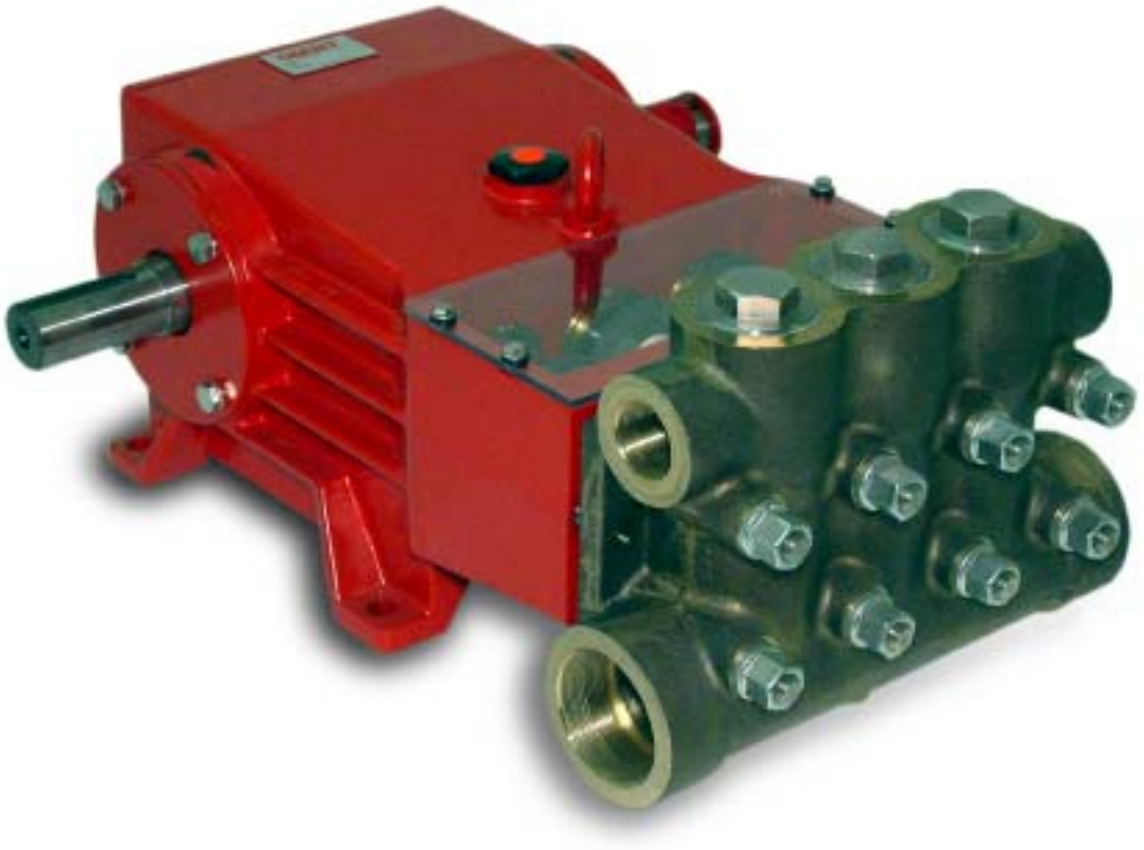
Model GP6132

Triplex Ceramic Plunger Pump Operating Instructions/ Repair and Service Manual



GIANT

Contents:

Updated 8/07

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 pumps are to be operated at temperatures in excess of 140^0 F, it is important to insure a positive head to the pump to prevent cavitation.

3. 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.

4. 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.

5. 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 pages 3 and 6.

6. 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 the crankcase so that oil level is between the two lines on the oil dipstick. DO NOT OVERFILL.

Use Giant's p/n 01154 or the equivalent SAE 80w-90 Industrial Gear oil .

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. 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. Run the pump dry approximately 10 seconds to drain the water before exposure to freezing temperatures.

NOTE: Contact Giant Industries for Service School Information. Phone: (419)-531-4600

Specifications
Model GP6132

	U.S.	Metric
Volume	23.5 GPM	88.9 LPM
Discharge Pressure	3045 PSI	210 BAR
Speed		800 RPM
Inlet Pressure	-4.35 to 145 PSI	-0.3 to 10 BAR
Plunger Diameter	1.26”	32mm
Plunger Stroke	1.89”	48mm
Crankshaft Diameter	1.65”	42mm
Key Width	0.47”	12mm
Crankshaft Mounting		Either side
Shaft Rotation		Top of pulley towards manifold
Temperature of Pumped Fluids	Up to 140 °F	60 °C
Inlet Ports		(2) 1-1/4" BSP
Discharge Ports		(2) 2-1/2" BSP
Weight	309 lbs.	140 kg
Crankcase Oil Capacity	1.1 Gal.	4.2 Liters
Fluid End Material		Bronze

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:

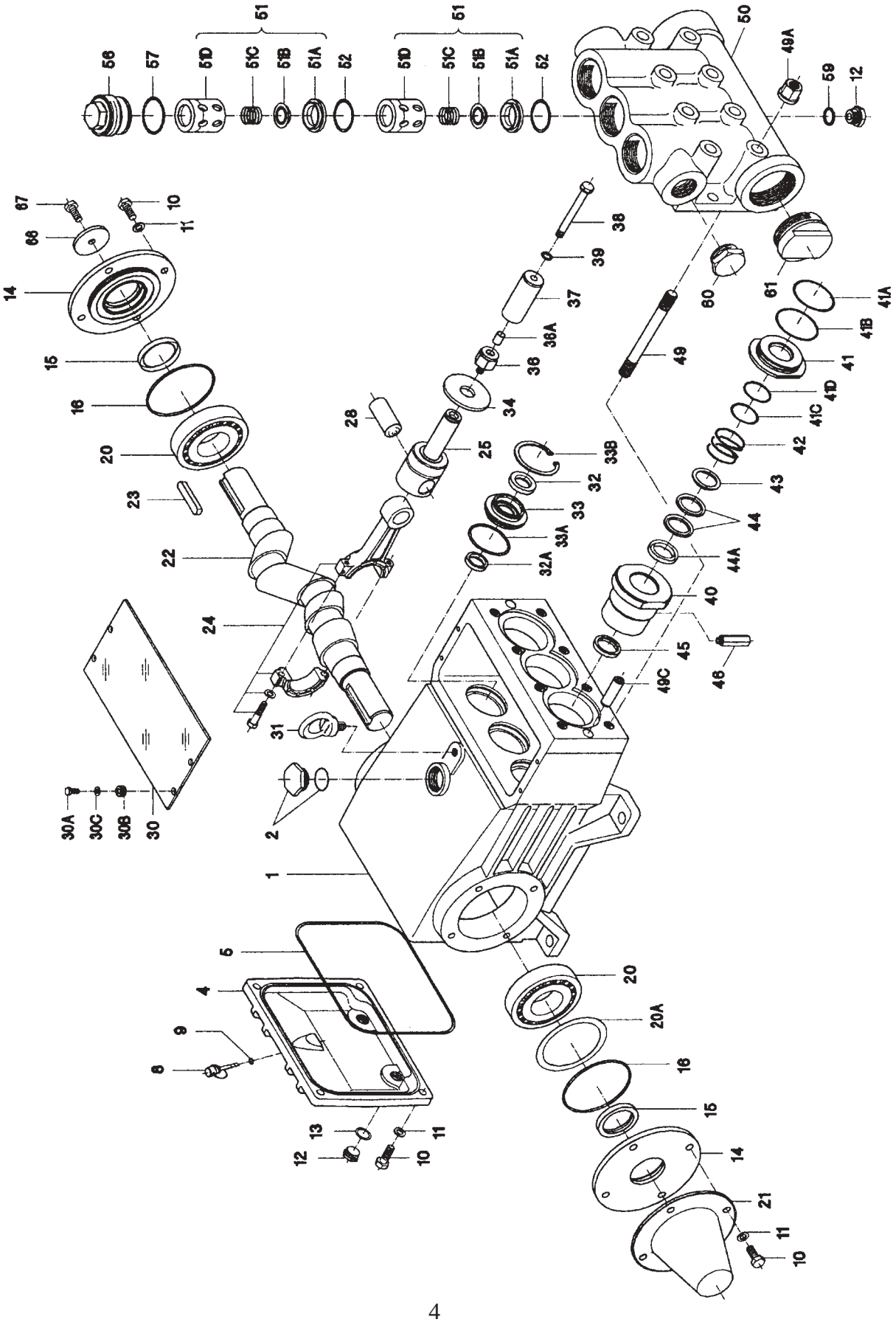
The rating shown are the power requirements for the pump. Gas engine power outputs must be approximately twice the pump power requirements shown above.

We recommend 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:

HP = (GPM X PSI) / 1450

GP6132 HORSEPOWER REQUIREMENTS					
RPM	GPM	1000 PSI	1500 PSI	2500 PSI	3045 PSI
400	11.8	8.1	12.2	20.3	24.7
500	14.7	10.1	15.2	25.3	30.8
600	17.6	12.2	18.2	30.4	37.0
700	20.6	14.2	21.3	35.5	43.2
800	23.5	16.2	24.3	40.5	49.4

EXPLODED VIEW - GP6132



GP6132 SPARE PARTS LIST

ITEM	PART	DESCRIPTION	QTY.	ITEM	PART	DESCRIPTION	QTY.
1	13200	Crankcase	1	36	13219	Plunger Connection	3
2	13000	Oil Filler Plug Assy	1	36A	07125	Centering Sleeve	3
4	13201	Crankcase Cover	1	37	13022	Plunger Pipe	3
5	13202	O-Ring for 4	1	38	05168	Tensioning Screw	3
8	06894	Oil Dipstick	1	39	07755	Copper Ring	3
9	01009	O-Ring for 8	1	40	05192	Seal Sleeve	3
10	13133	Hexagon Screw	12	41	13222	Seal Case	3
11	06725	Spring Washer	12	41A	07721	O-Ring for 41	3
12	07109	Drain Plug	3	41B	13223	Support Ring for 41A	3
13	07182	Seal for 12	2	41C	12055	O-Ring for 41	3
14	12549	Bearing Cover	2	41D	07693	Support Ring for 41C	3
15	13205	Radial Shaft Seal	2	42	07173	Tension Spring	3
16	08055	O-Ring for 14	2	43	05176	Sleeve Support Ring	3
20	13206	Taper Roller Bearing	2	44	06096	Sleeve	6
20A	13207	Fitting Disc	1-5	44A	05174	Pressure Ring	3
21	13208	Shaft Protector	1	45	13360	Leakage Seal	3
22	06895	Crankshaft	1	46	05169	Threaded Pipe	3
23	08213	Fitting Key	1	49	13159	Stud Bolt	8
24	06896	Connecting Rod Assy	3	49A	13160	Nut	8
25	06897	Crosshead Assy	3	49C	13162	Centring Stud	2
28	06898	Crosshead Pin	3	50	05191	Valve Casing	1
30	13214	Cover Plate	1	51A	12564	Valve Seat	6
30A	07225-0100	Hexagon Screw	4	51B	12565	Valve Plate	6
30B	13136	Grommet	4	51C	12566	Valve Spring	6
30C	07622	Disc	4	51D	12567	Spacer Pipe	6
31	07623	Eye Bolt	1	52	05166	O-Ring for 51	6
32	06118	Radial Shaft Seal	3	56	05171	Plug	3
32A	13215	Grooved Ring	3	57	05167	O-Ring for 56	3
33	13216	Seal Retainer	3	59	07661	Copper Seal for 12	1
33A	07721	O-Ring for 33	3	60	13151	Plug, 1-1/4” BSP	1
33B	13217	Circlip for 33	3	61	13171	Plug, 2-1/2” BSP	1
33C	12551	Fitting Disc (not shown)	3	66	13362	Disc for Crankshaft	1
34	13218	Oil Scraper	3	67	13358	Hexagon Screw	1

GP6132 REPAIR KITS

Plunger Packing Kit # 09319

Item	Part #	Description	Qty.
41A	07721	O-Ring	3
41B	13223	Support ring	3
41C	12055	O-Ring	6
41D	07693	Support Ring	6
44	06096	Sleeve	6
45	13360	Leakage Seal	3

Valve Assembly Kits #09320

Item	Part #	Description	Qty.
51A	12564	Valve Seat	6
51B	12565	Valve Plate	6
51C	12566	Valve Spring	6
52	05166	O-Ring	6
57	05167	O-Ring	3

Oil Seal Kit # 09304

Item	Part #	Description	Qty.
32	06118	Radial Shaft Seal	3
32A	13215	Grooved Ring	3
33A	07721	O-Ring	3

GP6132 TORQUE SPECIFICATIONS

Position	Item#	Description	Torque Amount
10	13133	Inner Hexagon Screw	30 ft.-lbs.
36	13219	Plunger Connection	33 ft.-lbs.
38	05168	Tensioning Screw	30 ft.-lbs.
49A	13160	Nut, Valve Casing	103 ft.-lbs.
56	05171	Tensioning Plug	160 ft.-lbs.

REPAIR INSTRUCTION - GP6132

To Check Valves

1. Loosen plugs (56) and take out complete valve assemblies (51) with a slide hammer. Use a bent piece of wire to remove the o-rings (52).
2. To dismantle the valves, carefully tap the valve plate (51B) with a bolt until the valve seat (51A) is pushed out of the spacer pipe (51D).
3. Check the sealing surfaces and replace all worn parts. Check the o-rings.
4. When reinstalling the valve assemblies, particular care must be taken so that the o-rings (52) sit properly in their fittings in the valve casing.
5. Tighten the plugs (56) to 160 ft.-lbs. (220 NM).

To Check Seals and Plunger Pipe

6. Loosen nuts (49A) and remove the valve casing (50).
7. Separate the plunger connection (36) from the crosshead assembly (25) by means of two open-end wrenches (size 22mm and 27mm).
8. Pull seal sleeves (40) out of their fittings in the crankcase (1).
9. Take the seal case (41) out of the seal sleeve (40).
10. Examine plunger parts (36-39) and seals (44 and 45).
11. Check o-rings (41A through 41D) and replace worn parts.
12. When replacing plunger pipe (37), tighten tension screw (38) to 30 ft.-lbs (40 NM).
13. Grease seals with Silicone before reinstalling.

IMPORTANT: Do not loosen the three plunger screws (36) before the valve casing (50) has been removed; otherwise, the tension screw (38) could hit against the spacer pipe (51D) when the pump is being turned.

14. The seal unit (43, 44, 44A) is pre-tensioned by a spring (42). Seal life can be increased if the loading allows for a little leakage. This assists lubrication and keeps the seals cool. It is therefore not necessary to replace the seals before the leakage becomes too heavy and causes output and operating pressure to drop.
15. When reassembling, tighten plunger screw (36) to 33 ft.-lbs. (45 NM).

Mounting Valve Casing

16. Check o-rings on seal case (41).
17. Clean surfaces of seal sleeves in crankcase (1) and sealing surfaces of valve casing (50).
18. Push valve casing (50) carefully onto o-rings (41A and 41B) of seal case and centering studs (49C).
19. Tighten nuts (49A) to 103 ft.-lbs. (140 NM).

To Dismantle Gear

20. As described above, take out the plunger and seal sleeves. Drain the oil.
21. After removing the circlip ring (33B), use a screw driver to lever out the seal retainer (33).
22. Check the seals (32, 32A and 33A) and surfaces of the crosshead (25).
23. Remove the crankcase cover (4) and make sure that the o-ring (5) looks good.
24. Loosen the inner hexagon screws on the connecting rods (24).

IMPORTANT: Connecting rods are marked for identification. Do not twist connecting rod halves. Connecting rod halves are to be reinstalled in the same position and orientation onto the crankshaft (22).

25. Push the connecting rod halves as far into the crosshead guide as possible.
26. Take out the bearing cover (14) to one side and push out the crankshaft (22) taking particular care that the connecting rod halves don't bend

IMPORTANT: Seal (32A) must always be installed so that the seal lip on the inside diameter faces the oil. Possible axial float of the seal adaptor (33) is to be compensated for with shims (33C).

27. Reassemble in reverse order
28. Regulate axial play of the crankshaft clearance to minimum of 0.1mm, maximum of 0.15mm by means of fitting disc (20A). The crankshaft should turn easily and with little clearance.
29. Tighten the inner hexagon screws to 30 ft-lbs. (40 NM).

IMPORTANT: The connecting rods have to be able to slightly moved sidewise at the stroke journals.

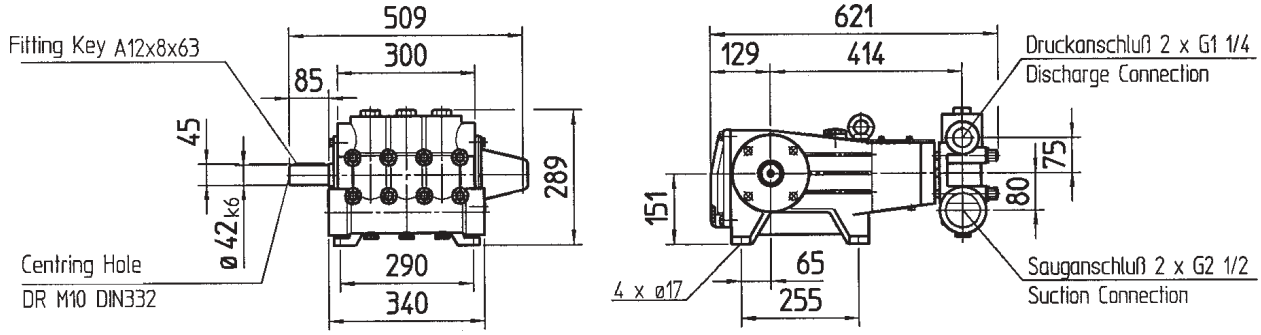
REPAIR INSTRUCTION - GP6132

PUMP SYSTEM MALFUNCTIONS

MALFUNCTION	CAUSE	REMEDY
The Pressure and/ or the Delivery Drops	Worn packing seals	Replace packing seals
	Broken valve springs	Replace springs
	Belt slippage	Tighten or Replace belt
	Worn or Damaged nozzle	Replace nozzle
	Fouled discharge valve	Clean valve assembly
	Worn or Plugged relief valve on pump	Clean, Reset, and Replace worn parts
	Cavitations	Check suction lines on inlet of pump for restrictions
	Unloader	Check for proper operation
Water in Crankcase	High Humidity	Reduce oil change intervals
	Worn Seals	Replace seals
Noisy Operating	Worn bearings	Replace bearings, Refill crankcase oil with recommended lubricant
	Cavitation	Check inlet lines for restrictions and/or proper sizing
Rough/Pulsating Operation with Pressure Drop	Worn packing	Replace packing
	Inlet restriction	Check system for stoppage air leaks, correctly sized inlet plumbing to pump
	Accumulator pressure	Recharge/Replace accumulator
	Unloader	Check for proper operation
	Cavitation	Check inlet lines for restrictions and/or proper size
Pump Pressure as Drop at gun Rated, Pressure	Restricted discharge plumbing	Re-size discharge plumbing to flow rate of pump
Excessive Leakage	Worn plungers	Replace plungers
	Worn packing/seals	Adjust or Replace packing seals
	Excessive vacuum	Reduce suction vacuum
	Cracked plungers	Replace plungers
	Inlet pressure too high	Reduce inlet pressure
High Crankcase Temperature	Wrong Grade of Oil	Giant oil is recommended
	Improper amount of oil in crankcase	Adjust oil level to proper amount

Preventative Maintenance Check List & Recommended Spare Parts List						
Check	**Daily**	**Weekly**	**50 Hrs.**	**Every 500 Hours**	**Every 1500 Hours**	**Every 3000 Hours**
Oil Level/Quality	X					
Oil Leaks	X					
Water Leaks	X					
Belts, Puelly		X				
Plumbing		X				
Recommended Spare Parts						
Oil Change (1 gallon) p/n 01154			X	X		
Plunger Seal Kit (1 kit/pump)					X	
Oil Seal Kit (1 kit/pump)					X	
Valve Repair Kit (1 kit/pump)						X

GP6132 DIMENSIONS (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.

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