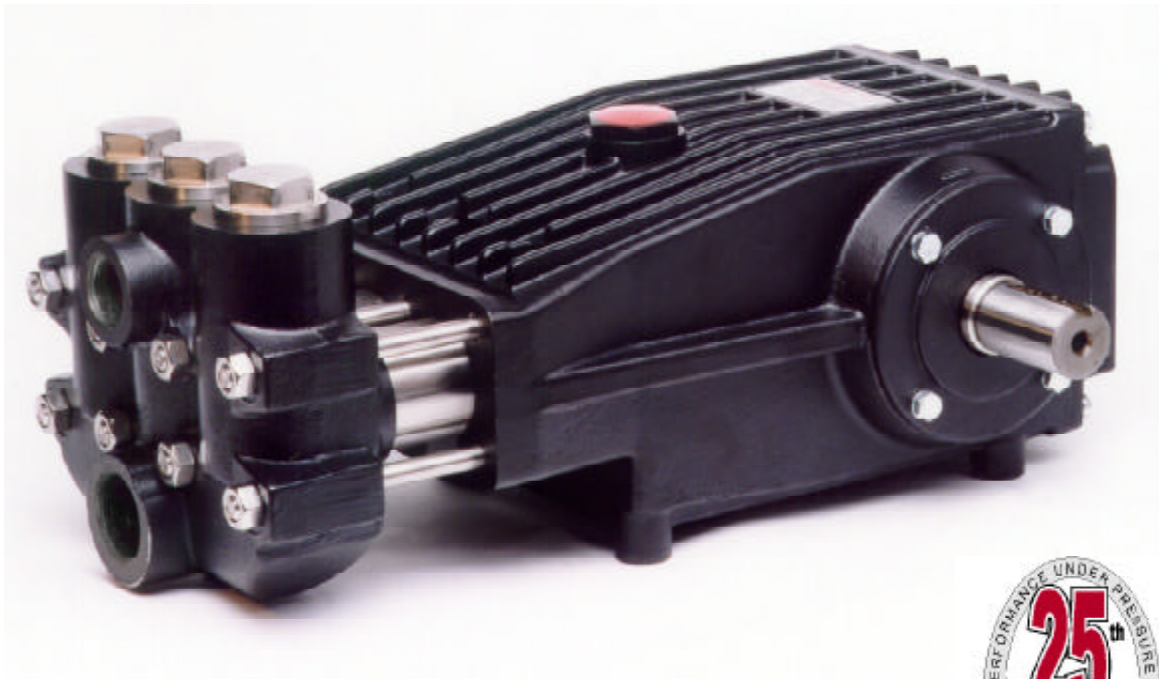


Model BP5236

Triplex Ceramic
Plunger Pump
Operating Instructions/
Repair and Service
Manual



Contents:

Installation Instructions:	page 2
Pump Specifications:	page 3
Exploded View:	page 4
Parts List:	page 5
Kit List/Torque Specifications:	page 6
Recommended Spare Parts List:	page 6
Repair Instructions:	pages 7-9
Pump Mounting Selection Guide:	page 9
Trouble Shooting:	page 10
Dimensions:	page 11
Warranty Information:	back page

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 160° F, it is important to insure a positive head to the pump to prevent cavitation. See NPSH curve.
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.

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.

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.

Giant Oil Recommended

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 BP5236

Volume	Up to 18.5 GPM (70 l/m)
Discharge Pressure	Up to 870 PSI (0.42 bar)
Speed	Up to 570 RPM
Inlet Pressure	-4.35* -150PSI
Power Consumption.....	12 HP
Plunger Diameter.....	36mm
Plunger Stroke	42mm
Crankshaft Diameter	35mm
Key Width	8mm
Crankshaft Mounting	Either side
Shaft Rotation.....	Top of pulley towards manifold
Temperature of Pumped Fluids	Up to 104 °F (40 °C)
Inlet Ports	(2) 1-1/2" NPT
Discharge Ports	(2) 1" NPT
Weight	120 lbs.
Crankcase Oil Capacity	116 fl.oz. (3,430 ml)
Fluid End Material	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.

* Depends on viscosity of medium

PULLEY INFORMATION

Pulley selection and pump speed are based on a 1725 RPM motor and "B" section belts. When selecting desired GPM, allow for a ±5% tolerance on pumps output due to variations in pulleys, belts and motors among manufacturers.

1. Select GPM required, then select appropriate motor and pump pulley from the same line.
2. The desired pressure is achieved by selecting the correct nozzle size that corresponds with the pump GPM.

HORSEPOWER INFORMATION

We recommend that a 1.1 service factor be specified when selecting an electric motor as the power source. To compute specific pump horsepower requirements, use the following formula:

$$HP = (GPM \times PSI) / 1440$$

BP5236 HORSEPOWER					
RPM	GPM	250 PSI	500 PSI	750 PSI	1000 PSI
100	3.2	0.6	1.1	1.7	2.3
200	6.4	1.1	2.3	3.4	4.6
300	10.0	1.8	3.6	5.4	7.1
400	13.0	2.3	4.6	7.0	9.3
570	18.5	3.3	6.6	9.9	13.2

*Intermittent duty only! - Consult factory!

BP5236 PARTS LIST

ITEM	PARTNO.	DESCRIPTION	QTY.	ITEM	PARTNO.	DESCRIPTION	QTY.
1	06911	Crankcase	1	31A	06118	Oil Seal	3
2	06912	Oil Filler Plug	1	32	06116	Oil Seal Retainer	3
4	06085	Crankcase Cover	1	32A	06119	O-Ring	3
5	07104	O-Ring	1	33	06117	Backup Seal	3
6	07186	Oil Sight Glass W/Gasket	1	35	06914	Seal Sleeve	3
8	06086	Oil Dipstick	1	36	06915	Guide Ring	3
9	01009	O-Ring	1	37	07139	Seal Case	3
10	01010	Screw	4	38	07140	O-Ring	6
11	08094	Spring Ring	5	39	06916	Support Ring	6
12	07109	Plug	1	40	06917	Spiral Ring	6
13	07182	Gasket	1	41	06918	Support Ring	3
14	07111	Bearing Cover	2	42	07147	Tension Spring	3
15	07112	Crankshaft Seal	2	43	06919	Valve Casing	1
16	07113	O-Ring	2	44A	07150	O-Ring	9
17	07114	Hex Screw	8	44B	06266	Support Ring	3
20	07116	Taper Roller Bearing	2	45	06078	Spring	3
20A	07117	Fitting Disc, 0.1mm	2	46A	06920	Valve Seat	6
20B	13001	Fitting Disc, 0.15mm	3	46B	06921	Valve Plate	6
21	07118	Shaft Protector	1	46C	07062	Valve Spring	6
22	13242	Crankshaft	1	46D	06922	Spacer Pipe Assembly	6
23	13243	Key	1	46E	06923	Gasket for Valve	6
24	13340	Connecting Rod Assy.	3	48	06077	Plug	3
25	06913	Crosshead Plunger		49	07154	Stud Bolt	8
		Base Assy.	3	49A	07158	Nut	8
28	13232	Crosshead Pin	3	49B	07159	Washer	8
29A	07125	Centering Sleeve	3	50	07423	Plug	1
29B	07130	Plunger Pipe (A-D)	3	50A	07161	Gasket	1
29C	07131	Tensioning Screw	3	52	13020	Disk for Crankshaft	1
29D	07755	Copper Gasket	3	53	06607	Hexagon Screw	1
30	07779	Flinger (E)	3				

BP5236 PUMP REPAIR KITS

Plunger Packing Kit # 09569

<u>Item</u>	<u>Part #</u>	<u>Description</u>	<u>Qty.</u>
36	06915	Guide Ring	3
38	07140	O-Ring	6
39	06916	Support Ring	6
40	06917	Spiral Ring	6

Valve Assembly Kit #09570

<u>Item</u>	<u>Part #</u>	<u>Description</u>	<u>Qty.</u>
44A	07150	O-Ring	9
44B	06266	Support Ring	3
46A	06920	Valve Seat	6
46B	06921	Valve Plate	6
46C	07062	Valve Spring	6
46D	06922	Spacer Pipe Assembly	6
46E	06923	Gasket for Valve	6

Oil Packing Kit # 09571

<u>Item</u>	<u>Part #</u>	<u>Description</u>	<u>Qty.</u>
31A	06118	Radial Shaft-Seal	3
32A	06119	O-Ring	3
33	06117	Compact Ring	3

BP5236 TORQUE SPECIFICATIONS

<u>Position</u>	<u>Item#</u>	<u>Description</u>	<u>Torque Amount</u>
10	01010	Screw, Cover	125 in.-lbs.
17	07114	Hex Screw, Bearing Cover	125 in.-lbs.
24A	13277	Hex Screw, Connecting Rod	250 in.-lbs.
29C	07131	Plunger Bolt	26 ft.-lbs.
48	06077	Plug, Valve	160 ft.-lbs.
49A	07158	Nut, Stud Bolt	60 ft.-lbs.

Preventative Maintenance Check-List & Recommended Spare Parts List

<u>Check</u>	<u>Daily</u>	<u>Weekly</u>	<u>50hrs</u>	<u>Every 500 hrs</u>	<u>Every 1500 hrs</u>	<u>Every 3000 hrs</u>
Oil Level/Quality	X					
Oil Leaks	X					
Water Leaks	X					
Belts, Pulley		X				
Plumbing		X				
<u>Recommended Spare Parts</u>						
Oil Change p/n 1154			X	X		
Plunger Packing Kits (1 kit/pump) (See page 7 for kit list)					X	
Valve Assembly Kit (1 kit/pump) (See page 7 for kit list)					X	
Oil Seal Kit (1 kit/pump) (See page 7 for kit list)						X

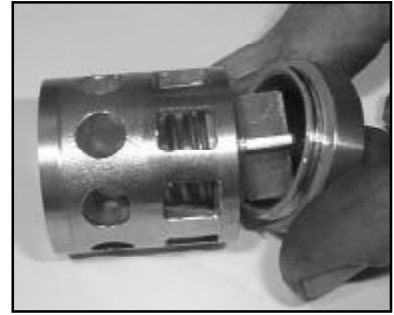
BP5236 - Repair Instructions



1. Remove plugs (48) with a 36mm wrench and check o-ring (44A) and support ring (44B) take out spring (45).



2. Remove discharge and suction valves (46), by pulling them upwards out of the valve casing with a valve puller.



3. The spacer pipe (46D) is screwed together with valve seat (46A).



4. Unscrew the valve seat, remove the valve plate (46B) and spring (46C). The seal ring (46E) is snapped onto the valve plate. Check all sealing surfaces and replace worn parts. Tighten plugs (48) to 107 ft-lbs.



5. Remove hexagon nuts (49A)

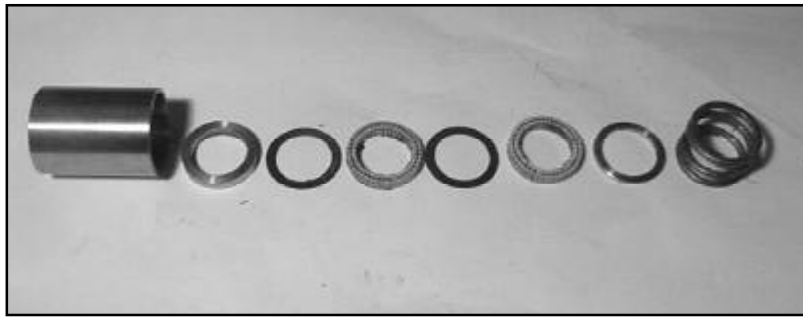


6. Remove pump head by tapping from the back with a rubber mallet.



7. Remove seal unit (36, 39, 40) out of seal sleeve.

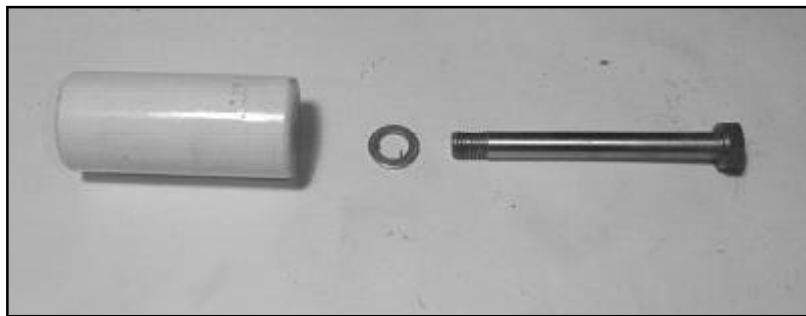
BP5236 - Repair Instructions



9. Examine spiral rings (40) and guide ring (36). Remove seal case (37) from valve casing and check O-rings (38). Replace worn parts; apply silicon grease on seals and o-rings before installing.



10. Remove tension screw (29C) and remove the plunger pipe from centering sleeve (29A)

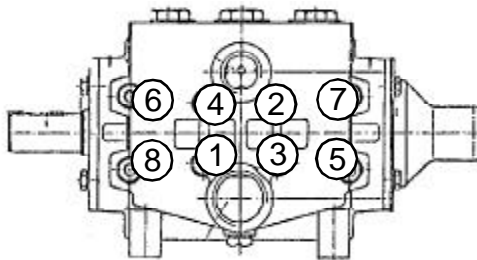


11. Clean plunger surface (25); using the tension screw, put the new plunger pipe and a new copper gasket (29D) onto the centering sleeve. Cover the threads of the tension screw lightly with lock tight and tighten to 26 ft-lbs.

IMPORTANT: Care must be taken that no lock tight gets between the plunger pipe (29B) and the centering sleeve (29A). The plunger pipe should not be strained by over tightening of the tension screw or through damage to front surface of plunger, otherwise it will probably break.



12. Check o-rings (38) on seal cases (37). Clean mounting surfaces of the seal cases as well as sealing surfaces in valve casing. Put seal cases (37) in the centering holes of the valve casing, then push valve casing carefully onto stud bolts (49).



13. Tighten hexagon nuts (49) in a crossing pattern shown to the right to 59 ft-lbs.

BP5236 - Repair Instructions

To Dismantle Gear End

14. After removing valve casing and plunger pipes (29B) drain oil by removing drain plug (12). Remove crancase cover (4) and bearing cover (14). Remove connecting rod screws and push the front of the connecting rods as far as possible into the crosshead guide.

IMPORTANT: Connecting rods are marked for identification. Do not twist connecting rod halves. Connecting rods to be reinstalled in their exact original position on shaft journals.

15. Turning the crankshaft slightly, hit it out carefully to the side with a rubber hammer.

IMPORTANT: Do not bend the connecting rod shanks. Check shaft and connecting rod surfaces, shaft seals and taper roller bearings.

To Reassemble

16. Using a soft tool, press in the outer bearing ring till the outer edge line up with the outer edge of the bearing hole. Screw on bearing cover together with shaft seal and o-ring. Fit shaft through 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 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) under the bearing cover.

IMPORTANT: After assembly has been completed, the shaft should turn easily with very little clearance. Tighten connecting rod screws to 26 ft-lbs.

Pump Mounting Selection Guide

Bushings 01065 - 18 mm Tapered H Bushing	Rails 01034 - Steel Box Rails (L=9.25" x W=1.18" x H=1.62") 01075 - Plated Steel Channel Rails (L=9.00" x W=2.12" x H=2.50")
Pulley & Sheaves 01061 - 7.75" Cast Iron 1 gr. - AB Section 01062 - 7.75" Cast Iron - 2 gr. - AB Section 01066 - 18 mm - 8" Steel Pulley - 1 gr.	

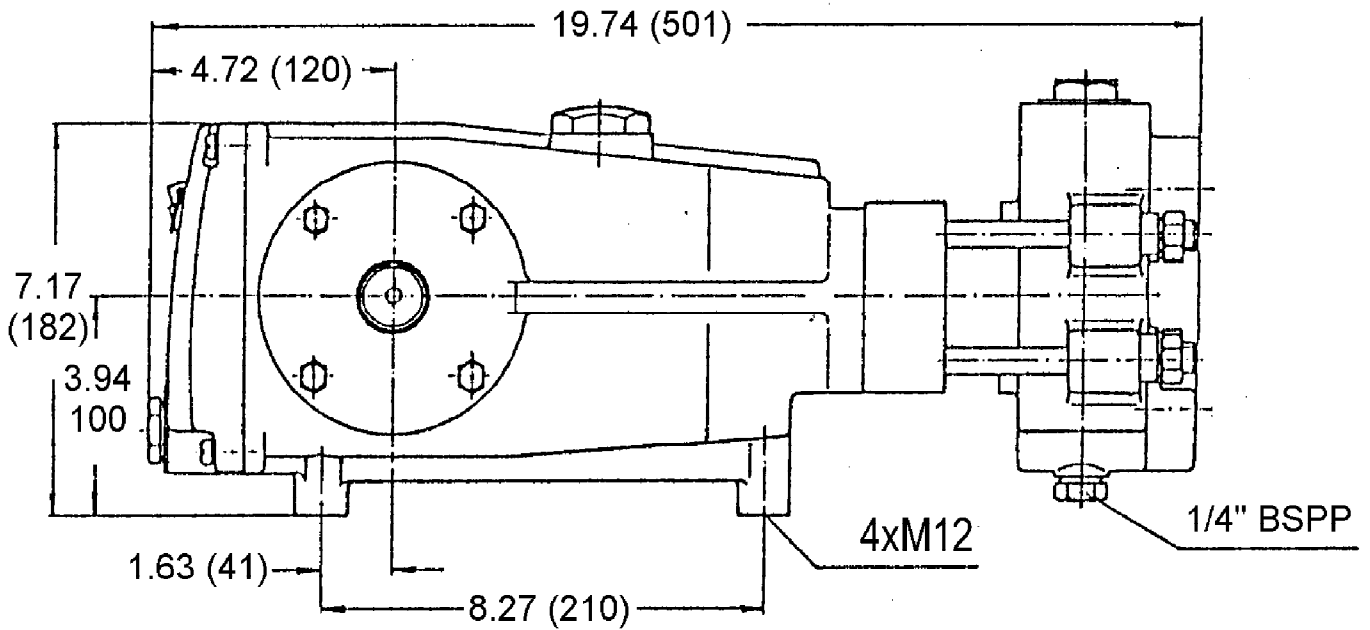
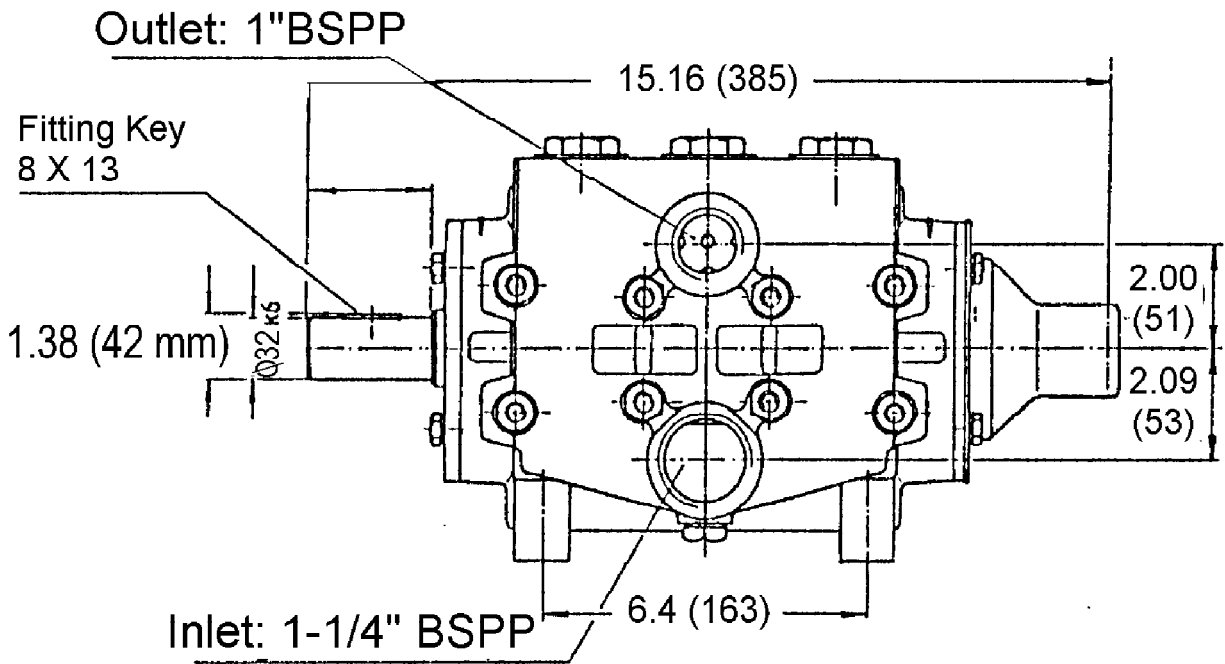
Contact Giant Industries or your local distributor for maintenance of the gear end of your pump. Phone: 419/531-4600

Contact Giant Industries for service school information. Phone: (419) 531-4600

PUMP SYSTEM MALFUNCTION

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

BP5236 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.

