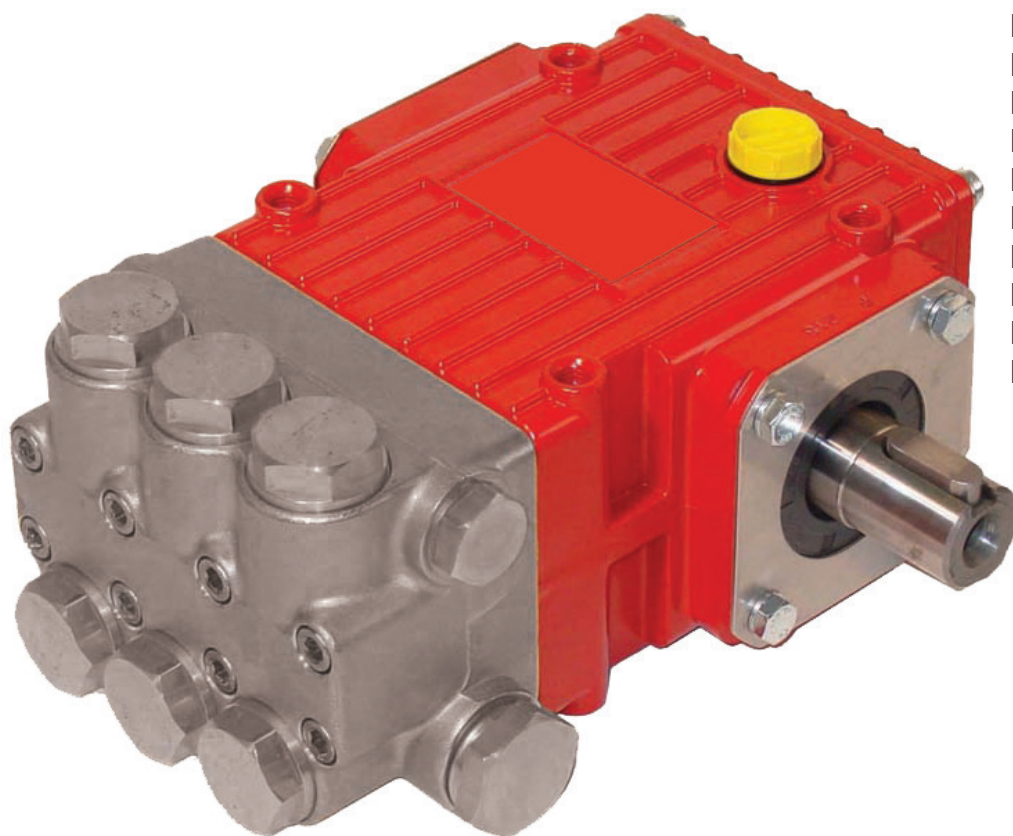


# Series P200-12mm versions 316 Stainless Steel

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 06/20

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# INSTALLATION INSTRUCTIONS

Required NPSH refers to water: Specific weight 1kg/dm<sup>3</sup>, viscosity 1°E at maximum permissible revolutions .

## Operation and Maintenance

Check oil level prior to starting and 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: Use only 8.1 ounces (0.24 litres) of Giant Oil (p/n 01154) 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 the oil once per year.

**Caution!** When operating in damp places or with high temperature fluctuations. Should condensate (frothy oil) occur in the gear box the oil must be changed immediately.

## Keep NPSH under control.

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.



## 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 maximum admissible operating pressure can not be exceeded by more than 10 %.

When the pump is in operation, the drive shaft end and the coupling must be covered up by either a contact-protector or by a coupling bell.

Before any maintenance to the pump takes place the pressure in discharge line and in pump must be at zero. Close suction line. Disconnect fuses to ensure that the driving motor is not accidentally switched on.

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 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.**

# Pump Specifications

Model	Max. Flow		Nominal/ Intermittent Pressure		Max. Speed	Plunger Diameter		Stroke		Power Required	
	GPM	l/min	PSI	bar	RPM	in	mm	in	mm	BHP	kW
P205	0.38	1.4	2500	170	1750	0.47	12	0.13	3.4	0.86	0.64
P206	0.73	2.8	2500	170	1750	0.47	12	0.22	5.5	1.4	1.0
P209	1.5	5.7	2500	170	1750	0.47	12	0.39	10	2.6	1.9

\* Positive inlet pressure required- Make sure that suction pulsation is sufficiently dampened-water column resonance must be avoided.

## Common Specifications

	<u>U.S.</u>	<u>Metric</u>
Max. Temperature of Pumped Fluids.....	160 °F	70 °C
Inlet Pressure .....	90 PSI	6.2 bar
Inlet Ports .....		(2) 1/2" BSP
Discharge Ports.....		(2) 3/8" BSP
Shaft Rotation.....		Top of Pulley Towards Fluid End
Crankshaft Diameter.....	0.94"	24 mm
Key Width .....	0.31"	8 mm
Shaft Mounting .....		Either Side
Weight .....	13.25 lbs.	6.0 Kg
Crankcase Oil Capacity .....	8.1 fl.oz.	0.24 Liter

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 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.

### Horsepower Ratings:

We recommend a 1.15 service factor be specified when selecting an electric motor as the power source. To compute electric motor horsepower required, use the following formula:  $HP = (GPM \times PSI) / 1450$ . The formula to determine the horsepower required for a gas engine is:  $HP = (GPM \times PSI) / 1150$ . The formula to determine the horsepower required for a diesel engine is:  $HP = (GPM \times PSI) / 1250$ .

### For the Application of a Hydraulic Motor:

To Determine the Torque of a Hydraulic Motor --  $(GPM \times PSI \times 36.77) / RPM = \text{Torque (in-lbs)}$

### Calculating RPM / GPM of Pump:

A pump must be connected to an electric motor or gas or diesel engine with the correct ratio of pulleys and belts to attain the required speed and GPM. The use of a Variable Frequency Drive (VFD) may also be used to control the RPM of a properly sized electric motor when variable flows are required.

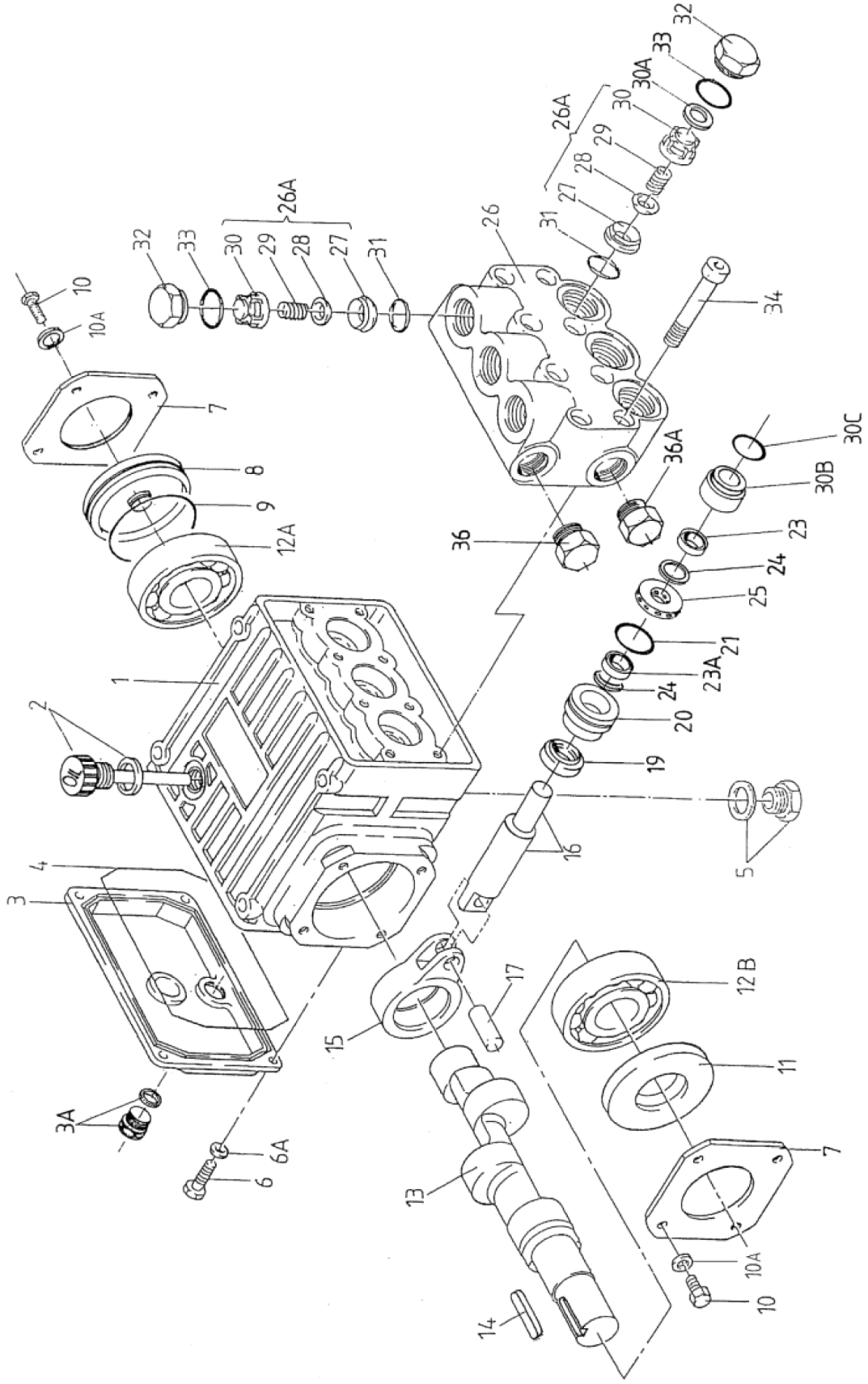
$$(\text{Max. Pump RPM} / \text{Rated Pump GPM}) \times \text{Required Pump GPM} = \text{Required Pump RPM}$$

To calculate a pulley diameter one (1) pulley diameter and the required pump RPM must be known:

$$(\text{Pump RPM} \times \text{Pump Pulley Diameter}) / \text{Motor RPM} = \text{Motor Pulley Diameter}$$

$$(\text{Motor RPM} \times \text{Motor Pulley Diameter}) / \text{Pump RPM} = \text{Pump Pulley Diameter}$$

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



# P200-5100/-5111/-5121/-5180 SERIES

## PARTS LIST - 12mm Versions

ITEM	PART NO.	DESCRIPTION	QTY.	ITEM	PART NO.	DESCRIPTION	QTY.
1	08300C	Crankcase, Anodized	1	23	07391	V-Sleeve	
2	08301	Oil Dipstick with O-Ring	1			(-5100/-5180 versions)	3
3	08302	Crankcase Cover, Short	1	23	07391-0010	V-Sleeve (-5111 versions)	3
3A	07190-0100	Drain Plug w/Gasket	1	23	07391-0020	V-Sleeve (-5121 versions)	3
4	08005	O-Ring	1	23A	08598	V-Sleeve, Weep	
5	08185-0100	Oil Drain Plug with Gasket	1			(-5100 versions)	3
6	07188-0100	Screw, Short Cover	4	23A	07391-0010	V-Sleeve (-5111 versions)	3
6A	07223-0100	Spring Washer	4	23A	07391-0020	V-Sleeve, Weep	
7	08303	Bearing Cover I	2			(-5180/-5121 versions)	3
8	08491	Sight Glass	1	24	07392	Support Ring	6
9	07193	O-Ring	1	25	06646-0100	Weep Return Ring	3
10	07225-0100	Hexagon Screw	8	26	06582-5000	Valve Casing	1
10A	07223-0100	Spring Washer	8	26A	04273	Valve Assembly	6
11	08331	Radial Shaft Seal	1	27	07849-0100	Valve Seat	6
12A	04917	Ball Bearing	1	28	06809	Valve Plate	6
12B	01086	Ball Bearing	1	29	06816	Valve Spring	6
13	04918	Crankshaft (P205)	1	30	07907	Valve Spring Retainer	6
13	03026	Crankshaft (P206)	1	30A	06824	Spacer Ring	3
13	04920	Crankshaft (P209)	1	30B	05510-0100	Sleeve	3
14	06207	Woodruff Key	1	30C	07489	O-Ring	3
15	08333	Connecting rod	3	30C	06015-0001	O-Ring	
16	06641	Plunger Complete				(-5111/-5121 versions)	3
		(except -5180)	3	31	07853-0001	O-Ring	6
16	06641-0100	Plunger Complete		32	07928-0100	Valve Plug	6
		(-5180 only)	3	33	07913-0001	O-Ring (-5180 versions)	6
17	08442	Wrist Pin	3	33	07913-0001	O-Ring (except -5180)	3
19	08356	Oil Seal	3	34	08316-0100	Hexagon Screw	8
20	06645-0100	Seal Case	3	36	12138	Plug, 3/8" BSP	1
21	08443	O-Ring	3	36A	07109-0400	Plug, 1/2" BSP	1
21	08443-0001	O-Ring					
		(-5111/-5121 versions)	3				

## 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# 09656-0011 ("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# 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# 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

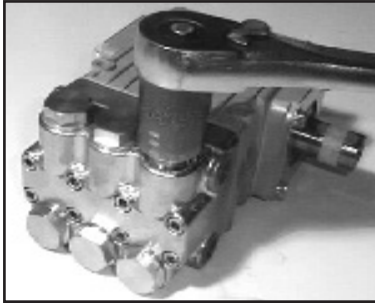
### Oil Seal Kit

#### Part# 09144

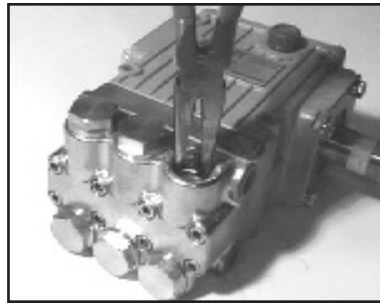
Item	Part #	Description	Qty.
19	08356	Oil Seal	3



## 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.



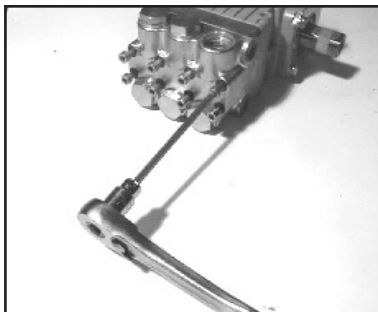
2. Using a needle nose pliers, remove the inlet and discharge valve assemblies (27-30) and o-ring (31). Inspect all parts for wear and replace as necessary.



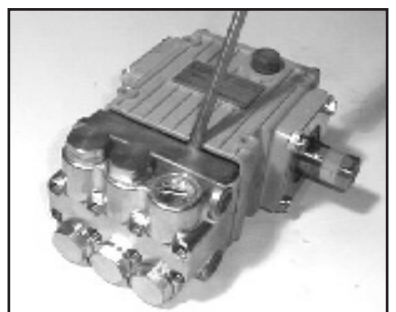
3. By inserting a small screw driver between the valve seat (27) and the valve spring retainer (30), the valve assembly can be separated.



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.**

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

## 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).

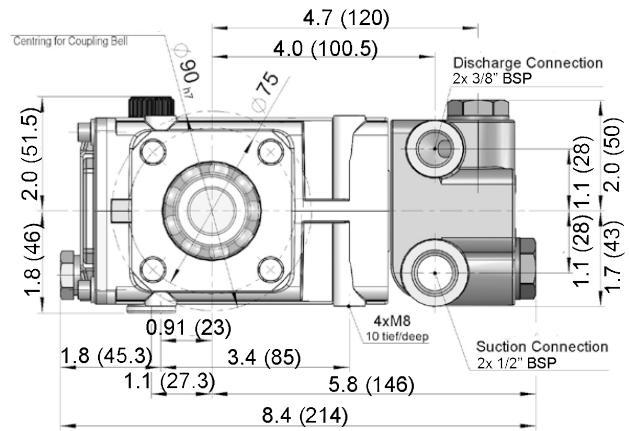
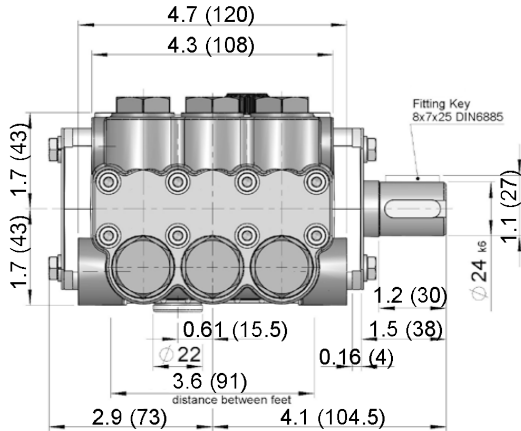
**For maintenance of the gear end of your pump contact Giant Industries or your local distributor. Phone: 419/531-4600**

<b>P200-5100 Lubrication Information/Torque Specification/Tool List</b>				
Item #	Part #	Description	Lubrication	Torque
3A	07190-0100	Drain Plug w/Gasket		22 ft.-lbs. (30 Nm)
5	08185-0100	Oil Drain Plug w/Gasket		22 ft.-lbs. (30 Nm)
6	07188-0100	Screw, Short Cover		88 in.-lbs. (10 Nm)
10	07225-0100	Hexagon Screw		88 in.-lbs. (10 Nm)
32	07928-0100	Valve Plug	Pro Pack 550	55 ft.-lbs. (75 Nm)
34	08316-0100	Hexagon Screw		106 in.-lbs. (12 Nm)

<b>Preventative Maintenance Check-List &amp; Recommended Spare Parts List</b>						
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				
<b>Recommended Spare Parts</b>						
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

**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. 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](http://www.P65Warnings.ca.gov)

**GIANT**  
Performance Under Pressure

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