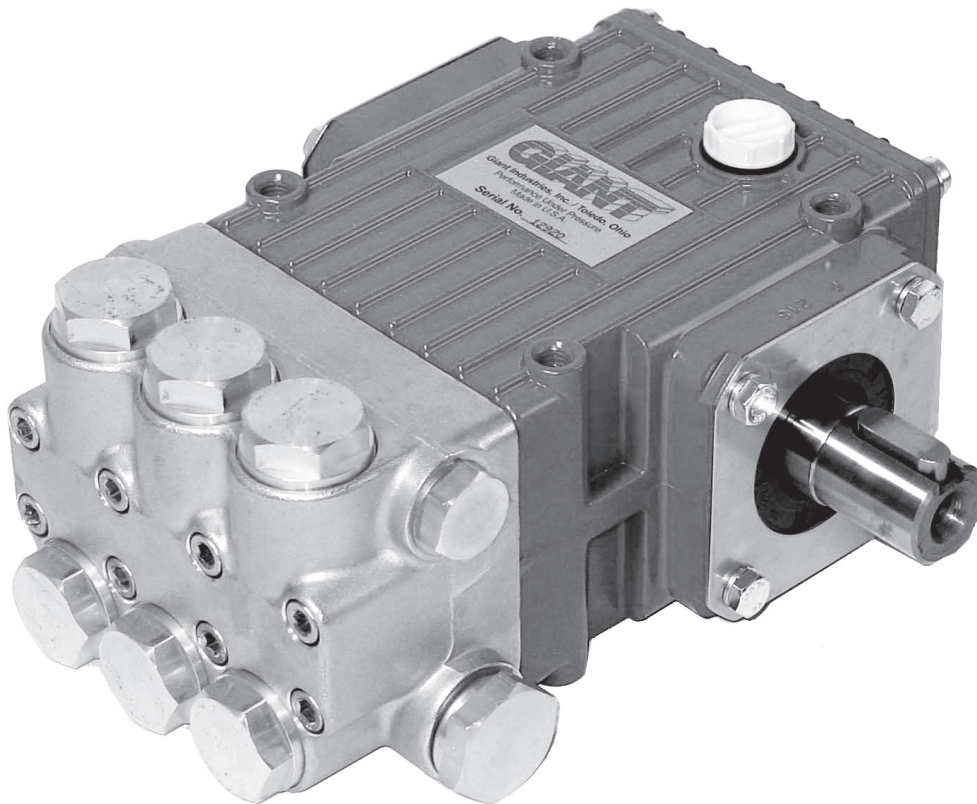


# Series P200-12mm versions

Triplex Ceramic  
Plunger Pump  
Operating Instructions/  
Repair and Service  
Manual

P205  
P206  
P207  
P208  
P209  
P210  
P211



**GIANT**  
Performance Under Pressure

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Updated 05/18

# 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 a 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 SAE 20W-50 (p/n 01153). Use 7.5 fluid ounces (0.22 L) for short crankcase covers and 9.0 fluid ounces (0.27 L) for extended crankcase covers.

Initial change after 50 operating hours and then every 500 operating 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.

### Keep NPSH under control.

Maximum input pressure 145 PSI (10 bar), maximum suction head -4.35 PSI (-0.3 bar). Make sure 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.

Pressure in discharge line and in pump must be at zero before any maintenance to the pump takes place. Close up 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 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 manufacturer and/or operator to ensure that all pertinent safety regulations are adhered to.**

# Pump Specifications

	Max. Flow	Max. Flow	Nominal/ Intermittent Pressure	Nominal/ Intermittent Pressure	Max. Speed	Max. Inlet Pressure**	Max. Inlet Pressure**	Plunger Diameter	Plunger Diameter	Stroke	Stroke	Power Req'd	Power Req'd
Model	GPM	l/min	PSI	bar	RPM	PSI	bar	in	mm	in	mm	BHP	kW
P205	0.5	1.9	2000/2500	140/175	1750	145	10	0.47	12	0.13	3.4	0.6/0.8	0.5/0.6
P206	0.8	3.0	2000/2500	140/175	1750	145	10	0.47	12	0.22	5.5	1.0/1.3	0.8/1.0
P205	0.9	3.4	2000/2000	140/140	3450*	145	10	0.47	12	0.13	3.4	1.2/1.2	0.9/0.9
P207	0.9	3.4	2000/2500	140/175	1750	145	10	0.47	12	0.25	6.3	1.2/1.6	0.9/1.2
P208	1.0	3.8	2000/2500	140/175	1750	145	10	0.47	12	0.28	7.0	1.4/1.7	1.0/1.3
P206	1.5	5.7	2000/2000	140/140	3450*	145	10	0.47	12	0.22	5.5	2.1/2.1	1.6/1.6
P209	1.5	5.7	2000/2500	140/175	1750	145	10	0.47	12	0.39	10.0	2.1/2.6	1.6/1.9
P207	1.7	6.4	2000/2000	140/140	3450*	145	10	0.47	12	0.25	6.3	2.3/2.3	1.7/1.7
P210	1.8	6.8	2000/2500	140/175	1750	145	10	0.47	12	0.49	12.4	2.5/3.1	1.9/2.3
P208	1.9	7.2	2000/2000	140/140	3450*	145	10	0.47	12	0.28	7.0	2.6/2.6	1.9/1.9
P211	2.1	7.9	2000/2500	140/175	1750	145	10	0.47	12	0.56	14.2	2.9/3.6	2.2/2.7
P209	2.7	10.2	2000/2000	140/140	3450*	145	10	0.47	12	0.39	10.0	3.7/3.7	2.8/2.8
P210	3.3	12.5	2000/2000	140/140	3450*	145	10	0.47	12	0.49	12.4	4.6/4.6	3.4/3.4
P211	3.8	14.4	2000/2000	140/140	3450*	145	10	0.47	12	0.56	14.2	5.2/5.2	3.9/3.9

\*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 Ports .....		(2) 1/2" BSP
Discharge Ports.....		(2) 3/8" BSP
Shaft Rotation.....		Top of Pulley Towards Fluid End
Crankshaft Diameter.....	0.98"	24 mm
Key Width .....	0.31"	8 mm
Shaft Mounting .....		Right Side Facing Manifold
Weight .....	11.7 lbs. ....	5.3 Kg
Crankcase Oil Capacity .....	7.5 fl.oz. ....	0.22 Liters
Extended Crankcase Oil Capacity.....	9.0 fl.oz. ....	0.27 Liters
Volumetric Efficiency @ 1750 RPM.....		0.94
Volumetric Efficiency @ 3450 RPM.....		0.87
Mechanical Efficiency @ 3450 RPM .....		0.86

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:  $HP = (GPM \times PSI) / 1150$ .

### 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.

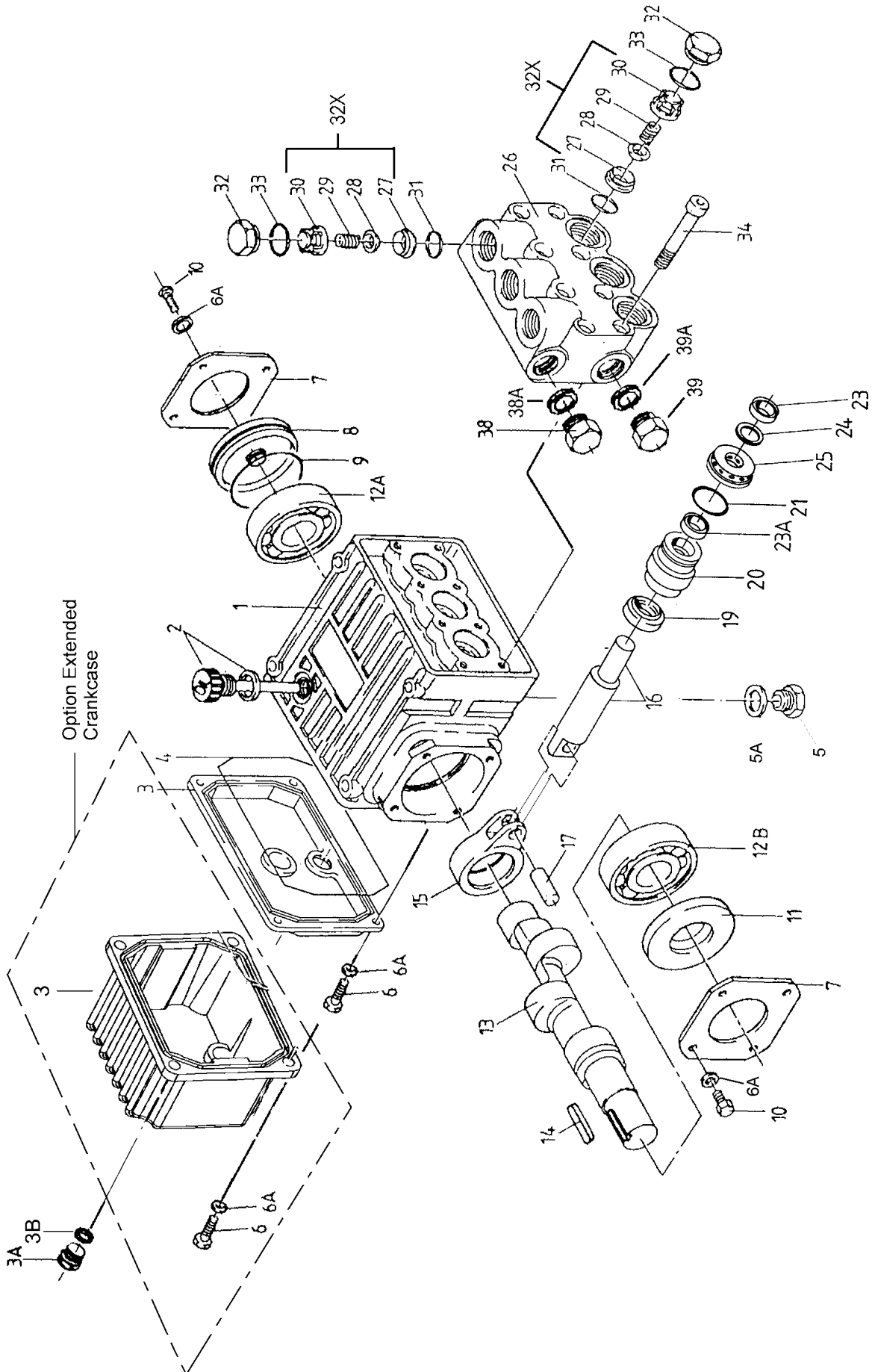
$$(\text{Max. Pump RPM} / \text{Rated Pump GPM}) \times \text{Required Pump GPM} = \text{Required Pump RPM}$$

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

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

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

# Exploded View - P205/P206/P207/P208/P209/P210/P211



## P205/P206/P207/P208/P209/P210/P211 PARTS LIST

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>	<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	08300	Crankcase	1	14	06207	Fitting Key	1
2	06773	Oil Dipstick with O-Ring	1	15	08333	Connecting Rod	3
3	08302	Crankcase Cover, Short	1	16	06641	Plunger, Complete	3
3	08302-L	Crankcase Cover, Long	1	17	08442	Wrist Pin	3
3A	07190	Drain Plug	1	19	08356	Oil Seal	3
3B	13262	Gasket for drain plug	1	20	06645	Seal Case	3
4	08005	O-Ring	1	21	08443	O-Ring	3
5	06273	Oil Drain Plug with Gasket	1	23	07391	V-Sleeve	3
5A	08192	Gasket	1	23A	08598	V-Sleeve, Weep	3
6	07188	Screw, Short Cover	4	24	07392	Support Ring	3
6A	01176-2	Spring Washer	12	25	06646	Weep Return Ring	3
7	08303	Bearing Cover I	2	26	06647	Valve Casing	1
8	08490	Sight Glass	1	27	07849	Valve Seat	6
9	08492	O-Ring for Sight Glass	1	28	07491	Valve Plate	6
10	07225	Screw with Lock Washer	8	29	07906	Valve Spring	6
11	01166	Radial Shaft Seal	1	30	07907	Valve Spring Retainer	6
12A	08020	Ball Bearing	1	31	07853	O-Ring	6
12B	01020	Ball Bearing	1	32	07928	Valve Plug	6
13	06694	Crankshaft (P205)	1	32X	07946A	Valve Assembly Complete	6
13	08465	Crankshaft (P206)	1	33	07913	O-Ring	6
13	06547	Crankshaft (P207)	1	34	08316	Hex Head Cap Screw	8
13	12258	Crankshaft (P208)	1	38	13338	Plug, 3/8" BSP	1
13	08440	Crankshaft (P209)	1	38A	07661	Seal	1
13	08466	Crankshaft (P210)	1	39	07109	Plug, 1/2" BSP	1
13	08467	Crankshaft (P211)	1	39A	08486	Copper Seal Ring	1

## P205/P206/P207/P208/P209/P210/P211 REPAIR KITS

### Plunger Packing Kit

#### Part # 09527

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

### Oil Seal Kit

#### Part # 09144

<u>Item #</u>	<u>Part #</u>	<u>Description</u>	<u>Qty.</u>
19	08356	Oil Seal	3

### Valve Assembly Kit

#### Part # 09116

<u>Item #</u>	<u>Part #</u>	<u>Description</u>	<u>Qty.</u>
32X	07946A	Valve Assembly Complete	6
31	07853	O-Ring	6
33	07913	O-Ring	6

### Optional Teflon Packing Kit

#### Part # 09527-0021

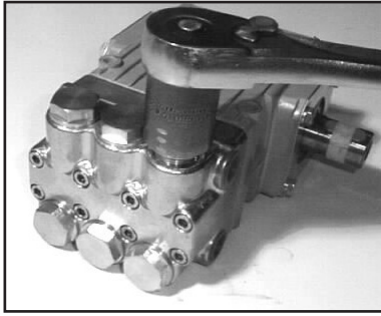
<u>Item #</u>	<u>Part #</u>	<u>Description</u>	<u>Qty.</u>
21	08443-0001	O-Ring	3
23/23A	07391-0020	V-Sleeve, Teflon	6
24	07392	Support Ring	3
31	07853-0001	O-Ring, Viton	6
33	07913-0001	O-Ring, Viton	6

## P205/P206/P207/P208/P210/P211 TORQUE SPECIFICATIONS

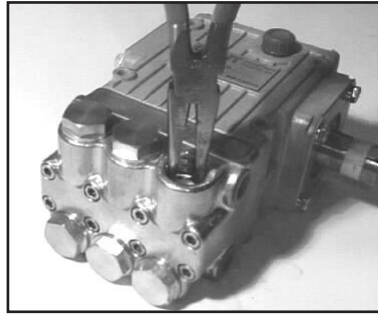
<u>Item</u>	<u>Part No.</u>	<u>Description</u>	<u>Lubrication</u>	<u>Torque Amount</u>
3A	07190	Drain Plug		22 ft.-lbs. (30 Nm)
5	06273	Oil Drain Plug w/Gasket		22 ft.-lbs. (30 Nm)
6	07188	Screw, Short Cover		88 in.-lbs. (10 Nm)
10	07225	Screw w/Lock Washer		88 in.-lbs. (10 Nm)
32	07928	Valve Plug	Loctite 243	55 ft.-lbs. (75 Nm)
34	08316	Hex Head Cap Screw		106 in.-lbs. (12 Nm)

# REPAIR INSTRUCTIONS - P205/P206/P207/P208/P209/P210/P211 PUMPS

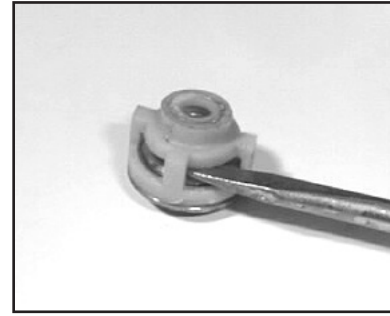
**NOTE:** Always take time to lubricate all metal and nonmetal parts with a light film of oil before reassembly. This step will ensure proper fit, at the same time protecting the pump nonmetal parts (i.e., the elastomers) from cutting and scoring.



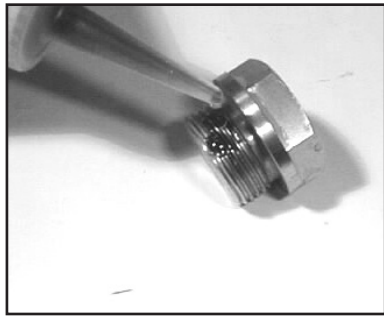
1. With a 22mm socket wrench, remove the (3) discharge valve plugs and (3) inlet valve plugs (32) Inspect the o-ring (33) for wear and replace if damaged.



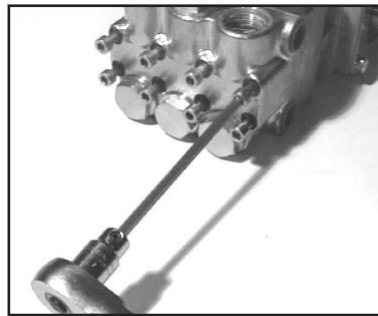
2. Using a needle nose pliers, remove the inlet and discharge valve assemblies (32X).



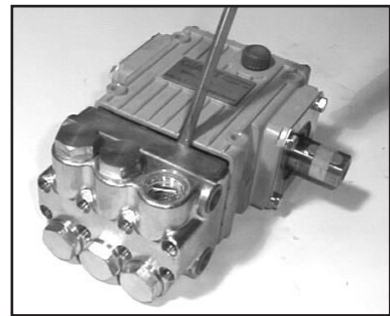
3. By inserting a small screw driver between the valve seat (27) and the valve spring retainer (30), the valve assembly can be separated.



4. Remove the o-ring (31). Inspect all parts for wear and replace as necessary. For pumps manufactured prior to 5/97, tighten plugs (32) to 33 ft.-lbs. otherwise, 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 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 weep v-sleeve (23A) from 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 rod (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.

# REPAIR INSTRUCTIONS - P205/P206/P207/P208/P209/P210/P211 PUMPS

10. If the ceramic plunger pipe (16) 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 P205/P206/P207/P208/P209/P210/P211 PUMPS

- 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)..
- 3) Generously lubricate v-sleeve (23). Assemble v-sleeves (23) into valve casing (#26). Assemble weep return ring (25) and pressure ring (24) over plungers (16). Slide valve casing over plungers and seat firmly. Replace the eight socket head cap screws (34) and tighten to 106 inch-pounds (12 Nm) in a crossing pattern.
- 4) Replace the six o-rings (31) and the six valve assemblies (32X). 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**

Preventative Maintenance Check List & Recommended Spare Parts List						
Check	Daily	Weekly	50 Hrs.	Every 500 Hours	Every 1500 Hours	Every 3000 Hours
Oil Level/Quality	X					
Oil Leaks	X					
Water Leaks	X					
Belts, Puelly		X				
Plumbing		X				
Recommended Spare Parts						
Oil Change (1 quart) p/n 01153			X	X		
Seal Spare Parts (1 kit/pump) (See page 5 for kit list)					X	
Oil Seal Kit (1 kit/pump) (See page 5 for kit list)					X	
Valve Spare Parts (1 kit/pump) (See page 5 for kit list)						X

