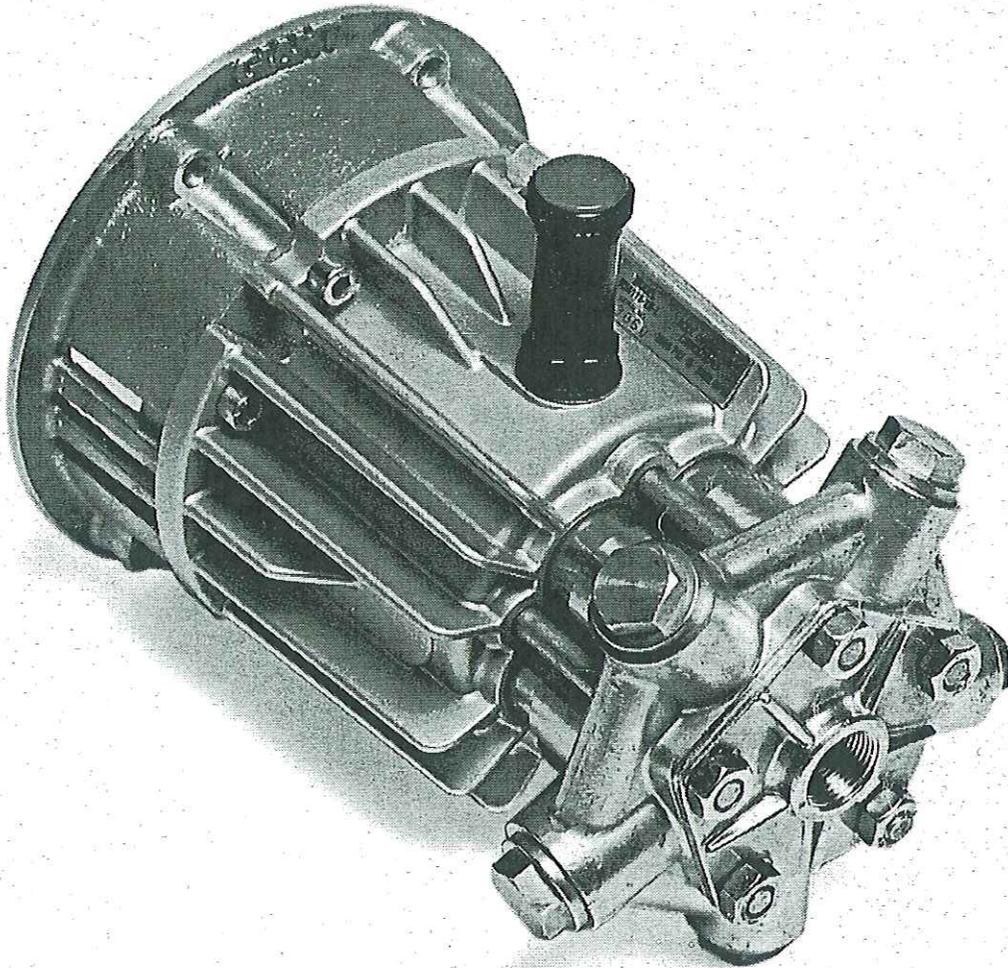


Series R56000-B

Direct Drive Quintuplex
Plunger Pump
Operating Instructions/
Repair and Service Manual



GIANT

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Updated 8/98

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 120 °F, refer to the specifications for special

considerations so as to avoid 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.

4. 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.

NOTE: An anti-seize material must be applied to the motor/engine shaft to ensure trouble free disassembly of the pump from the shaft.

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 crankcase so that the oil level is the center on the oil sight glass. **DO NOT OVERFILL.**
2. Operating a direct drive pump above speeds of 1725 RPM and/or when the temperature of the pumped fluid is between 120 °F and 160 °F requires the following:
 - a) a minimum inlet pressure of 25 PSIG;
 - b) a minimum inlet line size I.D. of 3/4";
 - c) Use of Giant Industries Synthetic Crankcase oil (part # 01150) or the equivalent such as Mobil 1 Formula 15W-50 synthetic oil.
3. Vacuum inlet pressures are allowed for fluid temperatures up to 120 °F when operating at or below 1725 RPM.
4. Crankcase oil should be changed after the first 50 hours of operation, then at regular intervals of 250 hours or less depending on operating conditions.

NOTE: The number of operating hours allowed

between oil changes will be affected by conditions such as high ambient temperature, high humidity and severity of use (operating at a maximum RPM and pressure for extended periods of time). You must decrease the number of hours between changes when operating under these conditions.

5. Pump operation must not exceed rated pressure volume or RPM. A pressure regulator/unloader is built into the discharge of your system.
6. Acids, alkalines, or abrasive fluids cannot be pumped unless approval in writing is obtained before operation from Giant Industries, Inc.
7. 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**

WARNING

IMPORTANT:

Electric motor models of the R56000-B Series pump are constructed to fit motors having a shaft length of 2.60" from the mounting surface.

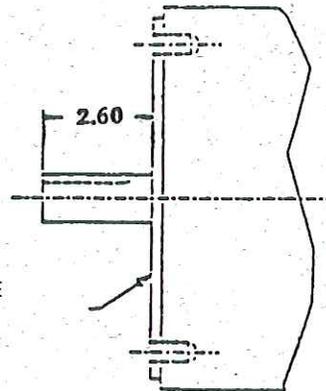
Gas engine models of R56000-B Series pump are constructed to fit gas engines having a shaft length of up to 3.0" from mounting surface. An optional flange can be ordered which allows for mounting on engines with shaft lengths of up to 3 3/4" from mounting surface.

* Add (L) suffix to pump model number when ordering. Example: Model #R56108-1B-L.

WARNING!!!

Using an electric motor having a shaft length of more than 2.60" from the mounting surface WILL RESULT IN SEVERE CRANKCASE DAMAGE!

MOUNTING SURFACE
(Electric motor Shown)



NOTE:

Minimum shaft length for electric motors is 2.1 " Using an electric motor with shaft lengths under the stated minimums will result in damage to the engine crankshaft or wobble plate bore due to insufficient key/keyway engagement.

NOTE:

The shaft key used on you motor must be kept as long as possible but must not extend past the end of the shaft. We recommend using a key which utilizes a minimum of 90% of the available keyway on the motor shaft. For example: If the available keyway on the engine shaft is 2.0", use a key which is at least 1.8" long.

Specifications

Model R56019-1B & R56019-1B-1300

5 Plunger Axial Pump with Electric Motor Flange

Volume	2.9 GPM @ 1725 RPM
Maximum Discharge Pressure.....	3000 PSI @ 1725 RPM
Maximum Inlet Pressure	90 PSIG
Minimum Inlet Pressure	- 8" Hg
Plunger Diameter	12mm
Stroke.....	11.9mm (10.7 ° angle)
Crankcase Capacity	7 fl. oz.
Temperature of Pumped Fluids	Up to 160 °F ¹
Inlet Port	3/4" NPT
Discharge Port	3/8" NPT
Shaft Rotation	Either Direction
Weight.....	22 lbs.
Length.....	9.10"
Width	9.00"
Height	9.00"
Swash Plate Bore	1-1/8" x 1/4" Keyway

¹ See important operating conditions on page 2

**** The pump itself can be driven in either direction of rotation,; however, the cooling fan on TEFC motors must always be positioned so that the cooling air is drawn from the non-drive end of the motor towards the pump.**

9-B & R56019-1B-1300 Horsepower Requirements						
RPM	GPM	1300 PSI	1900 PSI	2000 PSI	2600 PSI	3000 PSI
1725	2.9	2.6	3.8	4	5.2	6

Horsepower Formula: $HP = (GPM \times PSI) / 1460$

Special Note: The pump is constructed to fit NEMA 182T and 184T, C face , motor frames. If the pump is to be mounted to a 7-1/2" hp, 3450 RPM motor, or any 10 hp motor (standard NEMA213T and 215T, C face frames), a special 1-1/8" shaft diameter and 2-5/8" shaft length is required for these motors to properly fit the pump.

R56019-1B-1300 Series is a seawater resistant pump.

Specifications

Model R56069-1B

5 Plunger Axial Pump with Electric Motor Flange

Volume	3.7 GPM @ 1725 RPM
Maximum Discharge Pressure.....	3000 PSI
Maximum Inlet Pressure	90 PSIG
Minimum Inlet Pressure	- 8" Hg
Plunger Diameter	12mm
Stroke.....	15.0mm (13.3 ° angle)
Crankcase Capacity	7 fl. oz.
Temperature of Pumped Fluids	Up to 160 °F ¹
Inlet Port	3/4" NPT
Discharge Port	3/8" NPT
Shaft Rotation	Either Direction**
Weight.....	22 lbs.
Length.....	9.10"
Width	9.00"
Height	9.00"
Swash Plate Bore	1-1/8" x 1/4" Keyway

¹ See important operating conditions on page 2

** The pump itself can be driven in either direction of rotation,; however, the cooling fan on TEFC motors must always be positioned so that the cooling air is drawn from the non-drive end of the motor towards the pump.

R56069-1B HORSEPOWER REQUIREMENTS

RPM	GPM	800 PSI	1000 PSI	1200 PSI	1500 PSI	2000 PSI	2500 PSI	3000 PSI
1725	3.7	2	2.5	3	3.8	5	6.3	7.6

Horsepower Formula: $HP = (GPM \times PSI) / 1460$

Special Note: The pump is constructed to fit NEMA 182T and 184T, C face , motor frames. If the pump is to be mounted to a 7-1/2" hp, 3450 RPM motor, or any 10 hp motor (standard NEMA213T and 215T, C face frames), a special 1-1/8" shaft diameter and 2-5/8" shaft length is required for these motors to properly fit the pump.

Specifications

Model R56069-2B & R56069-2B-1300

5 Plunger Axial Pump with Electric Motor Flange

Volume	5.0 GPM @ 1725 RPM
Maximum Discharge Pressure.....	3000 PSI @ 1725 RPM
Maximum Inlet Pressure	90 PSIG
Minimum Inlet Pressure	- 8" Hg
Plunger Diameter	14mm
Stroke.....	15.0mm (13.3 ° angle)
Crankcase Capacity	7 fl. oz.
Temperature of Pumped Fluids	Up to 160 °F ¹
Inlet Port	3/4" NPT
Discharge Port	3/8" NPT
Shaft Rotation	Either Direction**
Weight.....	22 lbs.
Length.....	9.10"
Width	9.00"
Height	9.00"
Swash Plate Bore	1-1/8" x 1/4" Keyway

¹ See important operating conditions on page 2

** The pump itself can be driven in either direction of rotation; however, the cooling fan on TEFC motors must always be positioned so that the cooling air is drawn from the non-drive end of the motor towards the pump.

56069-2B & R56069-2B-1300 HORSEPOWER REQUIREMENTS

RPM	GPM	1000 PSI	1100 PSI	1400 PSI	2200 PSI	2500 PSI	3000 PSI
1725	5.02	3.4	3.8	4.8	7.5	8.6	10.3

Horsepower Formula: $HP = (GPM \times PSI) / 1460$

Special Note: The pump is constructed to fit NEMA 182T and 184T, C face, motor frames. If the pump is to be mounted to a 7-1/2" hp, 3450 RPM motor, or any 10 hp motor (standard NEMA 213T and 215T, C face frames), a special 1-1/8" shaft diameter and 2-5/8" shaft length is required for these motors to properly fit the pump.

Specifications

Model R56108-1B, R56108-1B-L, R56109-1B & R56109-1B-L

5 Plunger Axial Pump with Gas Engine Flange

Volume	See rating chart below
Maximum Discharge Pressure.....	See rating chart below
Maximum Inlet Pressure	90 PSIG
Minimum Inlet Pressure	25 PSIG
Plunger Diameter	12mm
Stroke.....	8.9mm (8.0 ° angle)
Crankcase Capacity	7 fl. oz. ¹
Temperature of Pumped Fluids	Up to 160 °F ¹
Inlet Port	3/4" NPT
Discharge Port	3/8" NPT
Shaft Rotation	Either Direction
Weight(Standard)	22 lbs.
(L)	21 lbs. 6 oz.
Length(Standard)	9.53"
(L)	10.28"
Width	7.50"
Height	7.50"
Swash Plate Bore (R56108-1B & R56108-1B-L ONLY)	1 x 1/4" Keyway
Swash Plate Bore (R56109-1B & R56109-1B-L ONLY).....	1 1/8" x 1/4" Keyway

¹ See important operating conditions on page 2

Special Notes:

1. The pump is constructed to fit engines having a 5 3/4" pilot diameter. 6 1/2" bolt circle, top 2 holes at 30 from vertical centerline, bottom 2 holes at 45 from vertical centerline. Model R56108-1B & R56108-1B-L will fit engines with a 1" shaft diameter. Model R56109-1B & R56109-1B-L will fit engines with a 1 1/8" shaft diameter.
2. The maximum allowable distance from the engine mounting surface to the of the shaft (and shaft key) is 3.0" or 3.75" using optional "L" flange. Severe damage to the crankcase will occur if the shaft or shaft key extends too far into the crankcase.
3. Positive inlet pressure above 25 PSIG is required to avoidcavitation.
4. Running the pump above rated RPM can cause severe crankcase damage.

R56108-1B, R56108-1B-L, R56109-1B & R56109-1B-L HORSEPOWER REQUIREMENTS**						
RPM	GPM	1600 PSI	1800 PSI	2000 PSI	2500 PSI	3000 PSI
2800	3.5	3.8	4.3	4.8	6.0	7.2
3000	3.7	4.1	4.6	5.1	6.3	7.6
3200	4.0	4.4	4.9	5.5	6.8	8.2
3300	4.1	4.5	5.1	5.6	7.0	8.4

Horsepower Formula: $HP = (GPM \times PSI) / 1460$

** Above brake horsepower ratings shown are the pump power requirements. For applications using gas engines, the power output of the engine will be greater than the brake horsepower listed. Consult with engine manufacturer for recommendation.

Specifications

Model R56118-1B, R56118-1B-L, R56119-1B & R56119-1B-L

5 Plunger Axial Pump with Gas Engine Flange

Volume	See rating chart below
Maximum Discharge Pressure.....	See rating chart below
Maximum Inlet Pressure	90 PSIG
Minimum Inlet Pressure	20 PSIG
Plunger Diameter	12mm
Stroke.....	11.9mm (10.7 ° angle)
Crankcase Capacity	7 fl. oz. ¹
Temperature of Pumped Fluids	Up to 160 °F ¹
Inlet Port	3/4" NPT
Discharge Port	3/8" NPT
Shaft Rotation	Either Direction
Weight(Standard)	22 lbs.
(L)	21 lbs. 6 oz.
Length(Standard)	9.53"
(L)	10.28"
Width	7.50"
Height	7.50"
Swash Plate Bore (R56118-1B & R56118-1B-L ONLY)	1" x 1/4" Keyway
Swash Plate Bore (R56119-1B & R56119-1B-L ONLY).....	1 1/8" x 1/4" Keyway

¹ See important operating conditions on page 2

Special Notes:

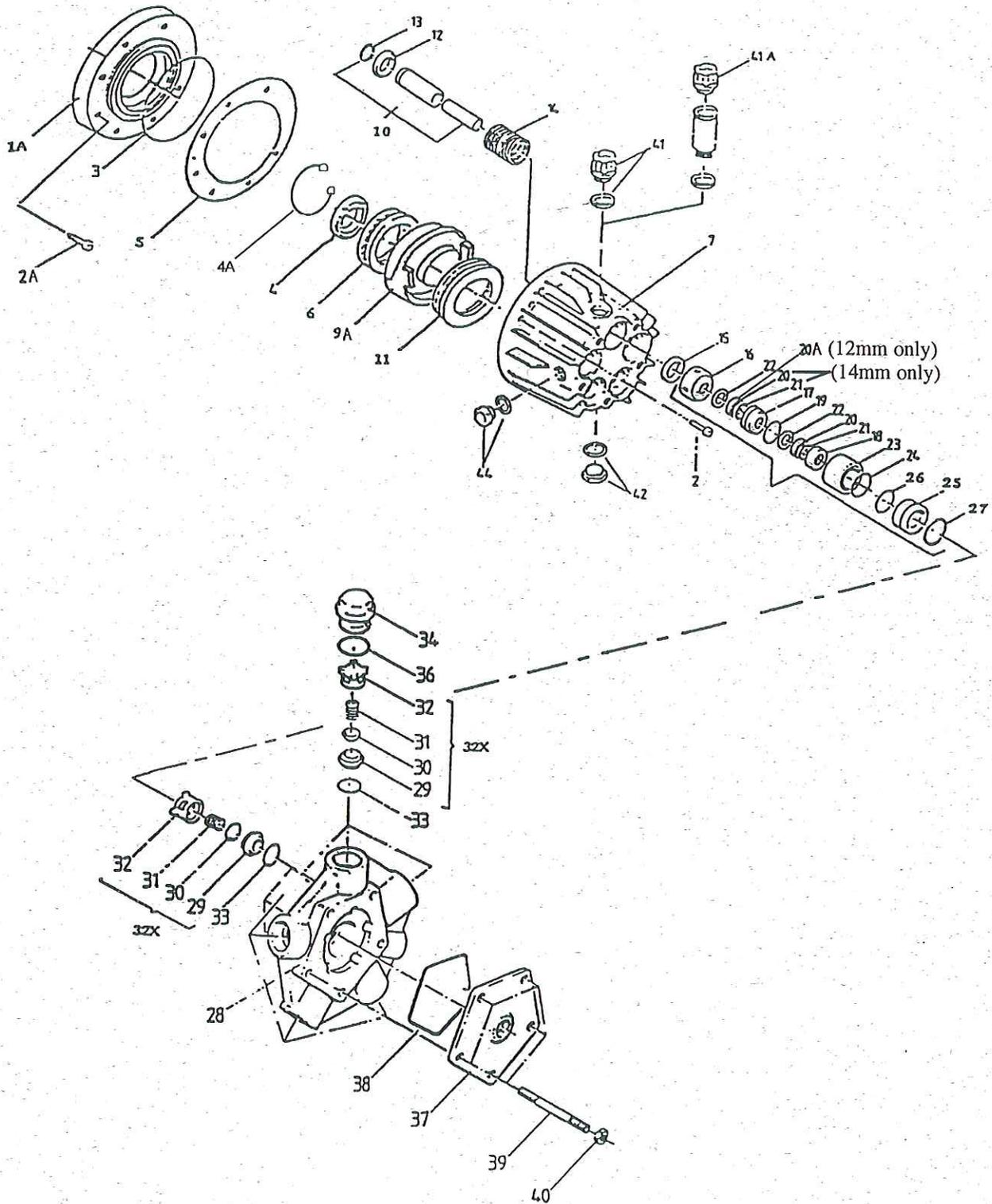
1. The pump is constructed to fit engines having a 5 3/4" pilot diameter, 6 1/2" bolt circle, top 2 holes at 30 from vertical centerline, bottom 2 holes at 45 from vertical centerline. Model R56118-1B & R56118-1B-L will fit engines with a 1" shaft diameter. Model R56119-1B & R56119-1B-L will fit engines with a 1 1/8" shaft diameter.
2. The maximum allowable distance from the engine mounting surface to the of the shaft (and shaft key) is 3.0" or 3.75" using optional "L" flange. Severe damage to the crankcase will occur if the shaft or shaft key extends too far into the crankcase.
3. Positive inlet pressure above 25 PSIG is required to avoidcavitation.
4. Running the pump above rated RPM can cause severe crankcase damage.

R56118-1B, R56118-1B-L, R56119-1B &R56119-1B-L						
HORSEPOWER REQUIREMENTS**						
RPM	GPM	1600 PSI	1800 PSI	2000 PSI	2500 PSI	3000 PSI
2800	4.4	4.8	5.4	6.0	7.5	9.0
3000	4.7	5.2	5.8	6.4	8.0	9.7
3200	5.0	5.5	6.2	6.8	8.6	10.3

Horsepower Formula: $HP = (GPM \times PSI) / 1460$

** Above brake horsepower ratings shown are the pump power requirements. For applications using gas engines, the power output of the engine will be greater than the brake horsepower listed. Consult with engine manufacturer for recommendation.

Exploded View - R56000-B Series



R56000-B PARTS LIST

<u>Item Part</u>	<u>Description</u>	<u>Qty.</u>	<u>Item Part</u>	<u>Description</u>	<u>Qty.</u>
1A 08145	Adapting Plate, Sold only with Part # 08152 * (R56019-1B, R56069-1B, R56060-2B, R56019-1B-1300, R56069-2B-1300)	1	11 07896	Front Bearing Complete	1
			12 07821	Spring Disc	5
			13 07822	Retaining Ring	5
			14 07873	Plunger Spring	5
			15 08356*	Oil Seal (R56019-1B, R56109-2B, R56089-1B, R56069-3B,R56019-1B-1300 & R56069-2B-1300)	5
1A 08141	Adapting Plate, Sold only with part #08152* (R56108-1B, R56109-1B, R56118-1B & R56119-1B)	1	15 08356-0010	Oil Seal (R56108-1B, R56109-1B, R56118-1B & R56119-1B)	5
1A 08146	Adapting Plate, Sold only with part #08152* (R56108-1B-L, R56109-1B-L, R56118-1B-L & R56119-1B-L)	1	16 08420	Spacer Ring, 12mm (R56019-1B, R56069-1B, R56108-1B, R56108-1B-L, R56109-1B, R56109-1B-L, R56118-1B, R56118-1B-L, R56119-1B & R56119-1B-L)	5
2 07544	Socket Head Screw M8	8	16 08420-0300	Spacer RIng, S.R.B., 12mm (R56069-2B-1300)	5
2A 07803	Socket Head Screw 1/2" (Electric Motor Flange Models)	4	16 08421	Spacer Ring, 14mm (R56069-2B)	5
2A 07804	Socket Head Screw 3/8" (Gas Engine Flange Models)	4	16 08241-0300	Spacer Ring, S.R.B., 14mm (R56069-2B-1300)	5
3 08055	O-ring	1	17 07827	Weep Return Stuffing Box, 12mm,(R56019-1B, R56069-1B, R56108-1B, R56108-1B-L, R56109-1B, R56109-1B-L, R56118-1B, R56118-1B-L, R56119-1B & R56119-1B-L)	5
4 07877	Shaft Seal	1	17 07827-0300	Weep Return Stufing Box, S.R.B.,12mm, (R56019-1B-1300)	5
5 08140	Gasket	1	17 07828	Weep Return Stufing Box, 14mm, (R56069-2B)	5
6 07480	Rear Bearing Complete	1	17 07828-0300	Weep Return Stufing Box, S.R.B.,14mm, (R56069-2B-1300)	5
7 07862	Crankcase	1	18 07830	Stuffing Box, 12mm (R56019-1B, R56069-1B, R56108-1B, R56108-1B-L, R56109-1B, R56109-1B-L, R56118-1B, R56118-1B-L, R56119-1B & R56119-1B-L)	5
9A 07970	Swash Plate, Sold only with part # 08139* (R56019-1B, R56119-1B, R56119-1B-L & R56019-1B-1300)	1	18 07830-0300	Stuffing Box, S.R.B., 12mm (R56019-1B-1300)	5
9A 07978	Swash Plate, Sold only with part #08139* (R56118-1B, R56118-1B-L)	1	18 07831	Stuffing Box, 14mm (R56069-2B)	5
9A 07971	Swash Plate, Sold only with part #08139* (R56069-1B, R56069-2B & R56069-2B-1300)	1	18 07831-0300	Stuffing Box, S.R.B., 14mm (R56069-2B-1300)	5
9A 07975	Swash Plate, Sold only with part #08139 (R56108-1B & R56108-1B-L)	1	19 07212	O-ring	5
9A 07976	Swash Plate, Sold only with part #08139* (R56109-1B & R56109-1B-L)	1			
10 07885	Plunger Assembly, 12mm (R56019-1B, R56069-1B, R56118-1B, R56118-1B-L, R56119-1B, R56119-1B-L & R56019-1B-1300)	5			
10 07886	Plunger Assembly, 14mm (R56069-2B & R56069-2B- 1300)	5			
10 07982	Plunger Assembly, 12mm (R56108-1B, R56108-1B-L, R56109-1B & R56109-1B-L)	5			

* Pumps manufactured prior to 2/90 require oil seal p/n 08249.

R56000-B PARTS LIST

<u>Item Part</u>	<u>Description</u>	<u>Qty.</u>	<u>Item Part</u>	<u>Description</u>	<u>Qty.</u>
20 07391	V-Sleeve, 12mm (R56019-1B, R56069-1B, R56108-1B, R56108-1B-L, R56109-1B, R56109-1B-L, R56118-1B, R56118-1B-L, R56119-1B, R56119-1B-L & R56019-1B-1300)	5	26 07847	O-ring	5
			27 07489	O-ring	5
			28 07848	Manifold	1
			28 07848-1000	Manifold, S.R.B. (R56019-1B-1300 & R56069-2B-1300)	1
20 07834	V-Sleeve, 14mm (R56069-2B, R56069-2B-1300)	10	29 07849	Valve Seat	10
			30 07491	Valve Plate	10
20A 08598	V-Sleeve Weep, 12mm (R56019-1B, R56069-1B, R56108-1B, R56108-1B-L, R56118-1B, R56118-1B-L, R56119-1B, R56119-1B-L, & R56019-1B-1300)	5	31 07906	Valve Spring	10
			32 07492	Retainer, Valve Spring	10
			32X 07841	Valve Assembly Complete	10
			32X 07841-0100	Valve Assembly Complete, 316 (R56109-1B-1300 & R56069-2B-1300)	10
21 08265	Support Ring, 12mm (R56019-1B, R56069-1B, R56108-1B, R56108-1B-L, R56118-1B, R56118-1B-L, R56119-1B, R56119-1B-L, & R56019-1B-1300)	5	33 07853	O-ring	10
			34 07854	Manifold Plug	5
			34 07854-0300	Manifold Plug, S.R.B. (R56019-1B-1300 & R56069-2B-1300)	5
21 08266	Support Ring, 14mm	10	36 07035	O-ring	5
22 07392	Pressure Ring, 12mm (R56019-1B, R56069-1B, R56108-1B, R56108-1B-L, R56109-1B, R56109-1B-L, R56118-1B, R56118-1B-L, R56119-1B, R56119-1B-L, & R56019-1B-1300-L)	5	37 07856	Suction Flange, 3/4" NPT	1
			37 07856-0300	Suction Flange, S.R.B., 3/4" NPT (R56019-1B-1300 & R56069-2B-1300)	1
			38 07238	O-ring	1
			39 07857	Stud	5
			40 08040	Nut, Manifold Stud	5
			40 08040-0100	Nut, Manifold Stud (R56019-1B-1300 & R56069-2B-1300)	5
22 07840	Pressure Ring, 14mm (R56069-2B, R56069-2B-1300)	10	41 07450	Oil Fill Cap (1725 RPM) with Gasket	1
23 07842	Seal Housing	5	41A 08161	Oil Fill Cap (over 1725 RPM) with Extension Pipe	1
23 07842-0300	Seal Housing, S.R.B. (R56019-1B-1300, R56069-2B-1300)	5	42 07300	Oil Drain Plug with Gasket	1
24 07843	O-ring	5	43 07182	Gasket	2
25 07844	Suction Valve Retainer, 12mm (R56019-1B, R56069-1B, R56108-1B, R56108-1B-L, R56109-1B, R56109-1B-L, R56118-1B, R56118-1B-L, R56119-1B & R56119-1B-L)	5	44 08250	Sight Glass, with Gasket	1
25 07844-0300	Suction Valve Retainer, S.R.B., 12mm (R56019-1B-1300)	5			
25 07845	Suction Valve Retainer, 14mm (R56069-2B)	5			
25 07845-0300	Suction Valve Retainer, S.R.B., 14mm (R56069-2B-1300)	5			

R56000-B SERIES TORQUE SPECIFICATIONS

<u>Position</u>	<u>Item#</u>	<u>Description</u>	<u>Torque Amount (ft.-lbs)</u>
34	07854 (and - 0300)	Plug, Manifold	50
40	08040 (and - 0100)	Nut, Manifold Stud	30

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 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 pump for restrictions Check for proper operation
Water in crankcase	High humidity Worn seals	Reduce oil change interval Replace seals
Noisy Operation	Worn bearings Cavitation	Replace bearings, Refill crankcase oil with 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
Pump Pressure as Drop at gun Rated, Pressure	Restricted discharge plumbing	Re-size discharge plumbing to 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

R56000-B Repair Instructions

NOTE: Always take time to lubricate all metal and non-metal parts with a light firm oil before reassembly. This step will proper fit, at the same time protecting the pump non-metal parts (elastomers) from cutting and scoring.

1. With a 22mm socket, remove the five (5) discharge manifold plugs (item #34). Inspect the manifold plug o-rings (item #36) for wear, and replace as necessary.
2. Using a needle nose pliers, remove the valve assembly (items #32, 31, 30 and 29). By inserting a small screwdriver between the valve seat (item #29) and the valve spring retainer (item #32), the valve assembly can be separated. Inspect valves for wear and replace as necessary.
3. Remove o-ring (item #33). Inspect for wear and replace as necessary.
4. Next, remove the five (5) manifold stud nuts (item #40) with a 17mm wrench. Remove suction flange (item #37) and flange o-ring (item #38). Inspect o-ring for wear and replace as necessary.

NOTE: Because of the close tolerance fit of the suction flange on the studs (item #39) it may be necessary to use a small screwdriver to carefully pry the suction flange loose.

5. Tap the back of the manifold (item #28) with a rubber mallet to dislodge, and slide off the pump. Take note of position of discharge port so as to place the port in the same position during reassembly.
6. The suction valve retainer (item #25) and valve assembly (item #32X) fit tightly into the manifold head. To remove, use a wood dowel and tap out from the front side of the manifold. Inspect parts for wear and replace as necessary.
7. Remove o-ring (item #33), inspect for wear and replace as necessary. See step 2 for disassembly of suction valve (suction valve and discharge valve are identical and can be interchanged).
8. Next, remove the seal housing (item #23) by pulling straight off the plunger. To overcome any resistance, insert a small screwdriver between the spacer ring (item #16) and the seal housing. The seal housing should easily slide off now.
9. To remove the weep return stuffing box (item #17) from the seal housing, insert a 19mm socket into the front of seal housing and tap the weep return stuffing box loose. Remove all high pressure and weep return seals (items #22, 20 and 21 respectively), inspect for wear, and replace as necessary. Next, remove the spacer ring (item #16).
10. If crankcase oil seals (item #15) are to be replaced, and they can be removed by prying loose with a straight pin. Take care not to make contact with the plunger and pry out oil seals from their housing. If oil seals are not to be replaced, proceed to the back disassembly sequence and carefully pry seals loose after plunger assemblies have been removed from crankcase. Seals should not be reinstalled until step #15.
- 10A. The seal housing (item #23) and valve assembly (item #32X) fit tightly into the manifold head. To remove, use a wooden dowel a tap out from the front side of the manifold. Inspect parts for wear and replace as necessary. Remove o-ring (item #33), inspect for wear and replace as necessary. See step 2 from disassembly of suction valve (suction valve and discharge valve are identical and can be interchanged). Inspect o-ring (item #24) for wear and replace as necessary. Remove stuffing box (item #18), o-ring (item #27), v-sleeve with o-ring (item #20 & 21) and pressure ring (item #22). Inspect all parts for wear and replace as necessary. Take note of seal arrangement for proper reassembly. Next remove o-ring (item #19), weep return stuffing box (item #17), v-sleeve with o-ring (item #20 & 21) and pressure ring (item #22). Inspect all parts for wear and replace as necessary. Remove spacer ring (item #160). Inspect oil seal (item #15) for leakage and replace as necessary.

(12mm only has V-sleeve)

THIS COMPLETES THE DISASSEMBLY AND REPAIR OF THE FRONT END OF THE GIANT INDUSTRIES COMPANY R56000-B SERIES PUMP.

**DISASSEMBLY SEQUENCE OF THE BACK END OF THE GIANT INDUSTRIES
COMPANY R56000-B SERIES PUMP.**

11. In an even sequence, remove the socket head screws (item #2) that secure the adapting plate (item #1a) to the crankcase (item #7). Remove plate. Next remove the ball bearing, rear bearing race, swash pallet with race and shaft ring, ball bearing and plunger bearing race (Assemblies 6 and 11 respectively). Inspect o-ring (item #3) for wear and replace as necessary.
12. Pull plunger assembly with plunger spring (items #13, 12, 10 and 14) straight out of the crankcase. Inspect all parts and replace as necessary.
To remove shaft seal (item #4), press out through back adapting plate. Replace, reversing above procedure.

CAUTION: Plungers are specifically designed for only one wobble plate. Disastrous failures will occur if plunger is used with incorrect wobble plate. DO NOT exchange plungers with other R56000 model pumps.

CAUTION: DO NOT attempt to remove expansion plug from end of swash plate. Doing so will result in oil leaking and destruction of pump.

**THIS COMPLETES THE DISASSEMBLY OF THE BACK END OF THE GIANT INDUSTRIES COMPANY
R56000-B SERIES PUMP.**

REASSEMBLY SEQUENCE OF THE GIANT INDUSTRIES COMPANY R56000 SERIES PUMP

13. To reassemble, replace plunger assembly and plunger springs (items #13, 12, 10 and 14) into crankcase, making sure the plunger spring is properly seated against the spring disc (item #12).
14. Next, place the adapting plate (item #1a) flat on a table. Position the ball bearing, rear bearing race, swash plate with race and shaft ring, ball bearing and plunger bearing race (Assemblies 6 and 11 respectively) on top of the adapting plate. Care must be taken so that the shaft seal (item #4) is not damaged when positioning swash plate with race shaft ring onto adapting plate. Lubricate both the shaft seal and shaft ring before assembling. Make certain that the plunger assemblies and plunger springs (items #13, 12, 10 and 14) are pushed into the crankcase as far as possible. Then wrap a rubber band tightly around the plungers (on manifold side) to secure them in place, as the next step is to turn the crankcase upside down. Turn crankcase upside down and position it on the adapting plate and bearings. It is suggested that a flat piece of wood be placed on top of the five (5) studs (item #39) in order to aid in pressing down on the crankcase. Press firmly to secure the adapting in position, making certain that the swash plate (item #9a) is properly positioned against the adapting plate. Replace socket head screws (item #2) and tighten security in a sequential pattern to a torque of 230in. lbs. Remove the rubber band used to hold the plunger in place.
15. Replace oil seal (item #15), making sure the lips of the seal face the crankcase. Gently tap seal into crankcase.
16. Replace spacer ring (item #16) over plungers and seat into crankcase.
17. Place o-ring (item #21) V-sleeve (item #20) with grooved sides pointing down and pressure ring (item #22) into weep return stuffing box (item #17). Replace o-ring (item #19) on weep return stuffing box. Press weep return stuffing box with seals into back of seal housing (item #23).
(12mm only has V-sleeve)
18. Replace high pressure seals (item #21, 20, 22) into stuffing box (item #18) following the same procedure in step #17. Place stuffing box into the front of the seal housing so that the seals are not visible. Replace seal housing over plungers and press firmly against spacer ring (item #16).

19. Next, replace o-ring (item #33). Replace valve assembly with the tapered surface of the valve seat (item #29) facing up and the tapered surface of the valve plate (item #30) facing down. Position spring (item #31) and snap the valve seat into valve spring retainer (item #32). Position spring (item #31) and snap the valve seat into valve spring retainer (item #32). Position assembly into suction valve housing making certain that the leg of the valve spring retainer is not blocking the liquid passages in manifold. Replace suction valve retainer with tapered side toward valve spring retainer.
20. Replace manifold over studs (item #39).
21. Grease suction flange o-ring (item #38) and replace on suction flange (item #37). Replace manifold stud nuts (item #40) and tighten to 30 ft. lbs. with a 17mm wrench.
22. Replace discharge o-ring (item #33). Next, replace valve assembly with the tapered surface of the valve seat (item #29) facing up and the tapered surface of the valve plate (item #30) facing down. Position spring (item #31) and snap the valve seat into valve spring retainer (item #32). Position assembly into discharge valve housing. Make certain that the leg of the valve spring retainer is not blocking the liquid passages in manifold.
23. Replace manifold plugs (item #34) and tighten to 50 ft. lbs.
24. Mount the pump and fill the crankcase with 7 fluid ounces of oil. Pump is now ready for operation.

REPAIR KITS R56000-B SERIES

Plunger Packing Kits

12mm Part #09106

Qty.	Part #	Description
5	07391	V-Sleeve, 12mm -20
5	08265	O-ring, 12mm 21
5	07392	Pressure Ring, 12mm 22
5	08598	Weep V-Sleeve 20A

14mm Part #09114

Qty.	Part #	Description
10	07834	V-Sleeve, 14mm
10	08266	O-ring, 14mm
10	07840	Pressure Ring, 14mm

Valve Assembly Kit

Part #09112

Qty.	Part #	Description
10	07853	O-ring, Valve Seat
10	07841	Valve Assembly Complete

O-ring Repair Kit

Part #09127

Qty.	Part #	Description
5	07212	O-ring, Weep Return Stuffing Box
5	07843	O-ring, Seal Housing
5	07847	O-ring, Suction Valve Retainer
5	07489	O-ring, Suction Valve Retainer
1	07238	O-ring, Suction Flange
10	07853	O-ring

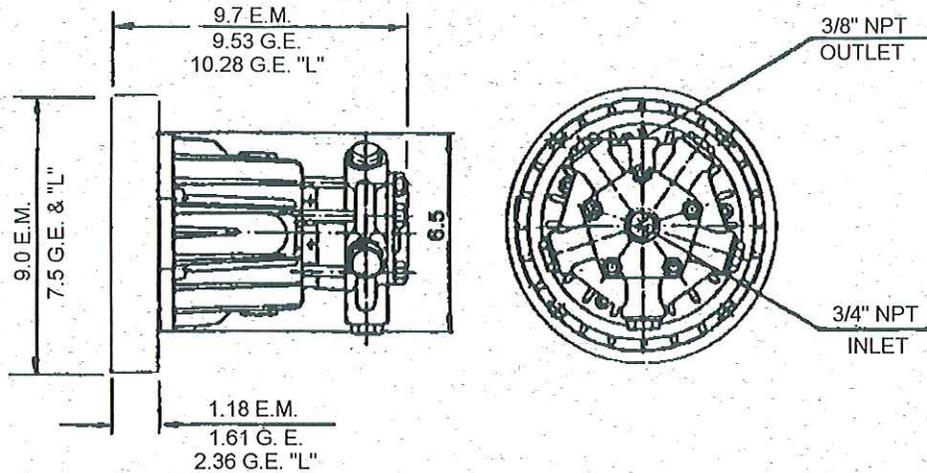
Oil Seal Kit

Part #09153

Qty.	Part #	Description
5	08356-0010	Oil Seal

NOTE: Repair kits for the R56000-1300 are not available. Replacement parts must be ordered individually.

SERIES R56000 DIMENSIONS (inches)



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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