Triplex Ceramic Plunger Pump Operating Instructions/ Repair and Service Manual

Model GP7124A-4000





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GP7124A-4000

1. Performance

	<u>U.S.</u> .	Metric
Volume		
Discharge Pressure	7400 PSI	510 Bar
Inlet Pressure*	4.35 to 58 PSI*	-0.3 to 4 Bar*
Speed		750 RPM
Plunger Diameter	0.94"	24mm
Plunger Stroke	2.05"	52mm
Crankshaft Diameter	1.9"	48mm
Key Width	0.55"	14mm
Crankshaft Mounting		Either side
Shaft Rotation		. Top of pulley towards manifold
Temperature of Pumped Fluids	Up to 140° F	
Inlet Ports	Up to 140° F	
Inlet Ports Discharge Ports	Up to 140° F	
Temperature of Pumped Fluids Inlet Ports Discharge Ports Weight	Up to 140° F	60° C (2) 1 1/4" NPT (2) 3/4" NPT 206 kg
Temperature of Pumped Fluids Inlet Ports Discharge Ports Weight Crankcase Oil Capacity	Up to 140° F 454 lbs 1.7 Gallons	
Temperature of Pumped Fluids Inlet Ports Discharge Ports Weight Crankcase Oil Capacity Fluid End Material	Up to 140° F 454 lbs 1.7 Gallons	
Temperature of Pumped Fluids Inlet Ports Discharge Ports Weight Crankcase Oil Capacity Fluid End Material. Volumetric Efficiency @ 700 RPM	Up to 140° F 454 lbs 1.7 Gallons	
Temperature of Pumped Fluids Inlet Ports Discharge Ports Weight Crankcase Oil Capacity Fluid End Material Volumetric Efficiency @ 700 RPM Mechanical Efficiency @ 700 RPM	Up to 140° F 454 lbs 1.7 Gallons	

1) Figures given for maximum pressure and maximum speed (rpm) apply to intermittent operation with cold water. When the pump is used in continuous operation and/or with water warmer than 100 $^{\circ}$ F (40 $^{\circ}$ C), these values must be reduced by 10%.

Performance data for intermittent operation, data for continuous operation on request. For information on intermittent operation and calculating of the performance data, see the Giant Industries assembly instructions.

NPSHR / Inlet pressure

Required NPSH refers to water at 68 °F (20 °C) at maximum permissible pump speed. The inlet pressure on the suction side must not exceed 145 PSI (10 bar).

Level of noise emission

Emission sound pressure level: \leq 93 dB(A)

2. Fields of application

The fields of application of these pump types correspond to the specifications in the assembly instructions GIANT INDUSTRIES.

Ambient conditions

Ambient temperature: 36 °F (2 °C) < T Amb. < 86 °F (30 °C)

4. Oil filling

- Filling quantity:
- Quality:
- Intervals:

1.7 gal (6.5 L)

Industrial gear oil ISO VG 220 or automotive gear oil SAE 90 GL4 - Giant's p/n 01154
First oil change after 50 operating hours then every 1000 operating hours, but at the latest 12 months

GP7124A-4000 HORSEPOWER REQUIREMENTS								
RPM	GPM 5000 PSI 6000 PSI		7000 PSI	7400 PSI				
400	6.8	23.5	28.3	32.8	34.7			
550	9.4	32.4	38.9	45.4	48.0			
600	10.2	35.2	42.2	49.2	52.1			
650	11.1	38.3	45.9	53.6	56.7			
700	12.0	41.4	49.7	57.9	61.2			
750	12.8	44.1	53.0	61.8	65.3			

6. Installation/Putting into Operation

6.1 Shaft protector

When the pump is in operation, the open shaft end must be covered up by shaft protector (21), the driven shaft side and coupling by a bell housing and the plunger room by cover (30).

6.2 Direction of pump rotation

Set the direction of rotation of the drive unit according to the direction of rotation arrow on the crankcase.

6.3 Suction line filter

Recommended mesh size 50 µm

7. Operation

The maximum operating pressure can be used in the speed range of 750 RPM. When reducing the speed, the pump pressure must be reduced in the same proportion to ensure sufficient gearbox lubrication.

7.1 Discharge Line

The pump comes with two special conical seals (50D) which have to be inserted in to the discharge ports of the pump. One of the two ports is to be closed with the included plug (50E).

To install the pressure line, the connection nipple (50C) with the external thread 1/2"-14 FNPT must be used. This together with the sealing cone (50D) seals the pressure line.





Hydraulic System Set-Up





- 2 = Booster pump
- 3 = Fine-particle filter
- 4 = Gauge to check input pressure
- 5 = High pressure pump
- 6 = High pressure gauge
- 7 = Excess, Safety valve

Exploded View - GP7124A-4000



GP7124A-4000 PARTS LIST

ITEM	<u>PART</u>	DESCRIPTION	<u>QTY.</u>	<u>ITEM</u>	<u>PART</u>	DESCRIPTION	<u>QTY.</u>
1	05769	Crankcase	1	46	07169	Leakage Seal	3
1A	05525	Head for Oil Dipstick	1	47	06758	Spacer Disc	3
1B	01009	O-Ring	1	48	05524	Circlip	3
2	13000	Oil Filler Plug Assembly	1	49	13159	Stud Bolt	8
4	07601	Crankcase Cover	1	49A	13160	Hexagon Nut	8
5	05798	Seal for Crankcase Cover	1	50	06759-NPT*	Valve Casing Assembly	
8	07603	Oil Dip Stick Assembly	1			(50C-E)	1
9	01009	O-Ring, Dip Stick	1	50A	13162	Centering Stud	2
10	22706	Hexagon Screw	8	50C	03397	Connection Nipple,	
11	06725	Spring Washer	8			1/2" FNPT	1
12	07109-0400	Drain Plug	6	50D	03398	Lens Gasket	2
13	06272	Copper Seal Ring, 1/2"	6	50E	03399	Plug, 3/4" BSP	1
14	05770	Bearing Cover	2	51	05780	Inlet Valve Assembly	
14A	12204	O-Ring	8			(51B-F)	3
15	05771	Radial Shaft Seal	2	51B	05193	O-Ring	3
16	05772	O-Ring for Bearing Cover	2	51C	05194	Inlet Valve Seat	3
17	05642	Hexagon Socket Screw	8	51D	06761	Valve Plate	3
18	05039	Spring Washer	8	51E	06762	Valve Spring	3
20	05773	Taper Roller Bearing	2	51F	06763	Spacer Pipe	3
20A	07611	Shim, 0.1 mm	1-8	52	05781	Discharge Valve Assembly	
21	05645	Shaft Guard Protector	1			(52B-F)	3
21A	05646	Shaft Guard	1	52B	05193	O-Ring	3
22	05775	Crankshaft	1	52C	05195	Discharge Valve Seat	3
23	07614	Kev	1	52D	06791	Valve Plate	3
24	05777	Connecting Rod Assembly	3	52E	06762	Valve Spring	3
25	05778	Crosshead Assembly	3	52F	06763	Spacer Sleeve	3
28	05779	Crosshead Pin	3	57	06078	Tension Spring	3
30	07619	Cover Plate	1	58	07699	Plug	3
30A	07225-0100	Hexagon Screw	8	58A	07700	O-Ring	3
30B	13136	Grommet	4	58B	07693	Support Ring	3
30C	08280	Disc	8	58C	07702	Hexagon Screw	12
30D	13154	Cover	1	59	07109-0400	Plua	3
31	07623	Eve Bolt	1	59A	06807	Copper Ring (Gasket)	3
32	07624	Radial Shaft Seal	3	61	12251	Plug 1-1/4" NPT	1
33	06950	Seal Retainer	3	62	03401	Connecting Joint	2
33A	07627	O-Ring for Seal Retainer	3	62A	06766	Connection Ring	2
33B	06951	Circlip for Seal Retainer	3	62B	06767	Seal Ring	4
33C	07249	Fitting Disc	3	64	07204-0100	Steel Ring	2
34	13137	Oil Scraper (Flinger)	3	66	13362	Disc for Crankshaft	1
36	13138	Plunger	3	67	13358	Hexagon Screw	1
38	06952	Seal Sleave	3	69	06588	Screw-in Connector	2
38A	22764	Serrated Pin	3	70	06768	Threaded Elbow	2
38B	06750	Leakage Gasket	3	71	06769	Curved Leakage Pipe	2
38C	06667	O-Ring	3		07662	Valve Tool (not shown)	1
39	06953	Seal Case	3		17212	Crankcase Assembly	
39A	07150	O-Ring	6			(2x12/1-34/49/49A/50A/66/6	67)
40	13143	Tension Spring	3		17407-NPT	Pump Head Assembly	,,,,
41	06955	Support Disc	3			(50-71 w/out 50A/66/67)	
42	07685	Spiral Ring (Packing)	6		17262	Plunger Conversion Kit (36-	48)
43	07718	Support Ring	6				,
44	06956	Guide Ring	3		*If the valve of	asing (50) needs to be replac	ced
45	06957	Pressure Ring	3	items ^p	50C-F will he in	ncluded	,
10	00001	· · · · · · · · · · · · · · · · · · ·	Ŭ				

GP7124A-4000 REPAIR KITS

Plunger Packing Kit #09224A					alve Ass	embly Kit #09702	
<u>Item</u>	Part #	Description	<u>Qty.</u>	<u>Item</u>	<u>Part #</u>	Description	<u>Qty.</u>
38B	06750	Leakage Gasket	3	51B	05193	O-Ring	3
38C	06667	O-Ring	3	51C	05194	Inlet Valve Seat	3
39A	07150	O-Ring	6	51D	06761	Valve Plate	3
42	07685	Packing	6	51E	06762	Valve Spring	3
43	07718	Support Ring	6	58A	07700	O-Ring	3
44	06956	Guide Ring	3	58B	07693	Support Ring	3
46	07169	Seal Ring	3				
48	05524	Circlip	3	Discharge Valve Assembly Kit #09703			3
				<u>Item</u>	<u>Part #</u>	Description	<u>Qty.</u>
Oil S	eal Kit #09	9221		52B	05193	O-Ring	3
<u>Item</u>	Part #	Description	<u>Qty.</u>	52D	06761	Valve Plate	3
32	07624	Radial Shaft Seal	3	52E	06762	Valve Spring	3
33A	07627	O-Ring	3	52C	05195	Discharge Valve Seat	3
				58A	07700	O-Ring	3
				58B	07693	Support Ring	3

GP7124A-4000 TORQUE SPECIFICATIONS								
Position	Item #	Thread	Description	Lubricaion Info	Torque Amount			
10	22706	M10	Hexagon Screw		33 ftIbs. (45 Nm)			
12	07109-0400	1/2" BSP	Drain Plug		59 ftIbs. (80 Nm)			
15	05771		Radial Shaft Seal	Loctite 403				
17	05642	M12	Hexagon Socket Screw		64 ftIbs. (87 Nm)			
24	05777	M10	Connecting Rod Assembly		30 ftIbs. (40 Nm)			
32	07624		Radial Shaft Seal	Loctite 403				
36	13138		Plunger		33 ftIbs. (45 Nm)			
38	06952		Seal Sleeve	Cu-Paste Crankcase Side				
49	13159		Stud Bolt	Loctite 648 Crankcase side				
49A	13160	M16	Hexagon Nut		133 ftIbs. (180 Nm)			
58C	07702	M16 Hexagon Screw Pro Pack 550 155 ftlbs. (210 Nm						

Preventative Maintenance Check-List & Recommended Spare Parts List							
Check	Daily	Weekly	50hrs	Every 500 hrs	Every 1500 hrs	Every 3000 hrs	
Oil Level/Quality	Х						
Oil Leaks	Х						
Water Leaks	Х						
Belts, Pulley		X					
Plumbing		Х					
		Recomm	nended Spa	re Parts			
Oil Change		-	Χ	X	1		
Plunger Spare Parts (1 kit/pump)					X		
(See page 6 for kit list)							
Oil Seal Kit (1 kit/pump)					X		
(See page 6 for kit lit)							
Valve Spare Parts (1 kit/pump) (See page 6 for kit list)						Х	

8. Maintenance and Servicing

Based on the thread type and the required tightening torques, observe the table on page 6.

8.1 Special tools required

The following special tools are required for assembly:

- Extraction tool (part number 07662)
- Pull-out tool size 2
- Snap-ring tongs

8.2 Suction and Discharge Valves

Loosen screws (58C).

Take plugs (58) out of valve casing with two screws.

Take out tension spring (57) and complete valve (51, 52) using either tool (07662) or stud bolt (size M16).

Valve seats (51C and 52C) are pressed out of spacer pipe (51F, 52F) by hitting the valve plate (51D, 52D) with a bolt.

Check surfaces of valve plate, valve seat, O-rings (51B, 58A) and support ring (58B) for damage.

Replace worn parts.



When reassembling, the suction valve seat (51C) is 1 mm smaller in diameter than the discharge valve seat (52C). Suction valve seats are marked "S" and always have to be installed first.

Discharge valve seats are marked "P" and are always to be installed on top of suction valve. Plugs (58) are to be tensioned down evenly with screws (58C) and crosswise to the required torque.

8.3 Seals and Plunger

Remove nuts (49A) and pull off pump head. Take off cover plate (30).

Using a size 27 open-end wrench, separate plunger (36) from crosshead (25).



Don't loosen the 3 plungers (36) before the valve casing has been removed.

Otherwise the plunger (36) could hit against the spacer pipe (51F) when the pump is being turned.

Remove seal sleeve (38) together with the plunger (36) from the crankcase guides (use ring groove as an aid).

Remove plunger (36) from seal sleeve.

Take pressure spring (40), support disc (41), seal unit (42/43/44) and pressure ring (45) out of the seal sleeve.

Remove leakage gasket (38B) from serrated pin (38A) on the seal sleeve (38).

Take-off circlip (48) using a clipring pliers, pull out spacer disc (47).

Lever grooved seal (46) out of the seal sleeve (38).

Check plunger surface (36), seal unit (42/43/44), leakage gasket (38B) and seal ring (46). Check O-rings (38C/39A) on the seal case (39)/ seal sleeve (38).

Replace worn seals.



The Ø3.2mm bore of the leakage gasket (38B) must be inserted directly on to the serrated pin (38A) of the seal sleeve (38A).

The leakage gasket (38B) must be fitted to the seal sleeve (38) so that the bevelled surface of the gasket (38B) faces outwards.

When exchanging worn plunger, attention must be paid that the centre bore and front surface of the crosshead (25) are free of dirt and damage. Thread new plunger carefully through oiled seals in seal sleeve.

Coat thread of new plunger lightly with suitable bonding agent.

Then insert seal sleeve with plunger into crankcase guide. Drive Crankshaft until plunger with crosshead (25) pushes against plunger (36).

Tighten plunger (36) to the required torque using a size 27 torque wrench.

Mounting Valve Casing:

Clean surfaces of seal sleeves (38) in gear box and sealing surfaces of valve casing. Push valve casing carefully onto O-rings of seal case and centring studs (50A). Tighten nuts (49A) to the required torque.

If required, supplementary assembly instructions can be requested from Giant Industries.

Take seal case (39) out of seal sleeve (38).

Dimensions - GP7124A-4000 - 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



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