

PULSAR KOPkit

Service Instructions

Accurate records in the early stages of pump operation will reveal the type and amount of maintenance that will be required. A preventative maintenance program based on these records will ensure trouble-free operation. It is not possible in these instructions to forecast the life of such parts as the diaphragm, check valves and other parts in contact with the product you are handling. Corrosion rates and conditions of operation affect the useful life of these materials so an individual metering pump must be gauged according to particular service conditions.



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PULSAR KOPkit's contain replacement parts normally used in a preventive maintenance program. Use the following directions to correctly install each of the enclosed parts. It may also be necessary to refer to your pump Installation, Operation and Maintenance Manual for pumps with special features.

— CAUTION —

Before performing any maintenance requiring reagent head or valve (wet end) disassembly, be sure to relieve pressure from the piping system and, where hazardous process materials are involved, render the pump safe to personnel and the environment by cleaning and chemically neutralizing as appropriate. Wear protective clothing and equipment as appropriate.

Accurate records from the early stages of pump operation will indicate the type and levels of required maintenance. A preventative maintenance program based on such records will minimize operational problems. It is not possible to forecast the lives of wetted parts such as diaphragms and check valves. Since corrosion rates and operational conditions affect functional material life, each metering pump must be considered according to its particular service conditions.

PULSAR KOPkits contain all replacement parts normally used in a preventative maintenance program. It is recommended that KOPkits and PULSAlube hydraulic and gear oils be kept available at all times.

Each PULSAR pump is provided with an individual specification data sheet included in the parts list package. The data sheet contains important information relating to the application along with pump serial number, pump specifications (i.e., materials, piston size, stroking rate, etc.).

I. VALVE ASSEMBLY REPLACEMENT

Removal, Inspection, and Reinstallation

CHECK VALVES

General Description

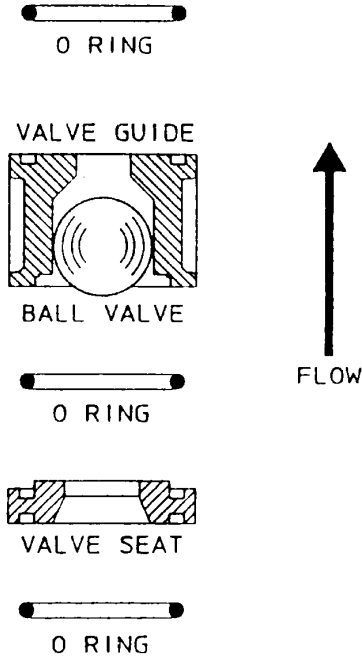


FIGURE 1

1. Disconnect the power source to the drive motor.
2. Relieve all pressure from the piping system.
3. Take all precautions described under “Caution” to prevent environmental and personnel exposure to hazardous materials.
4. Close the inlet and outlet shutoff valves.

5. Loosen the suction valve tiebar bolts and spring the suction piping slightly to drain any liquid from the reagent head cavity. If the piping is closely connected it may be necessary to disconnect a union or flange.
 6. Remove the suction check valve assembly (ball contained within guide and seat), holding it together as a unit.
 7. Loosen the tiebar bolts on the discharge valve and spring the piping slightly to drain any liquid.
 8. Remove the discharge check valve assembly, holding it together as a unit as before.
 9. Disassemble both valves and examine components for wear. Seats should have sharp edges or a small chamfer, free from dents or nicks. Hold the ball firmly against its mating seat in front of a bright light to inspect for fit: observation of light between ball and seat is cause for replacement of either or both components.
 10. Reassemble both valves using new parts as supplied in the KOPkit. Sealing “○”-rings should always be replaced.
 11. Reinstall both valve assemblies, taking care to ensure that they are correctly oriented with balls above seats. Refer to Fig. 1.
 12. Tighten the tiebar bolts evenly, making sure the valve assemblies are assembled squarely. Refer to Appendix A for torque values.
- Note:** For best results, always loosen the unions or flanges on either side of the system piping prior to retightening of the check valve assemblies. Retighten the unions or flanges after the check valves are securely tightened into position.
13. Check for leaks and retighten tiebar bolts as necessary.

II. DIAPHRAGM REMOVAL AND REINSTALLATION

— CAUTION —

If the diaphragm has failed, process material may have contaminated the pump hydraulic oil. Handle with appropriate care, clean and replace oil if required.

A.) Standard Diaphragm

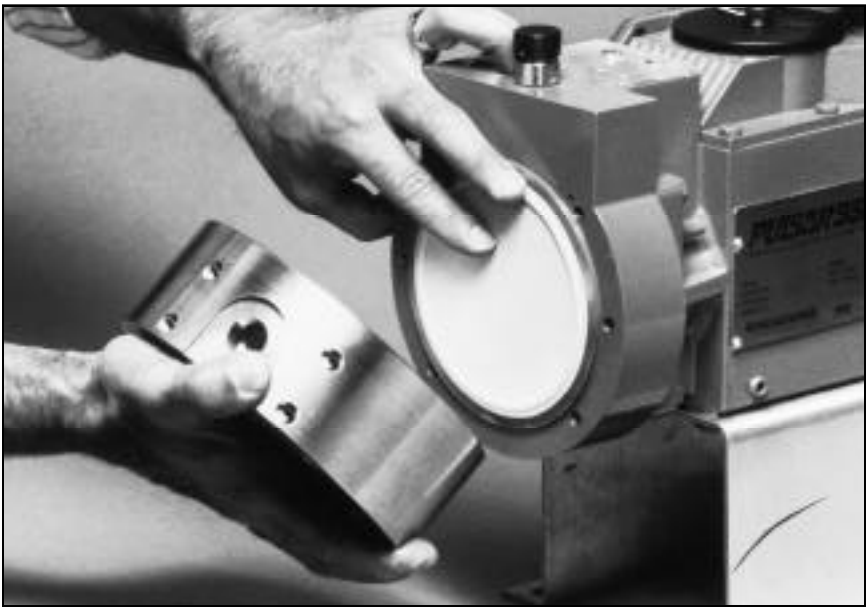


FIGURE 2

PULSAR diaphragms do not have a specific cycle life; however, the accumulation of foreign material or the entrapment of sharp particles between the diaphragm and dish cavity can eventually cause failure. Failure can also occur as a result of hydraulic system malfunction or chemical attack.

1. Disconnect the power source to the drive motor
2. Relieve all pressure from the piping system.
3. Take all precautions described under “Caution” to prevent environmental and personnel exposure to hazardous materials.
4. Close the inlet and outlet shutoff valves.
5. Disconnect piping to the reagent head and drain any process liquid, following material safety precautions described.
6. Place a pan underneath the pump head to catch any liquid leakage.
7. Remove all but one top reagent head bolt. Oil will leak out between the pump head and reagent head as the bolts are loosened.
8. Tilt the head and pour out any liquids retained by the check valves into a suitable container, continuing to follow safety precautions as appropriate.
9. Remove the final bolt and rinse or clean the reagent head with an appropriate material.
10. Remove the old diaphragm and replace it with the new one supplied in the KOPkit.
11. To install a diaphragm, first ensure that the critical sealing areas of diaphragm, reagent head, and pump head are clean and free of debris. Set the diaphragm in place on the reagent head and ensure seating of the diaphragm sealing ring into the mating groove in the reagent head.
12. Install the reagent head bolts and tighten in an alternating pattern to ensure an even seating force. Torque to the values recommended in Appendix A.

13. Reprime the pump per the procedure outlined under “Repriming the Pump”.

B.) Pulsalarm Leak Detection Diaphragm

— CAUTION —

After diaphragm failure, pressurized process fluid can be present in any part of the Pulsalarm leak detection vacuum system. Take appropriate precautions and handle with care.



FIGURE 3

Removal

1. Disconnect the power source to the drive motor
2. Relieve all pressure from the piping system.
3. Take all precautions described under “Caution” to prevent environmental and personnel exposure to hazardous materials.
4. Close the inlet and outlet shutoff valves.
5. Disconnect piping to the reagent head and drain any process liquid, following material safety precautions described.
6. Place a pan underneath the pump head to catch any liquid leakage.
7. Remove all but one top reagent head bolt. Oil will leak out between the pump head and reagent head as the bolts are loosened.
8. Tilt the head and pour out any liquids retained by the check valves into a suitable container, continuing to follow safety precautions as appropriate.
9. Remove the alarm switch assembly or pressure gauge from the reagent head.
10. Remove the bleed valve assembly and flat gasket from the reagent head.
11. Rinse or clean the reagent head with an appropriate material.
12. Remove the diaphragm by running a blunt blade along the periphery and prying it out.

Reinstallation



FIGURE 4

1. Ensure that the critical sealing areas of diaphragm assembly, reagent head, and pump head are clean and free from debris. Align the diaphragm assembly capillary tubes with mating holes in the seal groove in the reagent head and position it in place against the reagent head. Ensure seating of the diaphragm sealing ring into the mating groove in the reagent head.
2. Install the reagent head bolts and tighten in an alternating pattern to ensure an even seating force. Torque to the values recommended in Appendix A.
3. Apply sealing compound to the gauge/pressure switch assembly and reinstall to the upper port on the reagent head.
4. Apply sealing compound to the bleed screw and install the flat gasket, gasket seat, and bleed screw to the lower port on the reagent head.

5. Hand-tighten the bleed screw and loosen one turn.
6. Connect a hand-held vacuum pump or other vacuum source to the bleed screw, which fits 6 mm (1/4 in.) I.D. tubing.
8. Evacuate to approximately 650 mm Hg (26 in. Hg) and securely tighten the bleed screw during evacuation.
9. If required, test system operation per the “Pulsalarm Leak Detection” section of the Installation, Operation and Maintenance Manual.
10. Reprime the pump per the procedure outlined under “Repriming the Pump”.

III REPRIMING THE PUMP

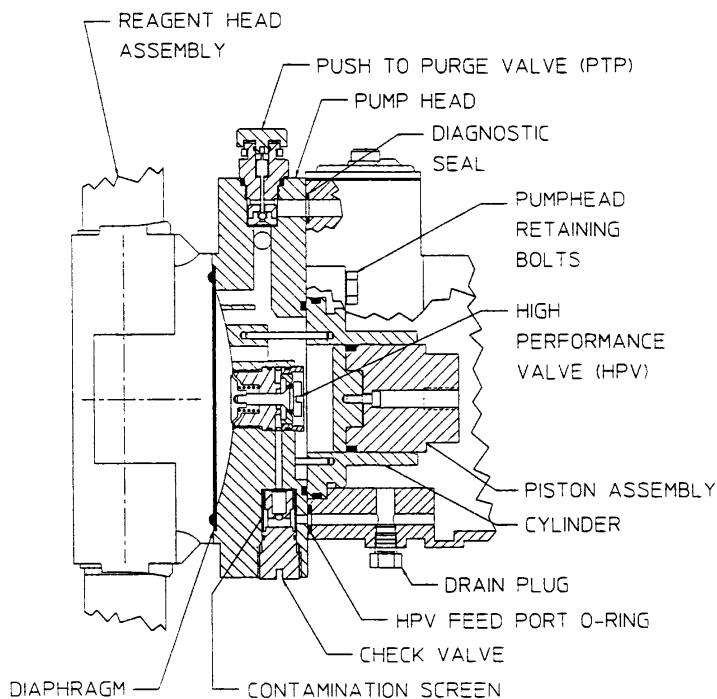


FIGURE 5

A) Priming the Pumphead

1. Disconnect the power source to the drive motor.
2. Relieve all pressure from the piping system.
3. Remove the diagnostic window and fill the eccentric box with PULSALUBE 7H hydraulic oil to the proper level. Replace the diagnostic window.
4. Turn on the pump and adjust the stroke length to the maximum setting of 100 per “Output Adjustment”.
5. Fully depress and hold the PTP valve. Oil should begin to flow out of the center diagnostic port. Continue to hold the valve down until the oil is clear of bubbles. The pump is now primed. If oil fails to flow out of the diagnostic port, proceed to step 6.
6. Turn off the pump. Remove the PTP valve from the pumphead. Using a plastic funnel, slowly pour oil into the pumphead through the PTP valve port until full.
7. Replace the PTP valve, ensuring that the flat copper gasket and “○”-ring are properly in place.
8. Turn on the pump. Fully depress and hold the PTP valve. Oil should begin to flow out of the center diagnostic port. Continue to hold the valve down until the oil is clear of bubbles. If oil fails to flow out of the diagnostics port, then additional oil is required: repeat steps (6) and (7) above.

REMEMBER TO ORDER A NEW KOPKIT TO REPLACE THE ONE YOU ARE USING.

APPENDIX A

BOLT TORQUE RECOMMENDATIONS

Reagent Head Part No.	Head Size	Head Bolts			Tiebar Bolts		
		No. Bolts & Size	Torque		No. Bolts & Size	Torque	
			N-m	Ft.-lb.		N-m	Ft.-lb.
NP160001	A	(6) M10 * 1.5	39	29	(4) M8 * 1.25	8	6
NP160002	B	(6) M12 * 1.75	68	50	(4) M8 * 1.25	8	6
NP160003	C	(6) M10 * 1.5	39	29	(4) M8 * 1.25	8	6
NP160004	D	(6) M8 * 1.25	20	15	(4) M8 * 1.25	8	6



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