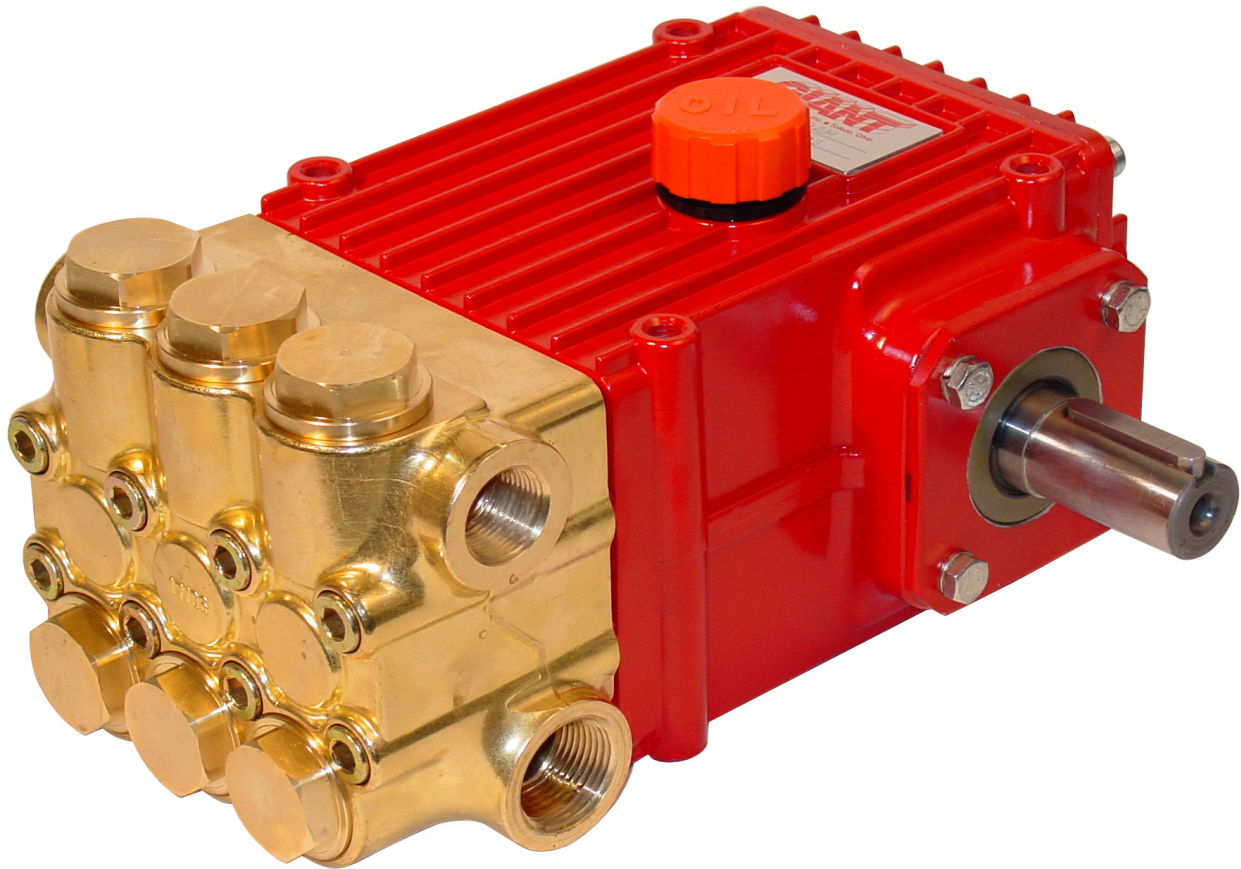


Model

Triplex Ceramic
Plunger Pump
Operating Instructions/
Repair and Service Manual

P423-BSP/P425-BSP



Updated 09/25

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INSTALLATION INSTRUCTIONS

Required NPSH refers to water (specific weight 1kg/dm³) at maximum permissible pump revolutions.

Operation and Maintenance

Check oil level prior to starting to ensure trouble-free water supply.

Important! If there is a **danger of frost**, the water in the pump and in the pump fittings (particularly the unloader valve) must be emptied. The second discharge port can also be used and the pump run "dry" for 1-2 minutes for this purpose.

Oil amount: 30.4 ounces (0.9 liters). Only use **ISO VG 220 industrial gear oil** (e.g. Aral Degol BG220) or **automobile gear oil SAE 90 GL4** (Giant p/n 01154).

Initial oil change after 50 operating hours and then every 500 hours, after 1 year if used less. 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.

NPSH values must be observed.

Maximum input pressure 145 PSI (10 bar), maximum suction head -4.35 PSI (-0.3 bar). Make sure that suction pulsation is sufficiently dampened - water column resonance must be avoided.

Important! If the pump is not used for a long period of time, it is possible the seals (23/23B) could become hard or brittle thus causing the pump to leak when put into operation.

If this is the case, we recommend these seals be replaced every 4 years.

Safety Rules

A safety valve is to be installed in accordance with the guidelines for liquid spraying units so that the admissible operating pressure cannot be exceeded by more than 10%. Pump operation without a safety valve as well as any excess in temperature or speed limits automatically voids the warranty.

When the pump is in operation, the drive shaft end and the coupling must be enclosed by a protective cover or a coupling bell.

Pressure in the discharge line and pump must be at zero before any maintenance to the pump takes place. Shut off 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 before starting the pump. In order to prevent air, or an air-water mixture being absorbed and to prevent cavitation occurring, the pump NPSHR (=suction head) and water temperature must be respected.

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 non-abrasive media with a specific weight similar to water.

Before pumping other liquids - especially inflammable, explosive and toxic media - the pump manufacturer must be consulted with regard to the resistance of the pump material. It is the responsibility of the equipment manufacturer and/or operator to ensure that all pertinent safety regulations are adhered to.

Specifications

	Max. Flow	Pressure	Max. Speed	Power Req'd.	Plunger Diameter	Stroke	NPSHR
Model	GPM (LPM)	PSI (bar)	RPM	BHP (kW)	In. (mm)	In. (mm)	ft. of head (mWs)
P423	8.2 (31.1)	2900 (200)	1450	16.4 (12.2)	0.87 (22)	0.79 (20)	21.0 (6.4)
P425	10.7 (40.4)	2465 (170)	1450	18.1 (13.5)	0.98 (25)	0.79 (20)	26.2 (8.0)

	U.S.	(Metric)
Inlet Pressure	-4.35 to 145 PSI	(-.3 to 10 bar)
Temperature of Pumped Fluids	Up to 160 °F	(70 °C)
Inlet Ports	(2) 1" BSP	
Discharge Ports	(2) 3/4" BSP	
Shaft Rotation	Top of pulley towards manifold	
Crankshaft Diameter	1.102"	(28mm)
Key Width315"	(8mm)
Shaft Mounting		Either side ¹
Weight	38.3 lbs.	(17.4 kg)
Crankcase Capacity	30.4 fl.oz.	(0.9 liters)
Volumetric Efficiency @ 1450		(0.95)
Mechanical Efficiency @ 1450		(0.83)

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.

NOTES:

In order to drive the pump from the side opposite the present shaft extension, simply remove the valve casing from the crankcase and rotate the pumps 180 degrees to the desired position. Be certain to rotate the seal case (item #20) as well, so that the weep holes are down at the six o'clock position. Exchange the oil fill and the oil drain plugs, also. Refer to the repair instructions as necessary for the proper assembly sequence.

P423 HORSEPOWER REQUIREMENTS

RPM	GPM	1000 PSI	1500 PSI	2000 PSI	2900 PSI
900	5.1	3.5	5.3	7.0	10.2
1050	5.9	4.1	6.1	8.1	11.8
1160	6.6	4.6	6.8	9.1	13.2
1300	7.4	5.1	7.7	10.2	14.8
1450	8.2	5.7	8.5	11.3	16.4

P425 HORSEPOWER REQUIREMENTS

RPM	GPM	1000 PSI	1500 PSI	2000 PSI	2465 PSI
750	5.6	3.8	5.7	7.6	9.4
900	6.7	4.6	6.9	9.1	11.3
1010	7.5	5.2	7.7	10.2	12.7
1120	8.3	5.7	8.6	11.4	14.1
1240	9.2	6.3	9.5	12.6	15.6
1450	10.7	7.4	11.1	14.7	18.2

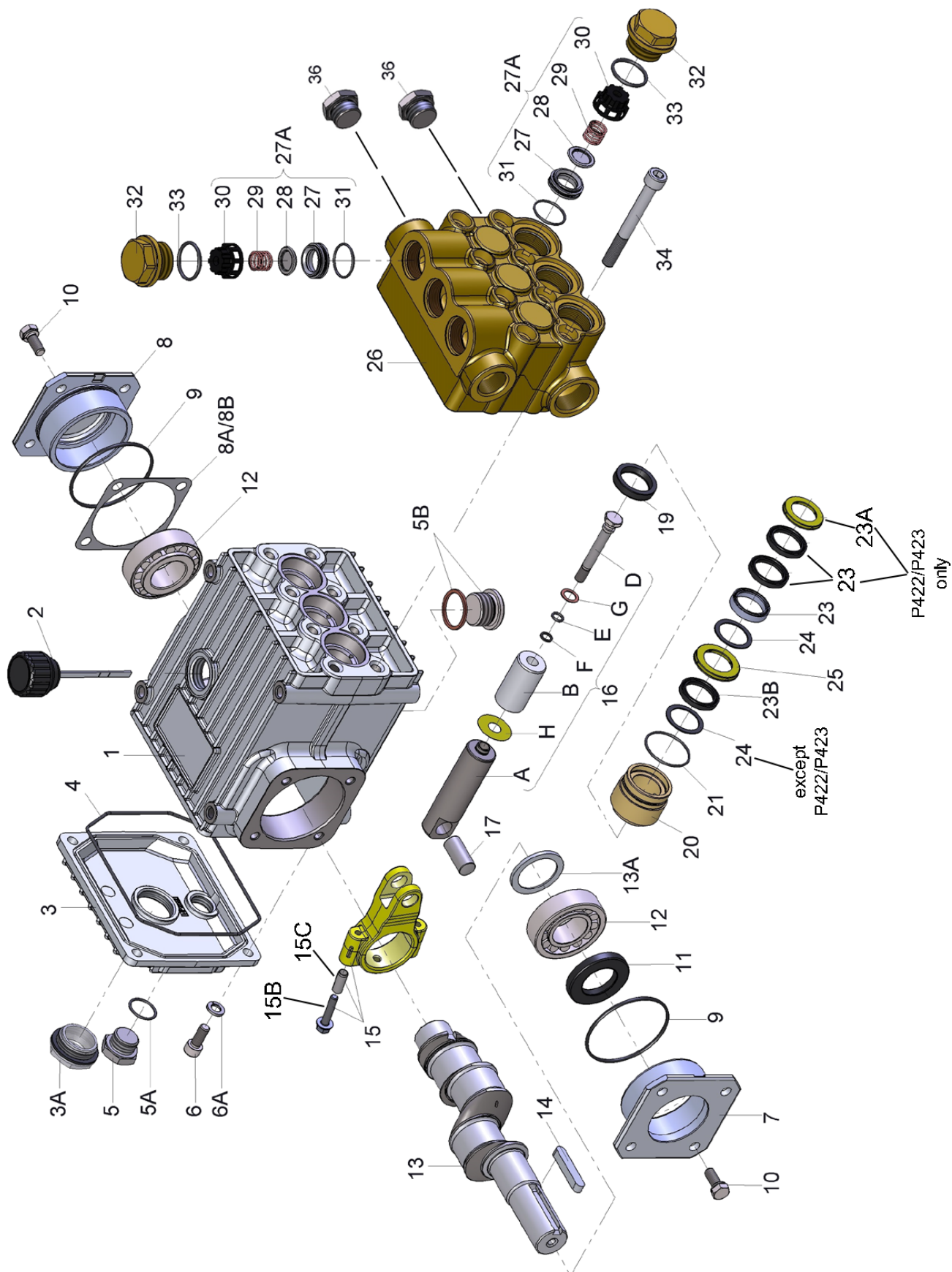
HORSEPOWER RATINGS:

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

We recommend a 1.15 service factor be specified when selecting an electric motor as the power source. To compute specific pump horsepower requirements, use the following formula:

$$HP = (GPM \times PSI) / 1450$$

EXPLODED VIEW - P423-BSP/P425-BSP PUMPS



P423-BSP/P425-BSP SPARE PARTS LIST

<u>ITEM</u>	<u>PART</u>	<u>DESCRIPTION</u>	<u>QTY.</u>	<u>ITEM</u>	<u>PART</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	08377	Crankcase	1	16F	07203	Backup Ring	3
2	08378	Oil Fill Plug with Gasket	1	16G	07258	Copper Washer	3
3	06479	Crankcase cover	1	16H	06431	Oil Scraper	3
3A	07186	Oil Sight Glass w/ Gasket	1	17	06790	Crosshead Pin	3
4	08380	O-Ring	1	19	05444	Oil Seal	3
5	07109	Oil Drain Plug	1	20	05601	Seal Case (P423)	3
5A	06015	Gasket for Oil Drain Plug	1	20	05443	Seal Case (P425)	3
5B	08092	Plug with Gasket	1	21	07266	O-Ring	3
6	01010	Screw	4	23	12254	V-Sleeve (P425)	3
6A	01011-0400	Spring Washer	4	23A	06251	Spacer Ring (P423 only)	3
7	04739	Bearing Cover, Open	1	23B	13390	Weep Seal (P423)	3
8	05291	Bearing Cover, Closed	1	23B	12255	Weep Seal (P425)	3
8A	05292	Shim	1-3	24	06252	Pressure Ring (P423)	3
8B	05293	Shim (May not be present)	1-3	24	08376	Pressure Ring (P425)	6
9	01016	O-Ring	2	25	06254	Weep Return Ring (P423)	3
10	07114	Screw with Washer	8	25	08394	Weep Return Ring (P425)	3
11	07459	Radial Shaft Seal	1	26	06999	Manifold	1
12	05350	Taper Roller Bearing	2	27A	08408	Valve Assembly	6
13	04740	Crankshaft	1	27	08370	Valve Seat	6
13A	04742	Spacer Ring	1	28	06791-0100	Valve Plate	6
14	08091	Fitting Key	1	29	06377-0100	Valve Spring	6
15	08390	Connecting Rod Assembly	3	30	08372	Valve Spring Retainer	6
15B	05349	Connecting Rod Screw	6	31	07212	O-Ring	6
15C	05348	Adapter Sleeve	6	32	08373	Plug	6
16	05351	Plunger Assy., 25mm, For items 16A-16H	3	33	07214	O-Ring (A, B, G & H)	6
16A	05352	Plunger Base	3	33	07214-0001	O-Ring, Viton (J & K)	6
16B	08398	Plunger Pipe	3	34	08396	Cap Screw	8
16D	08399	Tensioning Screw	3	36	07703	Plug, 3/4" BSP	1
16E	07023	O-Ring	3	36A	06272	Copper Gasket	1
				37	12249	Plug, 1" BSP	1

P423-BSP/P425-BSP REPAIR KITS

Plunger Packing Kit - # 09140

<u>Item</u>	<u>Part #</u>	<u>Description</u>	<u>Qty</u>
21	07266	O-Ring	3
23	12254	V-Sleeve	3
23B	12255	Weep Seal	3
24	08376	Pressure Ring	6

Valve Assembly Kit - # 09143

<u>Item</u>	<u>Part #</u>	<u>Description</u>	<u>Qty.</u>
27A	08408	Valve Assembly, Complete	6
33	07214	O-Ring	6

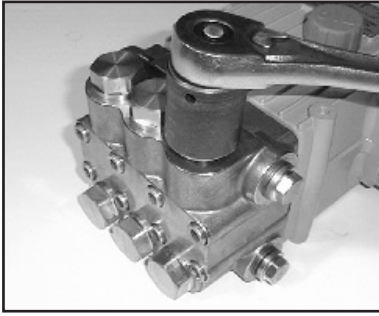
Oil Seal Kit

P400 Series - # 09641

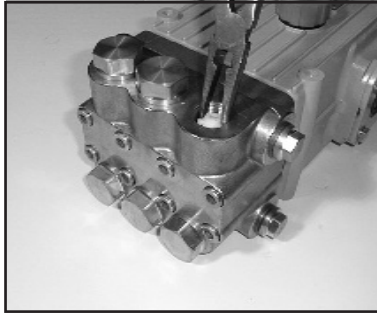
<u>Item</u>	<u>Part #</u>	<u>Description</u>	<u>Qty</u>
19	05444	Oil Seal	3

Repair Instructions - P423-BSP/P425-BSP

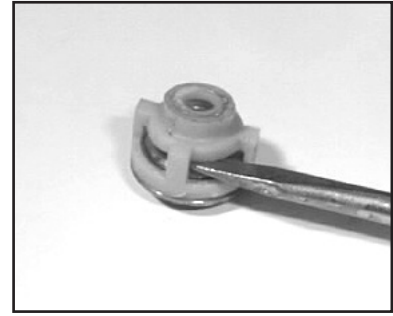
Note: Always take time to lubricate all metal and nonmetal parts with a light film of oil before reassembly. This step will ensure proper fit, at the same time protecting the pump nonmetal parts (i.e., the elastomers) from cutting and scoring.



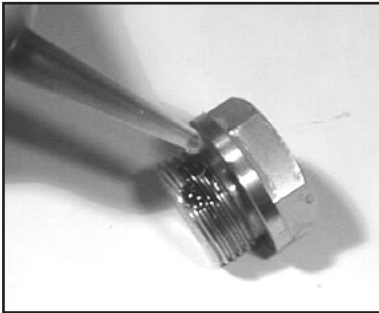
- 1) With a socket wrench, remove the three discharge valve plugs and three inlet valve plugs (32). Inspect the o-ring (33) for wear and replace if damaged.



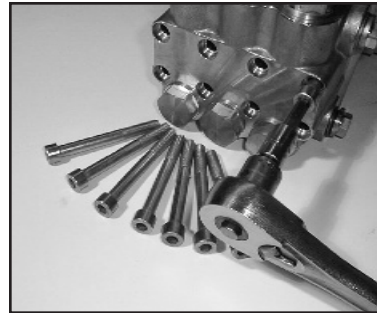
- 2) Using needle nose pliers, remove the inlet and discharge valve assemblies (27A). Note: It may become necessary to remove the valve seat (27) from the valve casing using a slidehammer.



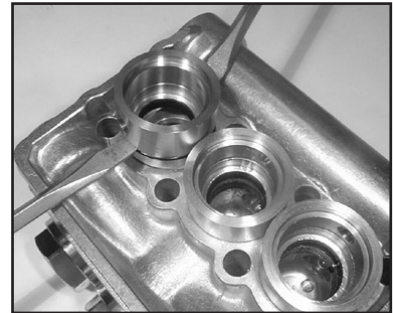
- 3) By inserting a small screw driver between the valve seat (27) and the valve spring retainer (30), the valve assembly can be separated.



- 4) Remove the o-ring (31). Inspect all parts for wear and replace as necessary. Apply one drop of loctite 243 to the valve plugs (32) and tighten to 107 ft.-lbs. (145 NM).



- 5) Use a 8mm allen wrench to remove the 8 socket head cap screws (34). Carefully slide the valve casing (26) out over the plungers.



- 6) Remove seal case (20) and weep return rings (25) from the valve casing.



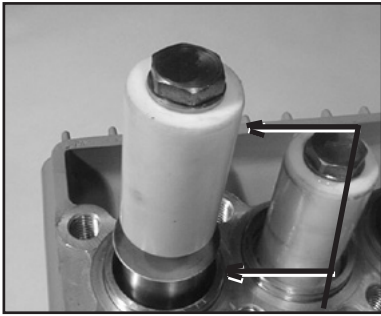
- 7) Remove the pressure rings (24) and v-sleeves (23).



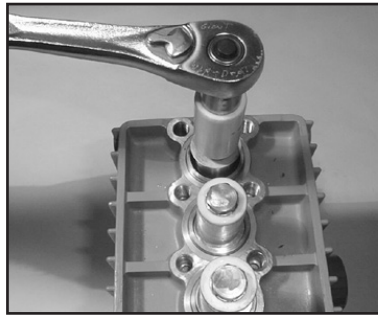
- 8) Remove the weep grooved seal (23B) together with pressure ring (24) out of the seal case (20). Check O-rings (21).

IMPORTANT! The grooved seal (23) on the high-pressure side is to be fitted carefully into the valve casing (26) using a screwdriver. Under no circumstances must the seal surface in the valve casing or the seal lip be damaged.

Repair Instructions - P423-BSP/P425 -BSP



- 9) Check surfaces of plunger (16). Damaged surfaces cause accelerated seal wear. Deposits of all kinds must be removed from the plungers.

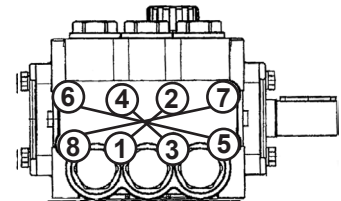


- 10) If the plunger pipe (16B), is damaged or worn, remove tension screw (16D) and plunger pipe (16B). Check and clean plunger surface (16A) and check flinger (16H). Cover thread of tension screw (16D) with a thin film of Loctite and tighten carefully to 20.7 ft.-lbs. (28 Nm).

- 11) If oil leaks under the plunger (16), the oil seals (19) need to be replaced. Remove oil plug (5) and drain oil. With the valve casing (26) and seal case (20) removed (ref. instructions #5 & 6), and plunger disassembled (ref. #10), carefully pry out the oil seal with a flat screwdriver and replace it with a new one. Make sure that the oil seal groove faces inward towards the oil.

NOTE: Be careful not to score the crankcase guides where the oil seal sits and where the plunger base (16A) moves through the crankcase (1).

- 12) After installation of high pressure seals (23), place seal case (20) with weep seals & pressure ring installed, weep return ring (25) and high pressure weep return ring (24) over plungers. Slide valve casing over plungers and seat firmly. Replace the 8 socket head cap screws (34) and tighten to 30 ft.-lbs. (40 Nm) in a crossing pattern (as shown at right).



IMPORTANT!

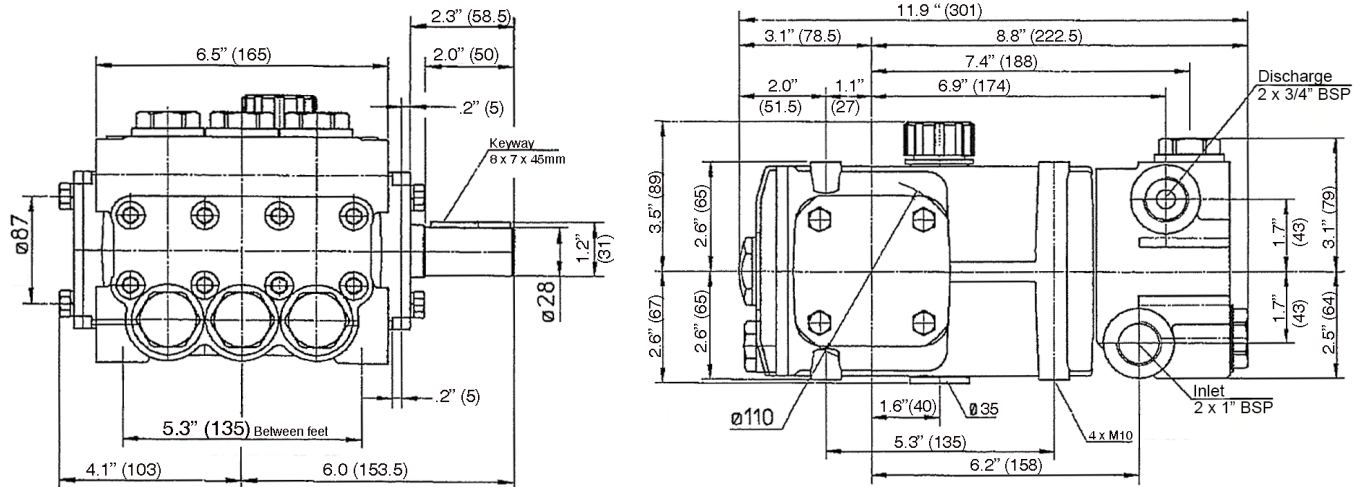
Plunger surfaces are not to be damaged. If there are lime deposits in the pump, care must be taken that the drip-return bore in parts (25) and (26) ensure trouble-free drip-return.

Torque Specifications - P423-BSP/P425-BSP

Position	Item #	Description	Lubrication	U.S. (Metric)
3A	07186	Oil Sight Glass	Loctite 5910	106 in.-lbs. (12 Nm)
5	07109	Oil Drain Plug		59 ft.-lbs. (80 Nm)
5B	08092	Plug with Gasket		59 ft.-lbs. (80 Nm)
6	01010	Screw		111 in.-lbs. (12.5 Nm)
10	07114	Screw with Washer		133 in.-lbs. (15 Nm)
15B	05349	Connecting Rod Screw		97 in.-lbs. (11 Nm)
16D	08399	Tensioning Screw	Loctite 243	20.7 ft.-lbs. (28 Nm)
32	08373	Plug	Loctite 243	107 ft.-lbs. (145 Nm)
34	08396	Cap Screw	Lightly Oil	30 ft.-lbs. (40 Nm)

Contact Giant Industries for service school information. Phone: (419) 531-4600

Dimensions - P423-BSP/P425-BSP - 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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