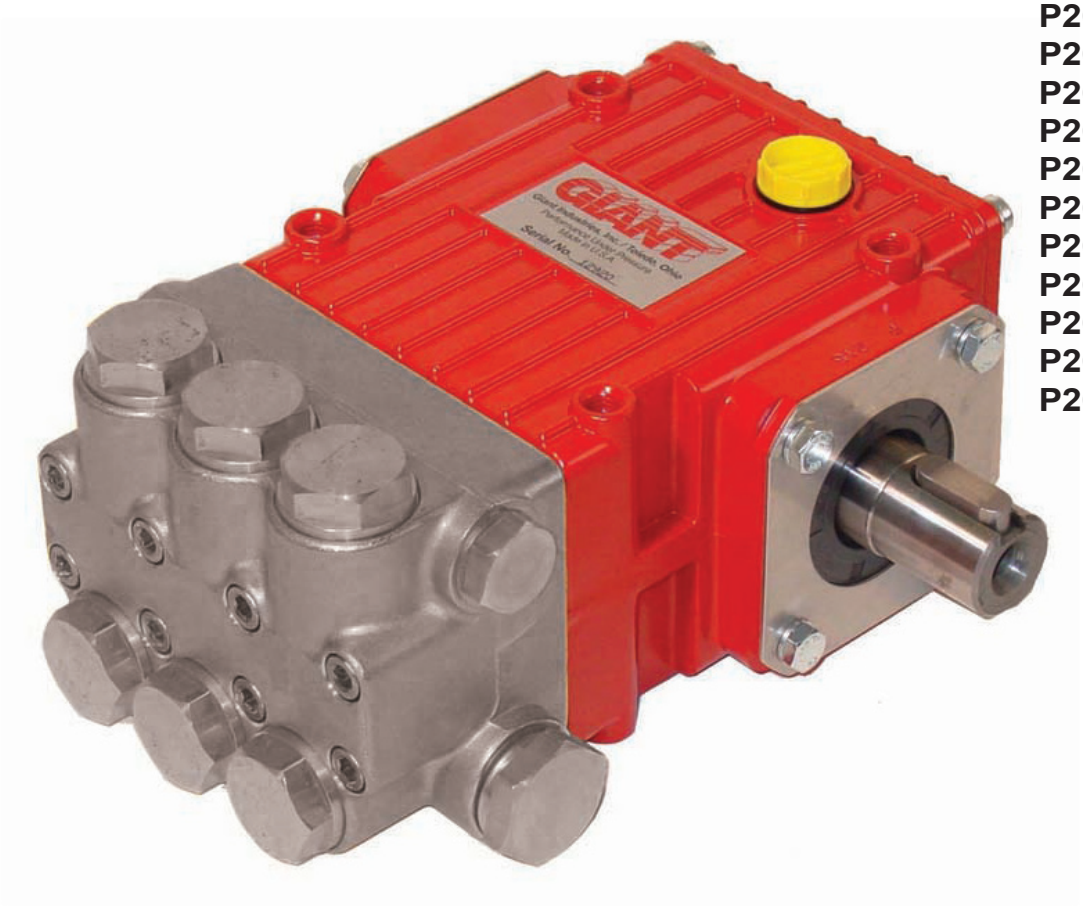
Series P200-12mm versions

316 Stainless Steel

Triplex Ceramic Plunger Pump Operating Instructions/ Repair and Service Manual

For Models:
P205-5100
P205-5111
P205-5121
P205-5180
P206-5100
P206-5111
P206-5121
P206-5180
P209-5100
P209-5111
P209-5121
P209-5180



GIANT
Performance Under Pressure

Updated 08/15

Contents:

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 160^0 F, it is important to insure a positive head 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 chart on page 3.

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.

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.

Use Giant Oil - P/N 01153
(20W-50)

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 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 P205-5100/-5111/-5121/-5180

Ratings	U.S.	Metric
Flow	0.5 GPM	2.0 l/m
Pressure	2000 PSI	140 bar
Inlet Pressure	Up to 90 PSI	6 bar
Crankshaft Speed		Up to 1750 RPM
Plunger Diameter	.47”	12mm
Stroke	.13”	3.4mm
Temperature of Pumped Fluids	Up to 160° F	71° C
Inlet Ports		(2) 1/2” BSP
Discharge Ports		(2) 3/8” BSP
Shaft Rotation	Top of Pulley Towards Fluid End	
Crankshaft Diameter	.94”	24mm
Key Width		8mm
Shaft Mounting	Right Side Facing Manifold	
Weight	11 lbs. 11oz.	5.3 kg
Crankcase Oil Capacity		7.5 fl.oz.
Extended Crankcase Oil Capacity		9.0 fl.oz.
Volumetric Efficiency @ 1750 RPM		0.94

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.

NOTE:

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 crankcase 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.

P205 Horsepower Requirements				
RPM	GPM	1000 PSI	1500 PSI	2000 PSI
500	0.14	0.10	0.14	0.19
1000	0.29	0.20	0.30	0.40
1750	0.50	0.34	0.52	0.69

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 X PSI) / 1450

Specifications
Model P206-5100/-5111/-5121/-5180

Ratings	U.S.	Metric
Flow	0.8 GPM	3.0 l/m
Pressure	2000 PSI	140 bar
Inlet Pressure	Up to 90 PSI	6 bar
Crankshaft Speed		Up to 1750 RPM
Plunger Diameter	.47”	12mm
Stroke	.13”	3.4mm
Temperature of Pumped Fluids	Up to 160° F	71° C
Inlet Ports		(2) 1/2” BSP
Discharge Ports		(2) 3/8” BSP
Shaft Rotation	Top of Pulley Towards Fluid End	
Crankshaft Diameter	.94”	24mm
Key Width		8mm
Shaft Mounting	Right Side Facing Manifold	
Weight	11 lbs. 11oz.	5.3 kg
Crankcase Oil Capacity		7.5 fl.oz.
Extended Crankcase Oil Capacity		9.0 fl.oz.
Volumetric Efficiency @ 1750 RPM		0.94

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.

NOTE:

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 crankcase 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.

P206 Horsepower Requirements				
RPM	GPM	1000 PSI	1500 PSI	2000 PSI
500	0.23	0.16	0.24	0.32
1000	0.46	0.32	0.48	0.63
1750	0.80	0.55	0.83	1.10

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 X PSI) / 1450

Specifications
Model P209-5100/-5111/-5121/-5180

Ratings	U.S.	Metric
Flow	1.5 GPM	5.7 l/m
Pressure	2000 PSI	140 bar
Inlet Pressure	Up to 90 PSI	6 bar
Crankshaft Speed		Up to 1750 RPM
Plunger Diameter	.47”	12mm
Stroke	.13”	3.4mm
Temperature of Pumped Fluids	Up to 160° F	71° C
Inlet Ports		(2) 1/2” BSP
Discharge Ports		(2) 3/8” BSP
Shaft Rotation	Top of Pulley Towards Fluid End	
Crankshaft Diameter	.94”	24mm
Key Width		8mm
Shaft Mounting	Right Side Facing Manifold	
Weight	11 lbs. 11oz.	5.3 kg
Crankcase Oil Capacity		7.5 fl.oz.
Extended Crankcase Oil Capacity		9.0 fl.oz.
Volumetric Efficiency @ 1750 RPM		0.94

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.

NOTE:

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 crankcase 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.

P209 Horsepower Requirements				
RPM	GPM	1000 PSI	1500 PSI	2000 PSI
500	0.43	0.30	0.44	0.59
1000	0.86	0.59	0.89	1.19
1750	1.50	1.03	1.55	2.07

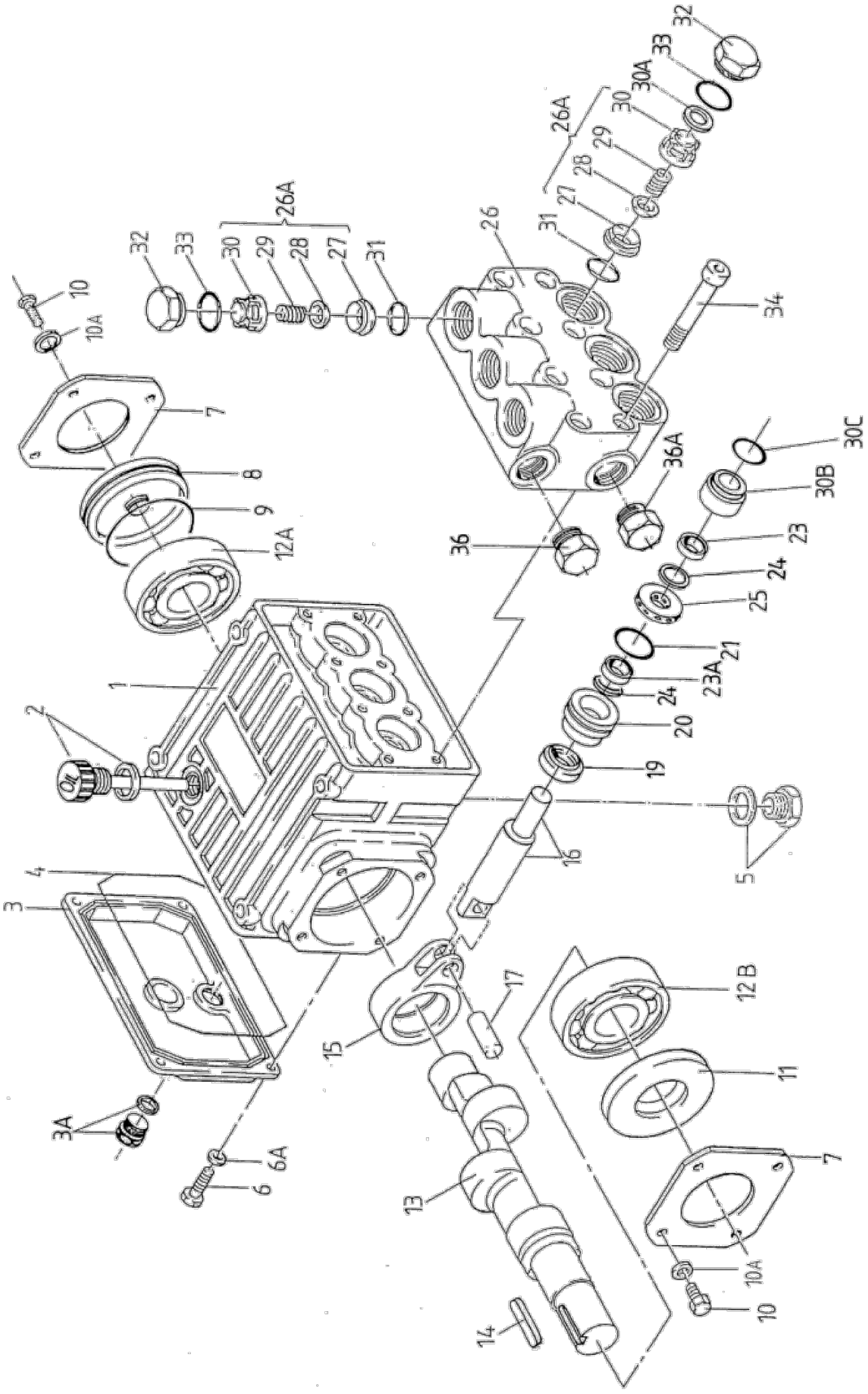
HORSEPOWER RATINGS:

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 X PSI) / 1450

P200-5100/-5111/-5121/5180 - 12mm - EXPLODED VIEW



P200-5100/-5111/-5121/-5180 SERIES
PARTS LIST - 12mm Versions

ITEM	PART NO.	DESCRIPTION	QTY.
1	08300A	Crankcase, Anodized	1
2	06773	Oil Dipstick with O-Ring	1
3	08302A	Crankcase Cover, Short	1
3A	07190-0100	Drain Plug w/Gasket	1
4	08005	O-Ring	1
5	08185-0100	Oil Drain Plug with Gasket	1
6	07188-0100	Screw, Short Cover	4
6A	07223-0100	Spring Washer	4
7	08303	Bearing Cover I	2
8	08490	Sight Glass	1
9	08492	O-Ring	1
10	07225-0100	Hexagon Screw	8
10A	07223-0100	Spring Washer	8
11	01166	Radial Shaft Seal	1
12A	08020	Ball Bearing	1
12B	01020	Ball Bearing	1
13	06694	Crankshaft (P205)	1
13	08465	Crankshaft (P206)	1
13	08440	Crankshaft (P209)	1
14	06207	Woodruff Key	1
15	08333	Connecting rod	3
16	06641	Plunger Complete (except -5180)	3
16	06641-0100	Plunger Complete (-5180 only)	3
17	08442	Wrist Pin	3
19	08356	Oil Seal	3
20	06645-0100	Seal Case	3
21	08443	O-Ring	3
21	08443-0001	O-Ring (-5111/-5121 versions)	3
23	07391	V-Sleeve (-5100/-5180 versions)	3
23	07391-0010	V-Sleeve (-5111 versions)	3
23	07391-0020	V-Sleeve (-5121 versions)	3
23A	08598	V-Sleeve, Weep (-5100 versions)	3
23A	07391-0010	V-Sleeve (-5111 versions)	3
23A	07391-0020	V-Sleeve, Weep (-5180/-5121 versions)	3
24	07392	Support Ring	6
25	06646-0100	Weep Return Ring	3
26	06582-5000	Valve Casing	1
26A	04273	Valve Assembly	6
27	07849-0100	Valve Seat	6
28	06809	Valve Plate	6
29	06816	Valve Spring	6
30	07907	Valve Spring Retainer	6
30A	06824	Spacer Ring	3
30B	05510-0100	Sleeve	3
30C	06015	O-Ring	3
30C	06015-0001	O-Ring (-5111/-5121 versions)	3
31	07853-0001	O-Ring	6
32	07928-0100	Valve Plug	6
33	07913-0001	O-Ring (-5180 versions)	6
33	07913-0001	O-Ring (except -5180)	3
34	08316-0100	Hex Hed Cap Screw	8
36	12138	Plug, 3/8” BSP	1
36A	07109-0400	Plug, 1/2” BSP	1

P200-5100/-5111/-5121/-5180 REPAIR KITS

Plunger Packing Kits

Part# 09656 (“-5100” Pumps)

Item	Part #	Description	Qty.
21	08443	O-Ring	3
23	07391	V-Sleeve	3
23A	08598	V-Sleeve, weep	3
24	07392	Support Ring	6

Part# 09656-0021 (“-5121” Pumps)

Item	Part #	Description	Qty.
21	08443-0001	O-Ring	3
23	07391-0020	V-Sleeve	3
23A	07391-0020	V-Sleeve, weep	3
24	07392	Support Ring	6

Part# 09656-0011 (“-5111” Pumps)

Item	Part #	Description	Qty.
21	08443-0001	O-Ring	3
23	07391-0010	V-Sleeve	3
23A	07391-0010	V-Sleeve, weep	3
24	07392	Support Ring	6

Part# 09657 (“-5180” Pumps)

Item	Part #	Description	Qty.
21	08443	O-Ring	3
23	07391	V-Sleeve	3
23A	07391-0020	V-Sleeve, weep	3
24	07392	Support Ring	6

Valve Assembly Kit

Part# 09775

Item	Part #	Description	Qty.
26A	04273	Valve Assembly	6
31	07853-0001	O-Ring	6
33	07913-0001	O-Ring	6

Oil Seal Kit

Part# 09144

Item	Part #	Description	Qty.
19	08356	Oil Seal	3

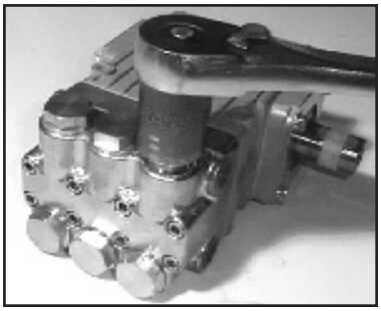
P200-5100 TORQUE SPECIFICATIONS

Position	Item#	Description	Torque Amount (NM)
32	07928-0100	Valve Plug	55 ft.-lbs. (75 NM)
34	08316-0100	Hex Head Cap Screw, Valve Casing	88 in.-lbs.(10-12 NM)

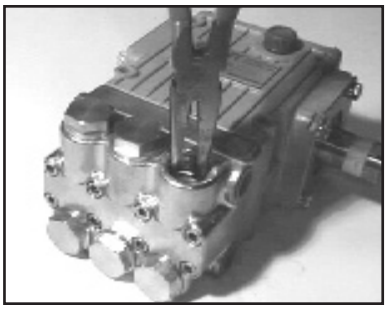
Preventative Maintenance Check-List & Recommended Spare Parts List

Check	Daily	Weekly	50hrs	Every 500 hrs	Every 1500 hrs	Every 3000 hrs
Oil Level/Quality	X					
Oil Leaks	X					
Water Leaks	X					
Belts, Pulley		X				
Plumbing		X				
		Recommended Spare Parts				
Oil Change (1 Quart) p/n 1153			X	X		
Seal Spare Parts (1 kit/pump) (See page 7 for kit list)					X	
Oil Seal Kit (1 kit/pump) (See page 7 for kit list)					X	
Valve Spare Parts (1 kit/pump)						X

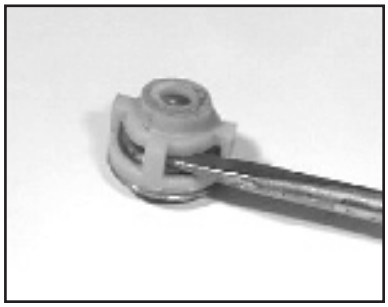
REPAIR INSTRUCTIONS - P200-5100/-5111/-5121-5180 PUMPS - 12mm Versions



1. With a 22mm socket wrench, remove the (3) discharge valve plugs and (3) inlet valve plugs (32) Inspect the o-ring (33) for wear and replace if damaged.

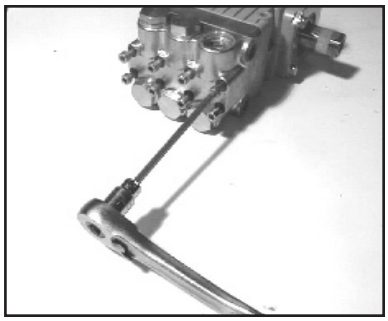


2. Using a needle nose pliers, remove the inlet and discharge valve assemblies (27-30) and o-ring (31). Inspect all parts for wear and replace as necessary.

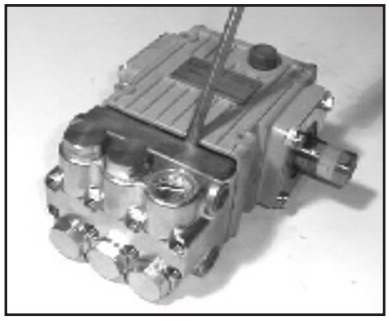


3. By inserting a small screw driver between the valve seat (27) and the valve spring retainer (30), the valve assembly can be separated.

4. Remove the o-ring (31) Inspect all parts for wear. Apply one drop of Loctite 243 to the valve plugs (32) and tighten to 55 ft.-lbs. (75 NM).



5. Next, use a 5mm allen wrench to remove the eight (8) socket head cap screws (34).



6. Carefully slide the valve casing (26) out over the plungers.

7. Remove the weep return ring (25), pressure ring (24), and v-sleeve (23) from the valve casing (26). Remove the rear v-sleeve (23A) from the seal case (20). Inspect pressure ring (24) behind the seal case (20).Inspect all parts, including o-ring (21) for wear and replace as necessary.

8. Check surfaces of plunger (16). A damaged surface will cause accelerated wear on the seals. Deposits of any kind must be carefully removed from the plunger surface. A damaged plunger must be replaced!

9. If the crankcase oil seals (19) are to be replaced, they can be removed by first removing the crankshaft (13), connecting rods (15) and plunger assembly (16) from the gear end. Then the oil seals can be pushed out from the rear. Please contact Giant for details.

10. If the ceramic plunger pipe (16B) is damaged, replace entire plunger assembly by removing crankshaft (13). Contact Giant for further details.

NOTE: If there are deposits of any kind (i.e., lime deposits) in the valve casing, be certain that the weep holes in the weep return ring (25) and valve casing (26) have not been plugged.

Reassembly sequence of the P200-5100/-5111/-5121/-5180 PUMP

1) If oil seals (19) were removed, replace with seal lip towards crankcase. Lubricate seals before replacing.

   Contact Giant for assistance with the reassembly of the gear end.

2) Replace seal case (20) with o-rings (21) over plungers. Generously lubricate o-rings and oil seal before reassembly. Replace weep v-sleeve (23A) over plungers (16). For the P206/209 pumps, replace pressure ring (24) along with v-sleeve (23A).

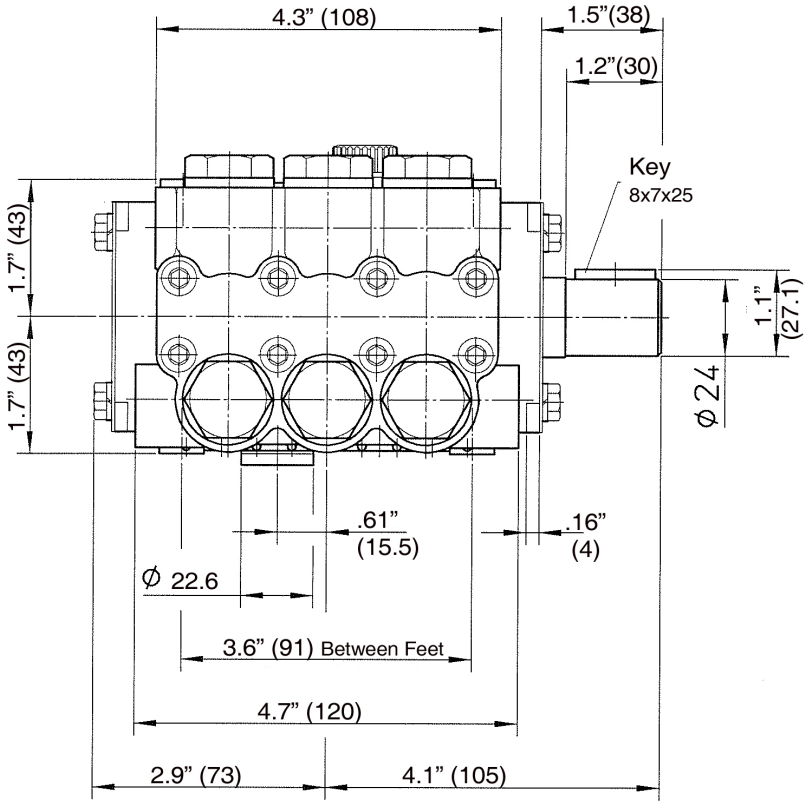
3) Generously lubricate v-sleeve (23). Assemble v-sleeves (23) into sleeve (30B). Assemble weep return ring (25) and pressure ring (24) over plungers (16). Assemble o-ring (30C) over sleeve (30B) and place sleeve (30B) into valve casing (26). Slide valve casing over plungers and seat firmly. Replace the eight socket head cap screws (34) and tighten to 88 inch-pounds (10-12 NM) in a crossing pattern.

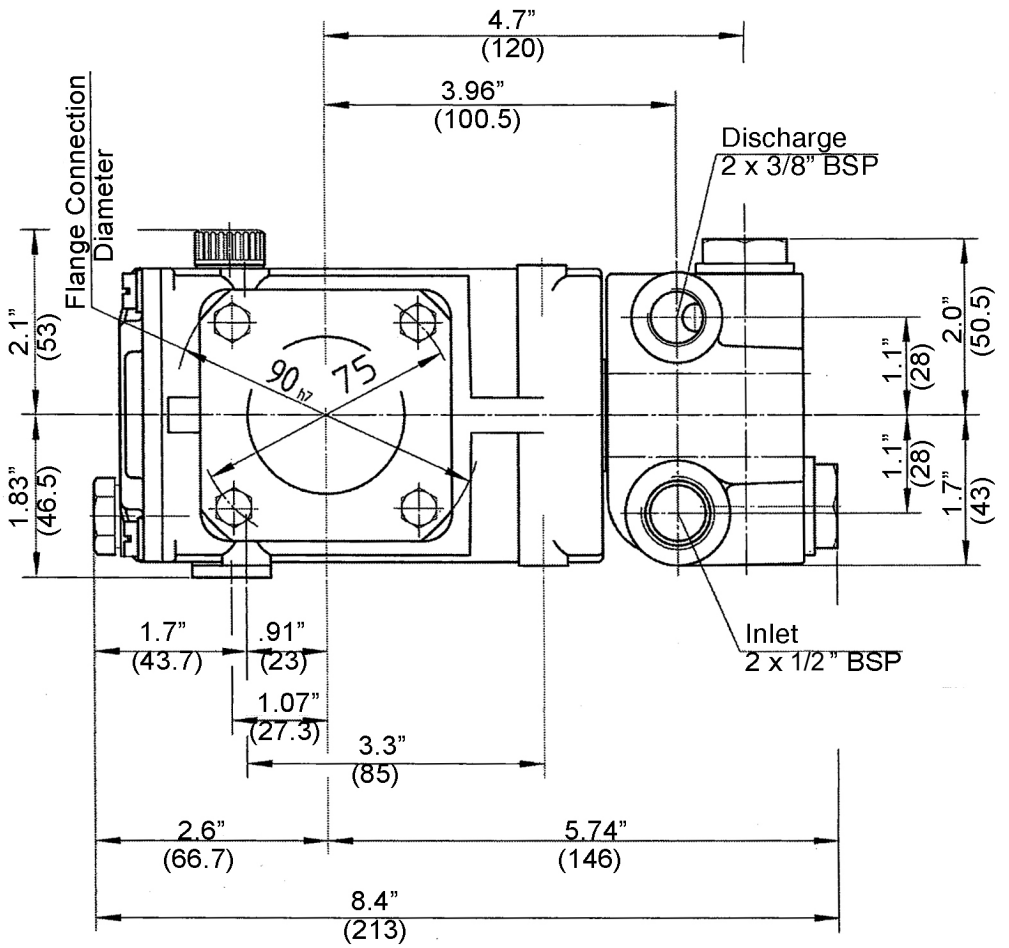
4) Replace the six o-rings (31) and the six valve assemblies (26A). Now replace the six valve plug
   o-rings (33). Apply one drop of Loctite 243 to the valve plugs (32) and tighten to 55 ft.-lbs. (75 NM).

For maintenance of the gear end of your pump contact Giant Industries or your local distributor. Phone: 419/531-4600

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

P200-5100/-5111/-5121/5180 - 12mm Version - 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. For portable pressure washers and car wash applications, the discharge manifolds will never fail, period. If they ever fail, we will replace them free of charge. Our other pump parts, used in portable pressure washers and in car wash applications, are warranted for five years from the date of shipment for all pumps used in NON-SALINE, clean water applications.
2. One (1) year from the date of shipment for all other Giant industrial and consumer pumps.
3. Six (6) months from the date of shipment for all rebuilt pumps.
4. 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.

GIANT
Performance Under Pressure

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08/15 P200-5100-12mm.PMD