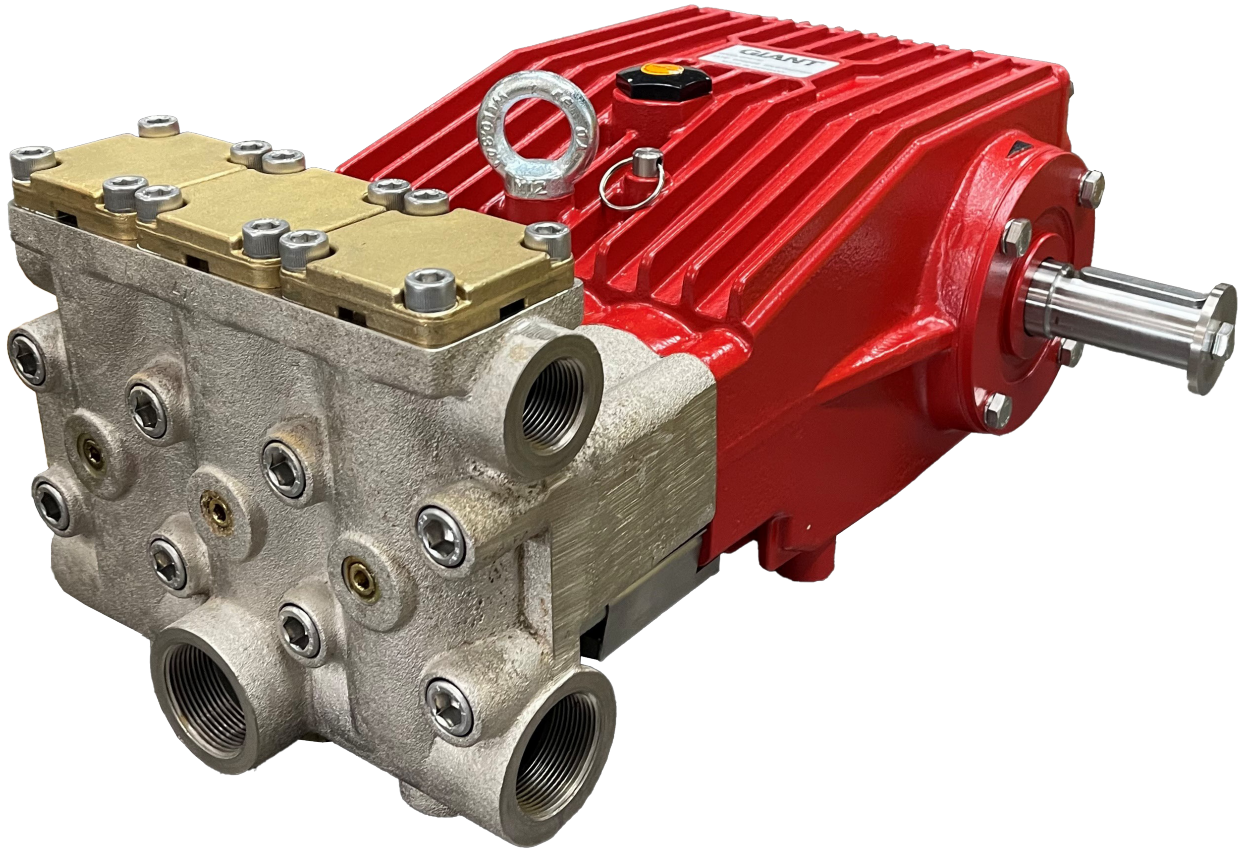
Model
GP5142

Triplex Ceramic Plunger Pump Operating Instructions / Manual



GIANT
Performance Under Pressure

Updated 10/26

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Figures for speed (rpm) and pressure apply to interval operation with cold water.
For continual operation, the speed of all pump models must be limited to 700 rpm and the max. operating pressure reduced by 10%.
Required NPSH refers to water: Specific weight 1kg/dm^3, viscosity 1°E at max. permissible revolutions.

Operation and Maintenance

Check oil level prior to starting and ensure trouble-free water supply. Oil: Use only 1.2 gallons (4.6 liters) of Industrial Gear Lube Oil (Giant p/n 01154) or ISO VG 220 (e.g. Aral Degol BG220) or SAE 90 GL4 gear oil.
Initial change after 50 operating hours and then every 500 operating hours.
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 PSI (-0.3 bar).

⚠ Safety Rules

Pump operation without safety valve as well as any excess in temperature or speed limits automatically voids the warranty. The safety valve must be regulated in accordance with the guidelines for liquid spraying units so that the admissible operating pressure can not be exceeded by more than 10%.
When the pump is in operation, the open shaft end must be covered up by a 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 accidently.
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 occuring, te 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-agressive 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.

GP5142 PUMP SPECIFICATIONS

	U.S.	Metric
Maximum Flow	40.4 GPM	153.0 LPM
Maximum Discharge Pressure	1885 PSI	130 bar
Power Required	52.5 BHP	39.2 kW
Crankshaft Speed		800 RPM
Maximum Inlet Pressure	-4.35 to145 PSI	-0.3 to 10 bar
Plunger Diameter	1.65”	42 mm
Crankshft Stroke	1.81”	46 mm
Crankshaft Diameter	1.38”	35 mm
Crankshaft Mounting		Either side
Shaft Rotation		Top of Pulley Toward Fluid End
Temperature of Pumped Fluids	Up to 140 °F	60 °C
Inlet Ports		(3) 1-1/2” NPT
Discharge Ports		(2) 1” NPT
Weight	179 lbs.	81 kg
Crankcase Oil Capacity	1.2 Gal.	4.6 liters
Fluid End Material		Nickel-Plated Spheroidical Cast Iron
Plungers		Solid Ceramic Oxide
Valves		Stainless Steel/Plastic Retainer
Seals		Nitrile with Fabric Reinforcing
Gear End		Spheroidal 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.

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 X PSI) / 1450.

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

The formula to determine the horsepower required for a diesel engine is: HP = (GPM X PSI) / 1250.

For the Application of a Hydraulic Motor:

To Determine the Torque of a Hydraulic Motor -- (GPM x PSI x 36.77) / RPM = 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.

(Max. Pump RPM / Rated Pump GPM) x Required Pump GPM = **Required Pump RPM**

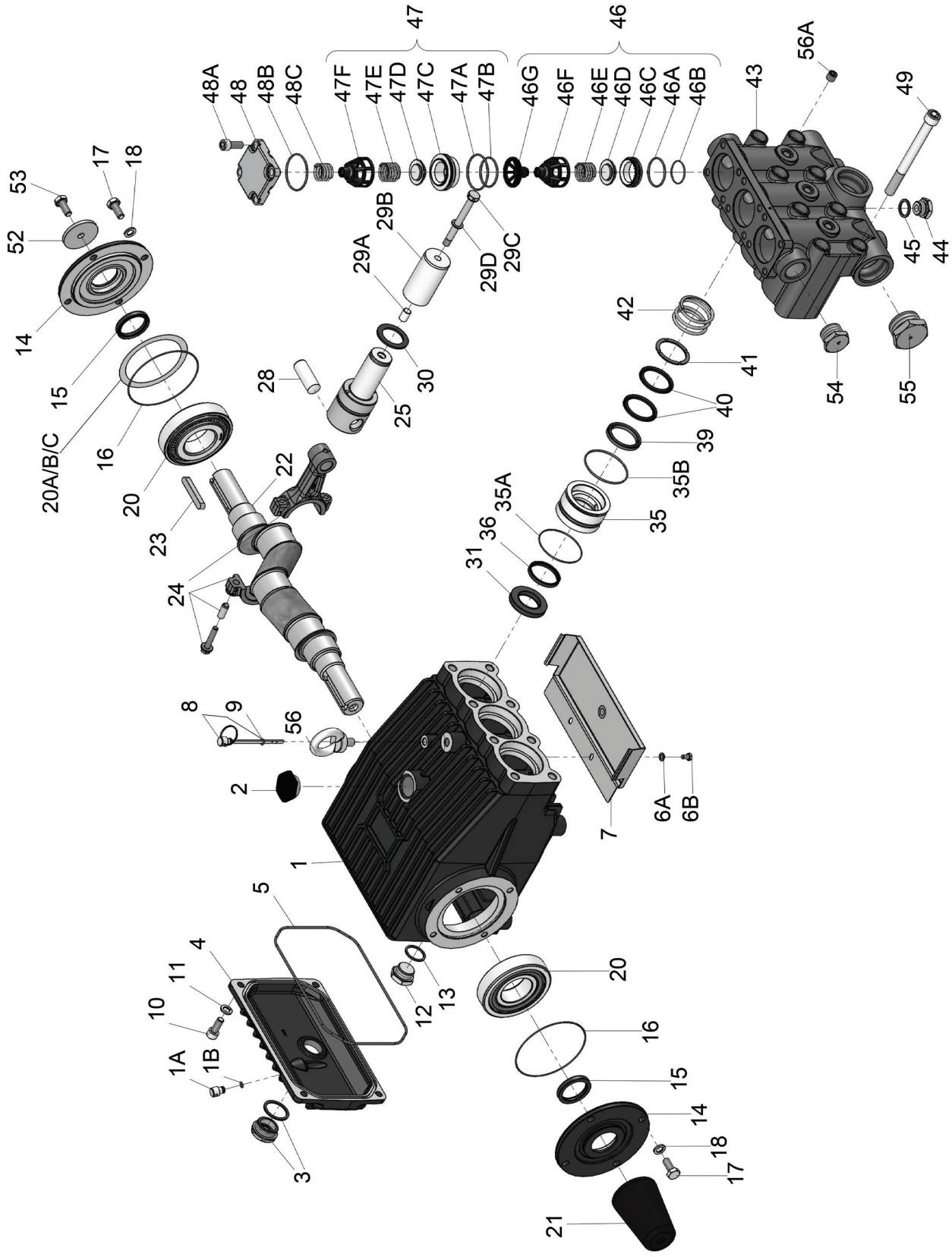
To calculate a pulley diameter one (1) pulley diameter and the required pump RPM must be known:

(Pump RPM x Pump Pulley Diameter) / Motor RPM = Motor Pulley Diameter

(Motor RPM x Motor Pulley Diameter) / Pump RPM = Pump Pulley Diameter

GP5142 Horsepower Requirements						
RPM	GPM	1000 PSI	1250 PSI	1500 PSI	1750 PSI	1885 PSI
400	20.2	13.9	17.4	20.9	24.4	26.3
500	25.3	17.5	21.8	26.2	30.5	32.9
600	30.3	20.9	26.1	31.4	36.6	39.4
700	35.4	24.4	30.5	36.6	42.7	46.0
750	37.9	26.1	32.7	39.2	45.7	49.3
800	40.4	27.9	34.8	41.8	48.8	52.5

EXPLODED VIEW - GP5142 PUMP



GP5142 SPARE PARTS LIST

ITEM	PART	DESCRIPTION	QTY.	ITEM	PART	DESCRIPTION	QTY.
1	13266A	Crankcase	1	35	04325	Seal Sleeve	3
1A	05225	Head of Oil Dipstick	1	35A	08183	O-Ring	3
1B	01009	O-Ring	1	35B	13286	O-Ring	3
2	13000	Oil Filler Plug Assembly	1	36	04323	Grooved Ring	3
3	05943	Oil Sight Glass Assembly	1	39	07744	Pressure Ring	3
4	13267	Crankcase Cover	1	40	07745	V-Sleeve	6
5	13268	O-Ring	1	41	07746	Sleeve Support Ring	3
6A	07223-0100	Spring Washer	2	42	13297	Tension Spring	3
6B	05051	Hexagon Screw	2	43	13300	Valve Casing	1
7	04334	Drip Pan	1	44	07109	Plug, 1/2” BSP	1
8	07603	Oil Dip Stick Assembly	1	45	06272	Copper Washer, 1/2” BSP	1
9	01009	O-Ring, Dip Stick	1	46	13302	Suction Valve Assembly	3
10	07008	Inner Hexagon Screw	4	46A	12055	O-Ring	3
11	06725	Spring Washer	4	46B	08059	O-Ring	3
12	07703	Drain Plug, 3/4” BSP	1	46C	13304	Suction Valve Seat	3
13	07704	Gasket, Drain Plug	1	46D	13306	Valve Plate	3
14	13271	Bearing Cover	2	46E	13307	Valve Spring	3
15	13272	Radial Shaft Seal	2	46F	13308	Spring Tension Cap	3
16	08182	O-Ring	2	46G	13309	Spacer Pipe	3
17	13358	Hexagon Screw	8	47	13311	Discharge Valve Assembly	3
18	06725	Spring Washer	8	47A	13289	O-Ring	3
20	13206	Taper Roller Bearing	2	47B	07700	O-Ring	3
20A	13207	Shim, 0.1mm	1-5	47C	13314	Discharge Valve Seat	3
20B	04723	Shim, 0.15mm	1-5	47D	13306	Valve Plate	3
20C	04724	Shim, 0.2mm	1-5	47E	13307	Valve Spring	3
21	13273	Shaft Protector	1	47F	13308	Spring Tension Cap	3
22	13274	Crankshaft	1	48	13316	Plug	3
23	13275	Fitting Key	1	48A	07008	Inner Hexagon Screw	12
24	13276	Connecting Rod Assembly	3	48B	07740	O-Ring	3
25	13279	Crosshead Assembly	3	48C	07232	Pressure Spring	3
28	13281	Crosshead Pin	3	49	13339	Inner Hexagon Screw	8
29A	07125	Centering Sleeve	3	52	13362	Disc for Crankshaft	1
29B	07736	Plunger Pipe	3	53	13358	Hexagon Screw	1
29C	13031	Tensioning Screw	3	54	06626	Plug, 1” NPT	1
29D	07755	Copper Ring	3	55	06627	Plug, 1-1/2” NPT	2
30	13282	Oil Scraper	3	56	07623	Eye Bolt	1
31	13284	Radial Shaft Seal	3	56A	22610	Plug, 1/4” NPT	3

GP5142 Pump
Torque Specifications and Lubrication Information

Position	Item #	Description	Lubricatin Info	Torque Amount
1	13266	Crankcase	Molycote Cu-Paste	
3	05943	Oil Sight Glass Assembly	Lectite 572	22 ft.-lbs. (30 Nm)
10	07008	Inner Hexagon Screw		33 ft.-lbs. (45 Nm)
12	07703	Drain Plug, 3/4” BSP		74 ft.-lbs. (100 Nm)
17	13358	Hexagon Screw		33 ft.-lbs. (45 Nm)
24	13276	Connecting Rod Assembly		22 ft.-lbs. (30 Nm)
29C	13031	Tension Screw, Plunger	Loctite 243	22 ft.-lbs. (30 Nm)
31	13284	Radial Shaft Seal	Loctite 403	
48A	07008	Inner Hexagon Screw, Plug	Pro Pack 550	35 ft.-lbs. (47 Nm)
49	13339	Inner Hexagon Screw, Valve Casing		89 ft.-lbs. (120 Nm)

GP5142 REPAIR KITS

Plunger Packing Kits - #09767

Item	Part#	Description	Qty.
35A	08183	O-Ring	3
35B	13286	O-Ring	3
36	04323	Grooved Ring	3
40	07745	V-Sleeve	6

Oil Seal Kit - #09230

Item	Part #	Description	Qty.
31	13284	Oil Seal	3

Valve Assembly Kits

Inlet Valve Kit, GP5100 Series, #09231

Item	Part #	Description	Qty.
46A	12055	O-Ring	1
46B	08059	O-Ring	1
46C	13304	Valve Seat	1
46D	13306	Valve Plate	1
46E	13307	Valve Spring	1

Discharge Valve Kit, GP5100 Series, # 09232

Item	Part #	Description	Qty.
47A	13289	O-Ring	1
47B	07700	O-Ring	1
47C	13314	Valve Seat	1
47D	13306	Valve Plate	1
47E	13307	Valve Spring	1

Complete Valve Repair Kit, #09812

Item	Part #	Description	Qty.
46A	12055	O-Ring	3
46B	08059	O-Ring	3
46C	13304	Inlet Valve Seat	3
46D	13306	Valve Plate	3
46E	13307	Valve Spring	3
46F	13308	Spring Tension Cap	3
46G	13309	Spacer Pipe	3
47A	13289	O-Ring	3
47B	07700	O-Ring	3
47C	13314	Discharge Valve Seat	3
47D	13306	Valve Plate	3
47E	13307	Valve Spring	3
47F	13308	Spring Tension Cap	3
48B	07740	O-Ring	3

GP5142 REPAIR INSTRUCTIONS

To Check Valves

Remove inner hexagon screw (48A) and remove plugs (48) with a screwdriver. Check O-rings on plugs (48). Pull out tension spring (48C). Remove the spring tension disc (47F) from discharge valve lying underneath by screwing in the M10-screw. Take out spring (47E) and plate (47D). Pull out valve seat (47C) by means of an valve puller. Check sealing areas of plate and valve seat for damage and replace worn parts. Check O-rings (47A) and (47B). Screw spacer pipe (46G) out of spring tension cap (46F) in the suction valve lying underneath. Remove suction valve by screwing in an M10-screw. Check O-ring (46A) and (46B). If valve seat (46C) remains in the valve casing (43) then carry forth as described for discharge valve. When reassembling, use new O-rings if possible and oil them before installing.
Tighten inner hexagon screws (48A) to 35 ft.-lbs. (47 Nm).

To Check Seals and Plunger Pipe

Loosen the inner hexagon screws (49) and pull off valve casing (43) to the front. Pull seal sleeves (35) out of guides in crankcase and over the plunger pipe (29B). Pull support ring (41), sleeves (40) and pressure ring (39) out of seal sleeve.
Check plunger surfaces, sleeves (40) and grooved rings (36). Replace worn parts.
If the plunger pipe is worn out, loosen tension screw (29C) and pull off plunger pipe to the front. Clean contact surfaces of plunger (25) thoroughly. Then, place new plunger pipe carefully through the oiled seals into the seal case. Then, push seal sleeve together with plunger pipe into the crankcase guide. Turn gear carefully until plunger (25) comes up against the plunger pipe. Put a new copper gasket (29D) onto the tension screw (29C). Cover the thread of tension screw and the gasket with glue and tighten to 29 ft.-lbs. (30 Nm).

Important! Care must be taken that no glue gets between the plunger pipe (29B) and the centering sleeve (29A). The plunger pipe should not be strained by eccentric tightening of the tension screw or through damage to front of surface of plunger, otherwise it will probably break. Tighten the inner screws (49) for the valve casing evenly to 89 ft.-lbs. (120 Nm).

To Dismantle Gear

Drain oil after dismantling valve case and plunger pipes and screw off crankcase cover (4) and bearing cover (14).
Loosen con rod screws (24), push stem of con rod as far as possible into the crosshead guide and carefully push out the radial shaft seals (31).

Important! Connecting rods are marked for identification. Do not twist con rod halves. Con rod is to be reinstalled in the same position on shaft journals.
While slightly turning the crankshaft, hit it out carefully to one side with a rubber hammer.

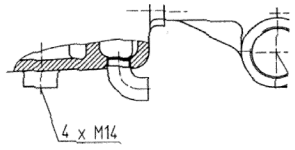
Important! Do not bend con rod shank. Finally, check surfaces of shaft, con rod, crosshead and plungers (25) as well as radial shaft seals (15, 31) and taper roller bearings (20).

To Reassemble

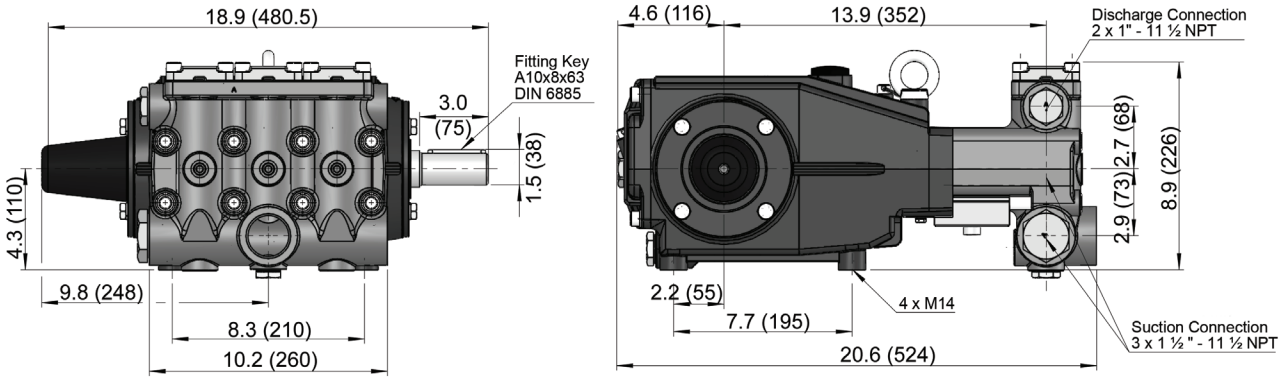
Using a soft tool, press in the outer bearing ring until it lines up with the outer edge of the bearing hole. Remove bearing cover together with shaft ring and O-ring. Fit shaft with pressed-on bearing parts through the bearing hole on the opposite side. Press in outer bearing ring and tension it inwards with the bearing cover, keeping the shaft in vertical position and turning it slowly so that the taper rollers of the bearings touch the edge of the outer bearing ring. Adjust axial bearing clearance with fitting discs 0.1mm (20A). Shaft should turn easily with very little clearance. Tighten inner hexagon screws on con rod (24) to 22 ft.-lbs. (30 Nm).

Important! There should be enough clearance for the con rod to move sideways a little on the journals.

Important! The 1/2” BSP connection in the crankcase serves the purpose of draining leakage water. The connection should not be closed (see the drawing to the right).



DIMENSIONS



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

GIANT
Performance Under Pressure

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