

# DOUBLE DIAPHRAGM LEAK DETECTION

Special instructions for Series 500, 500-A & 560 "dia-Pumps" with Double Diaphragm Leak Detection

## THEORY OF OPERATION

The instructions below are for Neptune's optional Double Diaphragm Kit which is available for the Neptune Series 500 and 500-A "dia-Pumps".

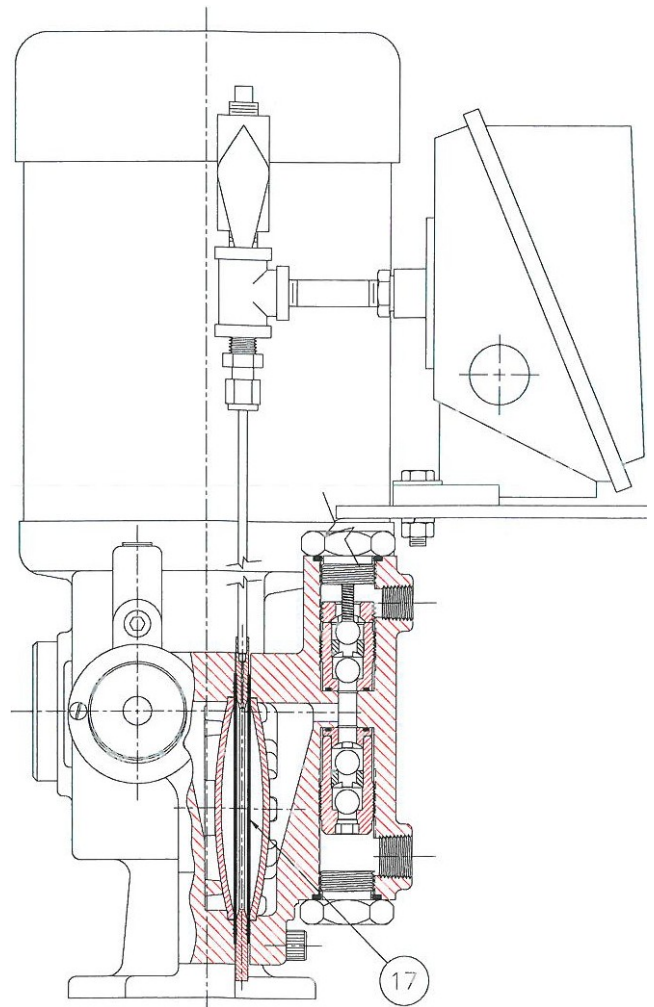
Use of a double diaphragm allows diaphragm to be monitored and provides an early warning upon failure of either diaphragm allowing repairs to be made before process fluid mix with the pump hydraulic fluid.

Neptune's double diaphragm is a kit which may be retrofitted to any pump currently in service or may be installed on a new pump at the factory.

**Figure 1** illustrates a Double Diaphragm Assembly. An intermediate plate is located between the oil and liquid heads with one diaphragm on each side of the intermediate plate. The Intermediate Plate is connected to a rupture alarm or pressure switch via a capillary system. The area between the diaphragms is evacuated. Rupture in either diaphragm produces an increase in volume and, therefore, a pressure increase, which can be sensed by a pressure switch for alarm purposes.

## DISASSEMBLY OF INTERMEDIATE PLATE

- 1.0.0 Shut pump off and disconnect suction and discharge piping. Remove drain plug and drain hydraulic fluid from the gearbox.
- 1.0.1 Remove 8 Screws and *remove* the liquid head assembly. Some hydraulic oil and process fluid will spill out when the head is removed.
- 1.0.2 The intermediate plate, which is between the pump heads can be removed easily.
- 1.0.3 Remove the rupture alarm (pressure switch) and clean the capillary system.
- 1.0.4 Replace one or both diaphragms if needed.
- 1.0.5 To reassemble reverse *above* procedure. Be certain that parts align properly.



**FIGURE 1**



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## VACUUM AIR FROM INTERMEDIATE SPACE

- 1.0.6 Open valve Item No. 5 (**Figure 2**).
- 1.0.7 To remove air, attach the vacuum pump with a hose connection Item No. 6 to the *valve* Item No. 5 (Figure 5) and pump **until resistance is felt**, for normal operating conditions.
- 1.0.8 Close valve Item No. 5
- 1.0.9 Remove the vacuum pump. Plug valve Item No. 5 with a 316SS pipe plug Item No. 12
- 1.0.10 Reinstall the Pump
- 1.0.11 Follow procedure in Neptune Standard Operating and Instruction Manual for Initial Pump Startup

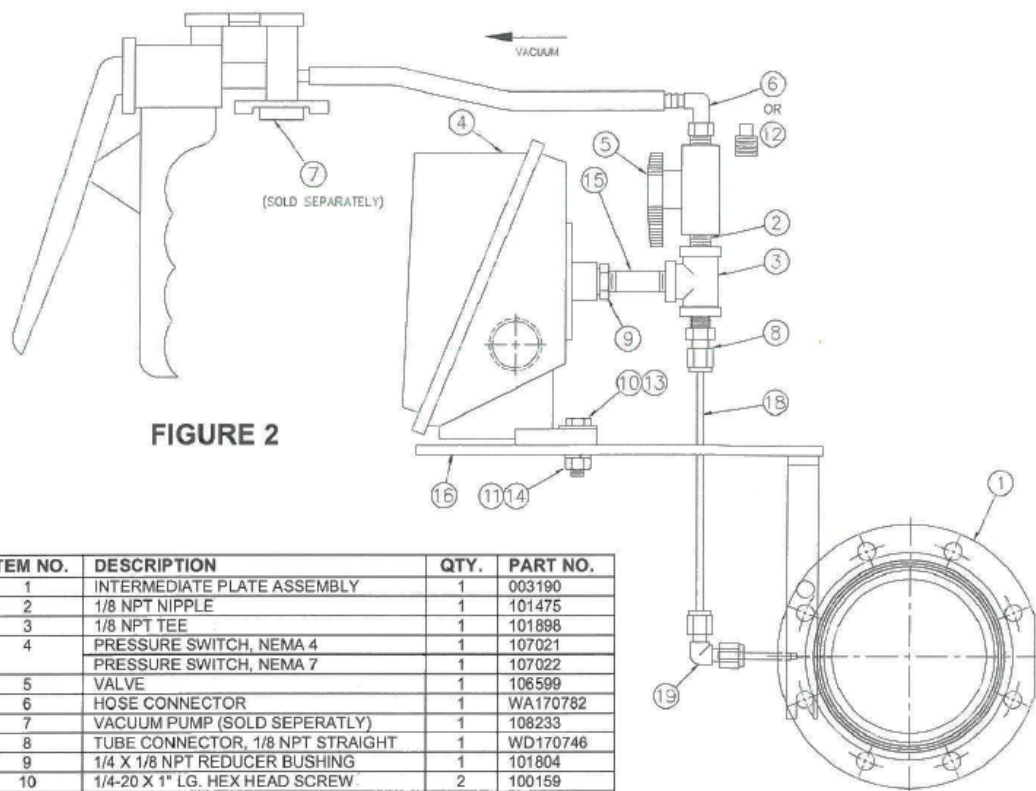


FIGURE 2

ITEM NO.	DESCRIPTION	QTY.	PART NO.
1	INTERMEDIATE PLATE ASSEMBLY	1	003190
2	1/8 NPT NIPPLE	1	101475
3	1/8 NPT TEE	1	101898
4	PRESSURE SWITCH, NEMA 4	1	107021
	PRESSURE SWITCH, NEMA 7	1	107022
5	VALVE	1	106599
6	HOSE CONNECTOR	1	WA170782
7	VACUUM PUMP (SOLD SEPERATLY)	1	108233
8	TUBE CONNECTOR, 1/8 NPT STRAIGHT	1	WD170746
9	1/4 X 1/8 NPT REDUCER BUSHING	1	101804
10	1/4-20 X 1" LG. HEX HEAD SCREW.	2	100159
11	1/4-20 HEX NUT.	2	100448
12	1/8 NPT PIPE PLUG, 316SS	1	101859
13	1/4" FLAT WASHER	2	108426
14	1/4" LOCK WASHER	2	100169
15	1/8 NPT NIPPLE (FOR METAL HEADS)	1	101477
	1/8 NPT NIPPLE (FOR PLASTIC HEADS)	1	101479
16	BRACKET ASSEMBLY	1	003577
	BRACKET ASSEMBLY (FOR DUPLEX)	1	003600
17	DIAPHRAGM	1	000200
18	VACUUM TUBE	1	004433
19	TUBE CONNECTOR, 1/8 NPT ELBOW	1	104614

**NOTE:** Neptune furnishes a Mityvac® vacuum pump from Mityvac® No. 6810 automotive test kit available at many automotive parts stores. (Unit furnished by Neptune is less gauge and automotive adapters)



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