 PSI (10 bar).
Maximum suction head -4.35 PSI (-0.3 bar) (dependent on the viscosity of the medium). Make sure that suction pulsation is sufficiently dampened – water column resonance must be avoided. When starting up for work, the pump must run first at zero pressure for approximately 1 minute.

Important! The GP8076 pump has a black arrow on the crankcase which shows the preferred direction of rotation.

The preferred direction of rotation ensures the motion of the connecting rods correctly distributes the oil onto the crosshead guides – which is a particular advantage where continuous operation is involved.

The pump can also be run against the recommended direction of rotation if operated periodically or at reduced pressure. If so, the pump has to be run in this direction to smoothen the bearing areas. This is done by a one-time operation at zero pressure for at least 30 minutes; thereafter the pressure must be slowly increased over the next hour to the desired maximum operating pressure after which the pump is then run in. The oil temperature is to be checked during this procedure.

The torque tension on the valve casing nuts (49A) is to be checked after approximately 200 operating hours. Please see the torque specification chart on page 5.

The pump must be at zero pressure when checking the torque tension.

Important! Retighten the sleeve only 1 to maximum 2 hole distances as otherwise the friction increases too much. Regrease the seal by pressing multi-purpose grease 2M (e.g. Multi Basic 2M) into the grease nipple (39B).

Important! To avoid any incrustation of the medium on the plungers (36B), screw off cover plate (30) after every operation and rinse the plunger area with clear non-pressurized water (e.g. using mains water, never under high pressure).

Important! After finishing the work, run the pump with clear water for 3-5 minutes. The service life of the seals, ceramic plungers and valves depends largely on how fine the recycled bentonite is filtered.

Safety Rules

The operating instructions must be read and adhered to before performing any work on the pump or complete assembled unit. No responsibility will be carried by us for damage to materials or persons caused by improper handling of our pumps.

Access to the pump is not allowed for unauthorized personnel. A safety valve is to be installed in accordance with the guidelines for liquid spraying units so that the admissible operating pressure cannot be exceeded by more than 10%. Pump operation without a safety valve as well as any excess in temperature or speed limits automatically voids the warranty.

When the pump is in operation, the driven shaft side and its coupling must be covered by a protective guard. The plunger area must also be covered by the protective plate (30).

Do not step onto the protective plate (30) nor put weight on it.

Pressure in the discharge line and pump must be at zero before carrying out any maintenance work to the pump or unit. Close off suction line. Disconnect fuses to ensure that the driving motor cannot get switched on accidentally. Make sure that the pump, the cooling system and all parts on the pressure side of the unit are vented and refilled, with pressure at zero, before starting the pump.

In order to prevent air or an air/medium-mixture being absorbed and cavitation occurring, the pump-npshr (positive suction head required) and water temperature must be respected.

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

The GP8076 Giant pump is suitable for pumping clean water as well as water containing bentonite in a concentration of maximum 55 lbs. (25 kg) of bentonite diluted in 264 gallons (1m³) of water.

Specifications - Model GP8076A

| | | |
|-----------------------------------|-------------------|--------------------------------|
| | U.S. | Metric |
| Volume | 132 GPM | 500 L/min |
| Discharge Pressure | 1500 PSI | 100 bar |
| Power Required | 129 HP | 96 kW |
| Speed | | 520 RPM |
| Inlet Pressure..... | -4.35 to 145 PSI* | -0.3 to 10 bar |
| Plunger Diameter..... | 2.99" | 76 mm |
| Plunger Stroke | 2.83" | 72 mm |
| Crankshaft Diameter..... | | 70 mm |
| Key Width | | B20 x 12 x 110 mm |
| Crankshaft Mounting..... | | Either side |
| Shaft Rotation | | Top of pulley towards manifold |
| Temperature of Pumped Fluids..... | Up to 104 °F | (40 °C) |
| Inlet Ports..... | | (2) 3" BSP |
| Discharge Ports | | (2) 1-1/2" BSP |
| Weight..... | 738 lbs. | (335 kg) |
| Crankcase Oil Capacity | 4.6 Gal. | (17.5 Liters) |
| Fluid End Material..... | | Nickel-Plated Cast Iron |

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

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

| GP8076 Horsepower Requirements | | | | | |
|--------------------------------|-------|---------|---------|----------|----------|
| RPM | GPM | 500 PSI | 750 PSI | 1000 PSI | 1500 PSI |
| 260 | 66.0 | 22.8 | 34.1 | 45.5 | 68.3 |
| 300 | 76.2 | 26.3 | 39.4 | 52.6 | 78.8 |
| 400 | 101.5 | 35.0 | 52.5 | 70.0 | 105.0 |
| 500 | 132 | 45.5 | 68.3 | 91.0 | 136.6 |

SPECIAL NOTE:

The theoretical gallons per revolution (gal/rev) is 0.254.
To find specific outputs at various RPM, use the formula:

$$\text{GPM} = 0.254 \times \text{RPM}$$

[illegible]

Parts List - GP8076A

| <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 | 05380 | Crankcase | 1 | 38 | 03563 | Seal Case | 3 |
| 2 | 06893 | Oil Filler Plug Assy. with Vent | 1 | 38A | 03564 | O-Ring | 6 |
| 5 | 22929 | Copper Washer | 2 | 39 | 03565 | Seal Sleeve | 3 |
| 6 | 12256 | Plug | 1 | 39A | 05066 | O-Ring | 3 |
| 7 | 05656 | Plug, 3/8" BSP | 1 | 40 | 03566 | Support Ring | 6 |
| 8 | 05035 | Oil Dipstick Assembly | 1 | 41 | 03567 | Guide Ring | 6 |
| 9 | 01009 | O-Ring | 1 | 42 | 03568 | Spiral Ring | 6 |
| 12 | 07109 | Plug, 1/2" BSP | 2 | 45 | 03569 | Pressure Spring | 3 |
| 13 | 06272 | Seal | 2 | 49 | 05072 | Stud Bolt | 8 |
| 14 | 05036 | Bearing Cover, Closed | 1 | 49A | 05073 | Hexagon Nut | 8 |
| 14A | 03597 | Bearing Cover, Open | 1 | 50 | 03570 | Valve Casing | 1 |
| 15 | 05112 | Radial Shaft Seal | 1 | 50A | 13162 | Centering Stud | 2 |
| 16 | 05037 | O-Ring | 2 | 50B | 03511 | Discharge Valve Casing | 1 |
| 17 | 05038 | Hexagon Socket Screw | 16 | 51 | 03572 | Valve Assembly (51A-51F) | 6 |
| 18 | 05039 | Spring Ring | 16 | 51A | 03573 | Spring Tension Cap | 6 |
| 21 | 05044 | Tapered Roller Bearing | 2 | 51B | 03574 | Valve Seat | 6 |
| 21A | 05042 | Fitting Disc | 1-5 | 51C | 03575 | Valve Plate | 6 |
| 21B | 05043 | Fitting Disc | 1-5 | 51D | 06560 | O-Ring | 6 |
| 22 | 05299 | Crankshaft | 1 | 51E | 05080 | Valve Spring | 6 |
| 23 | 05104 | Fitting Key | 1 | 51F | 03434 | O-Ring | 6 |
| 24 | 05047 | Connecting Rod Assembly | 3 | 56 | 03576 | Discharge Valve Adaptor | 3 |
| 25 | 05048 | Crosshead c/w Plunger | 3 | 56A | 04955 | O-Ring | 3 |
| 28 | 05049 | Crosshead Pin | 3 | 56B | 13156 | O-Ring | 3 |
| 29 | 05051 | Hexagon Screw | 4 | 57 | 05086 | Pressure Spring | 3 |
| 30 | 05052 | Cover Plate | 1 | 57A | 07210-0100 | Pressure Spring | 3 |
| 30A | 07225-0100 | Hexagon Screw | 5 | 58 | 05087 | Hexagon Socket Screw | 12 |
| 30B | 13136 | Grommet | 5 | 59 | 07109 | Plug 1/2" BSP | 2 |
| 30C | 05053 | Washer | 9 | 59A | 06272 | Copper Seal | 2 |
| 30D | 05050 | Splash Cover | 1 | 60 | 13322 | Plug 1-1/2" BSP | 1 |
| 31 | 07623 | Eye Bolt | 3 | 61 | 05088 | Plug 3" BSP | 1 |
| 32 | 05058 | Radial Shaft Seal | 3 | 62 | 05302 | Plug, 1/4" BSP | 6 |
| 32A | 03118 | Scraper | 3 | 62A | 06934 | Copper Seal | 6 |
| 33 | 03119 | Seal Retainer | 3 | 66 | 03503 | Disc for Crankshaft | 1 |
| 33A | 05056 | O-Ring | 3 | 67 | 13433 | Hexagon Screw | 1 |
| 33B | 05054 | Clip Ring | 3 | 68 | 07662 | Mounting Aid for Valve | |
| 33C | 05059 | Fitting Disc | 3 | | | (not shown) | 1 |
| 34 | 03586 | Oil Shield | 3 | K2 | 05027 | Seal for Gear Cover | 1 |
| 36A | 04934 | Plunger Pipe Cover | 3 | K3 | 03622 | Gear Cover | 1 |
| 36B | 03561 | Plunger Pipe | 3 | K5 | 22706 | Hexagon Socket Screw | 8 |
| 36C | 03621 | Tension Screw | 3 | K6 | 08041 | Washer | 8 |
| 36D | 07665-0100 | Steel Washer | 3 | K8 | 06272 | Copper Seal | 4 |
| 36E | 06900 | Centering Sleeve | 3 | K9 | 07109 | Plug, 1/2" BSP | 4 |
| 36F | 22704 | O-Ring | 3 | K18 | 03623 | Hexagon Socket Screw | 4 |
| 36G | 12092 | O-Ring | 3 | K19 | 05053 | Washer | 4 |

Repair Kits - GP8076A

Plunger Packing Kits - #09863A

| <u>Item</u> | <u>Part #</u> | <u>Description</u> | <u>Qty.</u> |
|-------------|---------------|--------------------|-------------|
| 38A | 03564 | O-Ring | 6 |
| 39A | 05066 | O-Ring | 3 |
| 40 | 03566 | Support Ring | 3 |
| 41 | 03567 | Guide Ring | 6 |
| 42 | 03568 | Spiral Ring | 6 |

Valve Repair Kit - #09864A

| <u>Item</u> | <u>Part #</u> | <u>Description</u> | <u>Qty.</u> |
|-------------|---------------|--------------------|-------------|
| 51 | 03572 | Valve Assembly | 6 |
| 56A | 04955 | O-Ring | 3 |
| 56B | 13156 | O-Ring | 3 |

Oil Seal Kit - #09584A

| <u>Item</u> | <u>Part #</u> | <u>Description</u> | <u>Qty.</u> |
|-------------|---------------|--------------------|-------------|
| 32 | 05058 | Radial Shaft Seal | 3 |
| 32A | 03118 | Scraper | 3 |
| 33A | 05056 | O-Ring | 3 |

| GP8076A TORQUE SPECIFICATIONS | | | | | |
|-------------------------------|--------|----------|-------------------------|----------------------------------|-----------------------|
| Position | Item # | Thread | Description | Lubrication Info | Torque Amount |
| 12 | 07109 | 1/2" BSP | Plug, 1/2" BSP | | 59 ft.-lbs. (80 Nm) |
| 15 | 05112 | | Radial Shaft Seal | Loctite 403 | |
| 17 | 05038 | M12 | Hexagon Socket Screw | | 64 ft.-lbs. (87 Nm) |
| 24 | 05047 | M10 | Connecting Rod Assembly | | 37 ft.-lbs. (50 Nm) |
| 32 | 05058 | | Radial Shaft Seal | Loctite 403 | |
| 36C | 03621 | M10 | Tension Screw | Loctite 243 | 30 ft.-lbs. (40 Nm) |
| 39 | 03565 | | Seal Sleeve | Anti-Seize 350 Crankcase Side | |
| 49 | 05072 | M20 | Stud Bolt | Loctite 648 Crankcase Side | |
| 49A | 05073 | M20 | Hexagon Nut | | 266 ft.-lbs. (360 Nm) |
| 58 | 05087 | M14 | Hexagon Socket Screw | Anti-Seize 350 | 133 ft.-lbs. (180 Nm) |
| 59 | 07109 | 1/2" BSP | Plug, 1/2" BSP | | 59 ft.-lbs. (80 Nm) |
| K5 | 22706 | M10 | Hexagon Socket Screw | | 33 ft.-lbs. (45 Nm) |
| K9 | 07109 | 1/2" BSP | Plug, 1/2" BSP | | 59 ft.-lbs. (80 Nm) |
| K18 | 03623 | M6 | Hexagon Socket Screw | | 133 in.-lbs. (15 Nm) |

| Preventive Maintenance Check-List & Recommended Spare Parts List | | | | | | |
|--|-------|--------|-------|------------------|-------------------|-------------------|
| Check | Daily | Weekly | 50hrs | 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 | | | | | | |
| Oil Change p/n 1154 | | | X | X | | |
| Seal Spare Parts (1 kit/pump) (Page 5 for kit list) | | | | | X | |
| Oil Seal Kit (1 kit/pump) (Page 5 for kit list) | | | | | X | |
| Valve Kit (1 kit/pump) (Page 5 for kit list) | | | | | | X |

| Problem | Cause | Solution |
|---|--|--|
| Pressure drops, medium leaks. | Spiral rings leak. | Replace spiral rings, examine surface of plunger. |
| Pressure drops, pump becomes loud. | Discharge or suction valve leaks. | Replace valve. |
| | Steam formation (cavitation). | Reduce suction height, reduce flow resistance in the suction line, clean suction filter, lower medium temperature. |
| Irregular pressure. | Worn valves. | Examine valves. |
| | O-Ring on the valves or suction valve adaptor leaks. | Examine O-ring, examine valve casing for unevenness on the sealing surfaces. |
| Oil leaks at visible part of plunger. | Gear sealing is leaky. | Examine seals and running surface of plunger. |
| Dirty milk-coloured frothy oil. | Oil has mixed with water. | Replace oil immediately, find and fix the cause. |
| Oil leakage on the crankshaft. | Shaft seal ring leaks. | Check seal and shaft. |
| Noise increases without loss of pressure. | Worn bearing. | Dismantle gear, examine all parts, replace worn parts, check oil level. If service life was too short, check for excess strain or whether lubrication intervals were too long. Only specified lubricants are to be used. |

GP8076A Repair Instructions

To Check Valves

Remove screws (58), lift discharge casing (50B) up and away. Take out pressure springs (57A). Pull out assembled valves (51) with fitting tool (p/n 07662).

Dismantling valves: the spring tension cap (51A) is screwed together with the valve seat (51B). Remove spring tension cap, take out springs (51C) and valve plate (51D). Examine sealing surfaces and o-rings (51D, 51F). Replace worn parts.

Coat threads of the valve seat with silicon grease or molycote anti-seize Cu-7439 when reassembling. Before refitting the valves, clean the sealing surfaces in the casing and check for any damage. Tighten screws (58) at 133 ft.-lbs. (180 Nm). Check torque tension after 8-10 operating hours.

To Check Seals and Plunger Pipe

Remove hexagon nuts (49A); remove the pump head (50) together with seal case (38) from the crankcase (1). If necessary, carefully tap the valve casing past the centring stud (50A) using a rubber hammer.

Important! If necessary, support the pump head by resting it on wooden blocks or by using a pulley.

Remove tension screw (36C). Then take seal sleeve (39) together with all mounted parts out of the drive. Pull plunger pipe (36B) out of seal assembly and check for any damage. Pull out spiral rings (42), guide ring (41) and support ring (40) and check for any damage. If necessary, replace the spiral rings (42) together with support ring (40) and guide ring (41). Clean parts and coat new parts generously with silicone grease before fitting.

Insert the seal unit (40-42) into the seal sleeve (39). Push the ceramic plunger (36B) carefully through the seals from the crankcase side. If necessary, the seals can be held on the other side of the seal sleeve using a suitable pipe support.

Take the seal cases (38) out of the valve casing (50) and check O-rings (38A, 39A). If necessary, secure 2 screwdrivers in the front O-ring groove (to extract seal casing from valve casing). Coat seals with silicon grease before fitting.

Important! The fitting surfaces on the crankcase (1) and valve casing (50) must be clean and free of damage. The components must lie exactly and evenly on one another. The same exactness applies for all centring positions in the crankcase and valve casing.

Coat the seal sleeves (39) lightly with anti-corrosive grease (e.g. molycote no. Cu-7439) in their fitting area towards the crankcase (1). Insert seal sleeves into their crankcase fittings. Coat the threads of the tension screw (36C) lightly with thread glue and insert it together with a new copper ring (36D) through the ceramic pipe (36B). Turn the pump by hand until the plunger (25) rests against the plunger pipe. Tighten tension screw at 30 ft.-lbs. (40 Nm).

Important! Thread glue must never come between the plunger pipe (36B) and centring sleeve (36E). Overtensioning of the plunger pipe by excessive tightening of the tension screw and/or dirt or damage on the mounting surfaces can cause the plunger pipe to fracture.

Mounting the Valve Casing:

Put seal cases (38) in the centring holes of the valve casing (50). Then carefully push the valve casing onto the centring studs (50A).

Tighten hexagon screws (49A) evenly and crosswise at 266 ft.-lbs. (360 Nm).

Important! With no pressure in the pump, the torque tension on the screws (49A) must be checked after 8-10 operating hours. Thereafter the tension is to be checked every 200 operating hours.

To Dismantle Crankcase Gear

Take out the plungers (36B) and seal sleeves (39) as described above.

Drain the oil by removing plug (12).

After removing the clip ring (33B), pry out the seal retainer (33) with a screwdriver.

Remove the gear cover (K3) by taking off the screws (K5). Then remove connecting rod screws (24).

Important! The connecting rods are marked 1 to 3 for identification. Do not twist the connecting rod halves or interchange them. When reassembling, the connecting rods must be fitted in their exact original position on the crankshaft journals.

Push connecting rod halves together with the crosshead as far as possible into the crosshead guides.

Take off the bearing cover (14/14A) and push out the crankshaft (22) [taking particular care not to bend the connecting rods (24)].

Check running surfaces on the connecting rods (24), crankshaft (22) and crossheads (25). Also check the surfaces of the crosshead bores in the crankcase (1) for any unevenness.

Reassemble in reverse order.

Thread the long end of the crankshaft (22) together with the inner bearing rings (21) into the crankcase. Then mount the outer bearing ring.

Fit the connecting rod halves in their exact original position and tighten at 37 ft.-lbs. (50 Nm).

Important! A little clearance must be present to enable slight side-ward movement of the connecting rods on their journals.

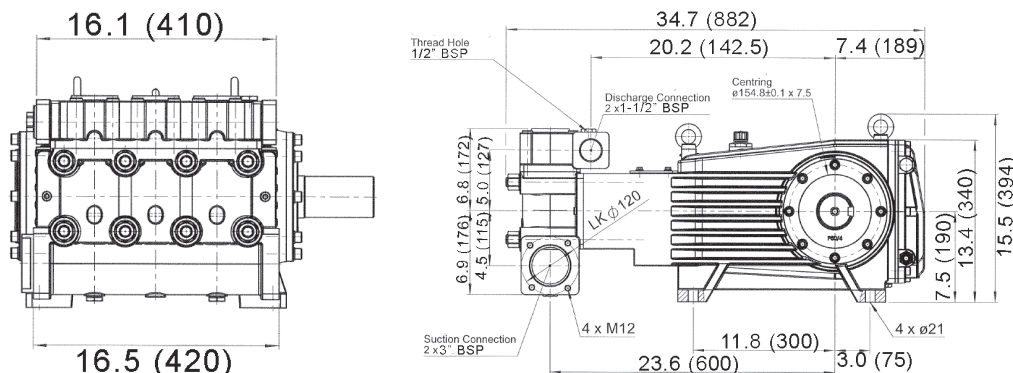
Fit bearing cover (14A) and tighten screws (17) at 64 ft.-lbs. (87 Nm).

Adjust axial play (clearance) on the crankshaft to minimum 0.1 mm / max. 0.15 mm using shims (21A/21B). The shaft should turn easily with little clearance. Connecting rods must sit exactly in the middle of each crank pin. Fit the bearing cover (14) and tighten the screws (17) at 64 ft.-lbs. (87 Nm).

Important! Possible axial float of the seal adaptor (33) is to be compensated with shims (33C).

Fit gear cover (K3) with the seals (K2).

GP8076A PUMP DIMENSIONS - mm (inches)



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. Five (5) years from the date of shipment for all pumps used in portable pressure washers with NON-SALINE, clean water applications.
2. Two (2) years from the date of shipment for Giant pumps used in car wash applications.
3. One (1) year from the date of shipment for all other Giant industrial and consumer pumps.
4. Six (6) months from the date of shipment for all rebuilt pumps
5. 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.

THE LIMITED WARRANTY SET FORTH HEREIN IS IN LIEU OF ALL OTHER WARRANTIES OR REPRESENTATION, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND ALL SUCH WARRANTIES ARE HEREBY DISCLAIMED AND EXCLUDED BY THE MANUFACTURER.



WARNING: This product might contain a chemical known to the State of California to cause cancer, and birth defects or other reproductive harm.

For more information go to www.P65Warnings.ca.gov

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