

Models

SP100HT, SP100HTK and SP200HT



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INSTALLATION INSTRUCTIONS

Required NPSH refers to water: Specific weight 62.4 lb/ft³ (1kg/dm³) at maximum permissible revolutions.

Operation and Maintenance

Check oil level prior to starting and ensure trouble-free water supply. **Oil: Use only 23.7 ounces (0.7 litres) of Giant Oil (p/n 01154) or ISO VG 220 GL4 (e.g. Aral Degol BG220) or SAE 90 GL4 gear oil.**

Initial change after 50 operating hours and then every 500 operating hours. In either case change oil every 6 months operation.

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.

Keep NPSH under control.

Max. input pressure 145 PSI (10 bar), maximum suction head -4.35 (-0.3 bar).

Safety Rules

Pump operation without safety valve as well as any excess in temperature or speed limits automatically voids the warranty. The safety valve must be regulated in accordance with the guidelines for liquid spraying units so that the admissible operating pressure can not be exceeded by more than 10%.

When the pump is in operation, the open shaft end must be covered up by shaft protector (17), the driven shaft side and coupling by a contact protector.

Pressure in discharge line and in pump must be at zero before any maintenance to the pump takes place. Close up suction line. Disconnect fuses to ensure that the driving motor does not get switched on accidentally.


Make sure that 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-NPSHR, positive suction head and water temperature must be kept under control.

Cavitation and/or compression of gases lead to uncontrollable pressure-kicks which can ruin pump and unit parts and also be dangerous to the operator or 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 inflammable, explosive and toxic media - the pump manufacturer must under all circumstances be consulted with regard to the resistance of the pump material. It is the responsibility of the equipment manufacture and/or operator to ensure that all pertinent safety regulations are adhered to.

 Please read operating instructions carefully before putting the pump into operation!

Important! Do not use grease when renewing the high pressure plunger seal (pos. 50). Hot water causes grease to wash off the seal which in turn can jam valves! The new seals should only be oiled lightly before installation.

These operating instructions supplement the general operating instructions for the SP series pumps.

Plant Lay-Out

For perfect functioning of the pump, the following points must be adhered to.

A) Pressure in Suction Side

The stipulated NPSHR is the minimum required pressure above the vapor pressure of the medium and is never to fall short of this figure. Temperature and vapor pressure of the medium, the geodetical height of the location, the flow rate and loss of friction in the suction line, must all be taken into consideration.

B) Pulsation

Due to its construction, the plunger pump creates pulsation in the suction and discharge lines. Suction pulsation in particular must be dampened in order to prevent resonance in the suction line which in turn, causes cavitation. Therefore, the pump is never to be connected by a rigid pipe but rather by a flexible hose (not reinforced by steel), and if possible 1.5 to 2 times wider than the suction connection. If a booster pump is used attach a hose between the booster pump and the high pressure pump.

If several pumps are used, each pump must have its own suction line. If this can't be done, a suction air chamber or a suction flow stabilizer must be installed in front of each pump. The bladder in the stabilizer is to be pre tensioned on location.

Depending on the lay-out of the plant, a pressure accumulator may be necessary on the discharge side. This pressure accumulator must be installed right behind the discharge outlet of the high pressure pump. We recommend the use of only one pressure accumulator in the discharge line in order to avoid irritation which could be caused by different pre-tension levels in the accumulators.

Gas-tension in both the suction flow stabilizer and in the pressure accumulator are to be checked regularly.

Maintenance

Important! To lubricate the high pressure seals, the intermediate casing (48) is filled with high-temperature resistant grease at our works. This means the holes in the valve casing have to be closed with thread plugs (29A) - to be tightened with Loctite 572.

Specifications

Models SP100HT and SP100HTK

	U.S.	(Metric)
Volume @ 900 RPM	7.1 GPM/426 GPH	(26.9 L/min/1613 L/hr)
Volume @ 750 RPM	5.9 GPM/354 GPH	(22.5 L/min/1340 L/hr)
Discharge Pressure	870 PSI	(60 bar)
Power Consumption	4.7 BHP	3.5 kW
Plunger Diameter	1.02"	(26mm)
Stroke	0.79"	(20mm)
Crankcase Oil Capacity	24 fl.oz.	(710 ml)
Temperature of Pumped Fluids @ 900 RPM	194 °F	(90° C)
Temperature of Pumped Fluids @ 750 RPM	221 °F	(105° C)
Inlet Ports	(2) 3/4" NPT	
Discharge Ports	(2) 1/2" NPT	
Crankshaft Mounting	Either Side	
Shaft Rotation	Top of Pulley Towards Fluid End	
Weight	31.3 lbs.	(14.2 kg)
NPSHR (900 RPM)	21.3 ft. of head	6.5 mWs

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.

SP100HT and SP100HTK HORSEPOWER REQUIREMENTS						
RPM	GPM	GPH	200 PSI	400 PSI	600 PSI	870 PSI
250	2.0	120.0	0.28	0.55	0.83	1.2
500	3.9	234.0	0.54	1.08	1.61	2.34
750	5.9	354.0	0.81	1.63	2.44	3.54
900	7.1	426.0	0.98	1.96	2.94	4.26

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.

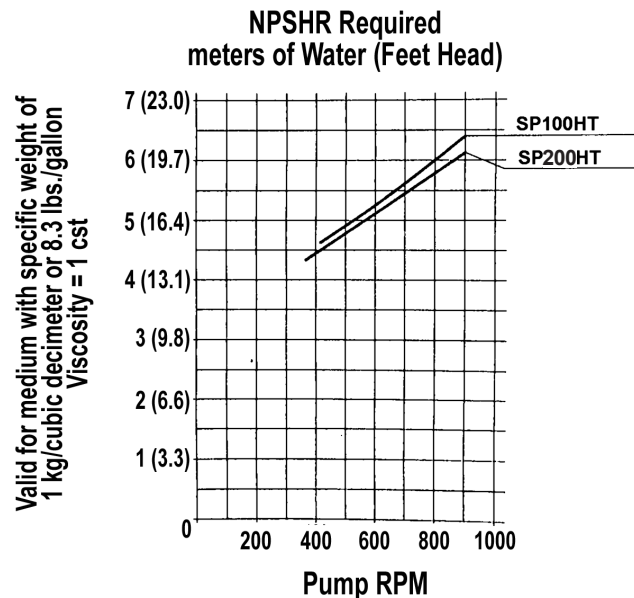
1. Select GPM required, then select appropriate motor and pump pulley from the same line.
2. The desired pressure is achieved by selecting the correct nozzle size that corresponds with the pump GPM.

HORSEPOWER INFORMATION

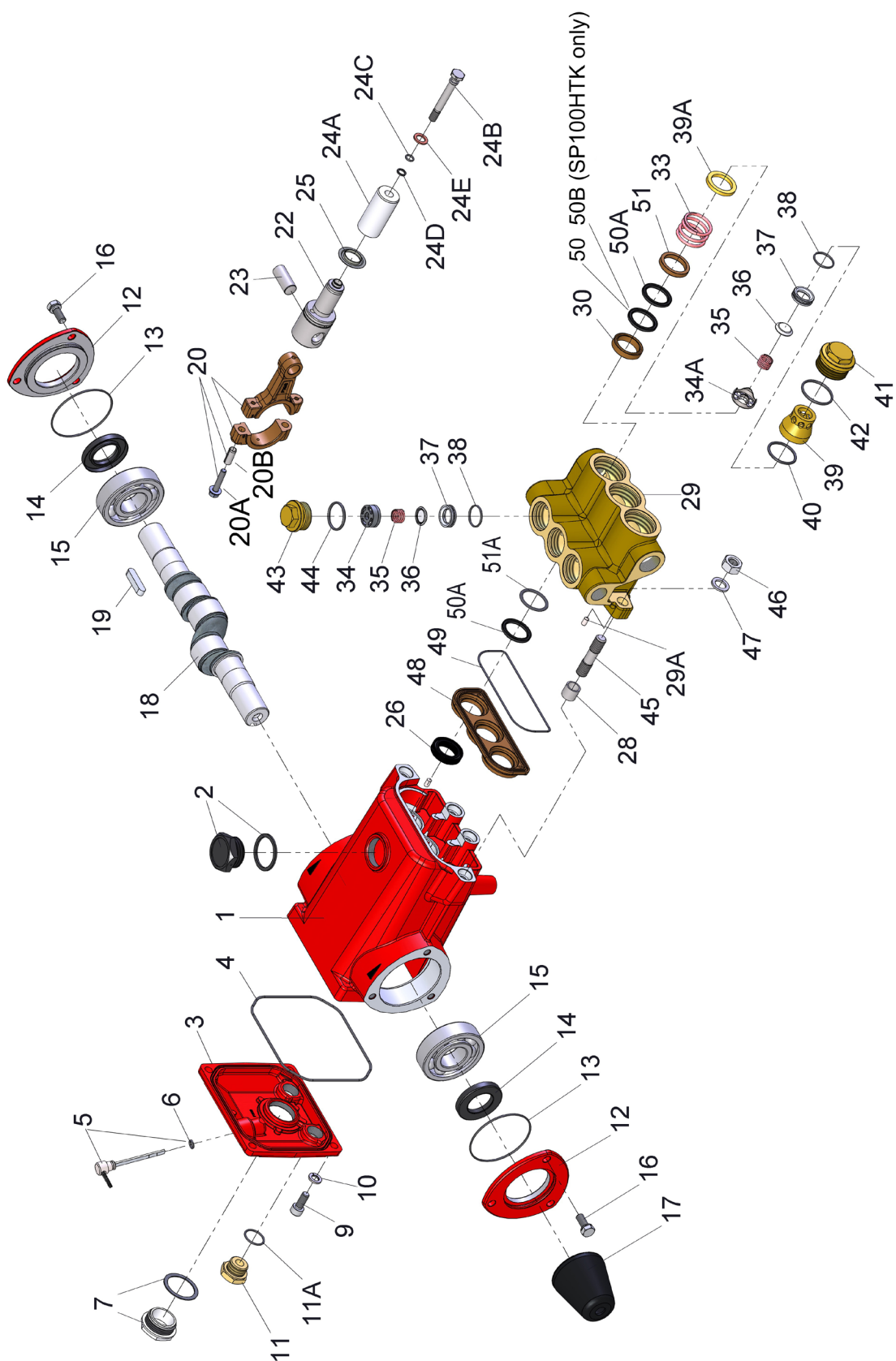
Horsepower ratings shown are the power requirements for the pump. Gas engine power outputs must be approximately twice the pump power requirements shown above.

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:

$$(\text{GPM} \times \text{PSI}) / 1460 = \text{HP}$$



SP100HT, SP100HTK and SP200HT EXPLODED VIEW



SP100HT, SP100HTK and SP200HT PARTS LIST

ITEM	PART	DESCRIPTIONS	QTY	ITEM	PART	DESCRIPTIONS	QTY
1	07294	Crankcase	1	30	07335	Pressure Ring	3
2	06968	Oil Filler Cap with Gasket	1	33	07338	Shim, Stud	3
3	07297	Cover, Crankcase	3	34	05593	Spring Retainer, Discharge (SP100HT/SP200HT)	3
4	07298	O-Ring, Crankcase Cover	1	34	07325-0100	Spring Retainer, Discharge (SP100HTK)	3
5	07299	Oil Dipstick Assembly	1	34A	07326-0100	Spring Retainer, Inlet	3
6	01009	O-Ring, Dip Stick	1	35	07312-0100	Valve Spring	6
7	07186	Oil Sight Glass Assembly	1	36	07327	Valve Plate	6
9	01010	Screw, Crankcase Cover	4	37	06014	Valve Seat	6
10	01010-0400	Spring Washer, Cover Screw	4	38	06015	O-Ring, Valve Seat	6
11	07109	Oil Drain Plug, 1/2" BSP	2	39	07328	Valve Retainer, Inlet	3
11A	06015	O-Ring for Oil Drain Plug	2	39A	07329	Spacer	3
12	07302	Bearing Cover	2	40	03036	O-Ring, Inlet Valve Retainer	3
13	07303	O-Ring, Bearing Cover	2	41	07331	Plug, Inlet, M36 x 1.5	3
14	07459	Seal, Crankshaft	2	42	07332	O-Ring, Inlet Plug	3
15	07306	Roller Bearing	2	43	07213	Plug, Discharge, M30 x 1.5	3
16	07114	Screw & Washer, Bearing Cover	6	44	07214	O-Ring, Discharge Plug	3
17	05312	Shaft Protector	1	45	07333	Stud Bolt	4
18	07309	Crankshaft	1	46	07158	Hexagon Nut, Stud Bolt	4
19	13331	Fitting Key	1	47	07159	Disc, Stud Bolt	4
20	07310	Connecting Rod Assembly	3	48	07347	Weep Return Plate (SP100HT/SP200HT)	1
20A	05349	Inner Hexagon Screw	6	48	07347A	Weep Return Plate (SP100HTK)	1
20B	05348	Centring Sleeve	6	49	07344	O-Ring, Weep Plate	1
22	07315	Crosshead w/Plunger Base	3	50	11503	Sleeve (SP100HT)	3
23	07314	Crosshead Pin	3	50	05636	Sleeve (SP200HT)	3
24A	07346	Ceramic Plunger	3	50A	11503	Sleeve (SP100HT/HTK)	6
24B	08399	Tension Screw	3	50A	05636	Sleeve (SP200HT)	6
24C	07023	O-Ring, Bolt Assembly	3	50B	07336	Sleeve (SP100HTK)	3
24D	07203	Support Ring	3	51	07349	Support Ring (SP100HT/HTK)	3
24E	07258	Copper Seal Washer	3	51	07687	Support Ring (SP200HT)	3
25	05289	Flinger	3	51A	11506	O-Ring (SP100HT/HTK)	3
26	07318-0010	Radial Shaft Seal	3	51A	13394	O-Ring (SP200HT)	3
28	07319	Shim, Stud	2				
29	07320	Manifold	1				
29A	11502	Stud Bolt	2				

SP100HT, SP100HTK and SP200HT REPAIR KITS

Plunger Packing Kit

(SP100HT/SP200HT) - #09591

Item	Part #	Description	Qty.
38	06015	O-Ring	3
40	03036	O-Ring	3
42	07332	O-Ring	3
49	07344	O-Ring	1
50	11503	Sleeve	6
50A	11503	Sleeve	3
51A	11506	O-Ring	3

Plunger Packing Kit

(SP100HTK) - #09816

Item	Part #	Description	Qty.
38	06015	O-Ring	3
40	03036	O-Ring	3
42	07332	O-Ring	3
49	07344	O-Ring	1
50	11503	Sleeve	3
50A	11503	Sleeve	3
50B	07336	Sleeve	3
51A	11506	O-Ring	3

Valve Assembly Kit

(SP100HT/SP200HT) - #09592

Item	Part #	Description	Qty.
34	05593	Discharge Spring Retainer	3
34A	07326-0100	Inlet Spring Retainer	3
35	07312-0100	Valve Spring	6
36	07327	Valve Plate	6
37	06014	Valve Seat	6
38	06015	O-Ring, Valve Seat	6
40	03036	O-Ring, Inlet Valve Retainer	3
42	07332	O-Ring, Inlet Plug	3
44	07214	O-Ring, Discharge Plug	3

Valve Assembly Kit

(SP100HTK) - #09817

Item	Part #	Description	Qty.
34	07325-0100	Discharge Spring Retainer	3
34A	07326-0100	Inlet Spring Retainer	3
35	07312-0100	Valve Spring	6
36	07327	Valve Plate	6
37	06014	Valve Seat	6
38	06015	O-Ring, Valve Seat	6
40	03036	O-Ring, Inlet Valve Retainer	3
42	07332	O-Ring, Inlet Plug	3
44	07214	O-Ring, Discharge Plug	3

Specifications

Model SP200HT

	U.S.	(Metric)
Volume @ 900 RPM	6.1 GPM/366 GPH	(23.0 L/min/1386 L/hr)
Volume @ 750 RPM	5.0 GPM/300 GPH	(19.1 L/min/1136 L/hr)
Discharge Pressure	870 PSI	(60 bar)
Power Consumption	4.0 BHP	3.0 kW
Plunger Diameter	0.94"	(24 mm)
Stroke	0.79"	(20 mm)
Crankcase Oil Capacity	24 fl.oz.	(710 ml)
Temperature of Pumped Fluids @ 900 RPM	194 °F	(90° C)
Temperature of Pumped Fluids @ 750 RPM	221 °F	(105° C)
Inlet Ports	(2) 3/4" NPT	
Discharge Ports	(2) 1/2" NPT	
Crankshaft Mounting	Either Side	
Shaft Rotation	Top of Pulley Towards Fluid End	
Weight	31.3 lbs.	(14.2 kg)
NPSHR (900 RPM)	20.3 ft. of head	6.2 mWs

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.

SP200HT HORSEPOWER REQUIREMENTS						
RPM	GPM	GPH	200 PSI	400 PSI	600 PSI	870 PSI
250	1.7	102.0	0.23	0.47	0.70	1.02
500	3.4	204.0	0.47	0.94	1.41	2.04
750	5.0	300.0	0.69	1.38	2.07	3.00
900	6.1	366.0	0.84	1.68	2.52	3.66

PULLEY INFORMATION

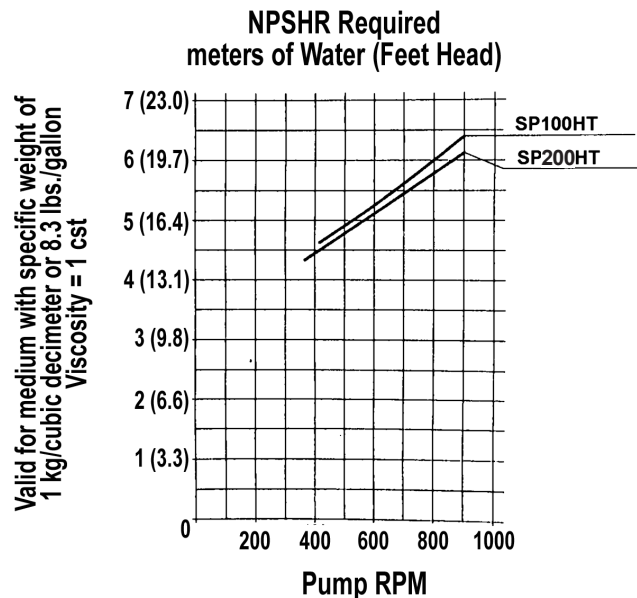
Pulley selection and pump speed are based on a 1725 RPM motor and "B" section belts. When selecting desired GPM, allow for a ±5% tolerance on pumps output due to variations in pulleys, belts and motors among manufacturers.

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:

$$(\text{GPM} \times \text{PSI}) / 1460 = \text{HP}$$



SP100HT, SP100HTK and SP200HT Torque Specifications

Pos.	Part #	Description	Lubrication Info	Thread	Torque Amount
7	07186	Oil Sight Glass Assembly	Loctite 5910	1" BSP	106 in.-lbs. (12 Nm)
9	01010	Screw		M8	221 in.-lbs. (25 Nm)
11	07109	Oil Drain Plug		1/2" BSP	29 ft.-lbs. (40 Nm)
16	07114	Screw and Washer		M8	132 in.-lbs. (15 Nm)
20A	05349	Inner Hexagon Screw		M6	106 in.-lbs. (12 Nm)
24B	08399	Tension Screw	Loctite 243	M8	247 in.-lbs. (28 Nm)
26	07318	Radial Shaft Seal	Loctite 403		
41	07331	Plug		M36x1.5	51 ft.-lbs. (70 Nm)
43	07213	Plug, Inlet		M30x1.5	51 ft.-lbs. (70 Nm)
45	07333	Stud Bolt	Loctite 270		
46	07158	Nut, Stud Bolt		M12	59 ft.-lbs. (80 Nm)

Pump Mounting Selection Guide

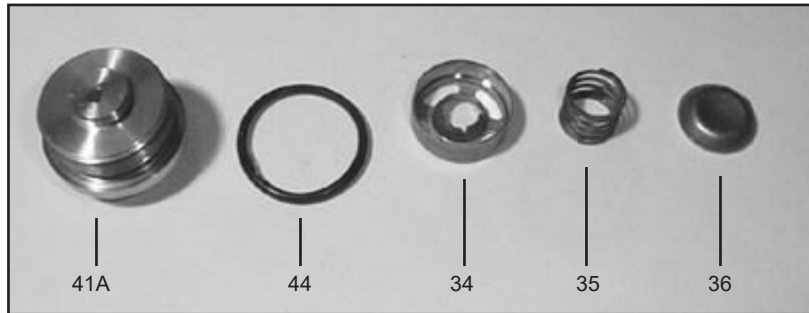
Bushings 07175 - 28 mm Tapered H Bushing	Pulley & Sheaves 01055 - 9.75" Cast Iron 2 gr. - AB Section 01062 - 7.75" Cast Iron - 2 gr. - AB Section	Rails 07358 - Plated Steel Channel Rails (L=9.18" x W=1.88" x H=3.00")
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Preventative Maintenance Check-List & Recommended Spare Parts List						
Check	Daily	Weekly	50hrs	Every 500 hrs	Every 1500 hrs	Every 3000 hrs
Oil Level/Quality	X					
Oil Leaks	X					
Water Leaks	X					
Belts, Pulley		X				
Plumbing		X				
Recommended Spare Parts						
Oil Change p/n 1154			X	X		
Plunger Packing Kits (1 kit/pump) (See page 5 for kit list)					X	
Valve Assembly Kit (1 kit/pump) (See page 5 for kit list)					X	

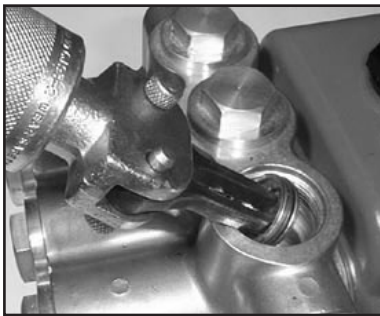
REPAIR INSTRUCTIONS - SP100HT, SP100HTK and SP200HT PUMPS



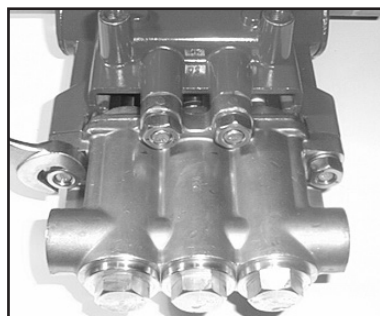
1. With a 22mm socket, remove the three discharge (43) and three inlet (41) manifold plugs.



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



3. 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.



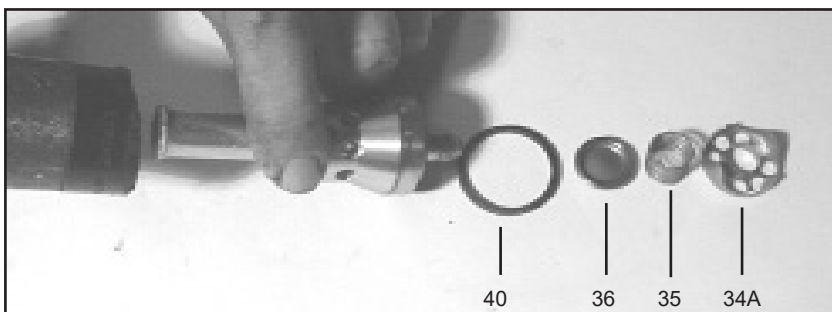
4. Drain the oil from the pump. Turn the pump over to remove the four manifold stud nuts (46) with a 19mm wrench.



5. Tap the back of the valve casing (29) with a rubber mallet.

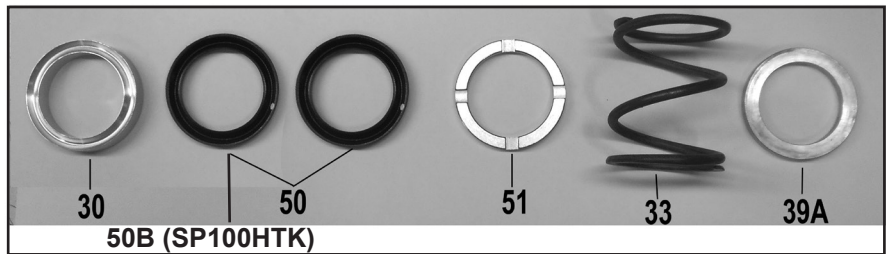
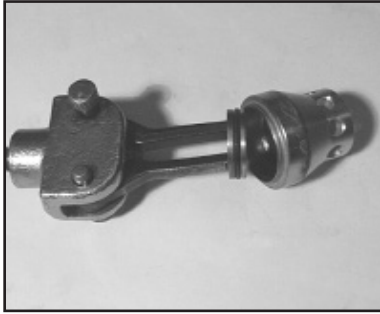


6. Remove the inlet valve retainer assembly (34A-39)



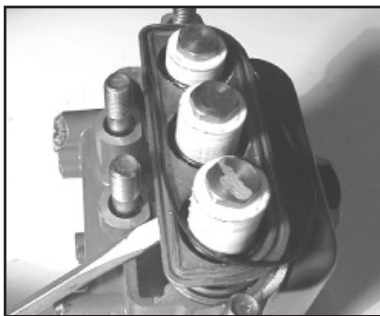
7. Remove the o-ring, (40), valve plate (36), valve spring (35), spring retainer (34A). Check valve retainer o-ring (40) for wear.

REPAIR INSTRUCTIONS - SP100HT, SP100HTK and SP200HT PUMPS

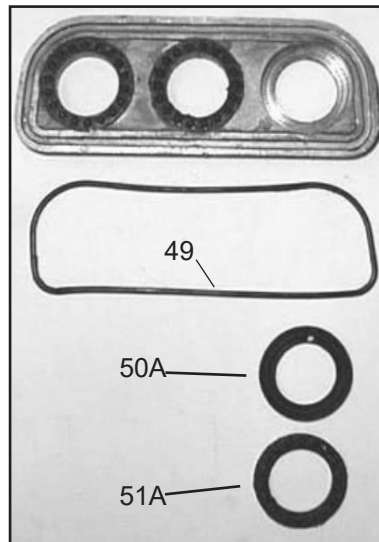


8. With a valve puller remove the valve seat (37) and o-ring (38) replace if worn. If excessive pitting is seen, replace the worn parts. Check valve seat o-ring (38) for wear and replace as necessary.

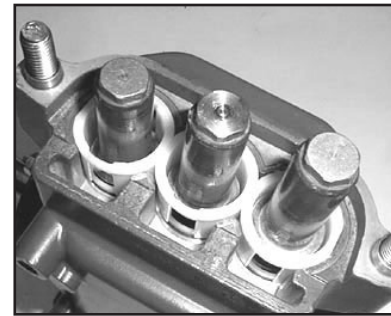
9. Remove the spacer (39A), pressure spring (33), support ring (51), sleeves (50/50B for SP100HTK only), and pressure ring (30), from the manifold (29) and check for wear.



10. With a flat headed screw-driver remove the weep return plate (48). Remove the o-ring (49) and check for wear.

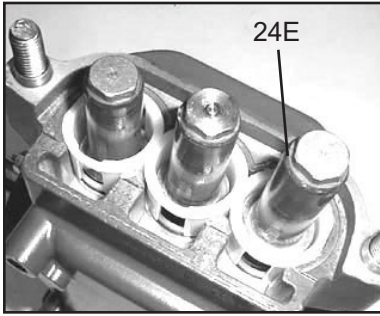


11. Inspect seals (50A), seal support ring (51A) and O-ring (49) and replace as necessary.



12. Inspect ceramic plunger (24A) tips for wear. If necessary, replacement of the ceramic plungers may be accomplished by removing the plunger bolt assemblies (24) with a 13mm wrench. Ceramic plungers should now slide off the stainless steel plunger base (22). Excessive resistance to plunger removal may be overcome by heating the stainless steel plunger base. This will melt any excess loc-tite beneath the ceramic plunger allowing easy removal.

REPAIR INSTRUCTIONS - SP100HT, SP100HTK and SP200HT PUMPS

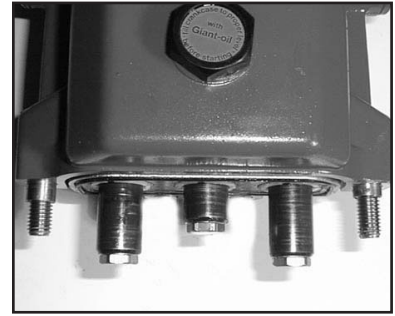


13. Replace copper ring (24E) onto plunger bolt (24B). Slide plunger bolt assembly (24) into ceramic plunger (24A). Apply a light film of loc-tite to plunger bolt threads and place plunger assembly onto stainless steel plunger base (22) and tighten to 247 in.-lbs. (28 Nm).

14. To replace plunger oil seals (26), proceed to "Gear End Disassembly" section below. Otherwise, continue as described below.

15. Before replacing pump manifold (29), first rotate crankshaft (18) until two outside plungers (24A) extend evenly forward. Next lubricate v-sleeves (50) in the rear v-sleeve housing (48) and slide housing over plungers.

Important! Do not use grease on the seals. Lubricate ceramic plungers with a light film of oil. Carefully and evenly slide manifold over plungers and press manifold firmly against crankcase (1). Replace manifold stud bolts (45), washers (47) and nut (46) and tighten to 59 ft.-lbs. (80 Nm).



Gear End Disassembly

16. Remove the crankcase cover screws (9). Inspect the crankcase cover o-ring (4) for wear. Replace if necessary.
17. Inspect the dipstick (5) vent hole for signs of clogging. Clean if necessary.
18. To remove the crankshaft (18), first remove the bearing cover plates (12). Remove the key (19).
19. With a 5 mm allen wrench remove the connecting rod screws (21) and rear portion of connecting rod assemblies (20). Push the connecting rod (20) and plunger rod (22) down as far as possible into the crankcase housing.
20. Hold the pump rear assembly with a wooden fixture, or other suitable device, in order to secure it while removing the crankshaft (18). Using a plastic mallet, tap the crankshaft from one side while turning it from the other side. The turning insures that during this sequence the crankshaft does not become wedged against the front portion of the connecting rods (20). The far side bearing (15) will remain in the crankcase (1). When free, the crankshaft can be removed by hand. The opposite side crankshaft seal (14) will be removed by this procedure. **It is important that you turn the crankshaft (18) constantly while tapping from the opposite end to avoid any binding. The crankshaft bearing (15) remains on the crankshaft as it is removed.** If necessary, use a bearing puller to remove the crankshaft bearing (15).
21. Remove the front portion of the connecting rods (20) and plunger base assembly (22) from the rear of the pump by pulling straight out of the crankcase crosshead guides. **Notice that the connecting rod (20) halves are numbered or colored. Connecting rods must be positioned with their numbers or colors on the upper left-hand side, in the same numerical sequence as when they were removed.**
22. Using a dowel and a rubber mallet, tap the oil seals (26) out from the rear of crankcase (1). The area onto which the oil seal rests should be clean and dry. Put a small drop of loc-tite on the oil seals and place into crankcase with lips facing the rear of the pump.
23. To remove the crosshead pin (23) from the crosshead (22), the assembly should be positioned on a wooden fixture to avoid damage to crosshead. Drive out the pin on opposite side of mark located on the crosshead. On those pumps without mark on crosshead, drive out pin by tapping on tapered side of pin.

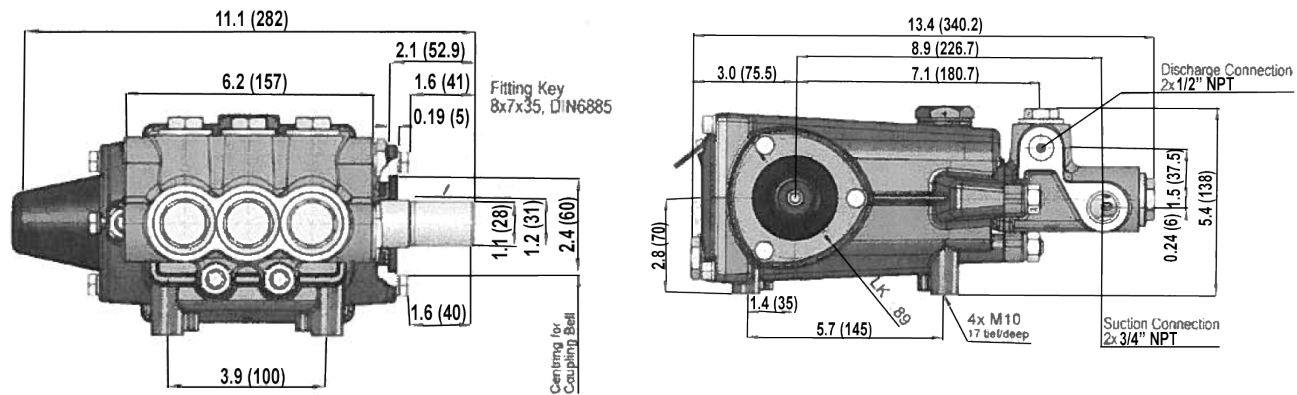
REPAIR INSTRUCTIONS - SP100HT, SP100HTK and SP200HT PUMPS

24. To remove the bearing (15) remaining in the crankcase (1), insert small end of Giant bearing tool and tap with a rubber mallet until bearing and seal (14) are completely removed. **The bearing can only be removed from the inside by inserting the Giant Bearing Tool through the opposite side of the crankcase.** The crosshead guide in the crankcase should be inspected for possible damage.
25. To reassemble, place the far bearing (15) in the crankcase (1) bearing housing and with the Giant Bearing tool as a driver, tap into the crankcase using a rubber mallet.
26. Insert the far side crankshaft oil seal (14) with the Giant Bearing Tool making sure it is firmly seated and well oiled. Always make sure that the crankshaft seal lip does not show signs of wear and that the garter spring is firmly in place on the seal before reinserting into the pump. Replace the bearing cover (12) and o-ring (13) and tighten securely.
27. Replace the front portion of the connecting rod (20) and plunger rod/ crosshead assembly (22) by press-fitting the crosshead pin (23). Make sure to insert the beveled edge of the crosshead pin into crosshead. If the crosshead has a mark, install pin from marked side. **The crosshead pin (23) should not extend beyond either side of the crosshead (22) in order to prevent damage to the crosshead bore of the crankcase (1).**
28. Place each crosshead/ plunger assembly into the pump making sure that all of the parts are well oiled before insertion into the crankcase (1). **Notice that the connecting rod (20) halves are numbered or colored. Connecting rods must be positioned with their numbers or colors on the upper left-hand side, in the same numerical sequence as when they were removed.**
29. Replace near side bearing (15) on crankshaft by using the Giant Bearing Tool and mallet to tap into place. Take the crankshaft (18) end with the bearing (15) and insert the other end through the bearing housing and tap with a rubber mallet until the bearing is seated.
30. When reassembling the connecting rods (20), note that the connecting rod halves are numbered or colored and that the numbers or colors must be matched and aligned. Torque the connecting rod bolts to 106 in.-lbs. (12 Nm).
31. Insert the near side crankshaft oil seal (14) with the Giant Bearing Tool making sure it is firmly seated and well oiled. Replace the bearing cover (12) and o-ring (13) and tighten securely.

See instructions above for re-installing fluid end onto the gear end.
32. Fill the pump crankcase (1) with 24 oz. (710 mL) of Giant Industries' oil and check the oil level with the dipstick (5). Proper level is center of two lines. Reinstall the pump into your system.

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

SP100HT, SP100HTK and SP200HT 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. 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.



WARNING: This product might contain a chemical known to the State of California to cause cancer, and birth defects or other reproductive harm.
For more information go to www.P65Warnings.ca.gov

GIANT
Performance Under Pressure

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