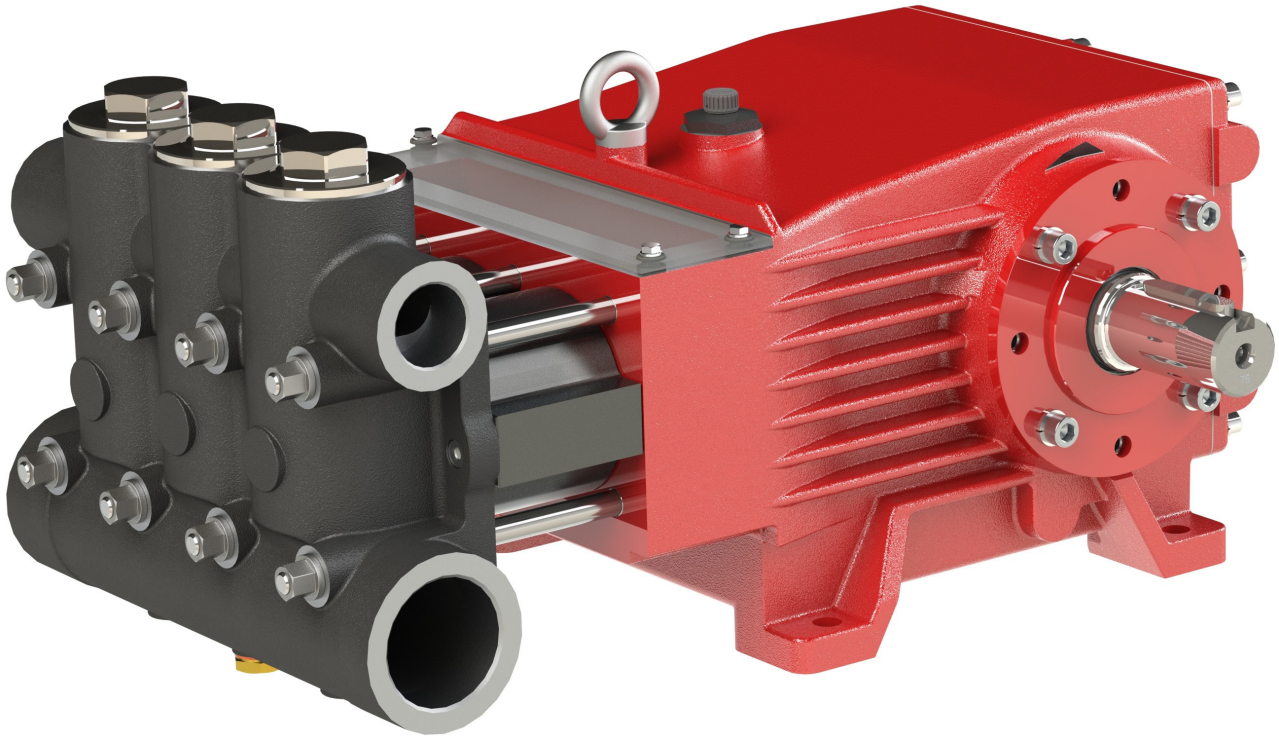
Model BPK7180

Triplex Ceramic Plunger Pump Operating Instructions/ Repair and Service Manual



GIANT
Performance Under Pressure

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BPK7180 PUMP SPECIFICATIONS

Performance

	Power Required	Pressure	Max. Speed	Max. Flow	Max. Temp.	Plunger ø	Plunger Stroke	Weight
Model	**BHP (kW)**	**PSI (bar)**	**RPM**	**GPM (l/min)**	**°F (°C)**	**in (mm)**	**in (mm)**	**lbs. (kg)**
BPK7180	74.0 (55.2)	1000 (70)	540	106 (400)	104 (40)	3.15 (80)	2.05 (52)	379 (172)

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 Pumps assembly instructions.

Inlet pressure
Maximum inlet pressure: 29 PSI (2 bar)

Level of noise emission
Emission sound pressure level: ≤ 91 dB(A)

Fields of application
The pump types specified in this data sheet are suitable for pumping water containing bentonite in a concentration of maximum 55 lbs. (25 kg) of bentonite diluted in 264 gallons (1m^3) of water. Furthermore, the fields of application of these pump types correspond to the specifications in the assembly instructions Giant Pumps.

Ambient conditions
Ambient temperature: 41 °F < $T_{Amb.}$ < 86 °F
Ambient temperature: 5°C < $T_{Amb.}$ < 30°C

Oil filling
- Filling quantity: 2.3 gal. (9 0 l)
- Quality: Industrial gear oil **ISO VG 220** or automotive gear oil **SAE 90 GL4 (Giant's p/n 01154)**

Intervals: first oil change after **50 operating hours** then every **1000 operating hours,** but at the latest after **12 months**

Installation/ Putting into Operation

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

Suction line filter
Recommended mesh size 150 µm.

Operation
For informations, see assembly instructions Giant Pumps.



If recycled bentonite is being pumped, the pump must be rinsed for 3-5 minutes with clear water after usage to flush out dirt particles (sand) in the bentonite.
The service life of the seals, cylinder liner and valves depends largely on how fine the recycled bentonite is filtered.



The pump must be emptied if there is a danger of frost. Note that travel wind, for example, can cause water in pumps fitted on open vehicles to freeze even if the outside temperature is above freezing point.

Empty the pump through the second unused suction and discharge connection using compressed air, for example.
Bottom plugs (12) on the suction channel can be opened as well.
The pump can run 'dry' for 1 minute for better draining.

BPK7180 Horsepower Requirements					
RPM	GPM	500 PSI	700 PSI	900 PSI	1000 PSI
270	37.0	12.8	17.9	23.0	25.5
400	54.8	18.9	26.5	34.0	37.8
500	68.5	23.6	33.1	42.5	47.2
540	74.0	25.5	35.7	45.9	51.3

BPK7180 Repair Instructions

Maintenance and Servicing
For the type of threadlocker used and the required tightening torques, observe the table in the exploded view.

Special tools required
The following special tools are required for assembly:
-Fitting Tool (03906)
-Tool for valve mounting (03852)

Suction and Discharge Valves
Remove plugs (54-58)
Pull out the complete pressure valve (52), valve holder (53) and suction valve (51) using fitting tool 03852 .

Dismantle valves:
The spring tension cap (51G ; 52G) is screwed together with valve seat (51A or 52A).
Screw off spring tension cap.
Remove spring (51E ; 52 E) and valve plate (51D ; 52D)
Check the valve plate (51D; 52D) for free movement in the guide bushing (51F; 52F).
Examine sealing surfaces and o-rings.
Replace worn parts.

Seals and Cylinder liner
Screw off hexagon nuts (49A), remove pump head together with centering ring (38) from intermediate casing (48).
If necessary, carefully tap the valve casing (50) past the centring stud (50A) using a rubber hammer.
Pull the centerring ring case (38) out of the valve casing (50) (if necessary using two screwdrivers placed into the front groove).
Examine o-rings (38A) and coat with silicon grease before fitting.


Pay attention to avoid any injury due to the heavy weight of the parts when removing these from the stud screws (49).
If necessary, secure the valve casing by supporting it with w ooden blocks or using a hoist.

Remove Flat Seal (41). Remove tension screw (36C) and take the cylinder liner (40) together with all mounted parts out of the drive.
Press the complete piston (36B, 36F, 36G, 36H, 36J) out of the cylinder liner and check for any damage. Clean parts from pos. 36A to pos. 41, examine them and replace if necessary.
Coat new parts generously with silicone grease before fitting. Press the complete piston (36B, 36D, 36G, 36H, 36J) into the cylinder liner.
Push the cylinder liner (40) with piston assembly (36B, 36F, 36G, 36H, 36J) into the intermediate housing (48).
If necessary, the seals can be held on the other side of the seal sleeve using a suitable pipe support. Position the complete piston (36B, 36F, 36G, 36H , 36J) using assembly tool 03906.


Pay attention that the sealing surfaces on the intermediate casing, crankcase and valve casing are clean and without damage.
The components must lie exactly and evenly on one another.
The same exactness applies to all centering positions in the crankcase, intermediate and valve casing.

Lightly coat tension screw (36C) with screw glue and, together with seal ring (36D), place into the piston.
Tighten tension screw to the required torque.

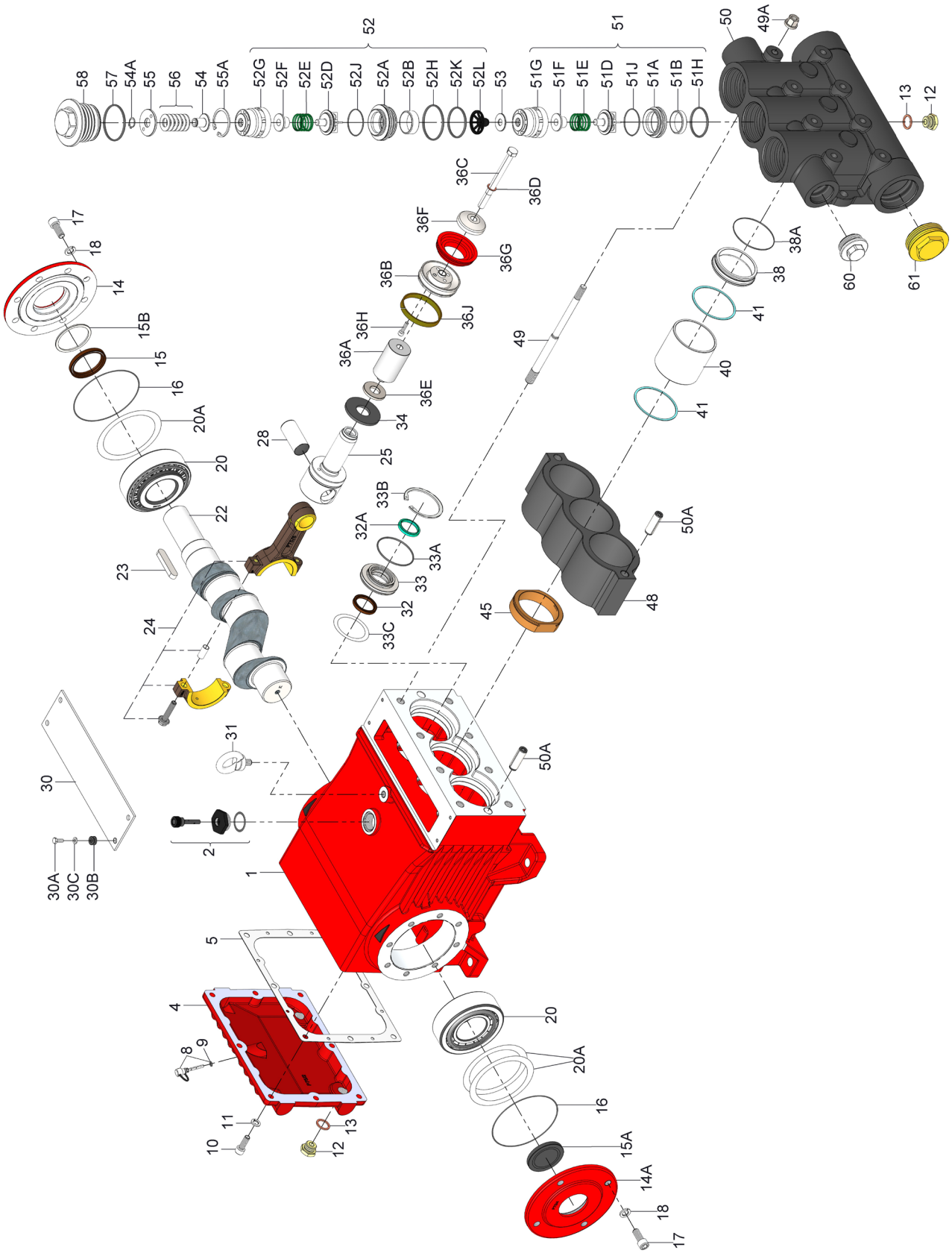

Overtensioning of the piston by excessive tightening of the tension screw and/or dirt or damage can lead to increased wear of the piston seal (36D).

Mounting the Valve Casing
Put centering ring (38) in the centring holes of the valve casing, then push valve casing carefully onto centring studs (50A).
Tighten hexagon nuts evenly and crosswise to the required torque.


The torque tension on the screws (49A) must be checked after 8-10 operating hours; the pump must be at zero pressure. Thereafter the tension is to be checked every 200 operating hours.

If required, supplementary assembly instructions can be requested from the manufacturer.

Exploded View - BPK7180



Parts List - BPK7180

ITEM	PART	DESCRIPTION	QTY.
1	03832	Crankcase	1
2	03833	Oil Filler Plug Assembly	1
4	07601	Crankcase Cover	1
5	05798	Gasket, Crankcase Cover	1
8	03215	Oil Dip Stick Assembly	1
9	01009	O-Ring, Dip Stick	1
10	22706	Hexagon Screw	8
11	06725	Spring Washer	8
12	07109	Drain Plug	3
13	06272	Gasket, Drain Plug	3
14	03855	Bearing Cover w/Centering Ring	1
14A	03834	Bearing Cover	1
15	03836	Radial Shaft Seal	1
15A	04822	Lid	1
15B	03837	Spacer Ring	1
16	03838	O-Ring	2
17	05642	Inner Hexagon Screw	8
18	05039	Spring Washer	8
20	05773	Taper Roller Bearing	2
20A	05774	Fitting Disc (Shim), 0.1mm	1-8
22	03839	Crankshaft	1
23	07614	Key	1
24	05777	Connecting Rod Assembly	3
25	05778	Crosshead Assembly	3
28	05779	Crosshead Pin	3
30	06661	Cover Plate	1
30A	07225-0100	Hexagon Screw	4
30B	13136	Grommet	4
30C	05053	Washer	4
31	07623	Eye Bolt	1
32	07624	Radial Shaft Seal	3
32A	03840	Flinger	3
33	03841	Seal Retainer	3
33A	07627	O-Ring	3
33B	07628	Circlip Ring	3
33C	07249	Fitting Disc (Shim), 0.1mm	3
34	13137	Oil Scraper	3
36A	03842	Extension	3
36B	03843	Piston Body	3
36C	03844	Hexagon Screw	3
36D	13262	Copper Ring	3
36E	03845	Pressure Disc	3
36F	03846	Plate	3
36G	03847	Piston Seal	3
36H	03623	Hexagon Socket Screw	12
36J	03848	Guide Ring	3

ITEM	PART	DESCRIPTION	QTY.
38	03856	Centering Ring	3
38A	03149	O-Ring	3
40	03849	Cylinder Liner	3
41	03850	Flat Seal	6
45	03851	Spacer Disc	3
48	03857	Intermediate Casing	1
49	04683	Stud Bolt	8
49A	13430	Hex Nut	8
50	04689	Valve Casing	1
50A	13162	Cylinder Stud	4
51	04684	Inlet Valve Assembly (51A-J)	3
51A	04685	Inlet Valve Seat	3
51B	04686	Guide Ring	3
51D	04688	Valve Plate	3
51E	05450	Valve Spring	3
51F	04690	Guide Sleeve	3
51G	04691	Spring Tension Cap	3
51H	05167	O-Ring	3
51J	07758	O-Ring	3
52	04692	Discharge Valve Assembly (52A-L)	3
52A	04693	Discharge Valve Seat	3
52B	03433	Guide Ring	3
52D	04688	Vale Plate	3
52E	05450	Valve Spring	3
52F	04690	Guide Sleeve	3
52G	04691	Spring Tension Cap	3
52H	03434	O-Ring	3
52J	07758	O-Ring	3
52K	05599	O-Ring	3
52L	13309	Spacer Sleeve	3
53	04694	Valve Holder	3
54	04695	Plate Spring Adapter	3
54A	04696	Clip Ring	3
55	04187	Tension Disc	3
55A	04697	Clip Ring	3
56	04698	Plate Spring	18
57	04699	O-Ring	3
58	04700	Valve Plug	3
60	13322	Plug, 1-1/2” BSP	1
61	13171	Plug, 2-1/2” BSP	1
	03852	Valve Puller Tool (not shown)	1
	03853	Gear End Assembly, (1-33C, 49, 49A, 50A)	1
	04703	Manifold Assembly, (50-61)	1
	03854	Piston Replacement Kit, (34-48)	1

Repair Kits - BPK7180

Plunger Packing Kit
 # 09883

Item	Part #	Description	Qty.
36D	13262	Copper Ring	3
36G	03847	Piston Seal	3
36J	03848	Guide Ring	3
38A	03149	O-Ring	3
41	03850	Flat Seal	6

Oil Seal Kit
 # 09221-BPK

Item	Part #	Description	Qty.
32	07624	Radial Shaft Seal	3
33A	13286	O-Ring	3

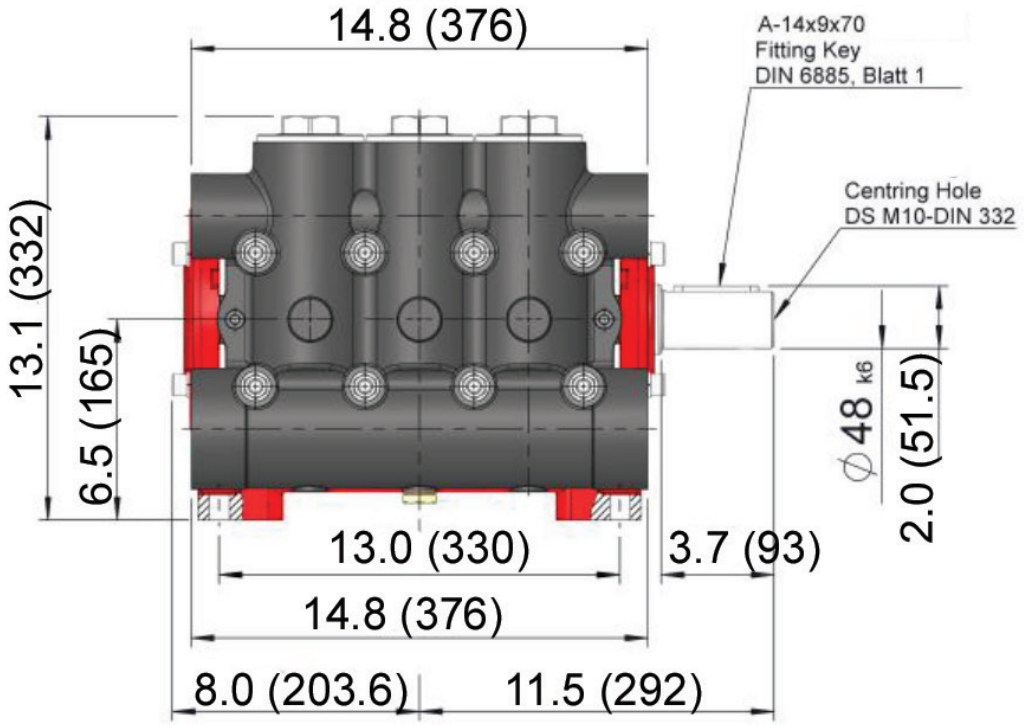
Valve Repair Kit
 # 09884

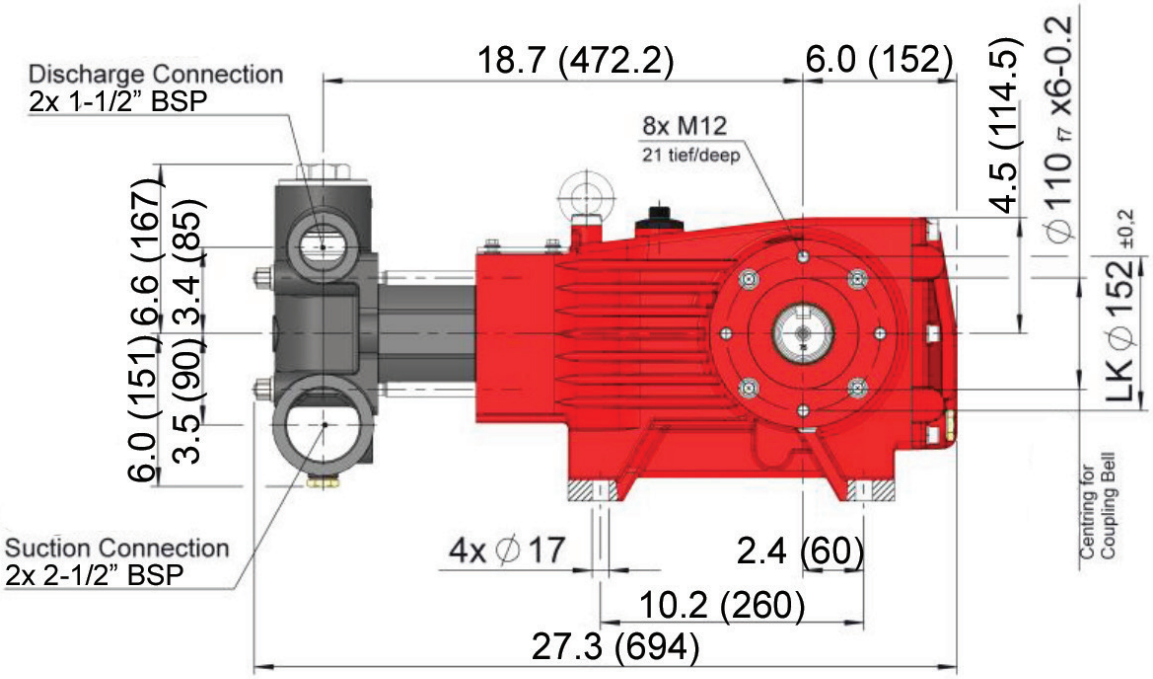
Item	Part #	Description	Qty.
51A	04685	Valve Seat, Inlet	3
51B	04686	Guide Ring	3
51D/52D	04688	Valve Plate	6
51E/52E	05450	Valve Spring	6
51F/52F	04690	Guide Sleeve	6
51G/52G	04691	Spring Tension Cap	6
51H	05167	O-Ring	3
51J/52J	07758	O-Ring	6
52A	04693	Valve Seat, Discharge	3
52B	03433	Guide Ring	3
52H	03434	O-Ring	3
52K	05599	O-Ring	3
52L	13309	Spacer	3
57	04699	O-Ring	3

Torque Specifications BPK7180			
Item	**Thread**	**Torque**	**Tool Needed/ Lubrication**
1			Glattol 4346 on contact surface to plunger guides
10	M10	33 ft.-lbs. (45 Nm)	
12	1/2” BSP	59 ft.-lbs. (80 Nm)	
15			Loctite 403
17	M12	64 ft.-lbs. (87 Nm)	
24	M10	33 ft.-lbs. (40 Nm)	
32			Loctite 403
36C	M12	36 ft.-lbs. (50 Nm)	Loctite 243
36H	M6	132 in.-lbs. (15 Nm)	Loctite 243
49	M16		Loctite 648 on Crankcase side
49A	M12	59 ft.-lbs. (80 Nm)	
58	M64x2	107 ft.-lbs. (145 Nm)	

Preventative Maintenance Check-List & Recommended Spare Parts List						
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		
Seal Spare Parts (1 kit/pump) (This page for kit list)					X	
Oil Seal Kit (1 kit/pump) (This page for kit lit)					X	
Valve Kit (1 kit/pump) (This page for kit list)						X

BPK7180 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

Performance Under Pressure
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