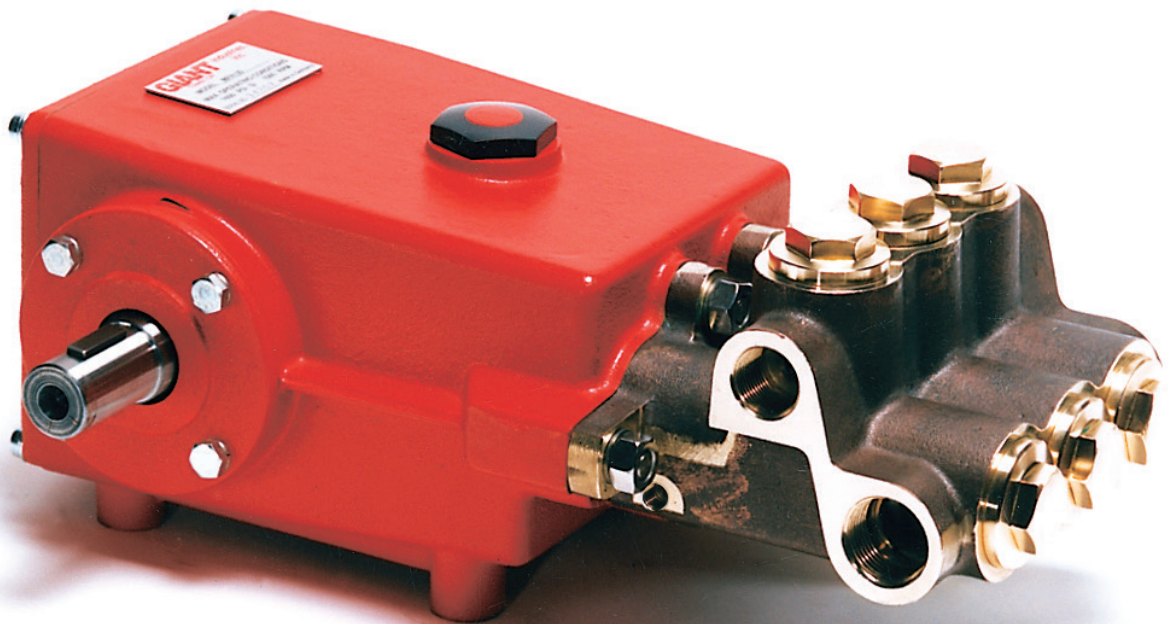


Model MP4130HK

Triplex Ceramic Plunger Pump
Operating Instructions/
Repair and Service Manual



GIANT
Performance Under Pressure

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INSTALLATION INSTRUCTIONS

Required NPSH refers to water: Specific weight 1kg/dm³, viscosity 1 °E at max. permissible revolutions.

Operation and Maintenance

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

Oil: Use 33.8 fl. ounces (1.0 liters) of Giant's part number 01154 or ISO VG 220 GL4 (e.g. Aral Degol BG220) or SAE 90 GL4 gear oil.

Initial change after 50 operating hours and then every 500 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 (frothy oil) occur in the gear box.

Keep NPSH under control.

Max. input pressure 145 PSI (10 bar), max. suction head -4.35 (-0.3 bar).

Safety Rules

Pump operation without safety valve as well as any excess in the 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 (21), the driven shaft side and coupling by a contact protector.

Pressure in discharge line and in pump must be at zero before any maintenance to the pump takes place. Close up suction line. Disconnect fuses to ensure that the driving motor does not get switched on accidentally.

Make sure that 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/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 manufacturer and/or operator to ensure that all pertinent safety regulations are adhered to.

| Preventative 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 (1 Quart) | | | X | X | | |
| Seal Kit (1 kit/pump) (See page 6 for kit list) | | | | | X | |
| Valve Spare Parts (1 kit/pump) (See page 6 for kit list) | | | | | | X |

MP4130HK - PUMP SPECIFICATIONS

| | U.S. | Metric |
|------------------------------------|---------------------------------|--------------|
| Volume..... | 15.4 GPM..... | 58.2 L/min |
| Discharge Pressure | 1600 PSI | 110 bar |
| Power Required | 17.6 HP | 13.1 kW |
| Inlet Pressure | 145 PSI | 10 bar |
| Speed | | 1100 RPM |
| Plunger Diameter..... | 1.18"..... | 30 mm |
| Plunger Stroke..... | 1.02"..... | 26 mm |
| Crankcase Oil Capacity | 33.8 fl.oz. | 1.0 L |
| Temperature of Pumped Fluids | 195 °F | 90 °F |
| Inlet Ports | | (2) 1" NPT |
| Discharge Ports | | (2) 3/4" NPT |
| Pulley Mounting | | Either side |
| Shaft Rotation..... | Top of Pulley Towards Fluid End | |
| Weight..... | 66 lbs. | 30 kg |
| Crankshaft Diameter..... | 1.10"..... | 28mm |

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.

Horsepower Ratings:

We recommend a 1.15 service factor be specified when selecting an electric motor as the power source.

To compute electric motor horsepower required, use the following formula: $HP = (GPM \times PSI) / 1450$.

The formula to determine the horsepower required for a gas engine is: $HP = (GPM \times PSI) / 1150$.

For the Application of a Hydraulic Motor:

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

Calculating RPM / GPM of Pump:

A pump must be connected to an electric motor or gas or diesel engine with the correct ratio of pulleys and belts to attain the required speed and GPM. The use of a Variable Frequency Drive (VFD) may also be used to control the RPM of a properly sized electric motor when variable flows are required.

$(\text{Max. Pump RPM} / \text{Rated Pump GPM}) \times \text{Required Pump GPM} = \text{Required Pump RPM}$

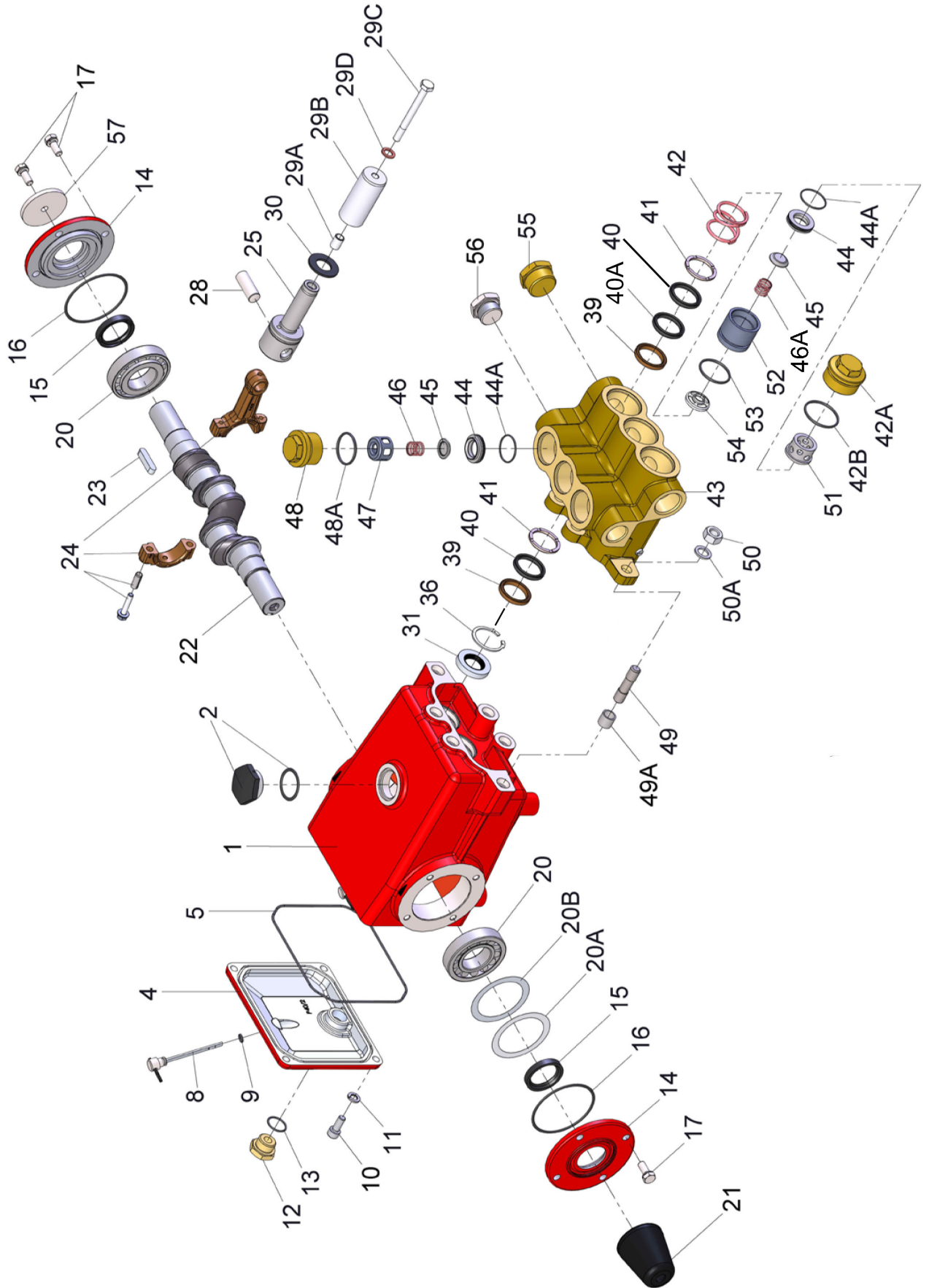
To calculate a pulley diameter one (1) pulley diameter and the required pump RPM must be known:

$(\text{Pump RPM} \times \text{Pump Pulley Diameter}) / \text{Motor RPM} = \text{Motor Pulley Diameter}$

$(\text{Motor RPM} \times \text{Motor Pulley Diameter}) / \text{Pump RPM} = \text{Pump Pulley Diameter}$

| MP4130HK PULLEY SELECTION AND HORSEPOWER REQUIREMENTS | | | | | |
|---|------|---------|----------|----------|----------|
| RPM | GPM | 500 PSI | 1000 PSI | 1250 PSI | 1600 PSI |
| 300 | 4.2 | 1.4 | 2.9 | 3.6 | 4.6 |
| 500 | 7.0 | 2.4 | 4.8 | 6.0 | 7.7 |
| 700 | 9.8 | 3.4 | 6.8 | 8.4 | 10.8 |
| 900 | 12.6 | 4.3 | 8.7 | 10.9 | 13.9 |
| 1100 | 15.4 | 5.3 | 10.6 | 13.3 | 17.0 |

EXPLODED VIEW - MP4130HK



PARTS LIST AND REPAIR KITS - MP4130HK

| <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 | 06100 | Crankcase | 1 | 36 | 07267-0100 | Snap Ring | 3 |
| 2 | 13000 | Oil Filler Cap Assembly | 1 | 39 | 07271 | Pressure Ring | 6 |
| 4 | 07243 | Cover, Crankcase | 1 | 40 | 06137 | V-Sleeve, High Temperature | 6 |
| 5 | 07244 | O-Ring, Crankcase Cover | 1 | 40A | 07272 | V-Sleeve | 3 |
| 8 | 01008 | Oil Dip Stick | 1 | 41 | 07273 | Support Ring | 6 |
| 9 | 01009 | O-Ring, Dip Stick | 1 | 42 | 07353 | Tension Spring | 3 |
| 10 | 01010 | Screw, Crankcase Cover | 4 | 42A | 06103 | Tension Plug | 3 |
| 11 | 01011-0400 | Spring Washer | 4 | 42B | 07354 | O-Ring, Tension Plug | 3 |
| 12 | 07109 | Oil Drain Plug | 1 | 43 | 06105 | Manifold Head | 1 |
| 13 | 06015 | O-Ring, Oil Drain Plug | 1 | 44 | 07280 | Valve Seat | 6 |
| 14 | 07245 | Bearing Cover | 2 | 44A | 07281 | O-Ring, Valve Seat | 6 |
| 15 | 07247 | Seal, Crankshaft | 2 | 45 | 06791-0100 | Valve Plate | 6 |
| 16 | 07627 | O-Ring, Bearing Cover | 2 | 46 | 07283 | Discharge Valve Spring | 3 |
| 17 | 07114 | Hex Screw, Bearing Cover | 9 | 46A | 06959 | Inlet Valve Spring | 3 |
| 20 | 07248 | Roller Bearing, Tapered | 2 | 47 | 07284 | Spring Retainer, Discharge | 3 |
| 20A | 07249 | Fitting Disc | 1-2 | 48 | 07356 | Plug, Brass | 3 |
| 20B | 06962 | Fitting Disc | 1-2 | 48A | 07332 | O-Ring, Plug | 3 |
| 21 | 05375 | Shaft Protector | 1 | 49 | 06109 | Stud, Manifold | 6 |
| 22 | 07251 | Crankshaft | 1 | 49A | 07319 | Shim, Stud | 2 |
| 23 | 13331 | Key | 1 | 50 | 07158 | Nut, Manifold Stud | 6 |
| 24 | 07253 | Connecting Rod Assembly | 3 | 50A | 07159 | Spring Washer | 6 |
| 25 | 07596 | Crosshead Complete | 3 | 51 | 06110 | Spacer | 3 |
| 28 | 07255 | Crosshead Pin | 3 | 52 | 06112 | Valve Housing | 3 |
| 29A | 07256 | Centering Sleeve | 3 | 53 | 07332 | O-Ring | 3 |
| 29B | 07261 | Ceramic Plunger | 3 | 54 | 06115 | Spring Retainer, Inlet | 3 |
| 29C | 13007 | Tension Screw | 3 | 55 | 06626 | Plug, NPT, 1" | 1 |
| 29D | 07258 | Seal Washer | 3 | 56 | 04732 | Plug, NPT, 3/4" | 1 |
| 30 | 06136 | Flinger | 3 | 57 | 13020 | Disc for Crankshaft | 1 |
| 31 | 07260 | Crankcase Oil Seal | 3 | | | | |

PARTS LIST AND REPAIR KITS - MP4130HK

Plunger Packing Kit - # 09664

| <u>Item</u> | <u>Part #</u> | <u>Description</u> | <u>Qty</u> |
|-------------|---------------|----------------------|------------|
| 40 | 06137 | V-Sleeve, High Temp | 6 |
| 40A | 07272 | V-Sleeve | 3 |
| 42B | 07354 | O-Ring, Tension Plug | 3 |

Valve Repair Kits - #09810

| <u>Item</u> | <u>Part #</u> | <u>Description</u> | <u>Qty</u> |
|-------------|---------------|-------------------------|------------|
| 42B | 07354 | O-Ring Tension Plug | 3 |
| 44 | 07280 | Valve Seat | 6 |
| 44A | 07281 | O-Ring, Valve-Seat | 6 |
| 45 | 06791-0100 | Valve Plate | 6 |
| 46 | 07283 | Valve Spring, Discharge | 3 |
| 46A | 06959 | Valve Spring, Inlet | 3 |
| 48A | 07332 | O-Ring, Tension Plug | 3 |
| 53 | 07332 | O-Ring | 3 |

TORQUE SPECIFICATIONS - MP4130HK

| <u>Position</u> | <u>Item#</u> | <u>Description</u> | <u>Lubrication Info</u> | <u>Torque Amount</u> |
|-----------------|--------------|---------------------------|-------------------------|-----------------------|
| 1 | 06100 | Crankcase | Loctite 270 | N/A |
| 10 | 01010 | Screw, Crankcase Cover | | 221 in.-lbs. (25 Nm) |
| 12 | 07109 | Oil Drain Plug | | 30 ft.-lbs. (40 Nm) |
| 17 | 07114 | Hex Screw, Bearing Cover | | 221 in.-lbs. (25 Nm) |
| 24 | 07253 | Hex Screw, Connecting Rod | | 106 in.-lbs. (12 Nm) |
| 29C | 13007 | Bolt, Plunger | Loctite 243 | 247 in.-lbs. (28 Nm) |
| 31 | 07260 | Crankcase Oil Seal | Loctite 403 | |
| 42A | 06103 | Plug, Inlet | | 107 ft.-lbs. (145 Nm) |
| 48 | 07356 | Plug, Discharge | | 107 ft.-lbs. (145 Nm) |
| 50 | 07158 | Nut, Manifold Stud | | 59 ft.-lbs. (80 Nm) |

REPAIR INSTRUCTION - MP4130HK

To Check Valves

Suction Valves: Remove plugs (42A). Take out spacer pipe (51) and suction valve adaptor (52). Push valve parts and as necessary spacer pipe (51) out of suction valve adaptor using a soft tool.

Check and replace worn parts. Check O-rings (42B, 44A and 53). Replace as necessary.

Discharge Valves: Remove plugs (48). Remove spring tension cap (47), valve spring (46) and valve plate (45) from the discharge valve. Take out valve seat (44) with a valve puller tool.
Check and replace worn parts.

Check O-rings (44A, 48A) and replace as necessary.

Tighten plugs (42A, 48) to 107 ft.-lbs. (145 Nm).

To Check Seals and Plunger Pipe

Remove plugs (42A). Loosen nuts (50) and remove valve casing (43) from plungers by pulling away from the crankcase (1). Take out spacer pipe (51), suction valve adaptor (52), tension spring (42) and seal-unit (39-41).

Check surfaces of plunger pipes (29B) as damaged surfaces cause fast wear to the seals.

When replacing V-sleeves (40/40A), grease new seals with special grease from pump manufacturer before installing.

Check O-rings (42B, 44A and 53) and replace as necessary.

Check rear v-sleeve (40) after having removed snap ring (36) and replace as necessary.

If plunger pipe (29B) has to be replaced, loosen tension screw (29C) and remove it together with the plunger pipe (29B). Check and clean plunger (25) surfaces and install new plunger pipe and seal washer (29D). Cover thread of tension screw (29C) with a fine film of liquid glue and tighten carefully to 247 in.-lbs. (28 Nm).

Important! Care must be taken that no glue gets between the plunger pipe (29B) and centring sleeve (29A). The plunger pipe should not be strained by eccentric tightening of tension screw, nor through dirt or damage to the front surface of the plunger as this could cause the plunger pipe to break.

Install spacer rings tension spring (42), spring tension disc (54), suction valve adaptor (52) and spacer pipe (51) and then tighten plug (42A) to 107 ft.-lbs. (145 Nm).
Install valve casing and tighten nuts (50) evenly to 59 ft.-lbs. (80 Nm).

To Dismantle Gear

After dismantling the valve casing (43) and plunger pipes (29B), drain the oil. Remove crankcase cover (4) and bearing covers (14).

Loosen connecting rod screws (24) and push stem of connecting rod halves as far as possible into the crosshead guides.

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

While turning slightly, hit the crankshaft (22) to one side with a rubber hammer.

Important! Do not bend the front portion of the connecting rods. Check the crankshaft (22) and connecting rod (24) surfaces, shaft seals (15 and 31) and taper roller bearings (20).

To Reassemble

Using a soft tool, press in the outer bearing ring till the outer edge lines up with the outer edge of the bearing hole.

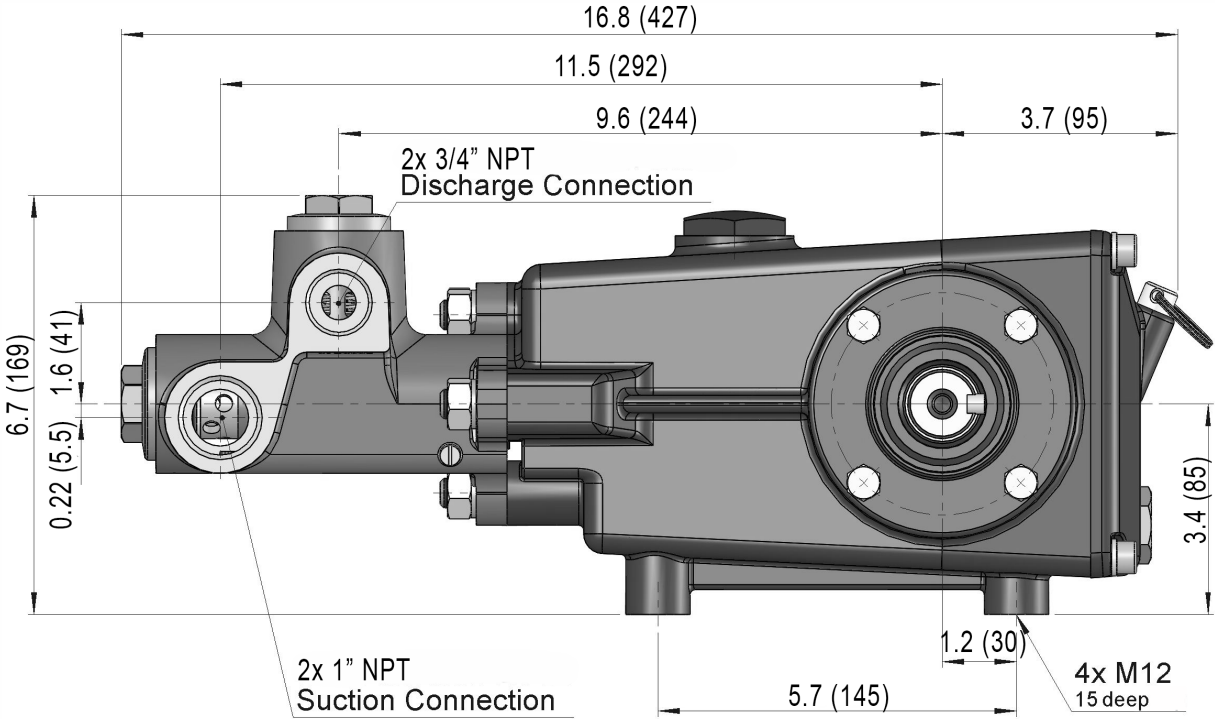
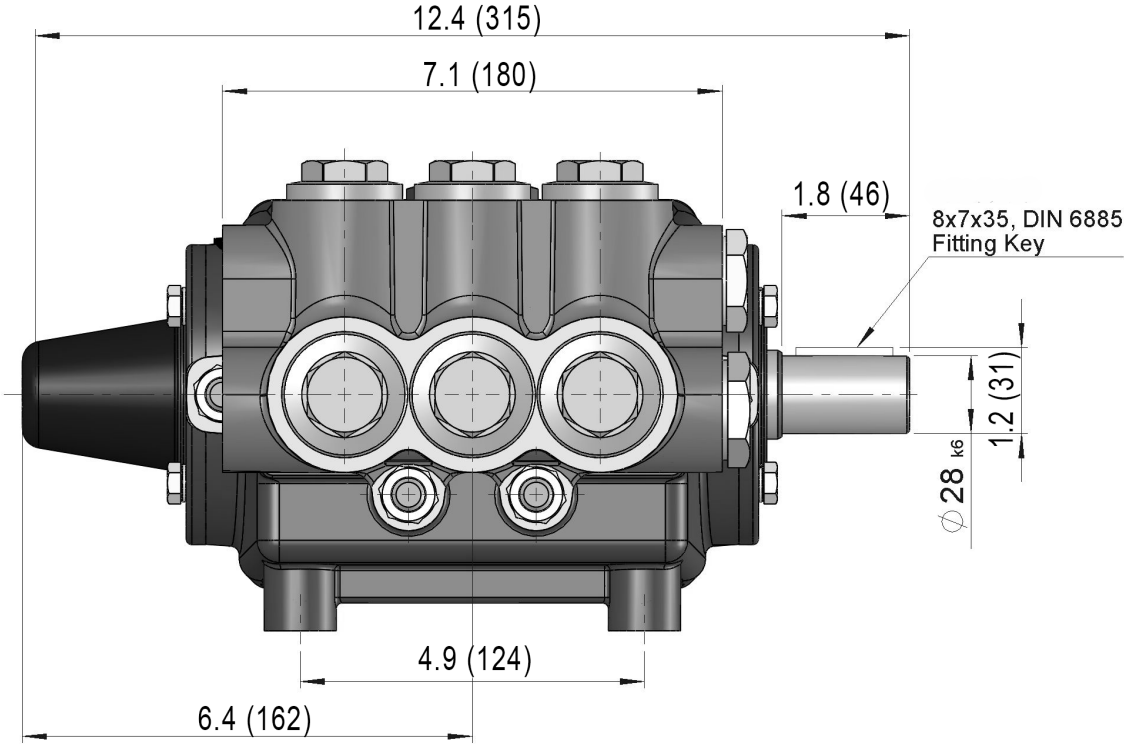
Remove bearing cover (14) together with shaft seal (15) and O-ring (16). Fit crankshaft (22) through bearing hole on the opposite side. Press in outer bearing (20), and tension it inwards with the bearing cover. Keep the crankshaft in vertical position and turn it slowly so that the taper rollers of 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/20B) under the bearing cover (14).

Important! After assembly has been completed, the crankshaft should turn easily with very little clearance.

Tighten connecting rod screws (24) to 106 in.-lbs. (12 Nm).

MP4130HK 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. 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



Performance Under Pressure

GIANT INDUSTRIES, INC., 900 N. Westwood Ave., Toledo, Ohio 43607
PHONE (419) 531-4600, FAX (419) 531-6836, www.giantpumps.com
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