

## Maintenance Instructions for All Models

1. After usage, flush the Pump with clean water.
2. Hypro Diaphragm Pumps come with oil in the crankcase. Hypro recommends changing oil after 40 hours of break-in operation and every three months or 500 hours, whichever comes first. Use Hypro Oil (Part Number 2160-0038). Hypro Oil is a specially formulated, high-grade, non-detergent, SAE 30 weight oil formulated to prolong pump life.



To drain the oil:

### **D12GRGI and D252**

Remove the oil fill cap, turn the pump upside down and rotate the shaft until oil stops flowing out. (D252 Gear Reduction Oil requirements: use 80-90 Wt. Gear Lube and fill to level hole on gear reduction side.)

## **Valve Replacement**

Occasionally debris can cause improper seating of the Valves or damage to the O-rings. To check for this problem, follow these steps.

### **D12 & D252**

Remove the Head Bolts and the Head. Remove the Valve Caps and the Valve Assemblies. Replace the Valve Assemblies and O-rings, and reassemble.

### **D303, D403, and D503**

Remove the Drain Plug (9910-30171 on D303, & 403, 9910-770070 on D503) and Oil Sight Glass Covers, and rotate shaft until the oil stops flowing out. Install the Drain Plug.

To fill the pump with oil, slowly pour oil into Sight Tube while turning the pump shaft. Turning the pump shaft purges all the air out of the crankcase. Always change oil when replacing diaphragms.

3. For winter storage or if a freezing condition will be encountered, flush the pump with a 50/50 mixture of water and antifreeze.

### **⚠ CAUTION**

**The bypass return outlet on all control units must be connected directly to the tank without restrictions or ball valves.**

### **D303, D403, & D50**

Remove the Pump Manifolds. With the Manifolds removed, the Valves can easily be removed and inspected for debris and wear. Replace Valves, O-rings and Manifolds.

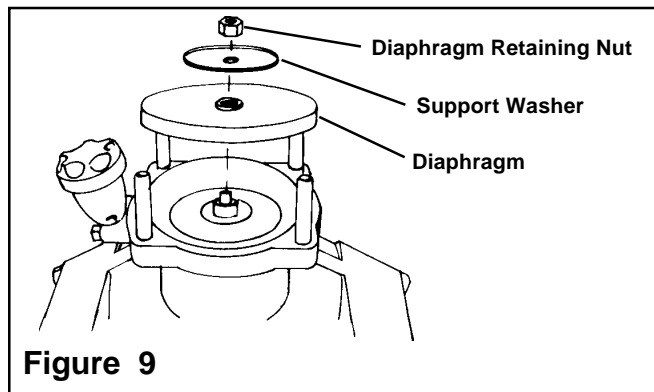
### **D503**

Remove Valve Retainers. With Retainers removed, Valves and O-rings can easily be removed and inspected. Replace Valves, O-rings and Valve Retainers.

## Diaphragm Replacement: D12, D252, and D503

Change diaphragms every 500 hours or three months, whichever comes first.

1. Drain oil from crankcase as instructed previously.
2. Remove pump head bolts and heads.
3. Remove the Diaphragm Retaining Nut, support washer and diaphragm (See Figure 9).
4. Turn the Crankshaft to bring the Piston to its down-stroke and seat the Diaphragm into the Sleeve Groove. Install Retaining Washer and tighten Retaining Nut.
5. Reinstall Pump Heads and Head Bolts.
6. On the D12 and D252, replace the Pulsation Dampener Diaphragm by first bleeding the air from the dampener. Remove the bolts from the dampener cover and replace the Diaphragm. Reassemble the



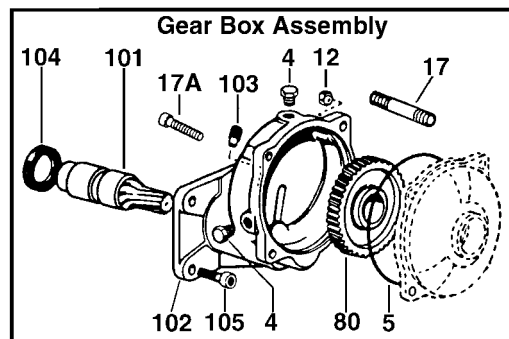
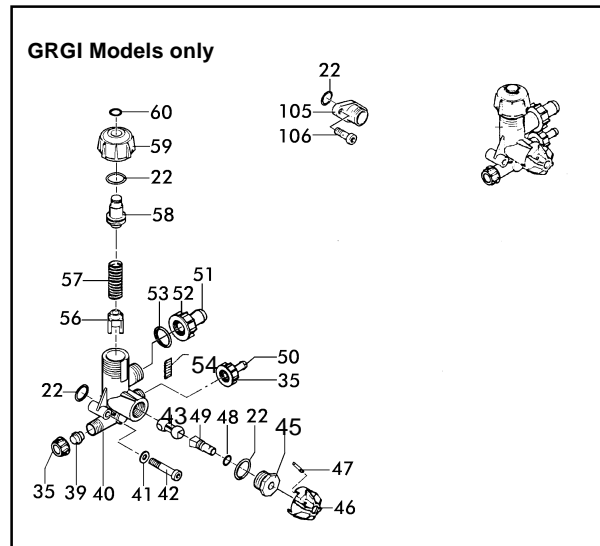
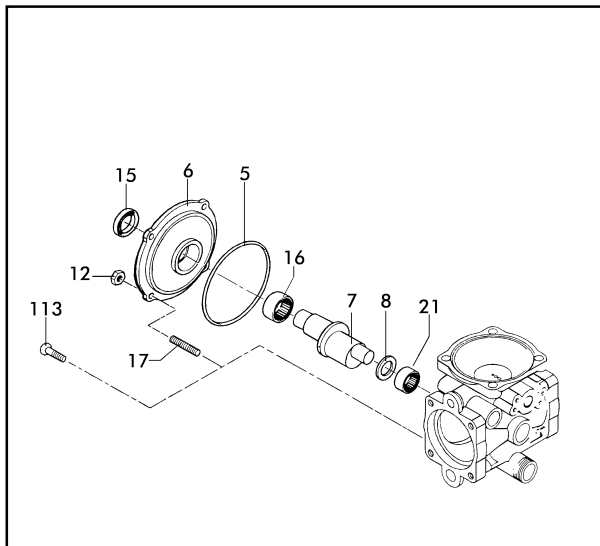
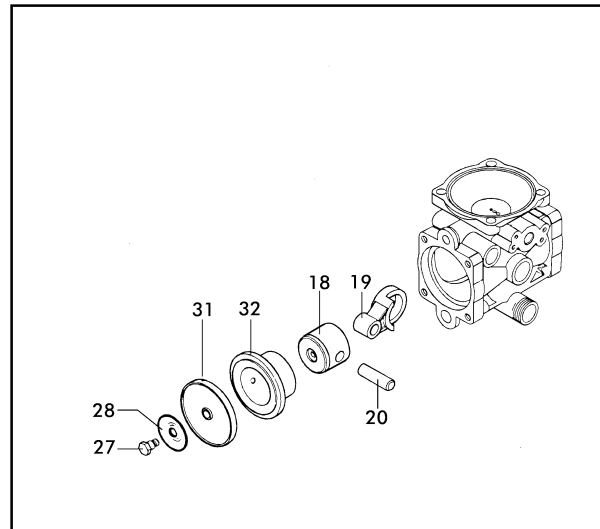
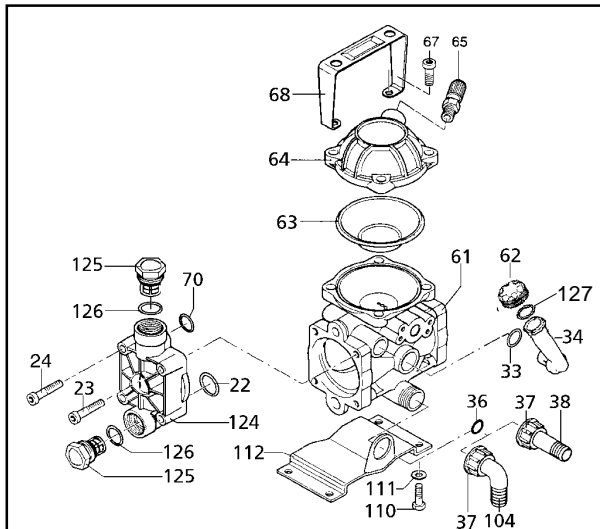
Cover in place and charge the dampener to 20% of the operating pressure.

7. Refill the crankcase with Hypro Oil (Part Number 2160-0038). Rotate the Shaft to distribute the oil and fill to proper level.

## Troubleshooting

<b>SYMPTOM</b>	<b>PROBABLE CAUSE(S)</b>	<b>CORRECTIVE ACTION</b>
The pump does not draw water.	One or more valves are seating improperly.	Remove valve and check for debris.
	Suction line is plugged or collapsed. Clogged strainer.	Examine suction line. Clean strainer.
The liquid flow is irregular.	The charge in the pulsation dampener is incorrect.	Check pressure in pulsation dampener (20% of your spray pressure).
	One or more valves are seating improperly.	Remove valve and check for debris. Examine the valve seatings and clean them.
Output drops and the pump is noisy.	Oil level is too low.	Add oil to correct level (halfway up the sight tube).
Oil comes out of the discharge port or oil is a milky color.	One or more diaphragms split.	Remove manifold and heads. Drain oil and clean crankcase of water. Replace diaphragms, heads and manifold. Refill with Hypro Oil (Part Number 2160-0038).

# Model 9910-D252, D252-GRGI 3/4, & D252-GRGI 5/8



**Figure 18**

Ref. No.	Part Number	Description	Qty. Req'd.
4	991 0-620301	Plug	2
12	9910-390440	Nut	4
80	9910-800280	Gear	1
101	9910-800810	Driver Gear, 3/4" Shaft Only	1
101	9910-801230	Driver Gear, 5/8" Shaft Only	1
02	9910-800820	Body	1
103	9910-800800	Locating Bolt	1
104	9910-480820	Seal	1
105	9910-620440	Bolt	4

Ref. No.	Description	Tightening Torque	
		In. Lbs.	Nm
4	Plug	87.5	9.8
105	Bolt	175.0	19.6

Ref. No.	Part Number	Description	Qty.
5 <sup>3</sup>	9910-800380	O-Ring	1
6	9910-800020	Flange	1
7	9910-800172	3/4" Solid Shaft	1
8	9910-800160	Spacer	1
12	9910-390440	Nut	4
15	9910-800200	Seal	1
16	9910-800180	Roller Bushing	1
17	9910-550330	Stud	4
18	9910-800120	Piston	2
19	9910-800140	Connecting Rod	2
20	9910-800130	Piston Pin	2
21	9910-480370	Roller Bushing	1
22 <sup>3</sup>	9910-480440	O-Ring	5
23	9910-680360	Bolt	1
24	9910-800220	Bolt	7
27	9910-800090	Diaphragm Pin	2
27	9910-800091	Diaphragm Pin	2
28	9910-800350	Plate	2
31 <sup>1</sup>	9910-800085	Diaphragm Desmopan	2
31	9910-80008T	Diaphragm Teflon (optional)	1
31	9910-800080	Diaphragm (Buna)	2
32	9910-800110	Sleeve	2
33 <sup>3</sup>	9910-740290	O-Ring	1
34	9910-801960	Oil Tank	1
35	9910-800520	Ring Nut	2
36 <sup>3</sup>	9910-390180	O-Ring	1
37	9910-550450	Ring Nut	1
38	9910-800340	Hose	1
39	9910-800540	Plug	1
40	9910-800400	Valve Body	1
41	9910-550331	Washer	2
42	9910-801080	Bolt	2
43	9910-800430	Valve	1
45	9910-800500	Ring Nut	1
46	9910-800510	Knob	1
47	9910-390330	Pin	1
48 <sup>3</sup>	9910-800560	O-Ring	1
49	9910-800490	Pivot	1
50	9910-800530	Hose	1
51	9910-800670	Hose	1
52	9910-800680	Ring Nut	1
53 <sup>3</sup>	9910-740290	O-Ring	1
54	9910-800480	Atm scale adhesive	1
56	9910-800440	Lower Spring Guide	1
57	9910-800450	Spring	1

<sup>1</sup> Denotes Diaphragm Kit 9910-Kit-1927

<sup>2</sup> Denotes Valve Kit 9910-Kit-2408

<sup>3</sup> Denotes O-Ring Kit 9910-Kit-2409

Ref. No.	Part Number	Description	Qty.
58	9910-800460	Upper Spring Guide	1
59	9910-800470	Adjustment Knob	1
60	9910-480550	Circlip	1
61	9910-800010	Pump Body "SP"	1
62	9910-550056	Oil Tank Cap	1
63	9910-800190	Semi Air Chamber	1
63	9910-800191	Semi Air Chamber	1
64	9910-800230	Upper Air Chamber	1
64	9910-800232	Upper Air Chamber	1
65	9910-800650	Valve	1
67	9910-540290	Bolt	4
68	9910-800390	Handle	1
70 <sup>3</sup>	9910-800210	O-Ring	2
104	9910-550460	Elbow	2
105	9910-800692	Flange	1
106	9910-880280	Bolt	2
107	9910-800590	Key	1
108	9910-800171	Shaft "Gr-Version"	1
110	9910-180431	Bolt	2
111	9910-380241	Washer	2
112	9910-800311	Pulley Base	1
113	9910-320350	Bolt	4
124	9910-801940	Head	2
125 <sup>2</sup>	9910-809060	Valve Assembly	4
126 <sup>2,3</sup>	9910-880830	O-Ring	4
127	9910-550040	O-Ring	1

Ref. No.	Description	Tightening Torque	
		In. Lbs.	Nm
23	Bolt	175.0	19.6
24	Bolt	175.0	19.6
27	Diaphragm Pin	175.0	19.6
42	Bolt	87.5	9.8
67	Bolt	200.8	22.5
106	Bolt	87.5	9.8
110	Bolt	175.0	19.6
113	Bolt	87.5	9.8
125	Valve Assembly	131.2	14.7

Diaphragm Kit 9910-Kit-1927	
Ref No.	Qty.
31	2

Valve Kit 9910-Kit-1917	
Ref No.	Qty.
125	4
126	4

O-Ring Kit 9910-Kit-1916	
Ref No.	Qty.
5	1
22	5
33	4
36	1
48	1
53	1
70	1
126	4

## Limited Warranty on Hypro Diaphragm Pumps

Hypro Corporation ("Hypro") warrants to the original purchaser of its products (the "Purchaser") that such products will be free from defects in material and workmanship under normal use for the period of one (1) year for all products except: oil crankcase plunger pumps will be free from defects in material and workmanship under normal use for the period of five (5) years, and accessories will be free from defects in material and workmanship under normal use for the period of ninety (90) days. In addition, Hypro warrants to the purchaser all forged brass pump manifolds will be free from defects in material and workmanship under normal use and from damage resulting from environmental conditions for the life of the pump.

"Normal use" does not include use in excess of recommended maximum speeds, pressures, vacuums and temperatures, or use requiring handling of fluids not compatible with component materials, as noted in Hypro product catalogs, technical literature, and instructions. This warranty does not cover freight damage, freezing damage, normal wear and tear, or damage caused by misapplication, fault, negligence, alterations, or repair that affects the performance or reliability of the product.

**THIS WARRANTY IS EXCLUSIVE. HYPRO MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

Hypro's obligation under this warranty is, at Hypro's option, to either repair or replace the product upon return of the entire product to the Hypro factory in accordance with the return procedures set forth below. **THIS IS THE EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY.**

**IN NO EVENT SHALL HYPRO BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, WHETHER FOR BREACH OF ANY WARRANTY, FOR NEGLIGENCE, ON THE BASIS OF STRICT LIABILITY, OR OTHERWISE.**

### Return Procedures

All pumps or products *must* be flushed of *any* chemical (ref. OSHA Section 0910.1200 (d)(e)(f)(g)(h)) and hazardous chemicals *must* be labeled before being shipped\* to Hypro for service or warranty consideration. Hypro reserves the right to request a Material Safety Data sheet from the Purchaser for any pump or product Hypro deems necessary. Hypro reserves the right to "disposition as scrap" pumps or products returned which contain unknown substances, or to charge for any and all costs incurred for chemical testing and proper disposal of components containing unknown substances. Hypro requests this in order to protect the environment and personnel from the hazards of handling unknown substances.

For technical or application assistance, call the **Hypro Technical/Application number: 1-800-445-8360.**

**To obtain service or warranty assistance, call the Hypro Service and Warranty number: 1-800-468-3428;**

**or call the Hypro Service and Warranty FAX: (651) 766-6618.**

Be prepared to give Hypro full details of the problem, including the following information:

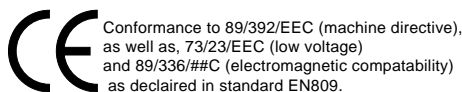
1. Model number and the date and from whom you purchased your pump.
2. A brief description of the pump problem, including the following:
  - Liquid pumped. State the pH and any non-soluble materials, and give the generic or trade name.
  - Temperature of the liquid and ambient environment.
  - Suction lift or vacuum (measured at the pump).
  - Discharge pressure.
  - Size, type, and mesh of the suction strainer.
  - Drive type (gas engine/electric motor; direct/belt drive; tractor PTO) and rpm of pump.
  - Viscosity (of oil, or other than water weight liquid).
  - Elevation from the pump to the discharge point.
  - Size and material of suction and discharge line.
  - Type of spray gun, orifice size, unloader/relief valve.

Hypro may request additional information, and may require a sketch to illustrate the problem.

Contact the factory to receive a return material authorization before sending the product. All pumps returned for warranty work should be sent shipping charges prepaid to:

HYPRO CORPORATION  
Attention: Service Department  
375 Fifth Avenue NW  
New Brighton, Minnesota 55112-3288

\*Carriers, including U.S.P.S., airlines, UPS, ground freight, etc., require specific identification of any hazardous materials being shipped. Failure to do so may result in a substantial fine and/or prison term. Check with your shipping company for specific instructions.



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www.hypropumps.com