

6200 Series Injector



6200 Series Specifications

The Flomore 6200 Series Pump line consists of a series of basic pump options all developed from a modular power unit. All units are pneumatically driven positive displacement, single or double acting, reciprocating pumps.

The basic pump is designed for use with three fluid ends, a 1¼" and 2¾" diameter plunger, and a 4" piston. The fluid ends are interchangeable with the modular power unit and can be assembled as single ended units or double ended units in any combination of sizes. All fluid ends are designed to withstand maximum output force of the power unit.

Due to the balanced valving of the power cylinder, it is, in theory, possible to operate the pump against a back pressure equal to the inlet power gas pressure; however, a differential in these two pressures must be maintained for the pump to stroke. (See Power to Fluid Ratio p.3) When the exhaust gas is piped to other areas, the pilot valves may also be connected to the pump exhaust manifold system.

Fluid ends are designed with removable check valves. These valves may be replaced without disconnecting the suction and discharge piping.

Material Specifications

Dower	Power End		l End	Fluid End	
Power Enu		Models 6211, 62	12, 6221, & 6222	Models 6241 & 6242	
Part	Material	Part	Material	Part	Material
Main Power Cylinder	Carbon Steel	Pump Head Body	Cast Steel (316SS Optional)	Pump Head Body	Cast Steel (316SS Optional)
Power Cylinder End Cap	Carbon Steel	Valve Cover	Carbon Steel	Valve Cover	Carbon Steel
Power Piston	Aluminum	Valve Plug	Stainless Steel	Valve Plug	Stainless Steel
Power Piston Seals	Buna-N	Plunger	Stainless Steel	Roll Pin	Stainless Steel
Power Cylinder Seals	Buna-N	Valve Ball	Stainless Steel	Valve Ball	Stainless Steel
Power Piston Rod	Stainless Steel	Valve Seat Insert	Stainless Steel	Valve Seat Insert	Stainless Steel
Piston Rod Packing Gland	Carbon Steel	Valve Seat Gasket	Teflon	Valve Seat Gasket	Teflon
Piston Rod Packing	Optional	Valve Seat Seals	Buna-N	Piston	Carbon Steel
A	A	Packing	Optional	Piston Cup	Buna-N
A	A	Lantern Ring	Stainless Steel	Piston Rod	Stainless Steel
A	A	Packing Gland	Delrin	Cylinder	Cast Ductile Iron
A	A	Packing Nut	Carbon Steel	Cylinder Sleeve	Stainless Steel

Installation and Operating Instructions

- 1. Remove pump from shipping container and inspect for possible shipping damage. If damaged, file a claim with the carrier.
- 2. Mount the pump by bolting to a stable foundation. Four legs are supplied on the power unit for this purpose.
- 3. Connect the fluid suction and discharge lines. Caution should be exercised to avoid piping stresses to the fluid head of the pump. A relief valve should be installed in the discharge line between the discharge check valve and the nearest shut off valve or auxiliary check valve.

Caution: When pump is installed in a closed or hazardous area, power gas exhaust (including pilot devices) must be vented in a safe manner. All gas connections must be checked periodically for leaks. If power or air supply pressure exceeds 250 PSIG, a regulator and pressure relief valve of proper size must be installed.

- 4. Connect power supply lines as shown in Figure 1 (p.4). Power supply must not exceed 250 PSIG.
- 5. Fill lubricator reservoir with 1 quart SAE 10, SAE 20, or SAE 30 non-detergent oil dependent upon operating temperature.
- 6. For connections where it is necessary to pipe off exhaust gas such as back pressure service or pollution control, refer too Figure 3 (p.5). Order Exhaust Manifold B-1126 and make all connections shown in Figure 4 (p.5).
- 7. Open supply line slowly in order to check pump and system operation.
- 8. Adjust supply volume and pressure to regulate operating speed to meet desired conditions of discharge pressure and volume.
- 9. Adjust lubricator to minimum supply rate.
- 10. Maintain plunger lubrication by adjusting the grease jack accordingly (1 1/4" Heads Only).

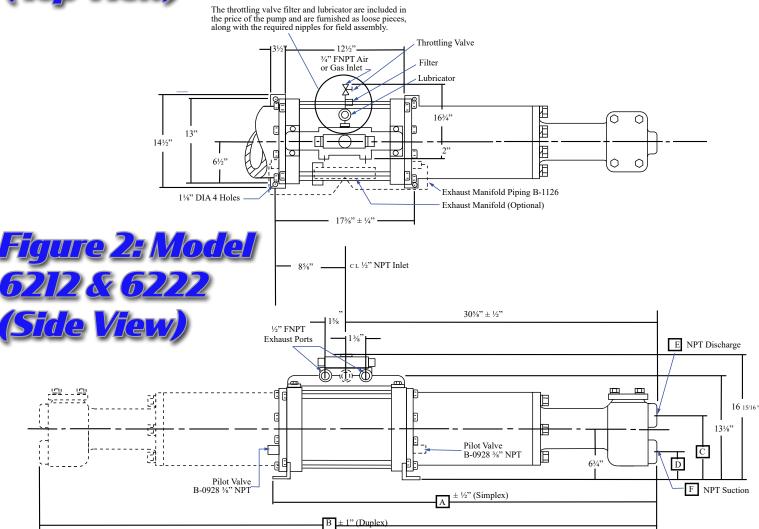
*For safe operation, a safety valve sized to meet the maximum capacity of the supply source should be installed in the supply line at or near the pump.

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	Operational Data				
Plunger Size	1 1/4"	2 3/4"	4"		
Pump Model Number	6211	6221	6241		
Fluid Discharge Maximum Pressure	9000 PSI	1800 PSI	900 PSI		
Fluid Discharge Volumes up to Maximum Pressure	See Page 12	See Page 12	See Page 12		
Operating Speed Maximum and Minimum	See Page 12	See Page 12	See Page 12		
Power/Fluid Power Ratio (Inlet Gas Pressure - Exhaust Back Pressure) x Power to Fluid Ratio = Maximum Fluid Discharge Pressure at Stall	40:1	8:1	4:1		
Pneumatic Pressure Required to Operate Pump	See Page 12	See Page 12	See Page 12		
Maximum Temperature	200°F with Buna-N Trim 400°F with Viton Trim				
Minimum NPSHR		8 Feet of Water			

Dinensional Data

NOTE: Do not use for construction. Contact factory for certified dimensions when required.

Figure It Model 6211 & 6221 (Top View)



Weights & Dimensions

Model#	A	В	C	D	E	F	Weight
6211	40 1/4	A	8 5/8	4 11/16	3/4	3/4	260
6212	A	61 1/4	8 5/8	4 11/16	3/4	3/4	340
6221	40 1/4	A	9 5/16	4 1/4	1	1	268
6222	A	61 1/4	9 5/16	4 1/4	1	1	362
6241	42 1/2	A	9 23/32	3 5/8	2	2	315
6242	A	65 5/8	9 23/32	3 5/8	2	2	430

Dinensional Data

NOTE: Do not use for construction. Contact factory for certified dimensions when required.

Figure 3: Model 62411

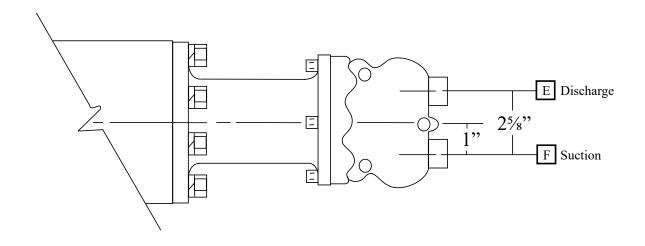
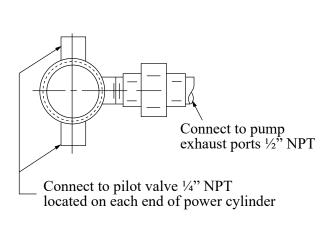
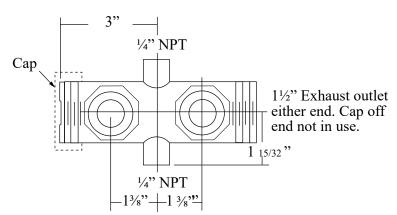


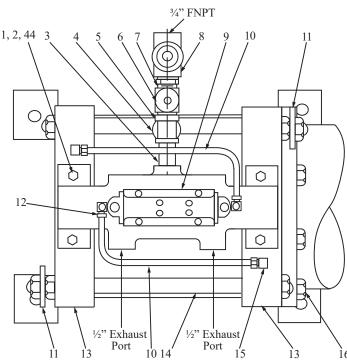
Figure 4# Exhaust Manifold B-1126 (optional)

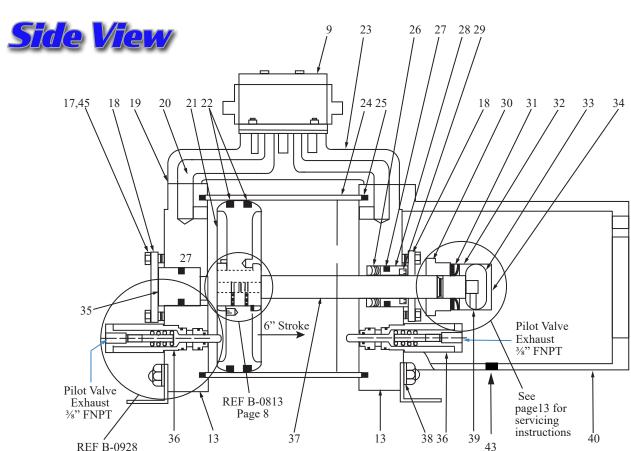




6200 Series Power Unit (D-0365)

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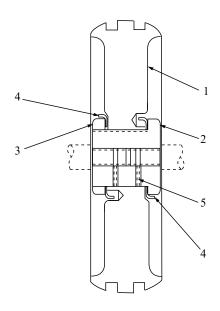




1	4000				
2 61283P015 4 Bolt for Manifold 316 Stainless Steel 3 A-3241 1 Nipple & Reducer Steel 4 A-3221 1 Literator Aluminum 5 A-3242 2 Her Nipple Steel 6 A-3220 1 Fifter Aluminum 7 A-3243 1 Her Nipple Steel 8 A-3209 1 3/4* Ball Valve 315 Stainless Steel 9 8-1510 1 Spool Valve Assembly Various 10 A-5000 2 Switching Walve Line Assembly 305 Stainless Steel 11 A-2899 2 Urbing Eye Steel 12 A-3644 2 Male Elbow Carbinum Plated Steel 14 A-4451 4 Socid & Nat 394 Stainless Steel/Steel 15 A-244 2 Male Elbow Carbinum Plated Steel 16 A-2921 8 8 Bolt 394 Stainless Steel	Item	Part #	# Req.	Description	Material -
3 A 3241 1 Nyppio & Reducer Steed 4 A 3221 1 Lubricator Auminium 5 A 3242 2 Her Nippie Steed 6 A 3220 1 Filter Auminium 7 A 3243 1 Hex Nippie Steed 8 A 3209 1 34" Ball Volve 316 Sanites Steed 9 B-1510 1 Spot Valve Assembly Various 10 A 5690 2 Switching Valve Line Assembly 304 Sanites Steed 11 A 2038 2 Lifting Eye Steed 12 A 3344 2 Male Blow Cadmium Placed Steed 15 A 3244 2 Male Blow Cadmium Placed Steed 16 A 2051 6 Boll 304 Sanites Steed 17 A 510355 6 Hex Head Bott 304 Sanites Steed 19 A 2080 2 Manifold Gasket Buna-N and Cork 20 A 4517	1	A-2813LW	4	Lock Washer	304 Stainless Steel
4 A 3221 1 Lubricator Aluminum 5 A 3222 2 Hex Nipple Sixel 6 A 3220 1 Filter Aluminum 7 A 3243 1 Hex Nipple Sixel 8 A 3209 1 3/4" fall valve 315 Sainless Steel 9 B 1510 1 Sport Marke Assembly Morious 10 A 5560 2 Switching Valve Line Assembly 304 Sainless Steel 11 A 3888 2 Lifting Eye Sceed 12 A 3344 2 Maile Ellitow Cadrahum Placed Steel 13 C 6553 2 End Cap Sceed 14 A -4491 4 Stod & Nut 304 Sainless Steel/Steel 15 A 2421 8 Bolt 304 Sainless Steel/Steel 16 A 2321 8 Hot Head Gold Steel Steel 17 A 016355 8 Hot Head Gold Steel Steel 18 A 2321	2	61283P015	4	Bolt for Manifold	316 Stainless Steel
S A-3242 2 Hex Nipple Steel 6 A-3220 1 Filter Aluminum 7 A-3243 1 Hex Nipple Steel 8 A-3299 1 3/4" fall Valve 316 Spainless Steel 9 B-1510 1 Spool Valve Assembly Various 10 A-5690 2 Switching Valve Line Assembly 304 Spainless Steel 11 A-8289 2 Lifting Eye Steel 12 A-3844 2 Male Elbow Cadmium Plated Steel 13 C-0533 2 End Cap Steel 14 A-4451 4 Stud & Nut 304 Spainless Steel 15 A-3244 2 Male Elbow Cadmium Plated Steel 16 A-2521 8 Bolt 304 Spainless Steel 17 A-601535 8 Hex Head Bolt 304 Spainless Steel 18 A-2781 2 Packing Flate Steel 19 A-2898	3	A-3241	1	Nipple & Reducer	Steel
6 A-3220 1 Filter Aluminum 7 A 3243 1 Hex Nipple Steel 8 A -3209 1 3/4" Ball Valve 316 Stainles Steel 9 B-1510 1 Spool Valve Assembly Various 10 A -5690 2 Switching Valve Line Assembly 304 Stainless Steel 11 A -8893 2 Lifting Eye Steel 12 A -3394 2 Male Blow Cadmium Plands Steel 13 C 0533 2 End Cap Steel 14 A 4451 4 Stud & Nut 304 Stainless Steel Steel 15 A -3244 2 Male Blow Cadmium Plands Steel 16 A -2751 8 Hot Not Assembly 17 A 01635S 8 Hex Head Bolt Stainless Steel 18 A -2751 8 Hex Head Bolt Stainless Steel 19 A -2880 2 Manifold Gasket Buna An Acceptable 20<	4	A-3221	1	Lubricator	Aluminum
7 A-3243 1 Hex Nipple Steel 8 A-3200 1 3/4" Ball Valve 315 Stainless Steel 9 8-1510 1 Spool Valve Assembly Various 10 A-5690 2 Switching Yave Line Assembly 304 Stainless Steel 11 A-2839 2 Lifting Eye Stoel 12 A-3384 2 End Cap Steel 13 C-0533 2 End Cap Steel 14 A-4451 4 Stud & Nut 304 Stainless Steel 15 A-2424 2 Male Elbow Cadmium Plated Steel 15 A-2241 8 Bolt 100 Stainless Steel 15 A-2244 2 Male Elbow Cadmium Plated Steel 16 A-5221 8 Bolt 100 Stainless Steel 17 A-016353 8 Hes Head Bolt Stainless Steel 18 A 2781 2 Manifold Gasket Bune Nind Cork 19 <	5	A-3242	2	Hex Nipple	Steel
8 A.3200 1 3/f* Ball Valve 316 Staintess Steel 9 B.1510 1 Spool Valve Assembly Various 10 A.5690 2 Switching Valve Line Assembly 304 Staintess Steel 11 A.2683 2 Lifting Eye Seeel 12 A.3364 2 Male Elbow Cadmium Plated Steel 13 C.0333 2 End Cap Seeel 14 A.4451 4 Sud & Nut 304 Stainless Steel Steel 15 A.3244 2 Male Elbow Cadmium Plated Steel 16 A.2521 8 Bolt 304 Stainless Steel 17 A.016355 8 Hox Head Both Stainless Steel 18 A.2781 2 Packing Plate Skeel 19 A.2898 2 Manifold Gasket Buns-N and Cork 20 A.4517 2 Wire Screen Filter Brass 21 B.0813 1 Power Fiston Aluminum <t< td=""><td>6</td><td>A-3220</td><td>1</td><td>Filter</td><td>Aluminum</td></t<>	6	A-3220	1	Filter	Aluminum
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10	8	A-3209	1	3/4" Ball Valve	316 Stainless Steel
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12	10	A-5690	2	Switching Valve Line Assembly	304 Stainless Steel
13	11	A-2839	2	Lifting Eye	Steel
14	12	A-3364	2	Male Elbow	Cadmium Plated Steel
15	13	C-0533	2	End Cap	Steel
116	14	A-4451	4	Stud & Nut	304 Stainless Steel/Steel
17 A-01635S 8 Hex Head Bolt Stainless Steel 18 A-2781 2 Packing Plate Steel 19 A-2898 2 Manifold Gasket Buna-N and Cork 20 A-4517 2 Wire Screen Filter Brass 21 B-0613 1 Power Piston Aluminum 22 A-3761 2 Piston Seal Buna-N 23 C-2061 1 Manifold Assembly Ductile fron 24 B-0615 1 Cylinder Steel 25 A-2859 2 O-Ring Buna-N **26 A-2860 1 Thrust Rod Packing Buna-N 27 A-1962 2 O-Ring Buna-N **28 A-2786 1 Gland Bushing Cast Iron **29 A-2897 1 Wiper Ring Buna-N **30 A-2803 1 Retainer Steel **31 A-2803 1 Balk Bearing Connec	15	A-3244	2	Male Elbow	Cadmium Plated Steel
18	*16	A-2521	8	Bolt	304 Stainless Steel
19	17	A-0163SS	8	Hex Head Bolt	Stainless Steel
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*28 A-2786 1 Gland Bushing Cast Iron *29 A-2897 1 Wiper Ring Buna-N *30 A-2803 1 Retainer Steel *31 A-2854 4 Belleville Washer Steel *32 A-2783 1 Backup Ring Steel *33 A-2782 1 Ball Bearing Connector Carbon Steel *34 A-2787 1 Thrust Bearing Carbon Steel *35 A-2830 1 End Plug Cast Iron 36 B-0928 2 Pilot Valve Assembly See Page 8 *37 B-0810 1 Power Piston Rod 17-4 pH Stainless Steel *38 A-2813LW 8 Lock Washer 304 Stainless Steel *39 A-3250 1 Set Screw Steel *40 D-0310 1 Spacer Ductile Iron 41 A-0171 2 Brass Pin for Tag Brass 42 A-0172	*26	A-2860	1	Thrust Rod Packing	Buna-N
*29 A-2897 1 Wiper Ring Buna-N *30 A-2803 1 Retainer Steel *31 A-2854 4 Belleville Washer Steel *32 A-2783 1 Backup Ring Steel *33 A-2782 1 Ball Bearing Connector Carbon Steel *34 A-2787 1 Thrust Bearing Carbon Steel 35 A-2830 1 End Plug Cast Iron 36 B-0928 2 Pilot Valve Assembly See Page 8 *37 B-0810 1 Power Piston Rod 17-4 pH Stainless Steel 38 A-2813LW 8 Lock Washer 304 Stainless Steel *39 A-3250 1 Set Screw Steel *40 D-0310 1 Spacer Ductile Iron 41 A-0171 2 Brass Pin for Tag Brass 42 A-0172 1 Chemical Injector Name Plate Stainless Steel 43	27	A-1962	2	O-Ring	Buna-N
*30 A-2803 1 Retainer Steel *31 A-2854 4 Belleville Washer Steel *32 A-2783 1 Backup Ring Steel *33 A-2782 1 Ball Bearing Connector Carbon Steel *34 A-2787 1 Thrust Bearing Carbon Steel 35 A-2830 1 End Plug Cast Iron 36 B-0928 2 Pilot Valve Assembly See Page 8 *37 B-0810 1 Power Piston Rod 17-4 pH Stainless Steel 38 A-2813LW 8 Lock Washer 304 Stainless Steel *39 A-3250 1 Set Screw Steel *40 D-0310 1 Spacer Ductile Iron 41 A-0171 2 Brass Pin for Tag Brass 42 A-0172 1 Chemical Injector Name Plate Stainless Steel 43 A-2496 1 Socket Pipe Plug Alloy Steel Black Coated <	*28	A-2786	1	Gland Bushing	Cast Iron
*31 A-2854 4 Belleville Washer Steel *32 A-2783 1 Backup Ring Steel *33 A-2782 1 Ball Bearing Connector Carbon Steel *34 A-2787 1 Thrust Bearing Carbon Steel 35 A-2830 1 End Plug Cast Iron 36 B-0928 2 Pilot Valve Assembly See Page 8 *37 B-0810 1 Power Piston Rod 17-4 pH Stainless Steel 38 A-2813LW 8 Lock Washer 304 Stainless Steel *39 A-3250 1 Set Screw Steel *40 D-0310 1 Spacer Ductile Iron 41 A-0171 2 Brass Pin for Tag Brass 42 A-0172 1 Chemical Injector Name Plate Stainless Steel 43 A-2496 1 Socket Pipe Plug Alloy Steel Black Coated 44 A-2813FW 4 Flat Washer 304 Stainless Steel	*29	A-2897	1	Wiper Ring	Buna-N
*32 A-2783 1 Backup Ring Steel *33 A-2782 1 Ball Bearing Connector Carbon Steel *34 A-2787 1 Thrust Bearing Carbon Steel 35 A-2830 1 End Plug Cast Iron 36 B-0928 2 Pilot Valve Assembly See Page 8 *37 B-0810 1 Power Piston Rod 17-4 pH Stainless Steel 38 A-2813LW 8 Lock Washer 304 Stainless Steel *39 A-3250 1 Set Screw Steel *40 D-0310 1 Spacer Ductile Iron 41 A-0171 2 Brass Pin for Tag Brass 42 A-0172 1 Chemical Injector Name Plate Stainless Steel 43 A-2496 1 Socket Pipe Plug Alloy Steel Black Coated 44 A-2813FW 4 Flat Washer 304 Stainless Steel	*30	A-2803	1	Retainer	Steel
*33 A-2782 1 Ball Bearing Connector Carbon Steel *34 A-2787 1 Thrust Bearing Carbon Steel 35 A-2830 1 End Plug Cast Iron 36 B-0928 2 Pilot Valve Assembly See Page 8 *37 B-0810 1 Power Piston Rod 17-4 pH Stainless Steel 38 A-2813LW 8 Lock Washer 304 Stainless Steel *39 A-3250 1 Set Screw Steel *40 D-0310 1 Spacer Ductile Iron 41 A-0171 2 Brass Pin for Tag Brass 42 A-0172 1 Chemical Injector Name Plate Stainless Steel 43 A-2496 1 Socket Pipe Plug Alloy Steel Black Coated 44 A-2813FW 4 Flat Washer 304 Stainless Steel	*31	A-2854	4	Belleville Washer	Steel
*34 A-2787 1 Thrust Bearing Carbon Steel 35 A-2830 1 End Plug Cast Iron 36 B-0928 2 Pilot Valve Assembly See Page 8 *37 B-0810 1 Power Piston Rod 17-4 pH Stainless Steel 38 A-2813LW 8 Lock Washer 304 Stainless Steel *39 A-3250 1 Set Screw Steel *40 D-0310 1 Spacer Ductile Iron 41 A-0171 2 Brass Pin for Tag Brass 42 A-0172 1 Chemical Injector Name Plate Stainless Steel 43 A-2496 1 Socket Pipe Plug Alloy Steel Black Coated 44 A-2813FW 4 Flat Washer 304 Stainless Steel	*32	A-2783	1	Backup Ring	Steel
35 A-2830 1 End Plug Cast Iron 36 B-0928 2 Pilot Valve Assembly See Page 8 *37 B-0810 1 Power Piston Rod 17-4 pH Stainless Steel 38 A-2813LW 8 Lock Washer 304 Stainless Steel *39 A-3250 1 Set Screw Steel *40 D-0310 1 Spacer Ductile Iron 41 A-0171 2 Brass Pin for Tag Brass 42 A-0172 1 Chemical Injector Name Plate Stainless Steel 43 A-2496 1 Socket Pipe Plug Alloy Steel Black Coated 44 A-2813FW 4 Flat Washer 304 Stainless Steel	*33	A-2782	1	Ball Bearing Connector	Carbon Steel
36 B-0928 2 Pilot Valve Assembly See Page 8 *37 B-0810 1 Power Piston Rod 17-4 pH Stainless Steel 38 A-2813LW 8 Lock Washer 304 Stainless Steel *39 A-3250 1 Set Screw Steel *40 D-0310 1 Spacer Ductile Iron 41 A-0171 2 Brass Pin for Tag Brass 42 A-0172 1 Chemical Injector Name Plate Stainless Steel 43 A-2496 1 Socket Pipe Plug Alloy Steel Black Coated 44 A-2813FW 4 Flat Washer 304 Stainless Steel	*34	A-2787	1	Thrust Bearing	Carbon Steel
*37 B-0810 1 Power Piston Rod 17-4 pH Stainless Steel 38 A-2813LW 8 Lock Washer 304 Stainless Steel *39 A-3250 1 Set Screw Steel *40 D-0310 1 Spacer Ductile Iron 41 A-0171 2 Brass Pin for Tag Brass 42 A-0172 1 Chemical Injector Name Plate Stainless Steel 43 A-2496 1 Socket Pipe Plug Alloy Steel Black Coated 44 A-2813FW 4 Flat Washer 304 Stainless Steel	35	A-2830	1	End Plug	Cast Iron
38 A-2813LW 8 Lock Washer 304 Stainless Steel *39 A-3250 1 Set Screw Steel *40 D-0310 1 Spacer Ductile Iron 41 A-0171 2 Brass Pin for Tag Brass 42 A-0172 1 Chemical Injector Name Plate Stainless Steel 43 A-2496 1 Socket Pipe Plug Alloy Steel Black Coated 44 A-2813FW 4 Flat Washer 304 Stainless Steel	36	B-0928	2	Pilot Valve Assembly	See Page 8
*39 A-3250 1 Set Screw Steel *40 D-0310 1 Spacer Ductile Iron 41 A-0171 2 Brass Pin for Tag Brass 42 A-0172 1 Chemical Injector Name Plate Stainless Steel 43 A-2496 1 Socket Pipe Plug Alloy Steel Black Coated 44 A-2813FW 4 Flat Washer 304 Stainless Steel	*37	B-0810	1	Power Piston Rod	17-4 pH Stainless Steel
*40 D-0310 1 Spacer Ductile Iron 41 A-0171 2 Brass Pin for Tag Brass 42 A-0172 1 Chemical Injector Name Plate Stainless Steel 43 A-2496 1 Socket Pipe Plug Alloy Steel Black Coated 44 A-2813FW 4 Flat Washer 304 Stainless Steel	38	A-2813LW	8	Lock Washer	304 Stainless Steel
41A-01712Brass Pin for TagBrass42A-01721Chemical Injector Name PlateStainless Steel43A-24961Socket Pipe PlugAlloy Steel Black Coated44A-2813FW4Flat Washer304 Stainless Steel	*39	A-3250	1	Set Screw	Steel
42 A-0172 1 Chemical Injector Name Plate Stainless Steel 43 A-2496 1 Socket Pipe Plug Alloy Steel Black Coated 44 A-2813FW 4 Flat Washer 304 Stainless Steel	*40	D-0310	1	Spacer	Ductile Iron
43 A-2496 1 Socket Pipe Plug Alloy Steel Black Coated 44 A-2813FW 4 Flat Washer 304 Stainless Steel	41	A-0171	2	Brass Pin for Tag	Brass
44 A-2813FW 4 Flat Washer 304 Stainless Steel	42	A-0172	1	Chemical Injector Name Plate	Stainless Steel
	43	A-2496	1	Socket Pipe Plug	Alloy Steel Black Coated
A5 A 0167 9 Flat Washer Plated Zing	44	A-2813FW	4	Flat Washer	304 Stainless Steel
45 A-0107 6 Flate Vasilei Flate Zilic	45	A-0167	8	Flat Washer	Plated Zinc

6200 Series Components

Power Piston B-0813

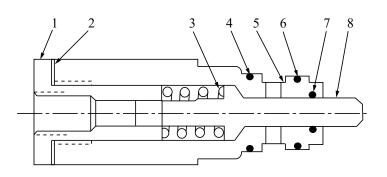


(See Servicing Instructions - Page 13 & 14)

Item #	Part #	# Req.	Description	Material
1	C-0789	1	Piston	Aluminum
2	B-1125	1	Bushing	Steel
3	A-3760	1	Bushing Nut	Steel
4	A-3759	2	Locking Ring	Steel
5	A-3762	1-Simplex 2-Duplex	Set Screw	Steel

Plot Valve B-0928

Two Required

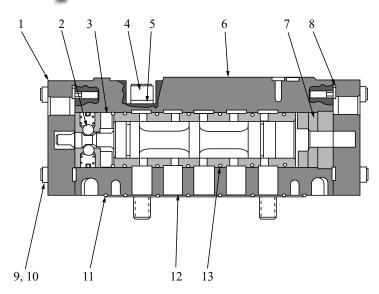


(See Servicing Instructions - Page 13)

Item #	Part #	# Req.	Description	Material
1	A-2901	1	Adapter	Stainless Steel
2	A-3024	1	Adapter Gasket	304 Stainless Steel
3	A-1053	1	Spring	Steel
4	A-3219	1	Pilot Valve O-Ring	Buna-N
5	B-0817	1	Pilot Valve Body	Steel
6	A-3212	1	Pilot Valve O-Ring	Buna-N
7	A-0612	1	O-Ring	Buna-N
8	A-2805	1	Plunger	Delrin

^{*}Recommended Spare Parts

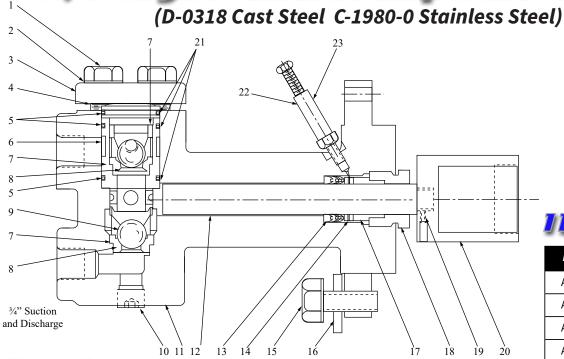
Spool Valve B-1510



Item #	Part #	# Req.	Description	Material
1	A-6191	2	End Cap	Aluminum
2	A-6175	1	Detent Assembly	Aluminum
3	A-6176	2	Bumper	Urethane
4	A-6177	4	Mounting Bolt	Carbon Steel
5	A-6178	4	Lock Washer	Carbon Steel
6	A	1	Body Assembly	Aluminum
7	A-6179	1	Bumper	Aluminum
8	A-6180	2	End Cap O-Ring	Buna-N
9	A-6181	8	End Cap Bolt	Carbon Steel
10	A-6185	8	Lock Washer	Carbon Steel
11	A-6182	1	Gasket	Buna-N
12	A-6184	1	Sleeve Assembly	Stainless Steel
13	A-6183	6	O-Ring	Buna-N

62118 6212

I 1/4# High Pressure Pump Head Assembly



11/4 Packing Chart

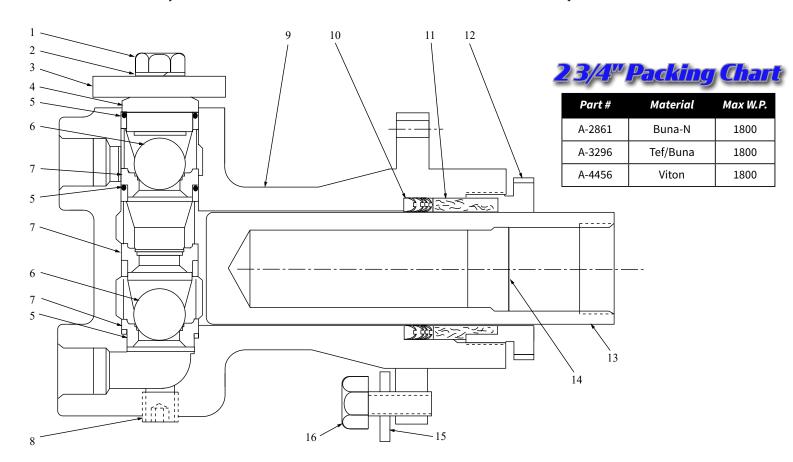
Part #	Material	Max W.P.
A-2850	Buna-N	3000
A-1014	Teflon	500
A-5290	Viton	3000
A-4133	Hard	9000

Parts List

Item	Part #	# Req.	Description	Material	
1	A-2868	4	Bolt	316 Stainless Steel	
2	A-2756	4	Split Lock Washer	316 Stainless Steel	
3	B-0816	1	Valve Cover	Steel	
4	A-2849	1	Valve Plug	Stainless Steel	
5	A-2852	5	Backup Ring	Teflon	
6	B-0812	1	Spacer	316 Stainless Steel	
7	61424P004	3	Gasket	Teflon	
8	61437P023	2	Small Valve Seat Insert	316 Stainless Steel	
9	61265P041	2	Valve Ball	440C Stainless Steel	
10	A-2152	1	Pipe Plug	Steel	
11	D-500	1	Head Body	Cast Steel	
11	D-0502-SS	1	Head Body	Stainless Steel	
12	B-1609	1	1 1/4" Plunger	17-4 pH Stainless Ste	
13	See Packing Chart	1	Packing	See Packing Chart	
14	A-2855	1	Lantern Ring	304 Stainless Steel	
15	A-3239	6	Hex Head Bolt	316 Stainless Steel	
16	A-3060	6	Split Lock Washer	316 Stainless Steel	
17	A-2788	1	Packing Gland	Delrin	
18	A-2789	1	Packing Nut	Steel	
19	A-3250	1	Set Screw	303 Stainless Steel	
20	A-2780	1	Ball Connector Cup	Steel	
21	A-2856	2	O-Ring	Buna-N	
21	A-4479	3	O-Ring	Viton	
22	A-3179-1		Lubricant Stick		
22	A-3179-2	_	72 Piece Lubricant Stick Carton	1	
23	A-0558	1	Grease Jack	Steel	

23/4P High Pressure Pump Head Assembly

(D-0314 Cast Steel C-1979-0 Stainless Steel)

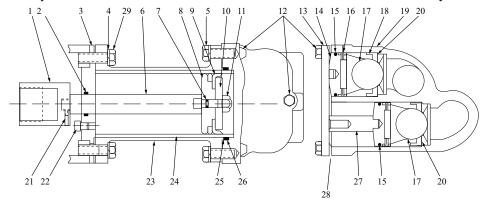


Parts List

Item	Part #	# Req.	Description	Material
1	A-2868	2	Bolt	316 Stainless Steel
2	A-2756	2	Split Lock Washer	316 Stainless Steel
3	A-2800	1	Valve Cover	Steel
4	A-3213	1	Valve Plug	Stainless Steel
F	A-3853	2	O Ding	Buna-N
5	A-4457	3	O-Ring	Viton
6	61265P061	2	Valve Ball	440C Stainless Steel
7	B-1022	3	Valve Seat Insert	316 Stainless Steel
8	A-2152	1	Pipe Plug	Steel
0	D-501	1	Hand Dade.	Cast Steel
9	D-0503-SS	1	Head Body	Stainless Steel
10	See Packing Chart	1	Packing	See Packing Chart
11	A-2784	1	Packing Gland	Delrin
12	B-0809	1	Packing Nut	Steel
13	B-0808	1	Plunger	17-4 pH Stainless Steel
14	A-2785	1	Thrust Plate	Steel
15	A-3060	6	Split Lock Washer	316 Stainless Steel
16	A-3239	6	Hex Head Bolt	316 Stainless Steel

6241 & 6242 4 High Pressure Pump Head Assembly

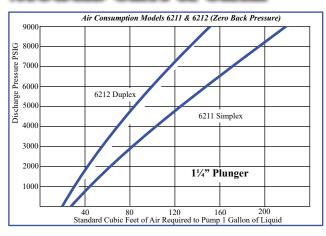
(D-0348 Cast Steel C-1978-0 Stainless Steel)

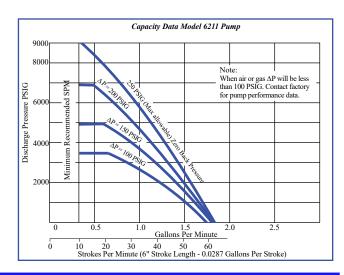


Item	Part #	# Req.	Description	Material
1	A-2780	1	Ball Connector Cup	Steel
2	A-2897	1	Wiper Ring	Buna-N
3	B-0856	1	End Plug	Steel
4	A-3060	12	Split Lock Washer	304 Stainless Steel
5	A-3240	6	Hex Head Bolt	304 Stainless Steel
6	B-0854	1	Piston Rod	17-4 pH Stainless Steel
_	A-3226		0.5:	Buna-N
7	A-4254	1	O-Ring	Viton
8	B-0857	1	Piston	Carbon Steel
9	A-3202	1	Seal Cup	Buna-N
10	A-3248	1	Backup Retainer	304 Stainless Steel
11	A-3246	1	Hex Nut	304 Stainless Steel
12	A-3245	3	Cover Plate Bolt	304 Stainless Steel
13	B-0855	1	Valve Cover	Steel
14	A-3490	2	Valve Plug	316 Stainless Steel
	A-2104	2		Buna-N
15	A-2171		O-RIng	Viton
16	A-3514	4	Roll Pin	316 Stainless Steel
17	61265P071	2	Valve Ball	440C Stainless Steel
18	B-1023	2	Valve Cage	316 Stainless Steel
	D-504			Cast Steel
19	D-0506-SS	1	Head Body	Stainless Steel
20	61421P006	2	Seat Gasket	Teflon
21	A-3250	1	Set Screw	304 Stainless Steel
22	A-1835	1	Vent	Assembly
23	C-0390	1	Cylinder	Cast Ductile Iron
24	B-0950-SS	1	Piston Cylinder	304 Stainless Steel
25	A-2148	1	Backup Ring	Buna-N
_	A-3218			Buna-N
26	A-2155	1	O-Ring	Viton
27	A-3051	1	Plug Extension	303 Stainless Steel
28	B-0853	1	Top Gasket	EPDM Foam
29	A-3239	6	Hex Head Bolt	Stainless Steel
* <i>Pacomma</i>	nded Snare Parts			11

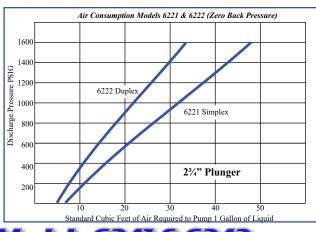
Performance Data

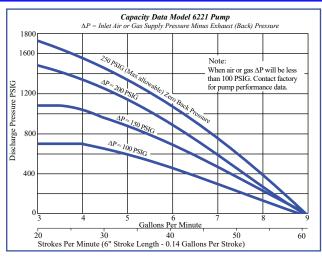
Models 6211 & 6212



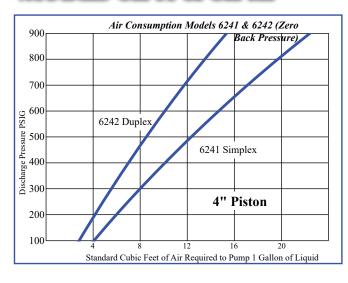


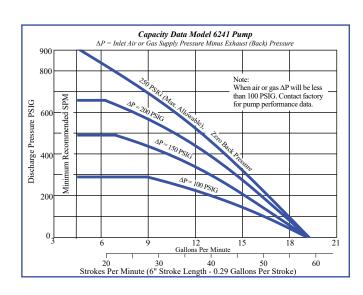
Models 6221 & 6222





Models 6241 & 6242





Servicing Instructions

Power Unit D-0365 (Page 6 & 7)

Caution: Prior to performing any maintenance on the power or fluid end of this pump, all pneumatic and hydraulic pressure must be removed and isolated from the unit.

Spool Valve (B-1510) is a 2 position, 4-way spool valve with internal parts for bleeder pilot operation. To inspect, proceed as follows:

- 1. Remove 4 Allen head cap screws from the pilot end caps.
- 2. Remove the pilot end cap. (One end cap contains the detent body, spring, and balls.)
- 3. Remove the bumper.
- 4. Remove the spool and examine.
- 5. If required, the sleeve assembly can be removed; however, this assembly contains the static o-ring seals and may be difficult to reassemble.
- 6. To remove the valve from the pump, loosen 4 cap screws.

Note: When reassembling, extreme care must be exercised to eliminate damage to the static o-rings, to eliminate contamination on the sleeve and/or spool, and to protect end gaskets.

Control lines: All connections must be tight and leak free.

Manifold must be securely fastened at both end cap connections and to the spool valve. When reassembling this unit, care must be exercised to protect the o-ring seals as leakage in this area will cause the unit to short stroke or make the unit entirely inoperative. Pilot valve assembly may be removed from the power end cap as a unit. In reassembling this unit, care must be exercised to protect o-ring seals as leakage in this area will cause the unit to short stroke or make the unit entirely inoperative.

Disassembly of Pilot Valve B-0928 (Page 8)

- 1. Remove adapter from sleeve.
- 2. Remove the spring and examine for set and stress failure.
- 3. Remove the plunger and examine the angled seat face and O.D. surface of the probe end. Probe end must be smooth enough to effect a pneumatic seal with o-ring.
- 4. Examine all o-rings and replace if necessary.

Disconnect Fluid Head from Power Cylinder (Page 6)

- 1. Position the pump in discharge position if possible.
- 2. Remove the retainer cup (this is a right hand thread).
- Slowly apply power to withdraw the power piston rod from the cup. If the pump does not operate, this connection may be pried apart.

Disassembly of Power Cylinder (D-0365, Page 6 & 7)

- 1. Loosen set screw and remove connector bearing ball from end of rod.
- 2. Remove backup ring, Belleville washers, and retaining nut.
- 3. Remove 4 hex head screws and packing plate.
- 4. Disconnect both pilot control lines.
- Remove the manifold bolts. The valve and manifold assembly may be removed from the power cylinder.
- 6. Remove the tie down bolts.
- 7. Remove the hex nuts from one end of each tie rod.
- 8. Remove the end caps from the cylinder.
- 9. Remove the piston and power piston rod from the cylinder.

Disassembly of Power Piston B-0813 (Page 8)

- 1. Bend down tab on both locking rings.
- 2. Remove the bushing nut from the bushing.
- 3. Remove the bushing from the piston.
- 4. Remove the set screw from the bushing.
- 5. Remove the power piston rod from the bushing.

Assembly of Power Piston B-0813 (Page 8)

- 1. Install the B-0810 power piston rod/rods into the bushing using anti-seize and tighten securely.
- 2. Install set screw/screws using anti-seize and tighten firmly against the power piston rod/rods.
- 3. Bend one tab on each of two locking rings 90° to the plane of the ring.
- 4. Place one locking ring over the bushing (bent tab positioned away from the bushing shoulder) and install the assembly into the piston using anti-seize. Position the locking ring with bent tab engaged in the hole in the piston. Tighten the bushing assembly piston as tightly as possible.
- Place the other locking ring over the exposed thread on the bushing with the bent tab positioned to engage the hole in the piston. Install the bushing nut and tighten as tight as possible.
- 6. Bend one exposed tab on each locking ring up against a flat surface of the hex nut on both the bushing and bushing nut.

Servicing Instructions

Assembly of Power Unit D-0365 (Page 6 & 7)

- 1. Lubricate I.D. of the cylinder and examine for surface defects.
- 2. Install piston seal ring into the last groove of inner cylinder and insert piston into cylinder.
- 3. Pass the piston through the cylinder until the second groove is exposed.
- 4. Install the other piston seal ring and draw the piston back into the cylinder.
- 5. Examine the ends of the cylinder for possible damage. Place the o-ring into the groove in the end cap and install the cylinder into the recess taking care not to pinch or otherwise damage the o-ring.
- 6. Place the o-ring into the groove in the other end cap.
- 7. Insert the power piston rod through the center hole in the end cap.
- 8. Install the tie rods. Make sure the end plates are brought up uniformly.
- 9. Position the manifold gaskets and manifold over the ports in the end caps making sure that the gaskets do not block the ports.
- 10. Secure the manifold with the hex head cap screws.
- 11. Install the valve gasket and spool valve and secure to the manifold with 4 socket head cap screws.
- 12. Install the pilot control lines.
- 13. Lubricate the center bore of the end cap and O.D. of the power piston rod and install the rod packing.
- 14. Install the o-ring and wiper ring into the gland bushing.
- 15. Place the gland bushing over the power piston rod and seat into place against the packing.
- 16. Position the packing plate against the gland bushing and tighten into place with 4 hex head cap screws. Do not overtighten.
- 17. For double ended pumps, repeat steps 14 through 17 for opposite end. For single ended pumps, place o-rings onto the end plug. Lubricate with a suitable grease and install the end plug into the end cap.
- 18. Secure the end plug with the packing plate and 4 hex head cap screws.
- 19. Assemble 2 pilot valves B-0928, Page 8
 - Install o-ring into I.D. of the sleeve.
 - Install o-rings onto the O.D. of the sleeve.
 - Lubricate the plunger and insert into the sleeve.
 - Place the spring over the exposed end of the plunger.
 - Install the gasket over the end of the adapter and install adapter into the sleeve.

Assembly of Power Unit D-0365 (Page 6 & 7) Continued

- 20. Lubricate the O.D. seals of the adapter and install one pilot valve assembly into each end cap.
- 21. Place the retainer, Belleville washers, and a backup ring over the end of the power piston rod.
- 22. Install the spacer onto the end cap using 8 cap screws. Spacer should be oriented with 1/2" drain on bottom. (Two spacers required foe double ended pumps.)

Assembly of 6211 Head Assembly (Page 9)

- 1. Examine the head body to make sure the valve cage seating surface and packing areas are free of nicks and burrs. Check all thread areas for condition of threads.
- 2. Install the seal onto the seal surface.
- 3. Install the lower valve cage and ball into the valve bore of the pump head.
- 4. Install the o-rings and backup rings onto the spacer cage and lubricate the seal area.
- 5. Install the spacer cage from step 4 into the pump head.
- 6. Install the seal onto the seal surface inside the spacer cage.
- 7. Install the upper cage valve and ball into the spacer cage.
- 8. Install the o-ring and backup ring onto the valve plug.
- 9. Place the seal on the top surface of the upper valve cage.
- 10. Install the valve plug from step 8 into the top of the pump body.
- 11. Place the cover plate over the valve plug and secure the cover using 4 hex head cap screws with lock washers.
- 12. Install the pipe plug using anti-seize or equal.
- 13. Install the packing and lantern ring.
- 14. Place the packing gland into the packing gland nut and thread the assembly into the pump body. Do not tighten more than hand tight.
- 15. Assemble the ball connector cup onto the plunger using anti-seize if available. Secure the connection with the set screw.
- 16. Lubricate the plunger and insert it through the packing end of the pump head.
- 17. Install the grease jack containing 2 sticks of Chemola lubricant.

Note: When using Teflon packing, replace the grease jack with the pipe plug.

Servicing Instructions

Assembly of 6221 Head Assembly (Page 10)

- Examine the head body to insure the valve cage seating surfaces and packing areas are free of nicks and burrs. Check the threaded areas for thread conditions.
- 2. Install the seal onto the lower seal surface.
- 3. Install the lower valve cage and valve ball into the pump head.
- 4. Install the spacer cage.
- 5. Install the seal onto the top surface of the spacer cage.
- 6. Install the top valve cage and valve ball into the pump head.
- 7. Place the top seal onto the top surface of the top valve cage.
- 8. Install the valve plug.
- 9. Position the cover plate over the valve plug and secure using 2 hex head cap screws with lock nuts.
- 10. Install the pipe plug using Loctite pipe seal or equal.
- 11. Insert packing into the packing bore of the pump body.
- 12. Install the packing gland into the packing gland nut and thread the assembly into the pump body.
- 13. Lubricate the O.D. of the plunger and insert through the packing end of the pump head.

Assembly of 6241 Head Assembly (Page 11)

- Examine the pump head to ensure valve cage sealing surfaces and cylinder sealing surfaces are free of debris. Check thread areas for thread conditions.
- 2. Install seals onto lower seal surfaces of each cavity in pump head.
- Install the valve ball into the valve cage. Insert the valve plug
 into the valve cage and fasten with a roll pin. Install the o-ring
 onto the valve plug and lubricate each cavity in the pump
 head.
- 4. Insert the plug and insert the assembly into each cavity of the pump head.
- 5. Install the plug as shown.
- 6. Position and secure the gasket and cover plate using 3 hex head cap screws.
- 7. Assemble the bell connector onto the end of the piston rod and secure with the set screw.
- 8. Install the breather and wiper ring into the end plug.
- 9. Insert the piston rod through the end plug as shown.
- 10. Position the end plug onto the spacer and position the cylinder using 6 screws and 6 washers. The flat end of the cylinder must be used. Do not tighten this joint, leave at least a 1/4" gap.

Assembly of 6241 Head Assembly (Page 11) Continued

- 11. Install the sleeve into the cylinder.
- 12. With the piston rod moved to full forward position, install the o-ring, piston, piston cup, backup retainer, and nut.
- 13. Install the o-ring and backup onto the end of the sleeve.
- 14. Place the assembled pump head from step 10 over the end of the sleeve. Secure the cylinder to the pump head using 6 screws and 6 washers. This joint should be brought face to face. If a gap exists, loosen the joint made in step 13.
- 15. After tightening the cylinder to the head connection, tighten the cylinder to the spacer connection.

Assembly of Fluid End to Power Units (Page 6)

- 1. Insert the ball joint thrust bearing into the connector cup.
- Insert the connector bearing ball (on end of preassembled power piston rod) into connector cup and tighten the retainer.
 Retainer should shoulder against the end of the connector cup without excessive pressure.



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