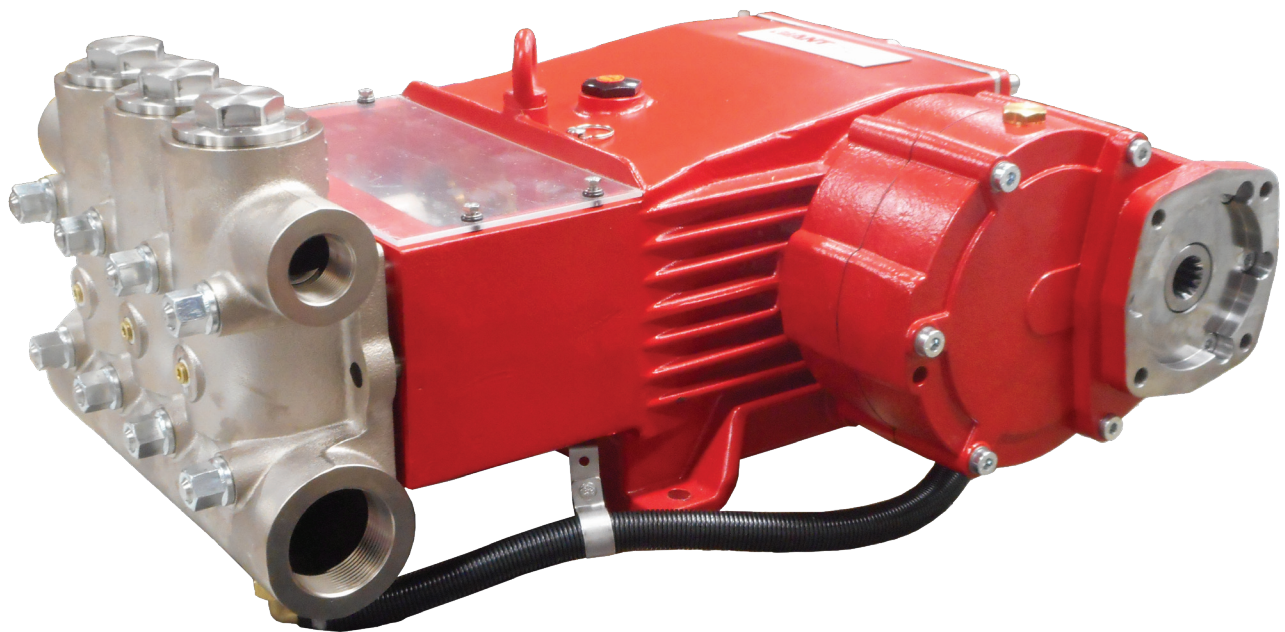


Models

GP7645GBHS-2.4-180/ GP7655GBHS-2.4-180

Gearbox Versions for Hollow Shaft Drives with gearbox in 180° position



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INSTALLATION INSTRUCTIONS

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 the water temperature exceeds 30°C or if aggressive water (seawater, demineralized water) or other liquids are to be pumped, the integrated gear oil cooling system must be decoupled and a separate cooling circuit set up.

The gear oil cooling system must be used for driving power of more than 50kW in continuous operation and is advisable for maximum performance in intermittent operation of more than 60 minutes. The flow in the integrated gear oil cooling system is dependent on the plunger diameter and the pump rpm, and the cooling water is drawn and conveyed by one plunger. The amount of cooling water conveyed ensures satisfactory oil cooling under observation of the recommended rpm limits. If a separate cooling circuit is fitted, the cooling capacity must be 1500 W.

3. A tube fitting on the side of the pumphead which allows the circulation of water between the valve casing and seal sleeves to take place. The tube fitting must always be mounted on the same side as the suction line.

4. 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.

5. 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.

6. 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 page 3.

7. 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 crankcase so that the oil level is between the two lines on the oil dipstick. **DO NOT OVERFILL. SAE 80W-90 Industrial Gear Lube Oil may be used (Giant's p/n 01154).** 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. The suction side input pressure must not exceed 29 PSI (2 bar) if the integrated gear oil cooling system is connected. The maximum system pressure for a separately fitted oil cooling system must likewise not exceed 29 PSI (2 bar).

If the integrated gear oil cooling system is not used, the maximum admissible input pressure on the pump suction side is 10 bar. In this case, transmitted pulsation from the pump to the suction line must be sufficiently damped. 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. If there is danger of frost, the pump and adjoining components such as the unloader and safety valve as well as the cooling system must be emptied. Empty the pump through the second unused suction and discharge connection. Run the pump "dry" for 1-2 minutes to aid emptying.

Empty the cooling system by removing screw joints K11 on the pump head and by blowing the hoses with compressed air on the K11/K7 side. Anti-freeze is recommended to guard against frost where a separate cooling circuit is used.

GP7645GBHS-2.4-180 Pump Specifications

| | U.S. | Metric |
|------------------------------------|----------------------|-----------------------------------------|
| Flow | 52.6 GPM..... | 199 L/min |
| Discharge Pressure | 3000 PSI | 207 Bar |
| Power Consumption | 109 BHP | 81.2 kW |
| Crankshaft Speed..... | | 758 RPM |
| Hydraulic Motor Speed | | 1850 RPM |
| Gear Reduction | | 2.44 |
| Inlet Pressure | -4.35 to 90 PSI..... | -0.3 to 10 Bar |
| Plunger Diameter..... | 1.77"..... | 45 mm |
| Plunger Stroke..... | 2.28"..... | 58 mm |
| Crankshaft Bore..... | | SAE-C Spline 14T 12/24 DP |
| Key Width | | 14 mm |
| Crankshaft Mounting | | Either side |
| Shaft Rotation..... | | Hydraulic Gear towards back of the pump |
| Temperature of Pumped Fluids | 104 °F | 40 °C |
| Inlet Ports | | (2) 2-1/4" NPT |
| Discharge Ports..... | | (2) 1-1/4" NPT |
| Weight | 476 lbs. | 216 kg |
| Crankcase Oil Capacity..... | 2.1 Gal. | 8 Liters |
| Fluid End Material..... | | Nickel-Plated Sheroidal Cast Iron |

GP7655GBHS-24-180 Pump Specifications

| | U.S. | Metric |
|------------------------------------|----------------------|-----------------------------------------|
| Flow | 80 GPM..... | 303 L/min |
| Discharge Pressure | 2030 PSI | 140 Bar |
| Power Consumption | 112 BHP | 84 kW |
| Crankshaft Speed..... | | 758 RPM |
| Hydraulic Motor Speed | | 1850 RPM |
| Gear Reduction | | 2.44 |
| Inlet Pressure | -4.35 to 90 PSI..... | -0.3 to 10 Bar |
| Plunger Diameter..... | 2.17"..... | 55 mm |
| Plunger Stroke..... | 2.28"..... | 58 mm |
| Crankshaft Bore..... | | SAE-C Spline 14T 12/24 DP |
| Key Width | | 14 mm |
| Crankshaft Mounting | | Either side |
| Shaft Rotation..... | | Hydraulic Gear towards back of the pump |
| Temperature of Pumped Fluids | 86 °F | 30 °C |
| Inlet Ports | | (2) 2-1/4" NPT |
| Discharge Ports..... | | (2) 1-1/4" NPT |
| Weight | 476 lbs. | 216 kg |
| Crankcase Oil Capacity..... | 2.1 Gal. | 8 Liters |
| Fluid End Material..... | | Nickel-Plated Sheroidal Cast Iron |

For the Application of a Hydraulic Motor:

To Determine the Torque of a Hydraulic Motor -- $(\text{GPM} \times \text{PSI} \times 36.77) / \text{RPM} = \text{Torque (in-lbs)}^*$

* To make sure your hydraulic motor is sized correctly, divide the calculated torque value by 0.85.

GP7645GBHS-2.4-180 & GP7655GBHS-2.4-180 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 | 05769 | Crankcase | 1 | 51 | 05594 | Inlet Valve Assembly (51A-51F) | 3 |
| 2 | 13000 | Oil Filler Plug Assembly | 1 | 51A | 05595 | Spring Tension Cap | 3 |
| 8 | 07603 | Oil Dip Stick | 1 | 51B | 05450 | Valve Spring | 3 |
| 9 | 01009 | O-Ring, Dip Stick | 1 | 51C | 05247 | Valve Plate | 3 |
| 12 | 07109 | Drain Plug | 9 | 51D | 05596 | O-Ring | 3 |
| 13 | 06272 | Copper Seal for 12 | 9 | 51E | 05597 | Inlet Valve Seat | 3 |
| 14 | 05770 | Bearing Cover | 1 | 51F | 05166 | O-Ring | 3 |
| 14A | 12204 | O-Ring | 4 | 52 | 05600 | Discharge Valve Assembly | 3 |
| 15 | 05771 | Radial Shaft Seal | 1 | 52A | 05595 | Spring Tension Cap | 3 |
| 16 | 05772 | O-Ring | 2 | 52B | 05450 | Valve Spring | 3 |
| 17 | 05642 | Inner Hexagon Screw | 4 | 52C | 05247 | Valve Plate | 3 |
| 18 | 05039 | Spring Ring | 4 | 52D | 05596 | O-Ring | 3 |
| 20 | 05773 | Taper Roller Bearing | 2 | 52E | 05598 | Discharge Valve Seat | 3 |
| 20A | 05774 | Fitting Disc (Shim), 0.1 mm | 1-5 | 52F | 05599 | O-Ring | 3 |
| 20B | 04570 | Fitting Disc (Shim), 0.15 mm | 1-5 | 53 | 22610 | Plug, 1/4" NPT | 3 |
| 21 | 05645 | Shaft Guard Holder | 1 | 55 | 05647 | Valve Spacer | 3 |
| 21A | 05646 | Shaft Guard | 1 | 56A | 07658 | O-Ring | 3 |
| 22 | 04517 | Crankshaft | 1 | 56B | 07635 | Support Ring | 3 |
| 23 | 05776 | Key | 1 | 57 | 13173 | Tension Spring | 3 |
| 24 | 05777 | Connecting Rod Assy. | 3 | 58 | 06682 | Plug, M64 x 2 | 3 |
| 25 | 05778 | Crosshead Assy. | 3 | 60 | 12251 | Plug, 1-1/4" NPT | 1 |
| 28 | 05779 | Crosshead Pin | 3 | 61 | 05170 | Plug, 2-1/2" NPT | 1 |
| 29A | 07408 | Hexagon Nut | 1 | 68 | 05782 | Bottom Casing for Gear | 1 |
| 29B | 05383 | Bracket 2 f. Cooling Hose | 2 | 69 | 05783 | Top Casing for Gear | 1 |
| 29C | 05662 | Fixing Bracket | 1 | 70 | 05784 | Gear Seal | 1 |
| 29D | 05381 | Bracket 2 f. Cooling Hose | 1 | 71 | 05785 | Centering Ring | 1 |
| 30 | 07619 | Cover Plate | 1 | 72A/B | 05786 | Gear Wheel Set, i=2.44 | 1 |
| 30A | 07225-0100 | Hexagon Screw | 9 | 74 | 05787 | Self-Aligning Roller Bearing | 1 |
| 30B | 13136 | Grommet | 4 | 75 | 05788 | Roller Bearing | 1 |
| 30C | 05053 | Disc | 8 | 76 | 07117 | Fitting Disc (Shim), 0.1 mm | 5 |
| 30D | 13154 | Cover | 1 | 77 | 05789 | Radial Shaft Ring | 1 |
| 31 | 07623 | Eye Bolt | 1 | 78 | 05665 | Cylinder Pin | 6 |
| 32 | 07624 | Radial Shaft Seal | 3 | 80 | 05790 | Spacer Ring 1 for Gear | 1 |
| 33 | 07626 | Seal Retainer | 3 | 81 | 05791 | Spacer Ring 2 for Gear | 1 |
| 33A | 07627 | O-Ring for Seal Retainer | 3 | 82 | 05802 | Fixing Plate for Gear | 1 |
| 33B | 07628 | Circlip for 33 | 3 | 83 | 13358 | Hexagon Screw | 1 |
| 33C | 07249 | Fitting Disc | 3 | 84 | 05792 | Hexagon Socket Screw | 7 |
| 34 | 13137 | Oil Scraper (Flinger) | 3 | 85 | 05702 | Hexagon Socket Screw | 8 |
| 36 | 06165A | Plunger Assy. (36A-36D), GP7645GB | 3 | 86 | 07159 | Washer | 8 |
| 36 | 07706 | Plunger Assy. (36A-36D), GP7655GB | 3 | 87 | 05793 | Hexagon Socket Screw | 5 |
| 36A | 07667 | Plunger Connection | 3 | 88 | 05655 | Hexagon Socket Screw | 1 |
| 36B | 05157A | Plunger Pipe, GP7645GB | 3 | 89 | 05794 | Gear Flange, Hollow | 1 |
| 36B | 07666 | Plunger Pipe, GP7655GB | 3 | 89A | 05795 | Centering Ring, Hollow | 1 |
| 36C | 07664 | Tensioning Screw | 3 | 90 | 04157-180 | Oil Cooler Assembly | 1 |
| 36D | 07665 | Copper Ring | 3 | K1 | 05797 | Cooling Vane Plate | 1 |
| 38 | 06167 | Seal Case, GP7645GB | 3 | K2 | 05798 | Seal for Gear Cover | 2 |
| 38 | 13155 | Seal Case, GP7655GB | 3 | K3 | 05799 | Gear Cover | 1 |
| 38A | 13156 | O-Ring | 3 | K4 | 05029 | Hexagon Head Countersunk Screw | 4 |
| 38B | 06258 | O-Ring, GP7645GB | 3 | K5 | 05800 | Hexagon Socket Screw | 8 |
| 38B | 07721 | O-Ring, GP7655GB | 3 | K6 | 06725 | Washer | 8 |
| 39 | 06171 | Seal Sleeve, GP7645GB | 3 | K7 | 05755 | Connection for Oil Cooler | 1 |
| 39 | 13157 | Seal Sleeve, GP7655GB | 3 | K8 | 06272 | Copper Seal | 5 |
| 39A | 13290 | Grooved Ring, GP7645GB | 3 | K9 | 07109 | Plug, 1/2" BSP | 2 |
| 39A | 07723 | Grooved Ring, GP7655GB | 3 | K10 | 05031 | Reducing Nipple | 2 |
| 40 | 07797 | Support Ring, GP7655GB | 3 | K11 | 05032 | U-Joint Connector with Nut | 2 |
| 41 | 13296 | O-Ring, GP7645GB | 3 | K12 | 05033 | Tube for Cooler | 2 |
| 41 | 13158 | O-Ring, GP7655GB | 3 | K13 | 05402 | Hose Clamp | 4 |
| 42 | 13294 | V-Sleeve, GP7645GB | 9 | K14 | 05403 | Hose Guard | 2 |
| 42 | 07711 | V-Sleeve, GP7655GB | 6 | K15 | 05404 | Hose Coupling Nut | 1 |
| 43 | 13293 | Pressure Ring, GP7645GB | 3 | K16 | 05405 | Flat Gasket | 3 |
| 43 | 07712 | Pressure Ring, GP7655GB | 3 | K17 | 08280 | Washer | 4 |
| 45 | 13297 | Tension Spring, GP7645GB | 3 | K18 | 04158 | Hexagon Socket Screw | 4 |
| 49 | 13159 | Stud Bolt | 8 | K19 | 04326 | Elbow | 1 |
| 49A | 13160 | Hexagon Nut | 8 | K20 | 04327 | Hose Nipple | 1 |
| 50 | 07791 | Valve Casing | 1 | | 07662 | Valve Tool (not shown) | 1 |
| 50A | 13162 | Centering Stud | 2 | | | | |

Repair Kits - GP7645GBHS-2.4-180 & GP76555GBHS-2.4-180

Plunger Packing Kit, GP7645GBHS-2.4-180 # 09603

| Item | Part # | Description | Qty. |
|------|--------|--------------|------|
| 38A | 13156 | O-Ring | 3 |
| 38B | 07721 | O-Ring | 3 |
| 39A | 07723 | Grooved Ring | 3 |
| 42 | 07711 | V-Sleeve | 9 |

Plunger Packing Kit, GP76555GBHS-2.4-180 # 09220

| Item | Part # | Description | Qty. |
|------|--------|--------------|------|
| 38A | 13156 | O-Ring | 3 |
| 38B | 07721 | O-Ring | 3 |
| 39A | 07723 | Grooved Ring | 3 |
| 41 | 13158 | Support Ring | 3 |
| 42 | 07711 | V-Sleeve | 6 |

Oil Seal Kit - # 09221

| Item | Part # | Description | Qty. |
|------|--------|-------------------|------|
| 32 | 07624 | Radial Shaft Seal | 3 |
| 33A | 07627 | O-Ring | 3 |

Inlet Valve Kit - # 09659

| Item | Part # | Description | Qty. |
|------|--------|----------------------|------|
| 51 | 05594 | Inlet Valve Assembly | 1 |
| 56A | 07658 | O-Ring | 1 |
| 56B | 07635 | Support Ring | 1 |

Large Discharge Valve Kit - # 09660

| Item | Part # | Description | Qty. |
|------|--------|----------------------|------|
| 52 | 05600 | Discharge Valve Assy | 1 |
| 55 | 05647 | Valve Spacer | 1 |
| 56A | 07658 | O-Ring | 1 |
| 56B | 07635 | Support Ring | 1 |

Small Discharge Valve Kit* - # 09661

| Item | Part # | Description | Qty. |
|------|--------|--------------|------|
| 51B | 05450 | Valve Spring | 1 |
| 51C | 05247 | Valve Plate | 1 |
| 51D | 05596 | O-Ring | 1 |
| 52F | 05599 | O-Ring | 1 |
| 56A | 07658 | O-Ring | 1 |
| 56B | 07635 | Support Ring | 1 |

* The discharge valve seat (item 52E) can be flipped over and used. If it is damaged on both sides, order kit # 09660.

GP7645GBHS-2.4-180 & GP76555GBHS-2.4-180 Torque Specifications

| Position | Item# | Description | Torque Amount |
|----------|-------------|-------------------------|-----------------------|
| 24 | 05777 | Connecting Rod Assembly | 30 ft.-lbs. (40 NM) |
| 36C | 06166/07664 | Tension Screw | 30 ft.-lbs. (40 NM) |
| 49A | 13160 | Hexagon Nut | 103 ft.-lbs. (140 NM) |
| 58 | 06682 | Plug | 107 ft-lbs (145 NM) |

| Preventative Maintenance Check-List & Recommended Spare Part List | | | | | | | |
|-------------------------------------------------------------------|---|-------|--------|------|------------------|-------------------|-------------------|
| Check | | Daily | Weekly | 50hr | 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 Part | | | | | | | |
| Oil Change (p/n 01154) | | | | X | X | | |
| Plunger Packing Kits(1 kit/Pump) | | | | | | X | |
| Oil Seal Kit (1 kit/Pump) | | | | | | X | |
| Valve Kit (1 kit/pump) | | | | | | | X |

GP7645GBHS-2.4-180 & GP7655GBHS-2.4-180 Repair Instructions

TO CHECK VALVES

Loosen plugs (58), take out tension spring (57) and then remove the complete valve assembly (#51 & 52) with either a valve tool or an M16 hexagon screw. Check sealing surfaces and replace worn parts. The discharge valve seat (# 52E) can be used on both sides. If you re-use it, make sure you switch the O-Ring (#51D) to the opposite side. Check O-rings and support rings. Tighten plugs (58) to 107 ft.-lbs. (145 NM).

TO CHECK SEALS AND PLUNGER PIPE

Loosen nuts (49A) and remove pump head (50). Separate the plunger connection (36A) from the crosshead (25) by means of an open-end wrench (size 36mm). Pull seal sleeves (39) out of their fittings in the crankcase (1). Take the seal case (38) out of the seal sleeve (39). Examine the plunger parts (36A-36D), seals (42 & 39A) and O-rings (38A & 38B). When replacing the plunger pipe (36B), tighten tension screws (36C) to 30 ft. lbs. (40 NM). Replace worn parts; grease seals with Silicone before installing.

CAUTION: Don't loosen the (3) plunger connections (36A) before the valve casing has been removed otherwise the tension screw (36C) could hit against the valve adapter (56) when the pump is being turned. Seal life can be increased if the pre-tensioning allows for a little leakage. This assists lubrication and keeps the seals cool. It is therefore not necessary to replace seals before the leakage becomes too heavy and causes output and operating pressure to drop.

MOUNTING VALVE CASING

Check O-rings (38A & 38B) on the seal case (38). Clean surfaces of seal sleeves in gear box and sealing surfaces of valve casing (50). Push the valve casing carefully on the O-rings of the seal case and centering studs (50A). Tighten nuts (49A) to 103 ft. lbs. (140 NM).

TO DISASSEMBLE GEAR

Take out plunger (36) and seal sleeves (39) as described above. Drain the oil. After removing the circlip ring (33B), lever out seal retainer (33) with a screw driver. Check seals (32 & 33A) and surfaces of crosshead (25). Remove the crankcase cover (4). Loosen inner hexagon screws on the connecting rods (24).

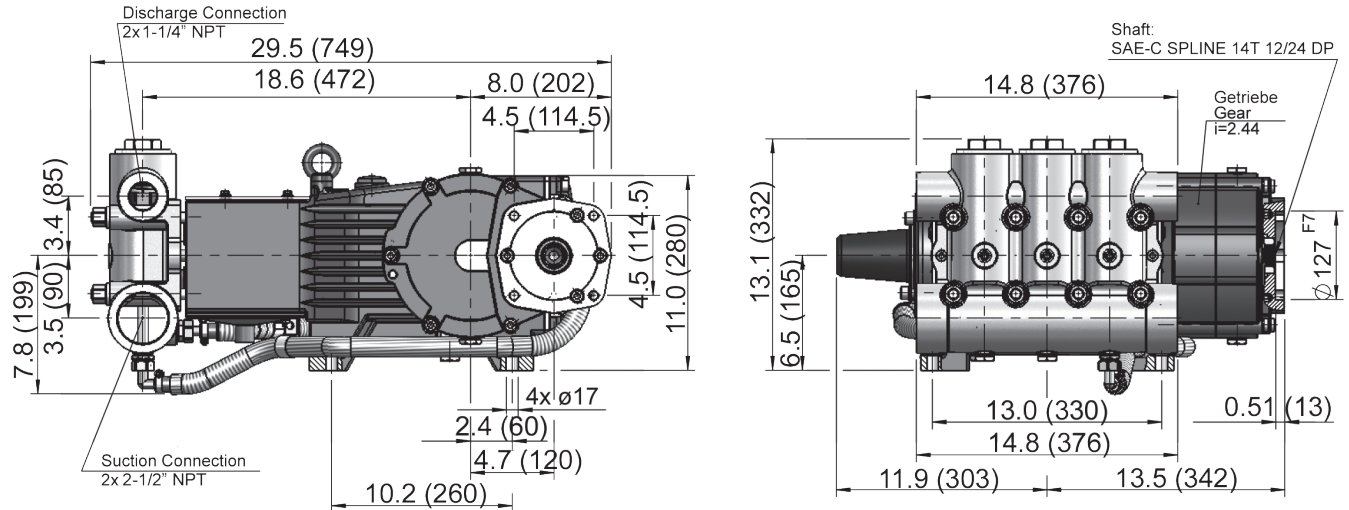
Note: Connecting rods are marked for identification. Do not twist connecting rod halves. Each connecting rod is to be reinstalled in the same position (and orientation) on the crankshaft journals.

Push the connecting rod halves as far into the crosshead guide as possible. Check the surfaces of connecting rod and crankshaft (22). Take out the bearing cover (14) to one side and push out crankshaft taking particular care that the connecting rod doesn't bend. Re-assemble in reverse order. Regulate axial bearing clearance to a minimum of 0.1mm and a maximum of 0.15mm by means of fitting discs (20A). The crankshaft should turn easily and with little clearance. Tighten screws (24) to 30 ft.-lbs. (40 NM).

Important! The connecting rod has to be able to slightly move sideways at the crankshaft journal.

Important! Seal (32) must always be installed so that the seal-lip on the inside diameter faces the oil. Possible axial float of the seal retainer (33) should be compensated with the shims (33C).

GP7645GBHS-2.4-180 & GP7655GBHS-2.4-180 Dimensions - Inches (mm)



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 will never fail, period. If they ever fail, we will replace them free of charge. 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.

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.



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