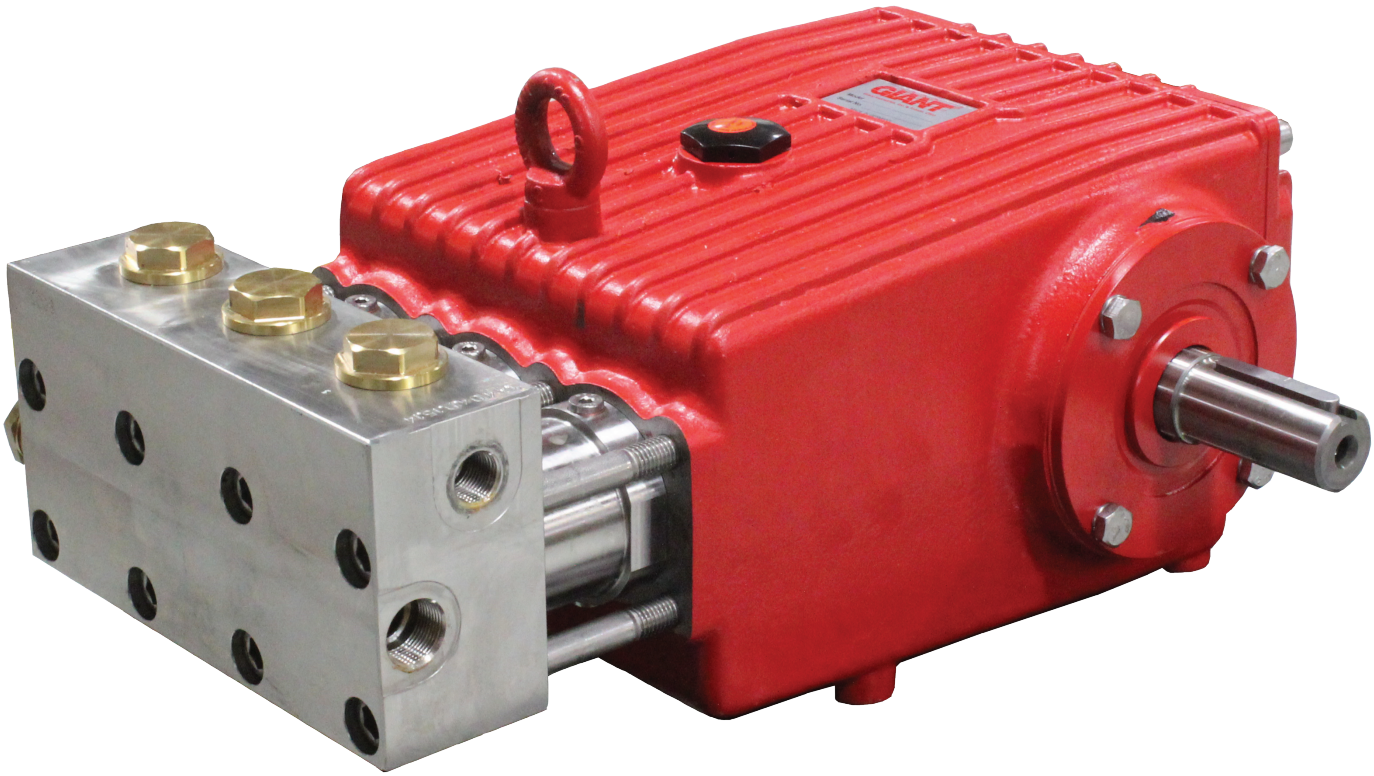
Triplex Ceramic
Plunger Pump
Operating Instructions /
Manual

Models

GP5120, GP5122 & GP5124



GIANT
Performance Under Pressure

updated 01/17

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INSTALLATION INSTRUCTIONS

Operation and Maintenance

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

Important! If there is a danger of frost, the water in the pump and in the pump fittings (particularly the unloader valve) must be emptied. The second discharge port can also be used and the pump run “dry” for 1-2 minutes for this purpose.

Oil: Use only 1.2 gal. (4.6 L) SAE 80W-90 Industrial Gear Lube Oil.

Before putting the pump into operation for the first time, and every time the suction line is emptied, the plugs (37) must be removed and the pump cranked manually or started briefly until water emerges out of the plug bores. This procedure serves to vent the drip-return so that the low-pressure seals (32) do not run dry.

Thereafter the plugs (34) must be screwed back on and tightened.

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

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.

NPSH values must be respected.

Max. input pressure 145 PSI (10 bar), max. suction head -4.35 PSI (-0.3) bar. Make sure that suction pulsation is sufficiently dampened - water column resonance must be avoided.

Safety Rules

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 shaft end must be covered by shaft protector (21) and the driven shaft side and coupling by a protective cover.

Pressure in the discharge line and in the pump must be at zero before any maintenance to the pump takes place. Close off suction line.

Take necessary precautions to ensure that the driving motor cannot get switched on accidently (by disconnecting the fuses, for example).

Make sure that the pump 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/water mixture being absorbed and to prevent cavitation occurring, the pump positive suction head (npshr) and water temperature must be respected.

Cavitation and/or compression of gases lead to uncontrollable pressure spikes which can ruin pump and unit parts and also be dangerous to the operator and 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 flammable, explosive and toxic media - Giant must be consulted with regard to the resistance of the pump material. It is the reposnsibility of the equimpment manufacturer and/or operator to ensure that all pertinent safety regualtions are adhered to.

GP5120/GP5122/GP5124 SERIES PUMP SPECIFICATIONS

	Max. Flow	Max. Pressure	Max. Speed	Power Req'd.	Max. Temp.	Plunger Diameter	NPSH Required
Model	**GPM**	**PSI**	**RPM**	**HP**	**°F**	**in**	**Ft-Head**
GP5120	10.5	8700	1000	63.3	140	0.787	27.9
GP5122	11.9	7250	930	59.0	140	0.866	27.9
GP5124	13.2	5800	850	53.8	140	0.945	27.9

	Max. Flow	Max. Pressure	Max. Speed	Power Req'd.	Max. Temp.	Plunger Diameter	NPSH Required
Model	**L/min**	**Bar**	**RPM**	**kW**	**°C**	**mm**	**mWs**
GP5120	40.0	600	1000	47.2	60	20	8.5
GP5122	45.0	500	930	44.0	60	22	8.5
GP5124	50.0	400	850	40.1	60	24	8.5

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

Common Specifications:

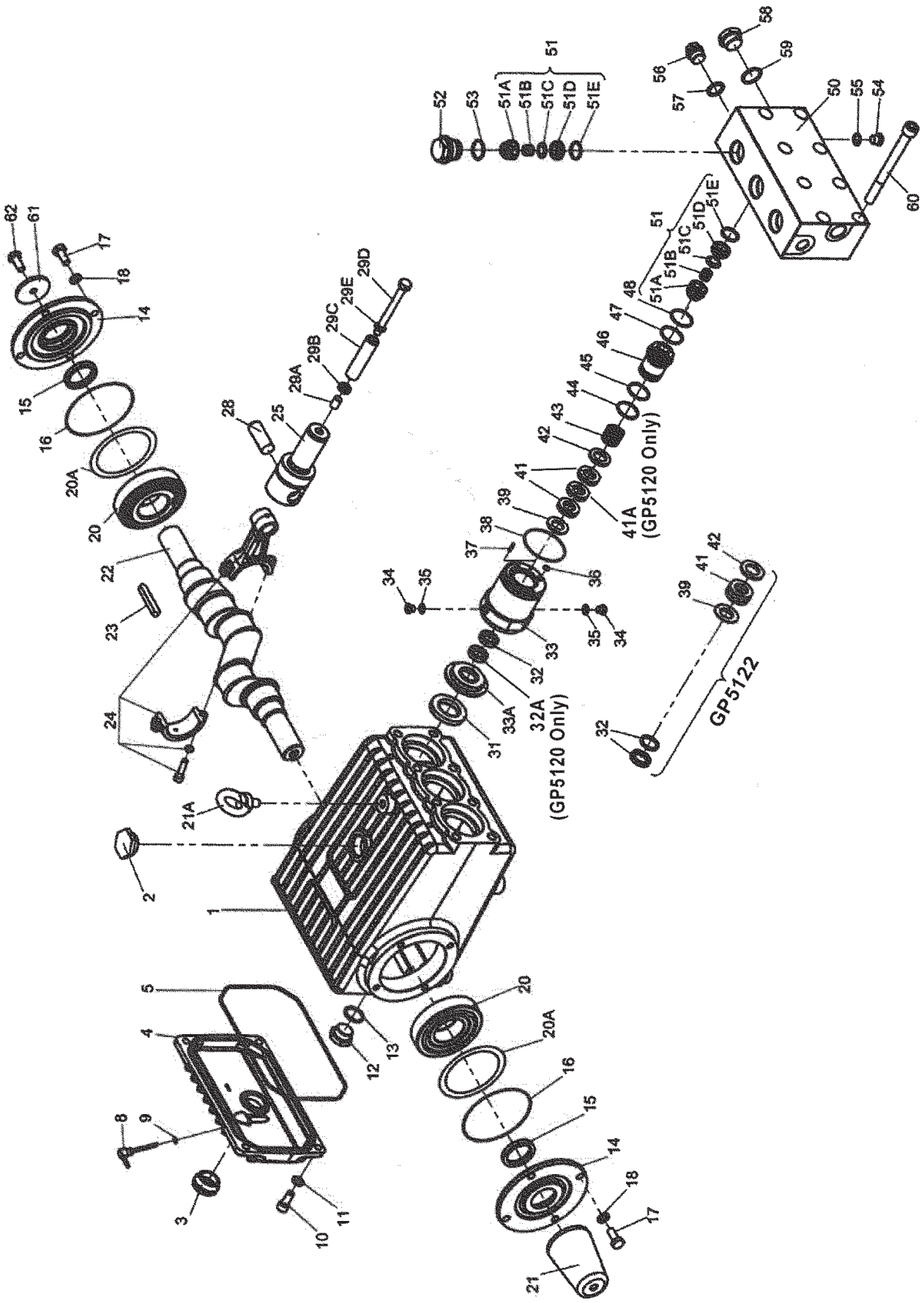
Inlet Pressure ..-4.35 to 145 PSI (-0.3 to 10 Bar)
Max. Temperature.....140 °F (60 °C)
Crankshaft Diameter.....1.38" (35mm)
Crankcase Oil Capacity.....1.2 Gal. (4.6 L)
Inlet Ports .....(2) 3/4" BSP
Discharge Ports.....(2) 1/2" BSP
Stroke .....1.81" (46mm)
Weight .....176 lbs (80 kg)
Shaft Rotation..Top of Pulley Toward Fluid End

Materials Used for MP Pumps:

Manifold..... AISI 303 Stainless Steel
Plungers ..... Solid Ceramic
Valves ..... Duplex Steel
Seals..... Aramide/Teflon Packing
Gear End ..... Spheroidal Cast Iron
Crankshaft .... Drop-forged and case-hardened

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.

EXPLODED VIEW - GP5120, GP5122 & GP5124 PUMPS



GP5120, GP5122 & GP5124 SPARE PARTS LIST

ITEM	PART	DESCRIPTION	QTY.
1	13266	Crankcase	1
2	13000	Oil Filler Plug Assembly	1
3	05943	Oil Sight Glass Assy.	1
4	13267	Crankcase Cover	1
5	13268	O-Ring	1
8	07105	Oil Dip Stick	1
9	01009	O-Ring, Dip Stick	1
10	07008	Inner Hexagon Screw	4
11	06725	Spring Washer	4
12	07703	Drain Plug G 3/4”	1
13	07704	Gasket, Drain Plug	1
14	13271	Bearing Cover	2
15	13272	Radial Shaft Seal	2
16	08182	O-Ring	2
17	13358	Hexagon Screw	8
18	06725	Spring Washer	8
20	13206	Taper Roller Bearing	2
20A	13207	Fitting Disc (Shim)	1-5
21	13273	Shaft Protector	1
21A	07623	Eye Bolt	1
22	13274	Crankshaft	1
23	13275	Fitting Key	1
24	13276	Connecting Rod Assy.	3
25	13279	Crosshead Assy.	3
28	13281	Crosshead Pin	3
29A	07125	Centering Sleeve	3
29B	04489	Pluger Extension (GP5120)	3
29B	04500	Pluger Extension (GP5122)	3
29B	04506	Pluger Extension (GP5124)	3
29C	07126	Plunger Pipe (GP5120)	3
29C	04501	Plunger Pipe (GP5122)	3
29C	07127	Plunger Pipe (GP5124)	3
29D	04507	Tensioning Screw	3
29E	07755	Copper Ring	3
31	13284	Radial Shaft Seal	3
32	13037	Grooved Ring (GP5120)	3
32	06249	Grooved Ring (GP5122)	3
32	13049	Grooved Ring (GP5124)	3
32A	08346	Support Ring (GP5120 only)	3
33	04490	Seal Sleeve (GP5120)	3
33	04509	Seal Sleeve (GP5122 & GP5124)	3
33A	04491	Centring Ring (GP5120)	3
33A	04502	Centring Ring (GP5122)	3
33A	04508	Centring Ring (GP5124)	3
34	06589	Plug, 1/8” BSP	6
35	06709	Seal	6
36	07023	O-Ring	3
37	22764	Notched Pin	3
38	07303	O-Ring	3
39	04492	Guide Ring (GP5120)	3
39	04503	Guide Ring (GP5122)	3
39	04381	Guide Ring (GP5124)	3
41	07783	Spiral Ring (GP5120)	6
41	04504	Spiral Ring (GP5122)	6
41	07685	Spiral Ring (GP5124)	6
41A	04475	Guide Ring (GP5120 only)	3
42	04476	Support Disc (GP5120)	3
42	04505	Support Disc (GP5122)	3
42	04510	Support Disc (GP5124)	3
43	07210	Pressure Spring (GP5120)	3
43	07338	Pressure Spring (GP5122 & GP5124)	3
44	07150	O-Ring (GP5120)	3
44	12055	O-Ring (GP5122 & GP5124)	3
45	04493	Support Ring (GP5120)	3
45	07693	Support Ring (GP5122 & GP5124)	3
46	04477	Seal Case (GP5120)	3
46	04511	Seal Case (GP5122 & GP5124)	3
47	06266	Support Ring	3
48	07150	O-Ring	3
50	04494	Valve Casing (GP5120 & GP5122)	1
50	04512	Valve Casing (GP5124)	1
51	04513	Valve Assembly	6
51A	06939	Spring Tension Cap	6
51B	06377	Valve Spring	6
51C	06938	Valve Plate	6
51D	06937	Valve Seat	6
51E	04123	O-Ring	6
52	05971	Plug, M33 x 1.5	3
53	05972	O-Ring	3
54	07423	Plug, 1/4” BSP	3
55	07161	Copper Ring, 1/4”	3
56	13434	Plug, 1/2” BSP	1
57	06272	Copper Seal Ring	1
58	07703	Plug, 3/4” BSP	1
59	07704	Copper Seal Ring	1
60	13339	Inner Hexagon Screw	8
61	13362	Disc for Crankshaft	1
62	13358	Hexagon Screw	1

GP5120, GP5122 and GP5124 REPAIR KITS

Plunger Packing Kits

GP5120 - #09784

Item	Part#	Description	Qty.
36	07023	O-Ring	3
38	07303	O-Ring	3
39	04492	Grooved Ring	3
41	07783	Spiral Ring	6
41A	04475	Guide Ring	3
44	07150	O-Ring	3
45	04493	Support Ring	3
47	06266	Support Ring	3
48	07150	O-Ring	3

GP5122 - #09785

Item	Part#	Description	Qty.
36	07023	O-Ring	3
38	07303	O-Ring	3
39	04503	Guide Ring	3
41	04504	Spiral Ring	6
44	12055	O-Ring	3
45	07693	Support Ring	3
47	06266	Support Ring	3
48	07150	O-Ring	3

GP5124 - #09786

Item	Part#	Description	Qty.
36	07023	O-Ring	3
38	07303	O-Ring	3
39	04381	Guide Ring	3
40	07718	Support Ring	3
41	07685	Spiral Ring	6
44	12055	O-Ring	3
45	07693	Support Ring	3
47	06266	Support Ring	3
48	07150	O-Ring	3

Valve Assembly and Oil Seal Kits

Valve Assembly Kit - #09787

Item	Part #	Description	Qty.
47	06266	Support Ring	3
48	07150	O-Ring	3
51	04513	Valve Assembly	6
53	05972	O-Ring	3

Oil Seal Kits

GP5120 - #09783

Item	Part #	Description	Qty.
32	13037	Grooved Ring	3
32A	08346	Support Ring	3

GP5122 & GP5124 - #09230

Item	Part #	Description	Qty.
31	13284	Oil Seal	3

GP5120, GP5122 & GP5124 Torque Specifications

Position	Item#	Description	Torque Amount - Ft.-lbs (NM)
24	13276	Connecting Rod Assy.	22 (30)
29D	04507	Tension Screw, Plunger	26 (35)
52	05971	Plug	107 (145)
60	13339	Inner Hexagon Screw, Valve Casing	74-89 (100-120)

GP5120, GP5122 and GP5124 REPAIR INSTRUCTIONS

To Check Valves

Discharge Valves: remove valve plugs (52) using allen wrench. Using a screwdriver, carefully push the exposed spring tension cap (51A) to the side to remove it from the valve seat (51D). Take out the spring tension cap, valve spring (51B) and valve plate (51C). Pull out valve seat (51D) using an extractor tool (ø12-ø16 mm).
To dismantle the complete valve, place a screwdriver through a gap in the spring tension cap, press on the valve plate and lever the valve apart. Tighten plugs (52) at 107 ft.-lbs. (145 Nm).
Suction Valves: remove hexagon socket screws (60) and pull valve casing (50) past the plungers (29A-29E) and to the front. Continue as described above under Discharge Valves.
Examine valves and replace worn parts.

To Check Seals and Plunger Pipe

Unscrew the 8 hexagon socket screws (60) and pull the valve casing (50) off to the front. Pull seal sleeves (33) out of the guides in the crankcase. Remove seal case (46) from the seal sleeve (33) where necessary. Take tension spring (43) and seal unit (39-42) out of the seal sleeve. Remove plugs (34). Check that the leakage bores are free from deposits of all kinds. Check plunger surfaces and seals. Replace worn seals. After removing support disc (31), check leakage seal (32) and replace if necessary. If the plunger surface is worn remove tension screw (29D), clean the centring hole and the front of the plunger crosshead (25). Then carefully thread a new plunger pipe through oiled seals into the seal sleeve. Put centring sleeve (29A) together with plunger extension (29B) onto plunger crosshead (25). Place the seal sleeves together with the plunger pipe into the drive. Put a new copper seal ring (29E) onto tension screw (29D). Lightly coat the threads of the tension screw as well as the seal ring with glue (Loctite) and tighten at 26 ft.-lbs. (35 Nm).

Important! Glue must never come between plunger extension (29B), plunger pipe (29C) and centring sleeve (29A). Deformation of the plunger pipe due to excessive tightening of the tension screw or dirt or damage on the front surface can cause the plunger pipe to fracture. The seal sleeves must be fitted so that grooved pins (37) are on top. Put tension spring (43) into seal casing (33) and place the seal case (46) into the valve casing. Carefully centre the valve casing with the fitted seal cases onto the seal sleeves and against the crankcase. Then tighten hexagon socket screws (60) to 74-89 ft.-lbs. (100-120 Nm) to secure the valve casing.

To Dismantle Gear

Drain oil after dismantling valve casing and plunger pipes. Remove crankcase cover (4) and bearing cover (14). Remove connecting rod screws (24), push the front connecting rod parts as far as possible into the crosshead guide and carefully push out the radial shaft seals (31).

Important! Do not twist the connecting rod halves. The connecting rods are marked for identification and must be remounted onto the shaft journals in their exact original position.
Turn the crankshaft lightly and hit it out to one side using a rubber hammer.

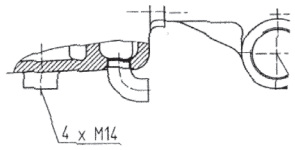
Important! Do not bend connecting rod shanks. Examine the surfaces of the crankshaft, connecting rods, crossheads and plungers (25) as well as radial shaft seals (15, 31) and taper roller bearings (20) for wear.

To Reassemble

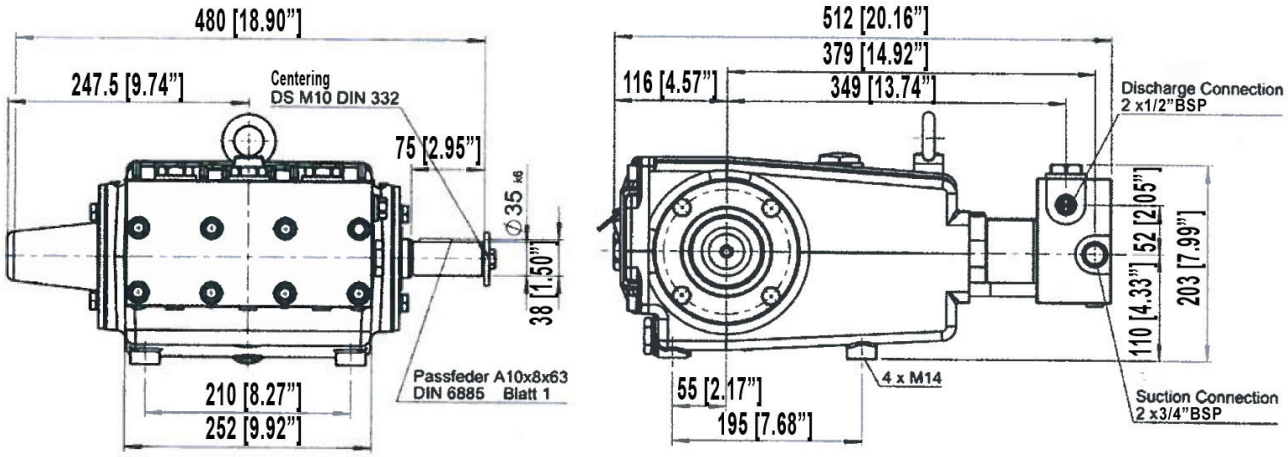
Using a soft tool, press in the outer bearing ring on one side until it lines up with the outer edge of the bearing hole. Screw on the bearing cover together with shaft ring and o-ring. Fit the crankshaft with pressed-on bearing parts through the bearing hole on the opposite side. Press in outer bearing ring and tension it inwards with the bearing cover, keeping 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 shims 0.1 mm (20A). Shaft should turn easily with very little clearance. Tighten hexagon socket screws on connecting rod (24) at 22 ft.-lbs. (30 Nm).

Important! A little clearance must exist to enable slight sideward movement of the connecting rod on its journal.

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 - 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 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.

GIANT
Performance Under Pressure

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