

Model SP100W

Triplex Ceramic
Plunger Pump
Operating Instructions/
Repair and Service
Manual



GIANT

Contents:

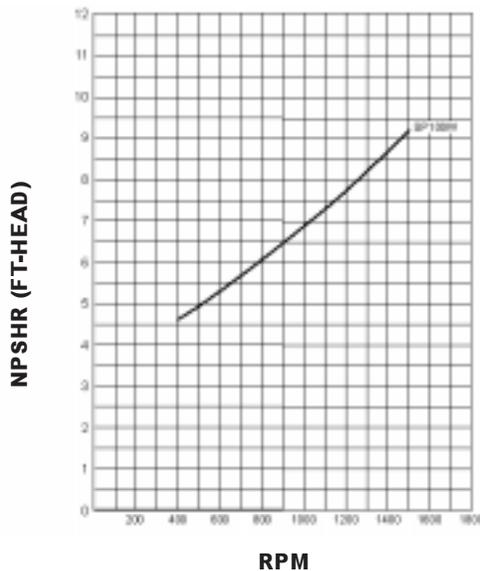
Installation Instructions:	page 2
Pump Specifications:	page 3
Parts List/Torque Specs.:	page 4
Exploded View / Kits:	page 5
Trouble Shooting:	page 6
Repair Instructions:	page 7
Dimensions:	back page
Warranty Information:	back page

Updated 8/97

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, it is important to insure a positive head



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.**

SAE 80W-140 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

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 3-6.

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.

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.

Specifications Model SP100W

Volume	Up to 11.2 GPM
Discharge Pressure	Up to 2000 PSI
Inlet Pressure	Up to 90 PSI
Maximum Speed of Crankshaft	Up to 1420 RPM
Plunger Diameter	26mm
Stroke	20mm
Crankcase Oil Capacity	24 fl.oz.
Temperature of Pumped Fluids	Up to 160 °F
Inlet Ports	(2) 3/4" NPT
Discharge Ports	(2) 3/8" NPT
Crankshaft Mounting	Either Side
Shaft Rotation	Top of Pulley Towards Fluid End
Weight	31 lbs.
Crankshaft Diameter	28mm

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.

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

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

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:

$$(GPM \times PSI) / 1460 = HP$$

SP100W PULLEY SELECTION & HORSEPOWER REQUIREMENTS							
PUMP PULLEY	MOTOR PULLEY	RPM	GPM	1200 PSI	1500 PSI	1900 PSI	2000 PSI
9.75"	4.15"	700	5.5	4.5	5.7	7.2	7.5
9.75"	4.70"	800	6.3	5.2	6.5	8.2	8.6
9.75"	5.25"	900	7.1	5.8	7.3	9.2	9.7
9.75"	5.50"	950	7.5	6.1	7.7	9.7	10.2
9.75"	5.80"	1000	7.9	6.5	8.1	10.2	10.8
9.75"	6.90"	1200	9.4	7.7	9.7	12.3	12.9
9.75"	7.45"	1300	10.2	8.4	10.5	13.3	14.0
9.75"	8.10"	1420	11.2	9.2	11.5	14.5	

SP100W PARTS LIST

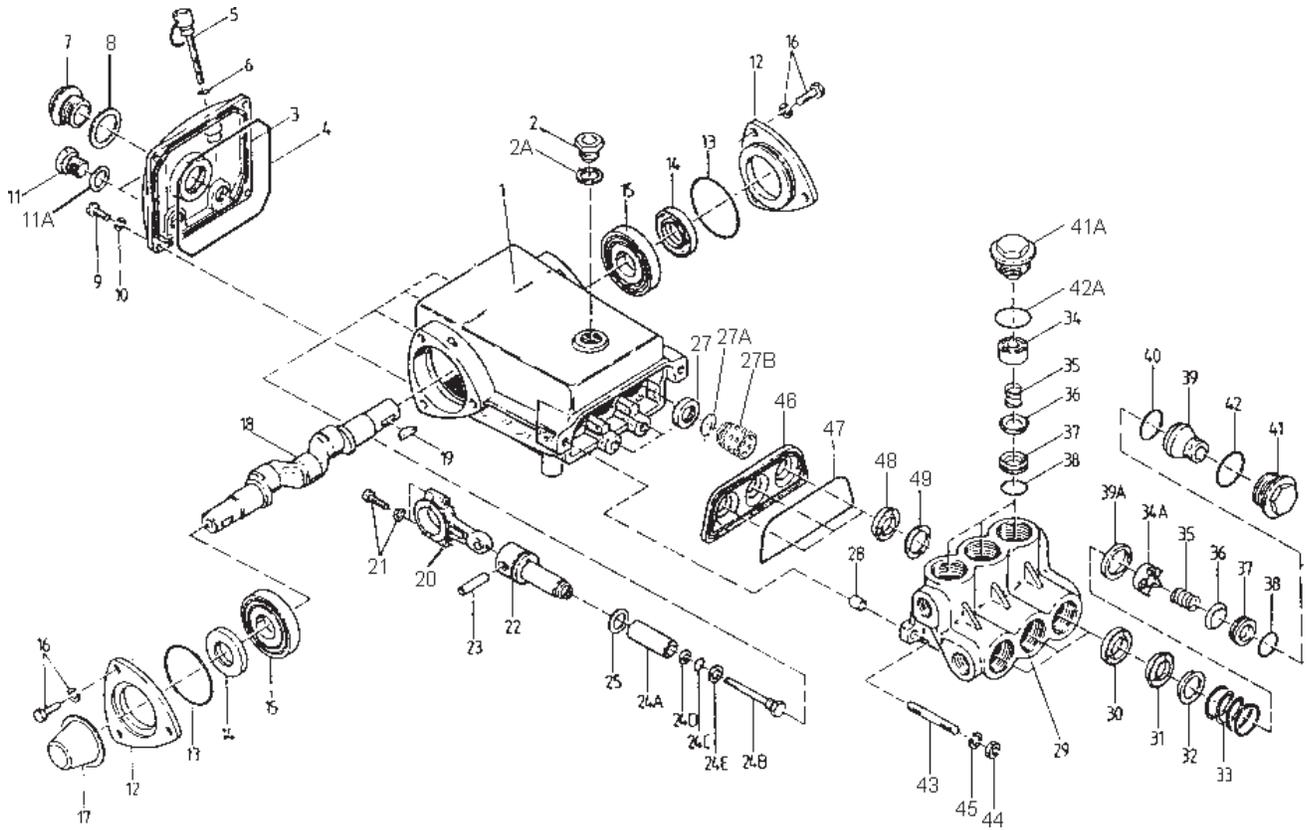
<u>ITEM</u>	<u>PART</u>	<u>DESCRIPTIONS</u>	<u>QTY</u>	<u>ITEM</u>	<u>PART</u>	<u>DESCRIPTIONS</u>	<u>QTY</u>
1	07294	Crankcase	1	25	07317	Flinger	3
2	07295	Oil Filler Cap	1	27	08058 ¹	Oil Seal	3
2A	07296	Gasket, Oil Filler Cap	1	27A	08059	O-Ring	3
3	07297	Cover, Crankcase	3	27B	08060	Seal Housing	3
4	07298	O-Ring, Crankcase Cover	1	28	07319	Shim, Stud	2
5	07299	Oil Dipstick	1	29	07320	Manifold, SP100W	1
6	01009	O-Ring, Dip Stick	1	30	07335	Pressure Ring	3
7	07186	Oil Sight Glass	1	31	07336	V-Sleeve	3
8	07187	Gasket, Oil Sight Glass	1	32	07337	Support Ring	3
9	01010	Screw, Crankcase Cover	4	33	07338	Pressure Spring	3
10	01011	Spring Washer, Cover Screw	4	34	07325-0100	Spring Retainer, Discharge	3
11	07109	Oil Drain Plug	2	34A	07326-0100	Spring Retainer, Inlet	3
11A	07182	Gasket for Oil Drain Plug	2	35	07312-0100	Valve Spring	6
12	07302	Bearing Cover	2	36	07327	Valve Plate	6
13	07303	O-Ring, Bearing Cover	2	37	06014	Valve Seat	6
14	07459	Seal, Crankshaft	2	38	06015	O-Ring, Valve Seat	6
15	07306	Roller Bearing	2	39	07328	Valve Retainer, Inlet	3
16	07114	Screw & Washer, Bearing Cover	6	39A	07329	Spacer	3
17	07308	Shaft Protector	1	40	12057	O-Ring, Inlet Valve Retainer	3
18	13349	Crankshaft	1	41	07331	Plug, Inlet	3
19	07252	Woodruff Key	1	41A	07213	Plug, Discharge	3
20	07310	Connecting Rod Assy.	3	42	07332	O-Ring, Inlet Plug	3
21	07311	Screw & Washer, Conn. Rod	3	42A	07214	O-Ring, Discharge Plug,	3
22	07315	Crosshead with Plunger Base	3	43	07333	Stud Bolt	4
23	07314	Crosshead Pin	3	44	07158	Hex Nut, Stud Bolt	4
24A	07346	Ceramic Plunger, SP100W	3	45	07159	Spring Washer, Stud Bolt	4
24B	07360	Bolt Assembly, SP100W (Items 24B, 24C, 24D, 24E)	3	46	07347	Weep Return Plate	1
24C	07023	O-Ring, Bolt Assy. (Viton)	3	47	07344	O-Ring, Weep Plate	1
24D	07203	Support Ring	3	48	07348	Weep Return Seal	3
24E	07258	Copper Seal Washer	3	49	07349	Seal Support Ring	3

¹ Earlier (non-weep) versions only had an oil seal. They did not have items 27, 27A and 27B.

SP100W TORQUE SPECIFICATIONS

<u>Position</u>	<u>Part#</u>	<u>Description</u>	<u>Torque Amount</u>
24B	07360	Tension Screw	228 in.-lbs.
41 or 41A	07331 or 07213	Plug, Inlet and Discharge	103 ft.-lbs.
44	07158	Nut, Stud Bolt	52 ft.-lbs.

SP100W EXPLODED VIEW



SP100W REPAIR KITS

Plunger Packing Repair #09077

Qty.	Part #	Description
3	07336	V-Sleeve

Ceramic Plunger Kit #09079

Qty.	Part #	Description
3	07346	Ceramic Plunger
3	07360	Bolt Assy. (24B-E)
3	07317	Flinger

Weep Repair Kit #09075

Qty.	Part #	Description
1	07344	O-Ring, Weep Return Plate
3	07348	Seal, Weep Return

Inlet Valve Kit #09069

Qty.	Part #	Description
3	07326-0100	Inlet Spring Retainer
3	07312-0100	Valve Spring
3	07327	Valve Plate
3	06014	Valve Seat
3	06015	O-Ring, Valve Seat
3	12057	O-Ring, Inlet Valve Retainer
3	07332	O-Ring, Inlet Plug

Discharge Valve Kit #09068

Qty.	Part #	Description
3	07214	Discharge Plug O-Ring,
3	07325-0100	Spring Retainer, Discharge
3	07312-0100	Valve Spring
3	07327	Valve Plate
3	06014	Valve Seat
3	06015	O-Ring, Valve Seat

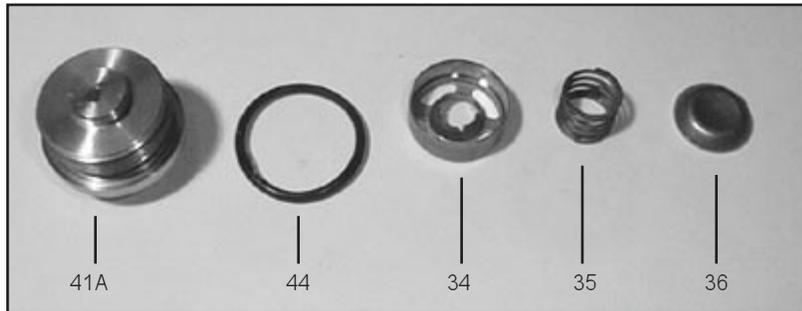
PUMP SYSTEM MALFUNCTION

<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
Pressure Drop at Gun	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

REPAIR INSTRUCTION - SP100W SERIES



1. With a 22mm socket, remove the three discharge (43) and three inlet (41) manifold plugs.



2. Check o-ring (44) for wear and replace as necessary. Remove the discharge spring retainer (34), valve spring (35), and valve plate (36).



7. Use a small slide hammer to remove valve seats (37) from manifold (29). Inspect valve plate (36) and valve seats (37) for wear. If excessive pitting is seen, replace the worn parts. Check valve seat o-ring (38) for wear and replace as necessary.



8. Drain the oil from the pump. Turn the pump over to remove the four manifold stud nuts (46) with a 19mm wrench.

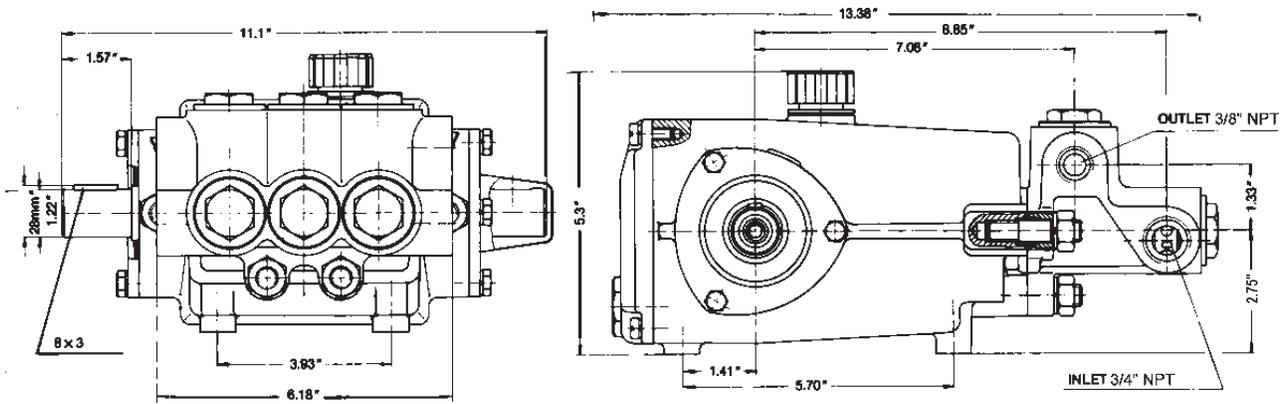
9. The front oil seal (31A) can now be removed by inserting a screwdriver through the rear of the retainer and tapping the seal out through the front of the retainer. Remove any excess old loc-tite from retainer. To replace oil seal, apply a light film of loc-tite around outside edges of seal. Tap seal



firmly into the retainer with a wooden dowel making certain that the spring side of the seal is installed first and that the seal sits squarely in the retainer.

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

SP100W 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.

